The Role of Personality, Imagined Stressors, and Level of Depression On Information Processing

by

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Abstract

Sociotropy/dependency refers to the personality style of an individual who places an extremely high value on close interpersonal relationships (Blatt, D'Afflitti, & Quinlan, 1982), and is highly invested in positive exchanges with other people (Beck, 1983). Autonomy/self-criticism refers to the personality style of an individual who places an extremely high value on personal achievement, freedom of choice, and independence from others (Beck, 1983; Blatt & Schichman, 1982). Depression and/or depressive symptomatology has been predicted to occur when sociotropic/dependent or autonomous/self-critical individuals experience negative life events in the area of their vulnerability (Beck, 1983; Beck, Rush, Shaw, & Emery, 1979). This matching of vulnerability to specific life event is known as the "congruency hypothesis" (Segal, Shaw, & Vella, 1989).

According to the congruency hypothesis, sociotropic/dependents are at greatest risk of becoming depressed when they experience a negative interpersonal event, and autonomous/self-criticals are at greatest risk of becoming depressed when they experience a negative achievement event. The congruency hypothesis predicts that cognitive processing differences will become apparent after the occurrence of congruent but not incongruent stressors. In contrast to the congruency hypothesis, the Differential Activation Hypothesis (DAH; Teasdale, 1983) predicts that *any* type of negative life event can trigger depression in vulnerable individuals, and that the event does not have to match an underlying vulnerability. It proposes that processing differences, once in a sad mood, distinguish between vulnerable and nonvulnerable individuals -- vulnerable individuals will exhibit distorted cognitive processing whereas nonvulnerable individuals will demonstrate normal cognitive processing. Consequently, the DAH predicts that cognitive processing differences will become apparent after the occurrence of *both* congruent and incongruent stressors.

The current investigation examined changes in information processing in sociotropic/dependent and autonomous/self-critical individuals with varying levels of depression immediately following imagined negative events, and examined whether these changes were better explained by the congruency hypothesis or the DAH. By doing so, this investigation attempted to answer whether changes in information

processing after the occurrence of negative life events are triggered by a match between the negative event and an underlying vulnerability, or if information processing changes are triggered by negative mood alone. Changes in cognitive *processes* were assessed through the use of a computerized attention task, the Deployment of Attention Task (DOAT; Gotlib, McLaughlan, & Katz, 1988), and changes in cognitive *products* were assessed through the use of personal narratives, including an open-ended thought sample, a cued autobiographical memory task, and a future behaviour predictions task.

The results from the DOAT demonstrated modest support for the congruency hypothesis in sociotropic/dependent individuals. Sociotropic/dependent individuals, with low levels of depression, demonstrated a positive bias (i.e., avoiding negative words and attending to positive words) after imagining the neutral situation, a protective bias (i.e., avoiding negative words but attending equally to positive and neutral words) after imagining the incongruent threat, and an entire loss of these biases after imagining the congruent threat. After imagining the congruent threat, the performance of sociotropic/dependents, with low levels of depression, on the DOAT was indistinguishable from sociotropic/dependents with high levels of depression. This pattern, however, was only evident for the interpersonally-based word pairs on the DOAT, not for the achievement-based word pairs.

In comparison, the DOAT results for autonomous/self-critical individuals demonstrated support for the DAH. Autonomous/self-critical individuals, with low levels of depression, demonstrated a protective bias (on the achievement-based word pairs) and a positive bias (on the interpersonally-based word pairs) after imagining the neutral situation, and an entire loss of these biases after imagining *both* the congruent and incongruent threats. In addition, the results from one of the narrative measures, the open-ended thought sample, demonstrated clear support for the DAH. In the open-ended thought sample, sociotropic/dependents and autonomous/self-criticals reported having more concerns after *both* the achievement and interpersonal threats compared to the neutral condition, and did not report significantly more concerns in the area related to their underlying vulnerability.

The results of the other narrative measures, the cued-autobiographical memory task and the future behaviour predictions task, did not clearly support *either* the congruency hypothesis or the DAH. Instead, these results were more consistent with a schema-based model of personality (Cane, Olinger, Gotlib, & Kuiper, 1986) which predicts that sociotropic/dependents should demonstrate more interpersonal than achievement content in their cognitive products, and autonomous/self-criticals should demonstrate more achievement than interpersonal content in their cognitive products. In a schema-based model of personality, the accessibility of such material does not change after the occurrence of congruent stressors. On the cued-autobiographical memory task, sociotropic/dependents recalled more interpersonally-based than achievement-based personal memories, and autonomous/self-criticals recalled more achievement-based than interpersonally-based personal memories. Autonomous/self-criticals were also significantly faster at recruiting achievement-based memories than interpersonally-based memories. Last, individuals with higher levels of depression recalled fewer positive personal memories, and took longer to recall these memories, than individuals with lower levels of depression. On the future behavior predictions task, subjects with lower levels of depression reported having more positive expectations for the future than subjects with higher levels of depression, and sociotropic/dependents reported more positive interpersonally-based expectations for the future than autonomous/self-criticals.

Overall, the current investigation demonstrated modest support for the congruency hypothesis on the DOAT in sociotropic/dependent individuals, and clear support for the DAH on the DOAT in autonomous/self-critical individuals. In addition, support for the DAH was obtained in sociotropic/dependents and autonomous/self-criticals on one measure of cognitive products immediately following imagined negative events. The results of the remaining two measures of cognitive products were more consistent with a schema-based model of personality. The implications of the current findings for understanding the role of personality as a vulnerability factor for depression, an explanation of the current findings, and the limitations of the current investigation are discussed.

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Introduction

Depression is a chronic problem in today's society, often considered the "common cold" of mental health. It is a frequently recurring disorder (Keller, Lavori, Endicott, Coryell, & Klerman, 1984) with at least 25% of people experiencing depression once in their lifetime (Weissman, Myers, & Harding, 1978). At least half of recovered patients relapse in the two years following recovery (Belsher & Costello, 1988), and approximately 20% have a chance of remaining chronically depressed (Belsher & Costello, 1988; Keller, Lavori, Lewis, & Klerman, 1983). This suggests that previous depression makes an individual highly vulnerable to future depressive episodes. However, it is still unclear what other, more specific, vulnerability factors might account for the onset and/or relapse of depression and depressive symptoms. Models with increased specificity are needed to help us understand what makes some individuals vulnerable to depressive episodes and others more resilient.

Many theorists have attempted to identify factors that make an individual vulnerable to depression, including social skills deficits (Lewinsohn, 1974), deficits in self-control (Rehm, 1977), and causal attributions (Abramson, Seligman, & Teasdale, 1978; Alloy & Abramson, 1988). Among these, Beck (1983) and Blatt (1974) have proposed that personality styles may act as predisposing vulnerability factors. Although Beck's approach is based on cognitive theory and Blatt's approach on psychoanalytic theory, the two sets of personality constructs overlap significantly. Each distinguishes between a depression resulting from disturbed interpersonal relationships (i.e., Sociotropy: Beck, 1983; Dependency: Blatt, 1974), and a depression resulting from a disruption of self-concept or identity (i.e., Autonomy: Beck, 1983; Self-Criticism: Blatt, 1974). Although Blatt (1974) conceptualizes these personality characteristics as traits, Beck is somewhat equivocal as to whether they are trait- or state-like. However, Beck has conceded that the contrast between sociotropy and autonomy is strong enough to "warrant distinguishing them as two types" (Beck, 1983, page 272).

Because the psychoanalytic and cognitive perspectives overlap considerably on the role of these personality characteristics in depression, they will be considered

identical for ease of discussion. However, the current study conceptualized personality vulnerabilities from Blatt's perspective in order to test specific predictions. Beck's lack of distinction as to whether these personality characteristics are trait-like or situation-based makes his model difficult to test empirically. Each of these hypothesized personality characteristics will now be discussed in greater detail.

Sociotropy/Dependency

Sociotropy/dependency refers to the personality style of an individual who places an extremely high value on close interpersonal relationships (Blatt et al.. 1982), and is highly invested in positive exchanges with other people (Beck, 1983). Sociotropic/dependents seek help from others, have strong needs for reassurance about their personal worth, and are dependent on others for guidance and direction (Beck, 1983). These individuals are preoccupied with issues related to caring and dependency (Blatt, 1974; Blatt & Homann, 1992), and are hypothesized to blame themselves for the loss or disruption of social relationships (Beck, 1983). As a consequence of their need to be nurtured and accepted (Clark, Beck. & Brown, 1992), sociotropic/dependent individuals are hypothesized to be highly reactive to social rejection and the loss of interpersonal relationships (Beck, 1983).

Autonomy/Self-Criticism

Autonomy/self-criticism refers to the personality style of an individual who places an extremely high value on personal independence, achievement, and freedom of choice. Autonomous/self-critical individuals have intense needs for self-definition, self-control, and to see themselves as independent from and different from others (Beck, 1983; Blatt & Schichman, 1982). These individuals want to be acknowledged, respected, and admired, and their sense of well-being is hypothesized to depend on being able to direct their own activities and attain meaningful goals (Beck, 1983). Autonomous/self-critical individuals put pressure on themselves to achieve excessively, and are often highly competitive with others (Abramson, Alloy, & Hogan, 1997). As a consequence of their excessive needs for accomplishment and control (Clark et al., 1992), autonomous/self-critical individuals are hypothesized to

experience intense feelings of guilt, inferiority, and worthlessness in the face of perceived defeat (Beck, 1983).

According to Blatt and Schichman (1983), individuals often place relatively greater emphasis on one of these dimensions over the other, and it is this relative emphasis on self-critical or interpersonal dimensions, and the extreme nature of the attitudes, that delineates the two basic personality configurations. According to Beck (1983) and Blatt's (1974) models, these personality styles may be thought of as diatheses for depression, with specific triggering stressors differing between the two styles.

It is hypothesized that the *interaction* of an individual's predisposition with specific stressful life experiences leads to the onset of clinical depression (Beck, 1983; Beck et al., 1979). This matching of vulnerability to specific life event has come to be known as the congruency hypothesis (Segal et al., 1989). In the congruency hypothesis it is stated that individuals are likely to become depressed when they experience a negative life event that matches their underlying vulnerability, or personality style. Accordingly, sociotropic/dependents are hypothesized to be more likely to become depressed in the face of negative interpersonal events, and autonomous/self-criticals are hypothesized to be more likely to become depressed in the face of negative achievement events.

Empirical Evidence for the Congruency Hypothesis: Cross-Sectional studies

In the cross-sectional studies conducted, there appears to be support for the congruency hypothesis in sociotropic/dependent individuals, but not in autonomous/self-critical individuals. Overall, in the majority of these studies the researchers have administered large batteries of questionnaires to nondysphoric, clinical control, and dysphoric participants. The measures included were used to tap depressive symptomatology (BDI; Beck et al., 1979), personality style (SAS; Beck, Epstein, Harrison, & Emery, 1983; DEQ; Blatt et al., 1976), and the occurrence of specific life events (LEI; Cochrane & Robertson, 1973; SRE; Holmes & Rahe, 1967; NEI; Clark et al., 1992; LES; Hammen, Marks, Mayol, & deMayo, 1985). For all life event inventories except the LES (Hammen et al., 1985), events were generally broken

down into the following categories: positive-interpersonal, negative-interpersonal, positive-achievement, negative-achievement, and ambiguous.

The majority of the studies found a significant interaction between sociotropy/dependency and number of negative interpersonal life events on predicting level of depressive symptomatology; as the number of negative interpersonal life events increased, so did depressive symptoms (Robins & Block, 1988; Robins, 1990, Study 1; Clark et al., 1992). Rude and Burnham (1993) also found that the sociotropy/dependency subscales of the SAS (Beck et al., 1979) and DEQ (Blatt et al., 1976) interacted with number of negative interpersonal life events to predict depressive symptoms. Unexpectedly, two studies found that sociotropy/dependency also interacted with number of negative achievement life events to predict depressive symptoms (Robins & Block, 1988; Clark et al., 1992). Although parallel congruency effects were not found in autonomous/self-critical individuals, this may be reflecting underlying measurement issues (see Coyne & Whiffen, 1995, for a review). However, a significant problem with *all* of these cross-sectional studies is the inability to examine causal relationships. To overcome this problem, longitudinal studies of the congruency hypothesis have also been conducted.

Empirical Evidence for the Congruency Hypothesis: Longitudinal Studies

Longitudinal studies of the congruency hypothesis have examined everyone from "at-risk" children of mentally ill mothers (Hammen & Goodman-Brown, 1990) and healthy undergraduate students (Hammen et al., 1985), to depressed unipolar and bipolar patients (Lakey & Ross, 1994; Hammen, Ellicott, Gitlin, & Jamison, 1989; Hammen, Ellicott, & Gitlin, 1989; Hammen, Ellicott, & Gitlin, 1992) and remitted depressives (Segal et al., 1989). Most subjects in these studies were followed for several months at a time, and personality style was classified by responses to various questionnaires (Dysfunctional Attitudes Scale (DAS): Weissman & Beck, 1978; see Segal, Shaw, Vella, & Katz, 1992; SAS; Beck et al., 1979; DEQ; Blatt et al., 1976) or narrative constructions (Hammen et al., 1985). Subjects were generally required to report at prescheduled intervals about the occurrence of different life events and

whether or not they had experienced depressive symptom onset or exacerbation since the last interview.

Support for the congruency hypothesis in both sociotropic/dependent and autonomous/self-critical individuals was found in several studies. Hammen et al. (1985) found that sociotropic/dependent individuals showed significantly stronger correlations between depression and the number of negative interpersonal events experienced than between depression and the number of negative achievement events. Similarly, autonomous/self-critical individuals showed significantly stronger correlations between depression and the number of negative achievement events experienced than between depression and the number of negative interpersonal events. However, the congruency effect appeared to be stronger in sociotropic/dependent individuals. Hammen et al. (1989) also found that the occurrence of congruent stressful life events was associated with increased depression in unipolar patients. Last, Mongrain and Zuroff (1994) found that sociotropy/dependency significantly predicted greater numbers of negative romantic relationship events, and autonomy/self-criticism significantly predicted greater numbers of negative academic events in women. Unexpectedly, sociotropy/dependency also significantly predicted greater numbers of negative academic events in men.

However, some studies have demonstrated support for the congruency hypothesis exclusively in sociotropic/dependent individuals. Hammen et al. (1992) found that the interaction of sociotropy/dependency and negative interpersonal events was associated with greater symptom severity in bipolar patients, and Lakey and Ross (1994) found a significant interaction between sociotropy/dependency and negative interpersonal events in predicting dysphoria. Last, Segal et al. (1989) found that sociotropic/dependent individuals rated interpersonal events as more stressful than achievement ones, that remitted depressed sociotropic/dependent individuals were more likely to relapse following interpersonal stressors, and that there was a significant association between sociotropy/dependency and the number of negative interpersonal events in predicting level of depression.

A couple of studies have also demonstrated support for the congruency hypothesis exclusively in autonomous/self-critical individuals. Hammen et al. (1989)

found that the interaction between autonomy/self-criticism and negative achievement events was associated with greater severity of depression symptoms in unipolar patients, and Segal et al., 1992 found that the interaction between autonomy/self-criticism and the number of negative achievement events predicted a significant amount of variance in the rate of depression relapse.

Although these studies lend some support to the congruency hypothesis, particularly in sociotropic/dependent individuals, most have examined *distal* influences on depression. Very few studies have attempted to examine the more *proximal* causes of depression, and the role that personality characteristics may play in the development of depression and depressive symptoms *immediately following* stressful events. However, there are two exceptions to this. Zuroff and Mongrain (1987) and Allen, de L. Horne, and Trinder (1996) conducted laboratory studies to examine the role of personality characteristics on mood and depressive symptom endorsement immediately following hypothetical interpersonal or achievement threatening events.

Empirical Evidence for the Congruency Hypothesis: Laboratory Studies

Zuroff and Mongrain (1987) examined dependent, self-critical, and control women's responses after listening to audiotape descriptions of hypothetical negative interpersonal and achievement events. After listening to each tape, subjects rated a set of anaclitic and introjective adjectives for what their "typical" reaction would likely be, and completed a modified version of the depression, anxiety, and hostility subscales of the Multiple Affect Adjective Checklist (MAACL; Zuckerman & Lubin, 1965). Anaclitic symptoms (e.g., feelings of helplessness and weakness) are hypothesized to be associated with depression in sociotropic/dependent individuals, and introjective symptoms (e.g., feelings of inferiority and worthlessness) are hypothesized to be associated with depression in autonomous/self-critical individuals (Blatt, 1974; Blatt et al., 1976; Blatt & Shichman, 1983)

The results demonstrated that dependent subjects responded to the interpersonal rejection tape with greater endorsement of anaclitic symptoms and higher scores on the MAACL depression subscale than the self-critical or control

groups. Unexpectedly, in response to the failure tape, both self-critical and dependent subjects responded with greater endorsement of introjective symptoms and higher depression scores than the control subjects. In addition, self-critical and dependent subjects did not report significantly different levels of depression in response to the failure tape.

Although the results of this study suggest some evidence for congruence in sociotropic/dependent subjects after imagining negative interpersonal events, there are several theoretical and methodological problems associated with this study. First, the authors did not collect baseline measures on affective state and were consequently unable to control for the effects of initial dysphoria. Therefore, it is unknown if these subjects were nondepressed, mildly depressed, or clinically depressed at the time of testing. Without being able to factor out initial dysphoria, it is unclear whether the obtained results are due to personality-event congruence or more general mood congruence.

Second, due to the use of a repeated measures design, the researchers were unable to minimize the influence of carryover effects. After listening to one tape and completing the short, 18-item checklist, subjects immediately listened to the next tape and completed the same checklist. Although the order was counterbalanced, the researchers did not assess for order effects. In addition, the manipulation check for ability to imagine each situation was completed after both scenarios were completed, which possibly contaminated subjects' responses, and may not be a valid reflection of their response to the first tape.

Last, upon closer examination, the hypothetical achievement stressor was actually highly interpersonal in nature. In this situation the subject was asked to imagine the voice of her father expressing his disappointment both *for* her and *with* her for failing to get into graduate school. This fact could help explain why sociotropic/dependents were reacting to both situations - there was a strong interpersonal component to both. In order to provide a more stringent test of the congruency hypothesis, one needs to use achievement and interpersonal stressors that are as dichotomous as possible.

In comparison, Allen et al. (1996) addressed some of the shortcomings of Zuroff and Mongrain (1987). In Allen et al. (1996), sociotropic/dependent and autonomous/self-critical subjects participated in six experimental imagery trials and completed self-reports of their emotional reactions to each of the trials. The scripts were comprised of two neutral, two social rejection, and two achievement failure scenes. Both general imagery ability (as assessed by the Questionnaire Upon Mental Imagery: QMI; Sheehan, 1967) and level of depression (as assessed by the Self-Rating Depression Scale: SDS; Zung, 1965) were used as covariates in the analyses. The dependent variables were two physiological measures; heart rate and corrugator (i.e., brow facial muscle) EMG, and three self-ratings of emotion. The authors hoped that by using physiological measures, which are considered less transparent than self-report measures, they would be able to identify more *automatic* processes that may be triggered after imagining congruent stressors.

The results demonstrated that subjects higher in sociotropy/dependency rated themselves as sadder and less in control in response to the social rejection scripts compared to subjects higher in autonomy/self-criticism, and sociotropy/dependency made a significant unique contribution to the prediction of EMG in response to the social rejection scripts but not in response to the achievement failure scripts. Unexpectedly, subjects high in sociotropy/dependency also tended to rate themselves as sadder and less in control in response to the achievement failure scripts, although this association was stronger in response to the social rejection scripts. Given that facial EMG is thought to reflect actual changes in felt emotion rather than increased responsiveness to demand characteristics (Allen et al., 1996), the authors concluded that subjects with sociotropic/dependent traits show more facial reactivity consistent with dysphoric mood following the social rejection scenes but not following the achievement failure scenes. There was no evidence for parallel congruency effects in autonomous/self-critical individuals.

In spite of the improvements in this study, some methodological concerns remain. First, the use of a repeated-measures design with six levels leads to the strong possibility of carryover effects. Allen et al. (1996) only had two counterbalanced orders for a set of 7 imagery trials (including the practice trial), and never assessed for

the existence of order effects. In addition, although the authors note that facial muscle patterning (i.e., EMG) in depressed mood has a tendency to carryover into nonimagery periods, they did little to control for possible contamination effects. This seems particularly troubling given that the imagery periods were thirty seconds long with a rest of only one minute (approximately) before the next imagery condition. However, the fact that congruency effects were obtained for sociotropic/dependent individuals suggests that this is not a concern for this group. However, it is unclear whether or not this could account for the lack of differential responsivity of the autonomous/self-critical individuals. It is also noted in the article that there was an "untimed" period at the end of each rest period during which subjects completed the mood measures. Lack of standardization across all epochs could increase the chance of carryover in some conditions but not others.

Second, it is not entirely clear if the emotional responses of sociotropic/dependent individuals to the achievement stressors was due to some unintended interpersonal component of the stressors. In the future, researchers need to implement some direct assessment of the way each participant interprets the stressors with respect to interpersonal and achievement themes. Only then will it be clear what aspect of the stressor is leading to the response.

Although both of these studies are interesting and informative, and Allen et al. (1996) examines the role of personality-event congruence in a less transparent manner, both studies are essentially measures of mood reactivity in response to congruent and incongruent events. Neither study speaks to the cognitive *processes* that may be triggered giving rise to these mood states. As such, they have left important questions unanswered. For example, are information processing changes triggered when sociotropic/dependent and autonomous/self-critical individuals are faced with negative stressful events? Do congruent stressors activate underlying vulnerabilities, *or self-schemata*, and consequently distort the way information is processed? It is this question that the current study attempted to address.

Schemata: Definition and Functions

The concept of the schema and schematic processing has been studied extensively. A schema is a hypothesized cognitive structure, which is an organized representation of an individual's prior experiences and prior knowledge (Segal, 1988; Fiske & Linville, 1980). Schemata are considered latent and inaccessible (Beck et al., 1979; Persons & Miranda, 1992; Segal & Ingram, 1994; Teasdale & Barnard, 1993), but once activated, guide the processing of new information by determining what information is attended to, and what is ignored (Fiske & Linville, 1980; Markus, 1977). This is considered an adaptive process, making information processing more efficient (Pace, 1988; Ruehlman, West, & Pasahow, 1985).

Schematic elements (or units) are hypothesized to be connected to each other in varying strengths of association, and activation of one element is hypothesized to spread to other related elements (Segal & Ingram, 1994). For example, failing an exam may trigger the memory of other failure experiences, even ones not directly associated with the current failure. As a consequence, new failure experiences have the potential to activate an underlying failure schema which then enhances the accessibility of schema-related material (Prieto, Cole, & Tageson, 1992), and affects the way an individual processes new information (Segal, 1988). Activated schemata are hypothesized to distort information in a way that is consistent with the schema by directing attention, perception, thought, and memory (Beck, 1967; Beck et al., 1979). Consequently, activation of a failure schema may lead an individual to selectively attend to and remember new failure experiences.

Self-Schemata

Individuals have many different types of schemata. In contrast to more general schemata, self-schemata are hypothesized to be more specific and idiosyncratic, and represent the way the self has been differentiated. Essentially, the self-schema contains the collection of features a person sees as describing himself. As the self-schema is hypothesized to contain a number of core elements that reflect important dimensions of self-regard or self-concept (Derry & Kuiper, 1981; Markus, 1977; Segal & Ingram, 1994; Taylor & Crocker, 1981), we can conceptualize the personality styles

of sociotropy/dependency and autonomy/self-criticism as specific types of self-schemata (Beck, 1987; Franche & Dobson, 1992; Cane et al., 1986; Segal & Ingram, 1994; Ingram, Miranda, & Segal, 1998). Sociotropic/dependent individuals would be considered to have a strong interpersonally-based self-schema, whereas autonomous/self-critical individuals would be considered to have a strong achievement-based self-schema. Beck (1967) argues that self-schemata remain latent until activated, or primed, by negative life events. Priming of self-schemata is considered a necessary precursor to seeing changes in information processing styles (Segal & Ingram, 1994, Ingram et al., 1998).

The Importance of Priming when Studying Information Processing

Priming refers to a variety of procedures that can be used to activate schemata. Whereas direct priming is usually based on the physical properties of a stimulus, indirect priming, or conceptual priming, relies on the conceptual association between the prime and its target for its effect (Segal & Ingram, 1994). Since core elements in the self-schema are hypothesized to be highly interconnected, activation of one or more elements in the self-schema through the use of priming should increase the accessibility of the whole structure (Segal & Ingram, 1994). Because priming procedures lead to heightened schema accessibility, they are considered very useful in studies of cognitive vulnerability to depression.

Most studies that fail to use priming procedures before comparing vulnerable and nonvulnerable groups have generally been unsuccessful in identifying differences between them (see Barnett & Gotlib, 1988 for a review; Haaga, Dyck, & Ernst, 1991). However, when vulnerable and nonvulnerable individuals *are* primed prior to examination, schematic differences between the two groups become apparent (Miranda, Persons, & Byers, 1990; Segal & Ingram, 1994). For example, after dysphoric mood has been induced, vulnerable individuals report an increased endorsement of dysfunctional attitudes (Miranda & Persons, 1988; Miranda et al., 1990), an increased number of automatic thoughts (Roberts & Kassel, 1996), and biased attention allocation on a dichotic listening task (Ingram, Bernet, & McLaughlin, 1994) compared to nonvulnerable individuals.

Segal and Ingram (1994) argue that information processing biases in vulnerable individuals only become evident after they encounter a negative stressor in the domain tied to their sense of self-worth and their self-schema is activated. Consequently, Blatt's (1974) model would suggest that conceptual primes that target interpersonal or achievement vulnerabilities could be used to activate self-schemata in sociotropic/dependent and autonomous/self-critical individuals, respectively.

But how does one know if information processing changes are due to schematic processing or if they represent mood congruent processing? The answer lies in comparing Beck's (1974) schema model with Teasdale's Differential Activation Hypothesis (DAH; Teasdale, 1983).

Beck's Schema Model Versus Teasdale's Differential Activation Hypothesis

According to the DAH, all individuals experience dysphoria in the face of negative events, but only individuals who are vulnerable to depression will demonstrate changes in cognitive functioning. Nonvulnerable individuals are expected to demonstrate self-soothing strategies which allow their affect to return to normal levels, whereas vulnerable individuals are expected to demonstrate negative cognitive functioning (Teasdale, 1985). In vulnerable individuals, a dysphoric state is predicted to lead to the activation of sad-emotion "nodes", which in turn activates a network of other emotion nodes. Network activation is then expected to increase the accessibility of sad thoughts and related negative constructs (Teasdale, 1988; Bower, 1981), and bias a range of cognitive processes, including attention, memory, and future expectations. Teasdale's (1983) theory predicts that depressed or sad individuals will remember information consistent with their mood, and this effect has been supported in the literature, using both experimentally induced and naturally occurring moods (Clark & Teasdale, 1982; Lloyd & Lishman, 1975; Teasdale & Fogarty, 1979). Teasdale (1988) argues that the *source* of the depression does not matter, and that negative life events *do not* have to match an underlying schema in order to bias cognitive processing.

In contrast, Beck (1983) argues that depressed mood and biased cognitive processing are the consequences of schematic activation by congruent stressors. Beck

(1983) argues that specific life events trigger underlying schemata, and that schematic activation then leads to dysphoric mood and biased cognitive processing. Therefore, if self-schemata are only activated by congruent negative events, changes in mood and cognitive processing would be evident after the occurrence of congruent stressors but not incongruent stressors.

To summarize, Beck (1983) postulates that changes in information processing only occur after *congruent* stressors, whereas Teasdale (1983) hypothesizes that changes in information processing may occur after *all* kinds of stressors. Consequently, if sociotropic/dependent and autonomous/self-critical individuals exhibit information processing changes after both congruent and incongruent stressors, this would support the DAH. In contrast, if sociotropic/dependent and autonomous/self-critical individuals exhibit information processing changes after only congruent stressors, this would support Beck's (1983) schema theory and the congruency hypothesis.

What Types of Information Processing Biases might Sociotropic/Dependent and Autonomous/Self-Critical Individuals Display?

The types of information processing biases that might be demonstrated by sociotropic/dependent and autonomous/self-critical individuals can be predicted by the content of their self-schemata. Kuiper and colleagues (Kuiper, Derry, & MacDonald, 1982; Kuiper, Olinger, & MacDonald, 1988; Kuiper & Derry, 1981) have discovered that the self-schemata of nondepressed individuals is primarily positive, the self-schemata of severely depressed individuals is primarily negative, and the self-schemata of mildly depressed individuals contains equally positive and negative information. Other research has suggested that the self-schemata of nondepressed individuals is, in fact, *overly* positive (Lloyd & Lishman, 1975; Nelson & Craighead, 1977; Ruehlman et al., 1985; Taylor & Brown, 1988) compared to depressed individuals, and may be thought of as a positive bias. Second, based on Blatt's (1974) writings, the self-schemata of sociotropic/dependent individuals would be predicted to contain primarily interpersonally-based information, whereas the self-schemata of autonomous/self-critical individuals would be predicted to contain primarily

achievement-based information. Therefore, combining the predictions from these theories would suggest that nondepressed sociotropic/dependent individuals should have a self-schema that contains highly positive interpersonal material, and nondepressed autonomous/self-critical individuals should have a self-schema that contains highly positive achievement material. In contrast, mildly depressed sociotropic/dependent individuals should have a self-schema that contains both positive and negative interpersonal material, and mildly depressed autonomous/self-critical individuals should have a self-schema that contains both positive and negative achievement material.

Based on the writings of Kuiper et al. (1981; 1982; 1988) it would be predicted that when nondepressed individuals experience mildly depressed mood, the content of their self-schema becomes *less positive* and starts to allow the incorporation of negative information. Therefore, nondepressed sociotropic/dependent and autonomous/self-critical individuals would demonstrate information processing changes in response to negative stressors by *losing* their positive bias. If this response is unique to congruent stressors, then this would be considered support for the congruency hypothesis. Alternatively, if this response occurs following both congruent and incongruent stressors, this would be considered support for the DAH.

As with many cognitive processes, however, such information processing changes may be operating at a preconscious level with individuals selectively attending to certain information without their explicit awareness. To date, all studies of the congruency hypothesis have relied on subjects' self-report of mood, depressive symptomatology, and event occurrence, with one exception (Allen et al., 1995). One does not know, then, if the data supporting the congruency hypothesis are the result of encoding biases, recall biases, demand characteristics, or a combination of all three.

To overcome such interpretive problems, one needs to examine the congruency hypothesis with measures of cognitive processes that are less susceptible to self-report biases and/or the biases of relying on behaviours that overlap with the symptoms of depression (Gotlib & McCann, 1984; Hammen et al., 1985). In addition, the biases produced by schema-congruent processing may be too subtle to be picked up by self-report questionnaires (Segal, 1988). As a consequence, some researchers have been

moving away from self-report measures, and using information-processing paradigms adapted from cognitive psychology. For example, self-schematic processing has been investigated with incidental recall and recognition tasks (Derry & Kuiper, 1982; Rogers, Rogers, & Kuiper, 1979), reaction time tasks (Markus, 1977), and selective attention measures (Williams, Watts, MacLeod, & Mathews, 1988). Each of these paradigms will now be discussed in some detail.

Information Processing Paradigms: Retrieval Biases

Recall Tasks. Kuiper and Derry (1982) found that whereas nondepressed subjects recalled more positive than negative words related to the self, depressed subjects recalled more negative than positive self-related words. Similarly, Gotlib (1981; 1983) found that depressed subjects recalled feedback they had received during an interaction as more negative than was actually the case, and Lloyd and Lishman (1975) found that as severity of depression increased, subjects were faster and more likely to retrieve negative autobiographical memories.

Recognition Tasks. Rogers, Rogers, and Kuiper (1979) had subjects rate adjectives for degree of likeness to the self, and then identify words from a list two-and-a-half months later as either "old" or "new". The results suggested that subjects were more likely to perceive "new" items as familiar (or "old") when they were highly related to the individuals' self-schemata. Ingram, Partridge, Scott, and Bernet (1994) also found that depressed patients demonstrated enhanced recognition of negative words relative to positive ones.

The results of recall and recognition studies suggest that there are retrieval biases associated with different types of self-schemata. However, it is still not clear if these biases occur at the retrieval stage, or the encoding stage. That is, if an individual selectively encodes certain information, only that information will be available to be retrieved. Therefore, when an individuals exhibits retrieval biases, one is unable to discern whether all material was encoded and only a *subset* is being retrieved (thus a retrieval bias), or if only a subset of material was encoded, and *all* is being retrieved (thus an encoding bias).

Information Processing Paradigms: Encoding Biases

Reaction Time Tasks. Markus (1977) identified subjects as being Independent, Dependent, or Aschematic and then presented them with a series of trait adjectives that had been previously judged to be related to independence, dependence, and creativity. Dependents were significantly faster at making "like me" judgments to dependent words than Independent subjects, and Independent subjects were significantly faster at making "like me" judgments to independent words than Dependent subjects. Kuiper and MacDonald (1982) also found that nondepressed individuals made faster self-referent decisions (i.e., like me) for positive material, whereas mild depressives made equally fast self-referent decisions for positive and negative material. This suggests that schema-consistent words are identified faster than schema-inconsistent words in nondepressed individuals.

In spite of its seemingly straightforward nature, reaction time paradigms may be detrimentally influenced by the self-presentational demands of the experimental setting (Logan, 1979). For example, subjects may respond that particular adjectives are "like them" because they want to portray themselves in a certain light. To bypass this difficulty, studies of attentional processing and attentional bias have been used to examine encoding biases.

Selective Attention Tasks. Attentional processing paradigms are based on the notion that activated schemata direct the focus of attention to certain aspects of the environment (Rogers, 1981; Mineka & Sutton, 1992). The Emotional Stroop (a modification of the original Stroop containing emotion-related words) has been used to assess attentional focus, and requires subjects to name the ink colours that various words are written in. The words used are either neutral (e.g., "BREAD") or threatening (e.g., "SAD"), and the dependent measure is the latency required to name the ink colour. Longer latencies reflect greater processing of the relevant construct words, and the difficulty subjects have inhibiting their response to the construct.

Gotlib and McCann (1984) found that whereas mildly depressed subjects exhibited longer colour-naming latencies to negative-content words than to positive- or neutral-content words, nondepressed subjects did not show any differences in colour-naming latencies. Mathews and MacLeod (1985) also found that anxious

subjects demonstrated longer colour-naming latencies for words related to physical or social threat, and that the latencies for threat words interacted with the participant's dominant concern (i.e., physical or social). In spite of these effects, the Emotional Stroop is not considered a good test of attentional bias (Kahneman & Chajczk, 1983; MacLeod, 1991) because the effects are hard to replicate (Mogg, Bradley, Williams, & Mathews, 1993; Williams & Nulty, 1986; Pratto & John, 1991), and it is not entirely clear whether the schematic bias is occurring at the encoding or response stage.

Dichotic listening tasks have also been used as a measure of selective attention. In this procedure, subjects are required to repeat stimuli presented in one ear, and attempt to ignore different stimuli simultaneously presented to the other ear. The accuracy of responses on a concurrent second task reflects the amount of attention being allocated to words in the unattended ear; the greater the mistakes on the concurrent task, the more distracted the person is by the material in the unattended ear. Gotlib and McCabe (1992) found that depressed individuals were more likely to be distracted by negative words in the unattended ear than were nondepressed individuals, and Mathews and MacLeod (1985) found that anxious subjects attended to threatening material in the unattended ear more than control subjects. Last, Burgess, Jones, Robertson, Radcliffe, Emerson, et al. (1981), and Parkinson and Rachman (1981) found that phobic/anxious individuals were able to detect more fear-relevant words presented to the unattended channel in such tasks.

Attentional Processing: The Role of Spatial Attention Tasks

Spatial attention tasks have also been used as a measure of selective attention. In these tasks, two or more emotion-related stimuli are presented in different spatial locations on a visual array, and subjects' responses indicate what type of word is being attending to and whether attention is directed away or towards the word.

The dot-probe task (MacLeod, Mathews, & Tata, 1986; MacLeod & Mathews, 1988; Mogg, Mathews, Bird, & MacGregor-Morris, 1990) has been used with success in anxiety-disordered participants. In this task, subjects are presented with word pairs, consisting of an emotionally threatening word and a neutral word (one above the other) on a computer screen. On one third of the trials a dot-probe occurs after the

threatening or neutral word, and subjects are required to press a button upon seeing the dot. In this task, it is assumed that if subjects are attending to one word, and the dot probe displaces the word they are *not* attending to, subjects would be required to make an attentional shift to see the dot probe, resulting in a longer latency for them to respond. By calculating latencies to predetermined dot-probes, one can determine what proportion of the time subjects were attending to the threatening words compared to the neutral ones.

MacLeod et al. (1986) found that anxious subjects detected probes faster when they were preceded by a threatening word, whereas control subjects detected probes faster when they were preceded by a neutral word (and the threat word occurred in the opposite position). This suggested that anxious subjects shifted their attention *towards* threat words, whereas control subjects shifted their attention *away* from threat words. This finding has been supported by other investigators (Mogg, Mathews, May, Grove, Eysenck, & Wienman, 1991; Mogg, Bradley, & Williams, 1995; Vasey, Daleidan, Williams, and Brown, 1995) .

In spite of its successful use, there are some logistical problems with the dot-probe task. First, one needs to assess how dot-probe position (i.e., upper or lower half of the screen) affects probe detection latency, and it has been found that the majority of the effects occur when the probe occurs in the top position. Second, one is only able to gather data on one third of the trials. Third, the dot-probe relies on response speed, which could lead to interpretive problems in comparing depressed and nondepressed subjects given that psychomotor slowing is a primary symptom associated with depression. Last, the set of stimulus words used in the dot-probe studies have been primarily related to anxiety, and may not adequately cover the range of depressive symptomatology, therefore limiting the possibility of finding differences in depressed individuals (Gotlib and McCabe, 1992; Williams and Broadbent, 1986).

In order to address these problems, the Deployment of Attention Task (DOAT; Gotlib et al., 1988) was developed. In the DOAT, pairs of words, in combinations of negative-, positive- and neutral-content, are presented on a computer screen. Following the presentation of each word pair, two color bars (one red and one green) simultaneously replace the words. Subjects are lead to believe that one bar appears

before the other, and they are to choose which of the two color bars they think appeared first. Based on Titchener's (1908) Law of Prior Entry, it is assumed that the word subjects are attending to will *appear* to be replaced before the unattended-to word. Thus, in this paradigm the dependent variable is the proportion of times the color bar replacing a particular target word is selected compared to chance. Therefore, a hit rate of .50 represents chance responding, or equal attention to both types of words. A hit rate of significantly greater than or less than .50 allows one to identify the type of bias subjects display. That is, whether they are allocating attention *towards* or *away* from positive and negative stimuli.

Gotlib et al. (1988) examined the attentional processing of mildly depressed and nondepressed University students using the DOAT. Subjects were presented with depressed/manic, depressed/neutral, and manic/neutral word pairs. Nondepressed subjects attend significantly *more* often to manic-content words than expected by chance in the manic/neutral, and depressed/manic conditions, and significantly *less* often to the depressed words than expected by chance in the depressed/neutral condition. In contrast, the depressed subjects showed no evidence of selective attention in any of the word pair conditions. Gotlib et al. (1988) interpreted the results as reflecting a "positive bias" in nondepressed subjects because they attended more frequently to the manic-content words and less frequently to the depressed words. The depressed subjects showed a more "even handed" attentional style because they attended equally to all types of words. This is conceptually similar to the findings from the dot-probe studies that suggest normal individuals shift their attention away from threatening material.

Using the DOAT, Gotlib and McCabe (1995) presented clinically depressed and never-depressed women with three types of word pairs; negative/neutral, positive/neutral, and positive/negative. Never-depressed women attended to negative words less often than would be expected by chance in both the negative/neutral, and negative/positive conditions, but did not attend more often than would be expected by chance to the positive words in the positive/neutral word pairs. In contrast, the clinically depressed women attended equally to all types of word pairs. This tendency of never-depressed women to attend less often to negative-content stimuli, but not

more often to positive-content stimuli was labeled a "protective bias." This protective bias was replicated in a sample of children using aggressive and nonaggressive word pairs (Dumas, 1997, personal communication).

Last, and most critical to the current investigation, McCabe, Gotlib, and Martin (in press) used the DOAT to assess Beck's (1967) theory that previously-depressed individuals are more vulnerable to future depressive episodes than never-depressed individuals because their negative self-schema is triggered in the face of negative stressors. McCabe et al. (in press) used previously-depressed (i.e., currently nondepressed *with* a history of depression), and never-depressed (i.e., currently nondepressed *without* a history of depression) women to test this theory. Half of the previously-depressed and half of the never-depressed subjects underwent a neutral mood induction, and the other half underwent a sad mood induction. The results indicated that never-depressed subjects and previously-depressed subjects in the neutral condition demonstrated a protective bias (i.e., they directed their attention away from negative stimuli). However, *after sad mood was induced* the never-depressed subjects *continued* to demonstrate a protective bias (save for one comparison), but the previously-depressed individuals, those considered to be most vulnerable to depression, *lost* their protective bias and displayed an "even-handed" attentional style. It appears, then, that attentional processing *can* change depending on underlying vulnerability and mood state.

Summary and Overview of the Current Investigation

Research has suggested that the personality styles of sociotropy/dependency and autonomy/self-criticism may act as vulnerability factors, or diatheses, for depression (Beck, 1983; Blatt, 1974). Beck (1983) and Blatt (1990) have hypothesized that the types of triggering stressors that lead to depression and/or depressive symptomatology differ between the two personality styles, and that it is the *interaction* between an individual's vulnerability with specific negative life experiences that leads to the onset of clinical depression (Beck, 1983; Beck et al., 1979). This matching of vulnerability to negative life event has come to be known as the congruency hypothesis (Segal et al., 1989), and it has been supported in both cross

sectional (Robins & Block, 1988; Clark et al., 1992; Rude & Burnham, 1993) and longitudinal (Hammen et al., 1985; 1989; 1992; Lakey & Ross, 1994; Mongrain & Zuroff, 1994; Segal et al., 1989) studies.

In comparison, Teasdale (1983) has hypothesized that *all* individuals experience dysphoric mood in the face of negative life experiences, and that negative life events do not have to match an underlying personality vulnerability in order to lead to depression and/or depressive symptomatology. The DAH predicts that dysphoric mood leads to increased accessibility of general negative constructs and the onset of depression and/or depressive symptomatology in all types of vulnerable individuals. Predictions associated with the DAH have been supported using both experimentally induced and naturally occurring moods (Clark & Teasdale, 1982; Lloyd & Lishman, 1975; Teasdale & Fogarty, 1979).

To date, no study has attempted to examine the role that the personality styles of sociotropy/dependency and autonomy/self-criticism may play in leading to changes in cognitive processing *immediately following* different types of stressful events. The current investigation examined proximal changes in cognitive processing in sociotropic/dependent and autonomous/self-critical individuals following imagined congruent and incongruent negative events, and whether these changes were better explained by the congruency hypothesis or the DAH.

Cognitive processing in the current study was assessed by examining the pattern of attentional allocation on the Deployment of Attention Task (DOAT). As it has been emphasized elsewhere that specific stimulus content is critical to finding differences in information processing tasks (Gotlib & McCabe, 1992; Williams & Broadbent, 1986), a set of stimulus words were developed for use with the DOAT that were theoretically linked to the personality constructs of sociotropy/dependency and autonomy/self-criticism.

Attentional allocation on the DOAT was examined with respect to the differential predictions made by the congruency hypothesis and the DAH. Results consistent with the congruency hypothesis would be as follows: (1) sociotropic/dependent and autonomous/self-critical individuals, with low levels of depression, would demonstrate a positive or protective bias after imagining the neutral

situation *and* the incongruent threat, that (2) sociotropic/dependents and autonomous/self-criticals, with low levels of depression, would *lose* their positive or protective bias after imagining the congruent threat, and would perform similarly to sociotropic/dependents and autonomous/self-criticals with high levels of depression, and that (3) sociotropic/dependents and autonomous/self-criticals, with high levels of depression, would demonstrate an "even-handed" attentional style to all of the DOAT word pairs across all of the conditions (i.e., neutral situation, congruent threat, and incongruent threat).

In comparison, results consistent with the DAH would be as follows: (1) sociotropic/dependents and autonomous/self-criticals, with low levels of depression, would demonstrate a positive or protective bias after imagining the neutral situation, that (2) sociotropic/dependents and autonomous/self-criticals, with low levels of depression, would lose their positive or protective bias after imagining *both* the congruent and incongruent threats, and would perform similarly to sociotropic/dependents and autonomous/self-criticals with high levels of depression, and that (3) sociotropic/dependents and autonomous/self-criticals, with high levels of depression, would demonstrate an "even-handed" attentional style to all of the DOAT word pairs across all of the conditions.

The current investigation also examined changes in cognitive *products* in sociotropic/dependent and autonomous/self-critical individuals immediately following different types of imagined stressors, and whether changes in the accessibility of schema-related material were better explained by the congruency hypothesis or by the DAH. Cognitive products represent the final stage of information processing and are sometimes thought of as the conscious manifestations of an individuals' underlying schemata (Hollon & Shelton, 1991).

It has been suggested elsewhere that cognitive products may be examined through the use of personal narratives by coding responses in terms of "core" themes, such as fear of rejection and/or fear of failure (Safran, Segal, Hill, & Whiffen, 1990). Consequently, the current investigation used a number of measures of personal narratives to examine cognitive products in sociotropic/dependents and autonomous/self-criticals. The personal narratives used in the current investigation

were an open-ended thought sample, a cued autobiographical memory task, and a future behaviour prediction task. A coding system was developed to score these narratives in terms of themes relating to sociotropy/dependency and autonomy/self-criticism, and was based on the theoretical writings of Beck (1983) and Blatt (1990), among others (Robins, Block, & Peselow, 1989; Robins & Luten, 1991; Robins, Hayes, Block, Kramer, & Villena, 1995; Haaga, Fine, Terrill, Steward, & Beck, 1995). In general, responses were categorized as being positive, negative, or neutral, as well as interpersonally-based, achievement-based, or undifferentiated. As sociotropic/dependents are theorized to have a strong interpersonally-based self-schema, and autonomous/self-criticals are theorized to have a strong achievement-based self-schema, the number of positive and negative interpersonal and achievement thoughts, memories, and predictions, were used as indices of schema accessibility.

Schema accessibility was examined with respect to the differential predictions made by the congruency hypothesis and the DAH. Results consistent with the congruency hypothesis would be as follows: (1) sociotropic/dependents and autonomous/self-criticals, with low levels of depression, would be better at generating positive thoughts, recruiting positive personal memories, and making positive future behaviour predictions than sociotropic/dependents and autonomous/self-criticals with high levels of depression, and that (2) sociotropic/dependent and autonomous/self-critical subjects, with low levels of depression, would have significantly more difficulty generating positive thoughts, recruiting positive personal memories, and making positive future behaviour predictions, after imagining the congruent threat compared to the neutral situation and the incongruent threat.

In comparison, results consistent with the DAH would be as follows: (1) sociotropic/dependents and autonomous/self-criticals, with low levels of depression, would be better at generating positive thoughts, recruiting positive personal memories, and making positive future behaviour predictions than sociotropic/dependents and autonomous/self-criticals with high levels of depression, and that (2) sociotropic/dependents and autonomous/self-criticals, with low levels of depression, would have significantly more difficulty generating positive thoughts, recruiting

positive personal memories, and making positive future behaviour predictions, after imagining *both* types of threats compared to the neutral situation.

In summary, the current study examined whether the congruency hypothesis (Segal et al., 1989) or the DAH (Teasdale, 1983) was better at accounting for changes in cognitive processing and cognitive products, in sociotropic/dependent and autonomous/self-critical individuals, immediately following the imagined occurrence of different types of stressors. By doing so, the current study attempted to answer whether changes in information processing after the occurrence of negative life events, in sociotropic/dependent and autonomous/self-critical individuals, are triggered by a match between the negative event and underlying self-schemata, or if information processing changes in sociotropic/dependent and autonomous/self-critical individuals are triggered by negative mood alone.

Method

Subjects

All subjects were recruited by telephone from the Psychology 101 Mass Testing Subject Pool and participated in exchange for course credit. Subjects were selected based on their scores on the Depressive Experiences Questionnaire (DEQ; Blatt et al., 1976). If a person's score fell above the 60th percentile for Dependency and below the 40th percentile for Self-Criticism, the person was considered sociotropic/dependent. If a person's score fell below the 40th percentile for Dependency and above the 60th percentile for Self-Criticism, the person was considered autonomous/self-critical.

Subjects were randomly assigned to experimental condition, and in an attempt to obtain as many subjects as possible, gender was balanced across cells in a 3:2 female-to-male ratio due to the preponderance of female subjects available through the Psychology 101 Mass Testing Pool. Of the 190 subjects run, a total of 178 subjects (80 sociotropic/dependents: 67 females and 13 males, and 98 autonomous/self-criticals: 54 females and 44 males) were included in the analyses with of mean age of 19.64 years (range 17 to 46). Eight subjects were excluded due to experimenter or mechanical error, and four subjects were excluded due to suspicion about the experimental procedures.

Materials

Questionnaires. In the two weeks prior to subject recruitment, all subjects completed the Depressive Experiences Questionnaire, the Beck Depression Inventory, and a demographic questionnaire through the Psychology 101 Mass Testing process. See Appendix A for a copy of the consent and information feedback forms, as well as questionnaires designed for use in the current study.

Depressive Experiences Questionnaire (DEQ). The DEQ is used as a measure of the personality constructs of Dependency and Self-Criticism. It was developed by Blatt et al. (1976), and contains 66 items that describe feelings and beliefs about the self and others, but does not assess specific depressive symptomatology (Blatt et al., 1976). For each item, subjects respond on a scale of 1 ("strongly disagree") to 7

("strongly agree"), and items include statements such as "I set my personal goals and standards as high as possible" (representing the self-critical dimension) and "I never really feel secure in a close relationship" (representing the dependent dimension).

Blatt et al. (1976) identified three major factors on the DEQ: Dependency, Self-Criticism, and Efficacy. However, in studies conducted with the DEQ the first two factors account for most of the variance, and the Efficacy factor is rarely interpreted (Zuroff, Moskowitz, Wielgus, Powers, & Franko, 1983; Nietzel & Harris, 1990). Test-retest reliabilities over a period of less than four months have been shown to be high (Dependency $\underline{r}$ = .81, Self-Criticism $\underline{r}$ = .75), and individuals' orderings (i.e., relative positions) on the DEQ have been found to be quite stable (Zuroff et al., 1983). Blatt et al. (1976) report Cronbach's alpha of .77 and .83 for the Dependency and Self-Criticism subscales, respectively, but Zuroff, Quinlan, and Blatt (1990) have reported Cronbach's alpha for the Dependency subscale to be as high as .81. Scores were calculated using the weights from Blatt et al. (1976), and cutoff points were established as mentioned earlier.

Beck Depression Inventory (BDI). The BDI is one of the most widely used questionnaires to measure syndromal depression severity (Beck, Steer, & Garbin, 1980). It is a 21-item self-report questionnaire that has subjects rate the degree to which they have a number of symptoms of depression. Subjects circle the number for each item, rated from 0 to 3 in terms of intensity, that corresponds to their level of symptomatology. Subjects can obtain a score of 0 to 63, with higher scores indicating greater severity of depressive symptomatology.

Test-retest reliability in an undergraduate population has been estimated as .62 over a four-month period (Bourque & Beaudette, 1982; see Beck et al., 1980), and internal consistency estimates for undergraduate populations range from .78 (Golin & Hartz, 1979) to .90 (Bourque & Beaudette, 1982; see Beck et al., 1980). Concurrent validity studies suggest that the BDI correlates highly with other measures of depression such as the Zung Self-Reported Depression Scale (Zung: Zung, 1965; see Blatt et al., 1982; Hatzenbuehler, Parpal, & Mathews, 1983) and the Hamilton Psychiatric Rating Scale for Depression (HRSD: Hamilton, 1960; see Hammen, 1980).

Manipulation Check. Subjects were asked to report on a visual analogue scale from 1 ("not at all well") to 8 ("extremely well") how much they were able to imagine themselves in the described situation. See Appendix A.

Mood Measures. The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to measure pre- and post-manipulation positive and negative affect. Positive affect is associated with feelings of contentedness and happiness, whereas negative affect is associated with feelings of restlessness and agitation. On the positive and negative affect subscales of the PANAS, subjects can obtain a score of 10 to 50, with higher scores indicating greater levels of positive or negative affect. Watson et al. (1988) report Cronbach's alpha ranging from .86 to .90 for positive affect, and from .84 to .87 for negative affect. Test-retest reliabilities are predictably small, ranging from .45 for negative affect to .54 for positive affect, over an eight week period.

Two 8-point visual analogue scales were also used to assess mood, each containing both a positive and negative anchor. Anchors for the first scale ranged from 1 ("happy") to 8 ("unhappy'), and anchors for the second scale ranged from 1("relaxed") to 8("irritable"). See Appendix A.

Feelings Assessment Questionnaire. The Feelings Assessment Questionnaire (FAQ) was designed to assess the types of feelings that sociotropic/dependent and autonomous/self-critical individuals experience after different types of events. In particular, it was designed to assess the possibility that sociotropic/dependents and autonomous/self-criticals may experience schema-congruent feelings after schema-incongruent events. For example, sociotropic/dependent individuals may react to incongruent threats (e.g., failure on a midterm) with concerns primarily related to the threat (e.g., fear that one will fail the entire course), primarily related to their personality style (e.g., fear that their parents will disapprove of their failing mark), or both. The items for the FAQ were generated inductively by the experimenter, and were designed to tap the types of worries and/or concerns that sociotropic/dependents and autonomous/self-criticals are theorized to have.

Twelve graduate student judges, familiarized with the constructs of sociotropy/dependency and autonomy/self-criticism, rated the initial pool of 40 items

for how well each item tapped the hypothesized vulnerabilities of sociotropic/dependents and autonomous/self-criticals. Items that represented 80% agreement (or better) among raters as tapping uniquely achievement or interpersonal worries were retained. The FAQ was consequently divided into two sections: worries and/or concerns hypothesized to be associated with autonomy/self-criticism ("achievement worry"), and worries and/or concerns hypothesized to be associated with sociotropy/dependency ("interpersonal worry"). Twenty items (ten achievement worry and ten interpersonal worry) were retained for the final scale, and Cronbach's alpha in the current study was .80 and .83 for the achievement worry and interpersonal worry scales, respectively. The items were placed in a random order, and half of the items for each scale were reversed in an attempt to minimize a potential response style bias (e.g., answering "highly agree" to all statements irrespective of content).

Subjects were asked to rate how much they would have the various feelings or concerns if the imagined situation had actually happened to them. Items included statements such as "I would feel that I had no one to lean on" (representing interpersonal worry) and "I would feel incompetent" (representing achievement worry). On the achievement worry and interpersonal worry scores, subjects can obtain a score of 20 to 100, with higher scores reflecting endorsement of more worries and/or concerns in that area.

Personal Style Inventory II. The Personal Style Inventory II (PSI; Robins, Ladd, Welkowitz, Blaney, Dias, & Kutcher, 1994) is a 48-item questionnaire that consists of a number of statements about personal characteristics. Subjects rate themselves on a scale from 1 ("strongly disagree") to 6 ("strongly agree") for each item. Cronbach's alpha for the sociotropy and autonomy subscales are reported to be .88 and .86, respectively. Test-retest reliability for a five to thirteen week period was .80 for sociotropy and .70 for autonomy. Robins et al. (1994) have reported good convergent validity of the PSI with the DEQ. As the Dependency and Self-Criticism scales of the DEQ are hypothesized to generally reflect the same constructs as the Sociotropy and Autonomy scales, respectively, of the PSI, the PSI was used to provide convergent validity for the method of personality style classification in the current study.

Beck Anxiety Inventory. The Beck Anxiety Inventory (BAI; Beck, Brown, Epstein, & Steer, 1988) was used to assess level of anxiety in all subjects. The BAI is a 21-item self-report questionnaire used to measure common symptoms of anxiety. Subjects are asked to rate on a 4-point scale, from 0 ("not at all") to 3 ("severely - I could barely stand it"), how much they have been bothered by each symptom in the past week. Subjects scores range from 0 to 63, with higher scores indicating higher levels of anxiety symptomatology. Beck et al. (1988) report an internal consistency estimate for the BAI as .92, and test-retest reliability over one week to be .75. Lovibond and Lovibond (1995) report good convergent validity of the BAI with the Anxiety scale of the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1993; see Lovibond & Lovibond, 1995), and Beck et al. (1988) report good discriminant validity of the BAI in measures that are theoretically related to depression but not anxiety, such as the Hopelessness Scale (HS; Beck, Weissman, Lester, & Trexler, 1974; see Beck et al., 1988) and the Depression subscale of the Cognitions Checklist (CCL; Beck, Brown, Steer, Eidelson, & Riskind, 1987; see Beck et al., 1988).

Level of anxiety was initially used as a covariate for all analyses in the current study. This was done because the hypotheses centred upon vulnerability to depression, and depression and anxiety are known to be highly correlated (Clark & Watson, 1991; Steer, Ranieri, Beck, & Clark, 1993; Watson, Clark, & Carey, 1988). Consequently, by using anxiety as a covariate, significant effects were not misinterpreted as being due to depression if they were, in fact, due to the shared variance with anxiety.

History of Depression. The Inventory to Diagnose Depression - Lifetime Version (IDDL; Zimmerman & Coryell, 1987), a 22-item self-report questionnaire, was used to screen subjects for history of major depression. The IDDL asks subjects to recall the period in their life when they were feeling most depressed, and then asks a series of questions about the presence or absence of depression symptoms during this period (e.g., level of concentration, appetite, sleeping patterns). Subjects are required to make ratings of severity on a scale from 0 to 3, and indicate whether or not the symptoms lasted longer than two weeks. At the end of the questionnaire, subjects are

asked to report the presumed cause of the depression, and indicate whether help was sought through the use of medication, consultation with a mental health professional, and/or hospitalization. Zimmerman and Coryell (1987) report Cronbach's alpha for the IDDL to be .92, and interrater reliability between the Diagnostic Interview Schedule and the IDDL to be .60. The IDDL was used to assess whether history of major depression was randomly distributed across personality styles and conditions.

Imagery Scripts. The imagery scripts were used to target the hypothesized interpersonal and achievement vulnerabilities in sociotropic/dependent and autonomous/self-critical individuals, respectively. Segal and Ingram (1994) have suggested that primes, which match specific areas of vulnerability, can be considered key stressors, and imagery procedures can be useful for priming these vulnerabilities.

The imagery scripts were adapted from Allen et al., 1996, and were used to prime subjects' underlying self-schemata. In total, four scripts were used; one practice (neutral) script, one neutral script, one achievement threat script, and one interpersonal threat script. Subjects were asked to visualize themselves in the situation that was described to them, and to imagine the thoughts and feelings that they would be having if the situation had actually happened. Research has suggested that having subjects imagine the types of thoughts and feelings they would be having is more effective as a priming procedure than merely having subjects visualize in response to different words (Segal, Gemar, Truchon, Guirguis, & Horowitz, 1995).

Imagery procedures were used to simulate stressful life events because it would be unethical to manipulate the content of real life events. Admittedly, this may produce less intense effects than in a real world situation or by asking subjects to recall a stressful experience, but it did control for idiosyncratic recall of congruent or incongruent negative events, and did not produce an unacceptable risk to subjects. See Appendix B for the scripts used in the current study.

Deployment of Attention Task (DOAT). Subjects were familiarized with the task by a set of instructions that appeared on the computer screen and were read aloud by the experimenter. In the actual trials, subjects were presented with a 1-second fixation point ("+"), followed by a 100-millisecond blank screen, followed by a 750-millisecond presentation of a word pair. The words appeared in the centre of the

computer screen, one word above the other, 8 cm apart, and were then replaced by two colour bars, one red and one green. Subjects had been told to look at both words, and were informed that the colour bars would be quickly replacing the words. Subjects were told that one of the colour bars appeared first (but the difference was extremely subtle) when, in fact, the colour bars appeared simultaneously. Subjects were then asked to indicate which of the colour bars they believed appeared first by pressing the button on a "button box" that corresponded to that colour. The colour bars stayed on the screen until subjects indicated their responses. Immediately following their button press, the computer recorded their choice of colour bar and started the next trial. Subjects completed five practice trials where the word pairs consisted of number names (e.g., "ONE", "TWO", "THREE") in order to familiarize them with the task before completing the imagery procedure.

Stimulus Word Pairs for the DOAT. As it has been emphasized elsewhere that specific stimulus content is critical to finding differences in information processing tasks (Gotlib & McCabe, 1991; Williams & Broadbent, 1986), the current study used stimulus words that were theoretically linked to the personality constructs of sociotropy/dependency and autonomy/self-criticism.

Six graduate student judges were familiarized with Beck and Blatt's concepts of the personality styles, and then rated a set of 665 words, taken from Myers (1980), Alport and Odbert (1936), and Heise (1965). Each word was rated for how much it described sociotropic/dependents and autonomous/self-criticals (that is, they made two separate sets of ratings for all words). A separate set of six graduate student judges rated the 665 words for emotional intensity and imagery, as defined by Myers (1980). See Appendix C for the instructional sets given to the judges, and the set of words they rated. From this set of words, a subset of positive and negative interpersonally- and achievement-based words were selected that were significantly different from each other, as indicated by judges' ratings. From this set, 16 positive interpersonal (e.g., affectionate, considerate) , 16 negative interpersonal (e.g., needy, dependent), 16 positive achievement (e.g., ambitious, determined), 16 negative achievement (e.g., critical, aggressive), and 16 neutral (e.g., mellow, moderate) words were selected for use in the study. All words were selected such that as a group they were matched as

closely as possible for emotional intensity, imagery, and frequency of usage in the English language (i.e., Kucera Francis word frequency). When constructing the word pairs, words were matched as closely as possible for length. A total of 96 word pairs were used in the Deployment of Attention Task; 16 positive/negative interpersonal, 16 positive interpersonal/neutral, 16 negative interpersonal/neutral, 16 positive/negative achievement, 16 positive achievement/neutral, 16 negative achievement/neutral. See Appendix D for a complete list of all the words that were used, along with judges' mean ratings of sociotropy/dependency, autonomy/self-criticism, emotional intensity, imagery, Kucera Francis word frequency, and word length (i.e., number of letters). Combinations of interpersonal and achievement words were never constructed into word pairs for two reasons. First, it would be hard to disentangle whether obtained effects were due to valence differences in the word pair (i.e., positive compared to negative) or content differences in the word pair (i.e., interpersonal compared to achievement). Second, construction of such word pairs would result in significantly more trials, which would extend the length of the DOAT and possibly compromise the induction procedures.

The DOAT was piloted on twelve nondepressed graduate students, with personality style unspecified, in order to test the efficacy of the new set of DOAT words. As these were nondepressed subjects, it was predicted that a positive or protective bias should be demonstrated if the words were effective stimuli. The results showed a significant positive bias for the interpersonal words, and significant protective bias for the achievement words. As the words produced the desired effect, they were used in the current study. Means and standard deviations for the pilot study can be found in Appendix E.

Narrative Measures. Three narrative tasks were used to assess schema accessibility following the imagination procedures. In the first task, subjects completed an open-ended thought sample that required them to list the "thoughts, feelings, and/or concerns that would occur to them if the imagined situation had actually happened." Responses were categorized as positive, negative, or neutral (i.e., valence), as well as interpersonally-based, achievement-based, or undifferentiated

(i.e., domain, see Robins, 1988 for a similar procedure). Interrater reliability for this coding system was high for both valence (κ=.94) and domain (κ=.92).

Subjects also completed a cued autobiographical memory task adapted from Markus (1977), and were asked to recruit personal memories and/or personal examples from their own behaviour as evidence for they were personally similar to specific positive, negative, and neutral, as well as achievement- and interpersonally-based words. The words used for this task had been previously rated as positive, negative, or neutral, as well as interpersonally- or achievement-based. The word list consisted of two positive interpersonal words ("sociable", "compassionate"), two negative interpersonal words ("deserted", "dependent"), two positive achievement words ("achieving", "independent"), two negative achievement words ("aggressive", "critical"), and two neutral words ("ordinary", "natural"). Words were presented in a random order and subjects were given 90 seconds to talk into a microphone and provide examples to each word.

Although some subjects recruited evidence in a concrete, straightforward way, most subjects recruited evidence in a free associative, wandering way, which made it hard to distinguish where one unit of supportive evidence ended, and another one began. As a consequence, the coding of subjects' responses was harder than anticipated. Responses needed to be parsed into logical thought units before they could be coded for valence and domain. The difficulty parsing subjects' thoughts is reflected in a lower rate of interrater reliability (κ=.72) for the number of personal memories/examples generated by all subjects. The kappa value of .72 captures the reliability of parsing the same thought units *and* the same content coding for these units (i.e., coding for domain and valence). The number of supportive examples generated for each word, as well as latency to the first example (in seconds), were used as indices of schema accessibility.

The last narrative task focused on future-behaviour predictions and was adapted from MacLeod and Byrne (1996). Subjects were asked to talk into a microphone and predict experiences that might happen to them over three different time periods: the next week (including today), the next year, and the next five to ten years. Subjects were given one minute to generate responses to each of the time

periods. MacLeod and Byrne (1996), and MacLeod, Rose, and Williams (1993) found that this approach was effective in eliciting personally relevant responses, and that subjects were *better* able to generate predictions when they were given cues specifying particular time periods. Subjects' predictions in the current study were coded as being positive, negative, or neutral (i.e., valence), as well as achievement-based, interpersonally-based, or undifferentiated (i.e., domain), and interrater reliability for both valence (κ=.88) and domain (κ=.95) was high. As suggested by MacLeod and Byrne (1996) and MacLeod et al. (1993), the total number of predictions of each type was calculated by combining subjects' responses to each of the three time periods. It was assumed that the types of predictions would not differ across time periods, and that there would not be enough predictions of each type, per time period, to analyze meaningfully. Therefore, the *total* number of positive and negative interpersonal and achievement predictions were used as an index of schema accessibility.

The narrative coding system, developed by the experimenter and used for scoring the open-ended thought sample and the future predictions task, was primarily based on the theoretical writings of Beck and Blatt. The narrative coding system can be found in Appendix F.

Apparatus

All imagery inductions were played for subjects on a Sanyo stereodouble cassette recorder, and subjects' responses to the schema assessment tasks were recorded using a Radio Shack CTR-100 AC/Battery cassette recorder. Subjects completed the DOAT on an IBM-PC clone 386 processor and viewed the stimuli on a Daytek 14-inch colour monitor. Subjects indicated their choice of colour bar by pressing either of two buttons, one marked by the colour "red" and the other "green", on a box connected through the game port of the computer. The buttons were placed 10 cm apart so that subjects could use both hands to press the buttons. Presentation of stimuli and recording of responses was controlled by software developed by Graves and Bradley (1988) that allows millisecond accuracy.

Procedure

Subjects were contacted by telephone and scheduled to come into the lab. After signing a consent form and reading the instructions for the DOAT, subjects went through a series of practice trials on the DOAT involving words unrelated to the study (i.e., "ONE", "TWO", "THREE").

After finishing the practice trials, subjects were told that the experimenter was investigating "how the experiences one has in everyday life can affect the thoughts that one has." Subjects were told that they would be required to imagine themselves in a situation as closely as possible, and what they would be thinking and feeling if the situation were happening to them. Subjects were warned that the imagery procedure could be difficult, and some individuals had trouble sustaining a mental image. Consequently, to make the imagery procedure as effective as possible, subjects were asked to re-read the imagined situation, whenever necessary, in order to sustain the mental image.

Subjects were then asked to close their eyes and imagine themselves in the practice situation that was played to them on audiotape and provided to them in writing. Subjects were informed that the practice imagery trial was to familiarize them with the procedure and being in the lab. After imagining this situation for 30 seconds, subjects were asked to open their eyes and complete a baseline mood measure. Subjects were then asked to imagine themselves in the situation they had been randomly assigned to, "and what they would be thinking and feeling if this situation happened to them." Subjects listened to the situation on audiotape, but were also provided with a written copy. Although the description was only played twice on the audiotape, subjects were encouraged to re-read the script when necessary to help maintain the image. The experimenter left the room during the imagery procedure to give the subjects some privacy, and to ensure as little distraction as possible. After the imagery procedure was over, approximately 7 minutes later, the experimenter re-entered the room and subjects completed the visualization manipulation check and the two visual analogue scales.

Subjects then completed the DOAT task, which took approximately five minutes, followed by a post-test mood measure, the open-ended thought sample, and the Feelings Assessment Questionnaire.

The narrative-based schema assessment tasks were then explained to the subjects, and they were told that they would be required to talk into a microphone to provide their responses. Subjects were told that the experimenter would be out of the room during both of these tasks, but would direct them to respond to each word by knocking on the door. After hearing a knock, subjects were told to turn to the first of several pages given to them, and respond to that word. Subjects were told to turn to the following pages in response to each knock that followed. This explanation was followed by a second imagery procedure, identical to the first. Past research suggests that priming effects are relatively short-lived, and the second imagery procedure was considered necessary to re-activate the underlying schemata.

Following the second imagery procedure, the experimenter re-entered the room and turned on the microphone before leaving the room again. The experimenter knocked on the door to cue the subjects to start responding, and continued to knock at the predetermined intervals. The experimenter audiotaped subjects' responses in order to record latency of their responses to the words and to increase the chance that all thoughts were recorded, rather than censored or forgotten if subjects' were to write their thoughts on paper.

After the completion of the narrative measures, the experimenter re-entered the room, and subjects completed the PSI, BDI, IDDL, and BAI before being thanked and dismissed.

Results

Subjects

All subjects were compared on level of depression, as assessed by continuous scores on the Beck Depression Inventory (BDI), to ensure that level of depression was distributed evenly across all conditions and personality styles. Thus, a 3 (Condition: Neutral, Interpersonal Threat, Achievement Threat) X 2 (Personality Style: Sociotropy/Dependency, Autonomy/Self-Critical) between-subjects Analysis of Variance (ANOVA) was performed on BDI scores, and means and standard deviations can be found in Table 1. No main effect for Condition was obtained, nor an interaction between Personality Style and Condition, both F's <1, both p's >.05. However, there was an unexpected main effect for Personality Style, $F(1,172)=5.64$, $p<.05$. Sociotropic/dependent subjects reported significantly lower levels of depression ($M=8.2$) than autonomous/self-critical subjects ($M=10.6$).

All subjects were also compared on level of anxiety, as assessed by continuous scores on the Beck Anxiety Inventory (BAI), to ensure that anxiety level was distributed evenly across all conditions and personality styles. A 3 (Condition: Neutral, Interpersonal Threat, Achievement Threat) X 2 (Personality Style: Sociotropic/Dependent, Autonomous/Self-Critical) between-subjects ANOVA was performed on BAI scores, and means and standard deviations can be found in Table 2. The results show that there were no significant differences in anxiety ratings by Personality Style, Condition, or the interaction between Personality Style and Condition, all F's <1, all p's >.05.

In all analyses for the current study, level of anxiety was initially used as a covariate because personality style was being examined as a vulnerability factor for depression, and depression and anxiety are known to be strongly correlated (Clark & Watson, 1991; Steer et al., 1993; Watson et al., 1988). For ease of discussion, anxiety level was not significant as a covariate, or in an interaction with another independent variable, unless otherwise indicated.

Table 1. *Means for level of depression as assessed by BDI continuous scores as a function of personality style and condition.*

Personality Style	Condition		
	Neutral	Interpersonal Threat	Achievement Threat
Soc./Dep.	8.42 (8.15)	8.26 (4.74)	7.96 (5.89)
Aut./S.C.	11.29 (7.05)	10.66 (7.10)	9.81 (6.10)

Note. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism. Standard deviations are presented in brackets.

Table 2. *Means for level of anxiety as assessed by BAI continuous scores as a function of personality style and condition.*

Personality Style	Condition		
	Neutral	Interpersonal Threat	Achievement Threat
Soc./Dep.	31.38 (9.06)	33.82 (8.76)	34.82 (9.29)
Aut./S.C.	33.00 (8.06)	34.86 (10.60)	33.10 (9.09)

Note. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism. Standard deviations are presented in brackets.

In an attempt to obtain as many sociotropic/dependent and autonomous/self-critical subjects as possible, and due to the preponderance of female subjects available through the University of Waterloo mass testing pool, subjects were assigned to all conditions in a 3:2 female-to-male ratio. To ensure that subjects were properly distributed in this ratio, a chi-square analysis was performed on the number of males and females in the total sample, with expected frequencies specified as 60% for females and 40% for males. Results showed that gender was distributed, as intended, in a 3:2 female-to-male ratio, $\chi^2(1)=.14$, n.s.

Previous history of major depression was assessed using the Inventory to Diagnose Depression Lifetime Version (IDDL) with all subjects. Scores on the IDDL were used to classify subjects as either having had a major depressive episode in their life or not. It was important to ensure that rate of previous depression was not significantly different across the two personality styles because this could confound interpretation of the results. That is, if priming effects were only evident for subjects with one personality style, and these subjects had a significantly greater rate of previous major depression than the other personality style, it would be unclear whether personality style or previous depression was accounting for the priming differences between the groups. To ensure that personality style was not confounded with history of major depression, a chi-square analysis was performed on the number of cases of previous depression with Personality Style (Sociotropy/Dependency, Autonomy/Self-Criticism) as the independent variable. The results showed that number of previously depressed subjects did not differ by Personality Style, χ^2 (1)=1.88, n.s. In total, 19% of the current sample reported a previous episode of major depression as assessed by their responses to the IDDL. The number of previous episodes of major depression did not significantly differ between males and females, χ^2 (1)=.83, n.s.

To ensure that condition was also not confounded with history of depression, a chi-square analysis was performed on the number of cases of previous depression with Condition (Neutral, Interpersonal Threat, Achievement Threat) as the independent variable. The results showed that the number of previously depressed subjects was equally distributed across all conditions, $\chi^2(2)=2.88$, n.s. Frequency counts for the

number of subjects reporting a previous episode or no previous episode of major depression can be found in Table 3.

Relationship Between Personality Style Measures

Sociotropic/dependent and autonomous/self-critical subjects, as classified by the DEQ in the current sample, were compared on their mean scores on the PSI Sociotropy and Autonomy scales. This was done to provide convergent validity for the method of personality classification in the current study. It was predicted that sociotropic/dependent subjects would have significantly higher scores on PSI Sociotropy than autonomous/self-critical subjects, and that autonomous/self-critical subjects would have significantly higher scores on PSI Autonomy than sociotropic/dependent subjects. As predicted, sociotropic/dependent subjects had significantly higher PSI Sociotropy scores (M = 100.1) than autonomous/self-critical subjects (M = 87.6), $t(175) = 6.27$, $p<.001$, and autonomous/self-critical subjects had significantly higher PSI Autonomy scores (M=88.0) than sociotropic/dependent subjects (M=76.4), $t(175) = -5.95$, $p<.001$. These results suggest that the current sample is representative of the personality constructs as theorized by Beck (1983) and Blatt (1974; 1990).

Success in Imagining the Scenes

Differences in self-reported ability to imagine the scenes was analyzed with ANOVA using General Linear Modeling procedures, with Level of Depression (continuously measured by the BDI), Personality Style (Sociotropy/Dependency, Autonomy, Self-Criticism), and Condition (Neutral, Interpersonal Threat, Achievement Threat) as independent variables. General Linear Modeling procedures were used because they allow ANOVA to be conducted with continuous variables. The mean rating for imagery success was 6.7 (s.d. = .07) on an 8-point scale anchored from 1 ("not at all well") to 8 ("extremely well").

The ANOVA revealed a significant main effect for Personality Style, $F(1,76)=5.22$, $p<.05$, and a significant interaction between Personality Style and Level of Depression, $F(19,76)=2.03$, $p<.05$, on imagery success. However, both of these

Table 3. *Frequency counts for number of sociotropic/dependent and autonomous/self-critical subjects classified by the IDDL as having a previous episode of major depression, or no previous episode of major depression, as a function of condition.*

Personality Style & History of Major Depressive Episode	Condition		
	Neutral	Int. Threat	Ach. Threat
Soc./Dep. (N=80)			
Prev. Episode	3	5	5
No Prev. Episode	23	22	22
Aut./S.C. (N=98)			
Prev. Episode	9	2	10
No Prev. Episode	26	30	21

Note. Prev. Episode or No Prev. Episode refers to the occurrence of nonoccurrence of a previous major depressive episode as assessed by the IDDL. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism, Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat.

effects were qualified by a significant three-way interaction between Level of Depression, Personality Style, and Condition, $F(13,76)=1.98$, $p<.05$. As the main effect for Personality Style and the two-way interaction between Personality Style and Level of Depression were subsumed within the three-way interaction, only the three-way interaction was decomposed. Means and standard deviations can be found in Table 4. In order to illustrate the differences between personality style, condition, and level of depression more clearly, depression level was categorized into high depression and low depression by dichotomizing BDI scores at the mean in all Tables and Figures, although analyses maintained depression as a continuous variable.

The three-way interaction was decomposed by examining the two-way interaction of Personality Style and Level of Depression at each level of Condition. Examining the interactions at each level of Condition revealed a significant two-way interaction between Level of Depression and Personality Style in the interpersonal threat condition, $F(11,25)=2.40$, $p<.05$, but no significant interactions between Level of Depression and Personality Style in either the neutral, $F(9,27)=2.05$, n.s., or achievement threat, $F(12,24)=1.59$, n.s., conditions. To better illustrate the pattern between personality style and depression level, depression scores were dichotomized at the mean. The two-way interaction between Level of Depression and Personality Style in the interpersonal threat condition is illustrated in Figure 1. Examination of Figure 1 reveals that sociotropic/dependent subjects reported being better able to imagine the interpersonal threat than autonomous/self-critical subjects, although autonomous/self-critical subjects with higher levels of depression reported that they were better at imagining the interpersonal threat than autonomous/self-criticals with lower levels of depression.

Mood Induction Analyses

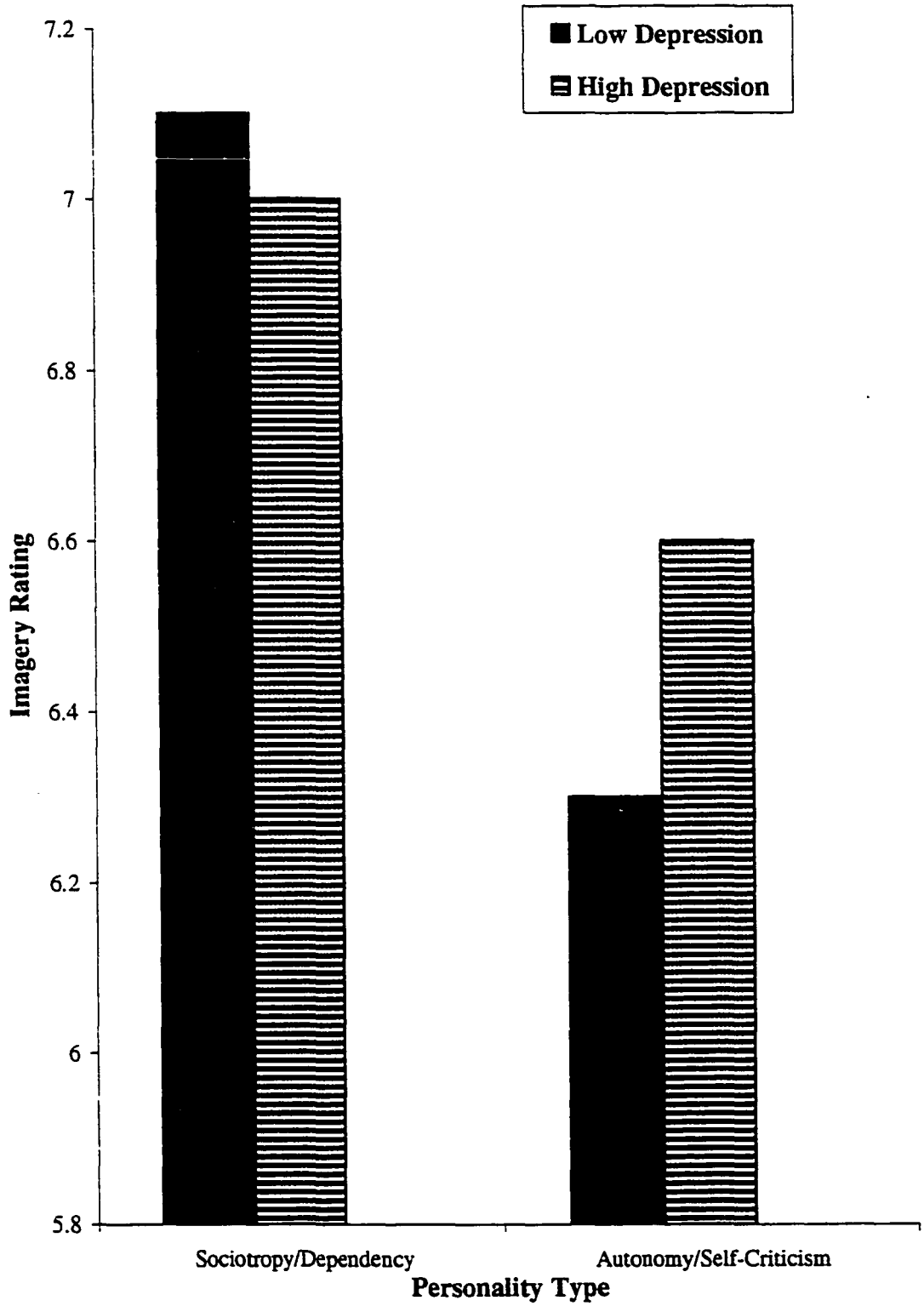
The mood results will be discussed in the same sequence as the data were collected. Baseline moods were established using the Positive and Negative Affect Schedule (PANAS) after imagining the neutral practice situation, and immediate mood changes were assessed using two visual analogue scales after completion of the assigned imagery procedure but prior to completion of the computerized attention task

Table 4. *Means and standard deviations for self-reported ability to imagine the scenes as a function of personality style, condition, and level of depression.*

Personality Style & Depression Level	Condition		
	Neutral	Int. Threat	Ach. Threat
Soc./Dep.			
Low Depression	7.00 (.76)	7.07 (.70)	6.75 (.86)
High Depression	7.09 (.70)	7.00 (.74)	6.55 (1.63)
Aut./S.C.			
Low Depression	7.00 (.85)	6.33 (1.18)	6.43 (1.40)
High Depression	6.70 (.86)	6.59 (.80)	6.82 (.95)

Note. Depression scores were dichotomized at the mean in order to ease illustration. Low Depression = average depression score below the mean, High Depression = average depression score above the mean. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism. Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat. Standard deviations are presented in brackets.

Figure 1. Self-reported ability to imagine the interpersonal threat as a function of personality style and level of depression.



(DOAT). Pre-to-post changes in mood were assessed by re-administering the PANAS following completion of the DOAT.

Baseline Moods. Analysis of Variance (ANOVA) using General Linear Modeling procedures was performed with Personality Style and Level of Depression as the independent variables, and positive and negative affect as the dependent variables. As positive and negative affect are considered to be independent dimensions, and were uncorrelated in the current sample, $r = .07$, ANOVA was performed separately on each. Means and standard deviations can be found in Table 5. In order to make illustration of the means easier, depression level was categorized into high depression and low depression by dichotomizing BDI scores at the mean.

For baseline positive affect, there was an unexpected main effect for Personality Style, $F(1,130)=5.68$, $p<.05$. Baseline positive affect was significantly greater for sociotropic/dependents ($M=28.2$) than for autonomous/self-criticals ($M=26.0$). For baseline negative affect, there was a main effect for Level of Depression, $F(26,130)=2.49$, $p<.001$. Examination of the means revealed that individuals with higher levels of depression reported greater levels of negative affect than individuals with lower levels of depression. No other main effects or interactions were significant, all F's <1, all p's $>.05$.

Visual Analogue Measures. The visual analogue scales were completed *immediately* following the imagery procedures and *prior* to completion of the DOAT. Analysis of Variance using General Linear Modeling procedures was conducted separately on the two visual analogue scales with Level of Depression, Personality Style, and Condition as independent variables.

For the happy/unhappy scale, there was a significant main effect for Condition, $F(2,76)=67.59$, $p<.001$, and a significant two-way interaction between Condition and Personality Style, $F(2,76)=3.34$, $p<.05$, on unhappiness ratings. Means and standard deviations can be found in Table 6. Post-hoc Scheffé tests revealed that sociotropic/dependent subjects reported being significantly more unhappy after the interpersonal threat ($M=6.2$) and achievement threat ($M=5.3$) conditions compared to the neutral ($M=1.9$) condition, but reported significantly *more* unhappiness after the interpersonal threat compared to the achievement threat. Post-hoc Scheffé tests for

Table 5. *Means for baseline levels of positive and negative affect for sociotropic/dependents and autonomous/self-criticals as a function of condition.*

Personality Style & Depression Level	Baseline Affect	
	Positive Affect	Negative Affect
Sociotropy/Dependency		
Low Depression	27.43 (8.02)	11.28 (2.30)
High Depression	29.12 (6.04)	12.15 (3.07)
Autonomy/Self-Criticism		
Low Depression	26.55 (7.71)	11.23 (1.60)
High Depression	25.57 (7.61)	13.26 (4.32)

Note. Standard deviations are in brackets.

Table 6. *Means and standard deviations for unhappiness ratings for sociotropic/dependent and autonomous/self-critical subjects as a function of condition and level of depression.*

Personality Style & Depression Level	Condition		
	Neutral	Int. Threat	Ach. Threat
Soc./Dep.			
Low Depression	2.00 (1.00)	5.73 (.96)	4.88 (1.31)
High Depression	1.91 (.83)	6.75 (1.06)	6.00 (1.41)
Aut./S.C.			
Low Depression	2.87 (1.41)	5.60 (1.40)	5.36 (1.74)
High Depression	3.30 (1.66)	6.12 (1.11)	5.76 (1.03)

Note. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism, Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat. Standard deviations are presented in brackets.

autonomous/self-critical individuals revealed that they rated themselves as being significantly more unhappy after the interpersonal threat (M=5.9) and achievement threat (M=5.6) conditions compared to the neutral (M=3.1) condition, but did not significantly differ in unhappiness ratings between the two threat conditions. This suggests personality-mood congruence for sociotropic/dependent subjects but not autonomous/self-critical subjects.

For the relaxed/irritable scale, there was a main effect for Condition, $F(2,72)=78.5$, $p<.001$, and a significant three-way interaction between Level of Depression, Personality Style, and Condition, $F(13,72)=3.47$, $p<.001$ on irritability ratings. Means and standard deviations can be found in Table 7. To better illustrate the relationship between level of depression, condition, and personality style, depression scores were categorized into high depression and low depression by dichotomizing BDI scores at the mean. The three-way interaction was decomposed by examining the two-way interaction of Condition and Level of Depression for sociotropic/dependent and autonomous/self-critical individuals separately.

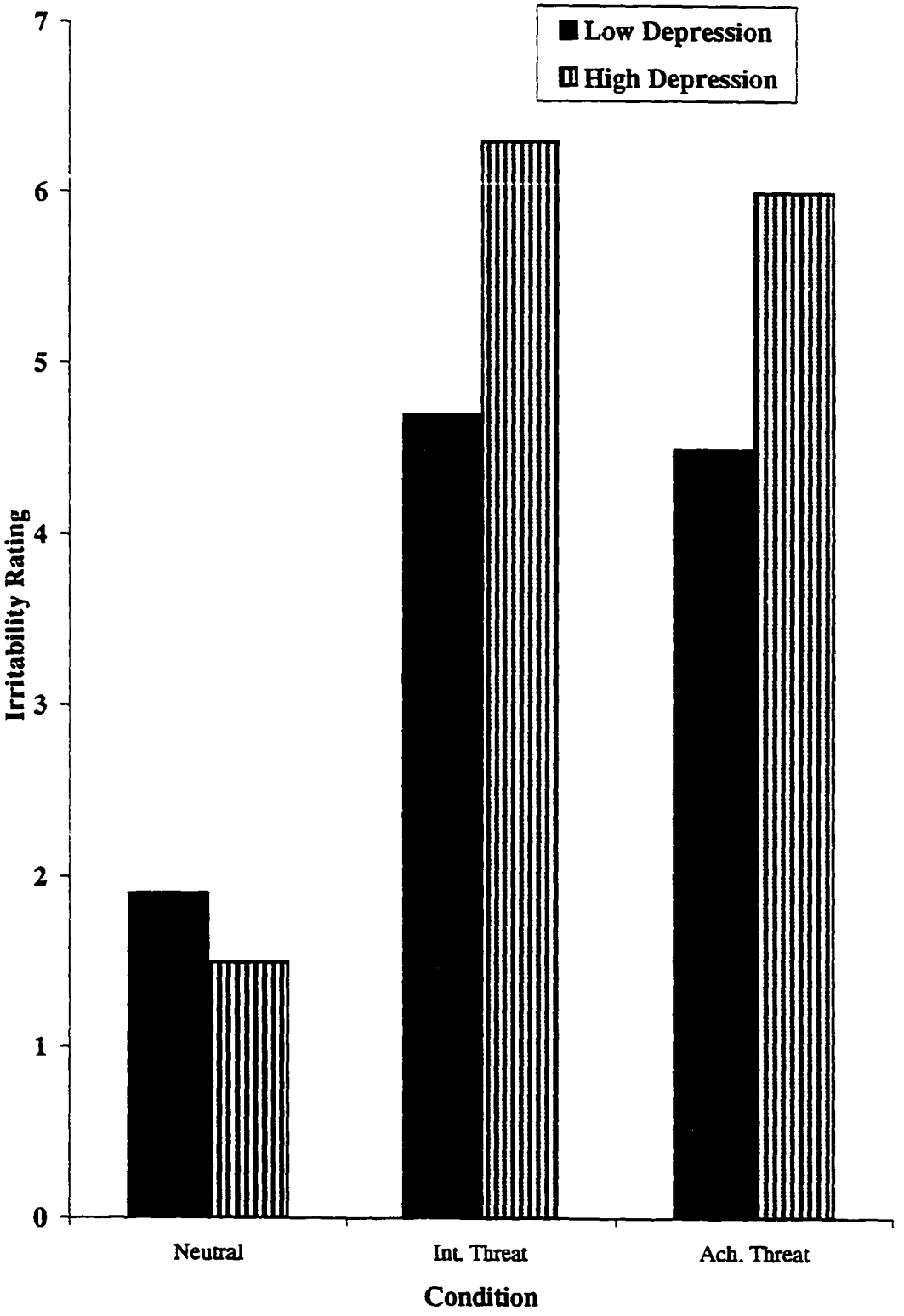
There was a significant two-way interaction between Level of Depression and Condition for sociotropic/dependent individuals, $F(20,36)=3.56$, $p<.001$, but not for autonomous/self-critical individuals, $F(31,40)=1.00$, n.s. Simple effects were analyzed for Level of Depression at each level of Condition, for sociotropic/dependent subjects, because level of depression was a continuous variable and condition was a categorical variable. Level of Depression was significant in both the interpersonal and achievement threat conditions, $F(13,12)=3.04$, $p<.05$ and $F(13,12)=4.00$, $p<.05$, respectively, but not in the neutral condition, $F(13,12)<1$. The interaction between Level of Depression and Condition for sociotropic/dependent subjects is illustrated in Figure 2. Sociotropic/dependents reported being more irritable after the interpersonal threat and achievement threat conditions compared to the neutral condition, with this effect being more pronounced as level of depression increased. This result was more supportive of the DAH because sociotropic/dependents were more irritable after *both* the congruent and incongruent threat conditions compared to the neutral condition. Although this pattern was only statistically significant for sociotropic/dependent subjects, a similar pattern was evident for autonomous/self-critical subjects.

Table 7. *Means and standard deviations for irritability ratings for sociotropic/dependent and autonomous/self-critical subjects as a function of condition and level of depression.*

Personality Style & Depression Level	Condition		
	Neutral	Int. Threat	Ach. Threat
Soc./Dep.			
Low Depression	1.93 (1.22)	4.67 (1.98)	4.50 (1.46)
High Depression	1.45 (.52)	6.33 (1.44)	6.00 (1.00)
Aut./S.C.			
Low Depression	1.67 (.90)	5.00 (1.31)	4.71 (1.73)
High Depression	2.20 (1.24)	5.82 (1.42)	5.29 (1.49)

Note. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism, Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat. Standard deviations are presented in brackets.

Figure 2. Mean irritability ratings for sociotropic/dependent subjects as a function of level of depression and condition.



Positive and Negative Affect. Subjects were re-administered the PANAS *after* completion of the DOAT. Re-administration was done after the completion of the DOAT instead of *directly following* the imagery procedures in order to avoid potential contamination of subjects' performance on the DOAT by repeated exposure to similar content of the self-relevant adjectives found on the PANAS.

Analysis of Variance using General Linear Modeling procedures was performed using Time as a within-subjects factor, Level of Depression, Personality Style (Sociotropic/Dependent, Autonomous/Self-Critical), and Condition (Neutral, Interpersonal Threat, Achievement Threat) as between-subjects factors, and positive and negative affect as the dependent variables. As noted previously, positive and negative affect were analyzed separately because they are independent dimensions and were uncorrelated in the current sample. Means and standard deviations for pre- and post- DOAT positive and negative affect scores can be found in Table 8.

Analysis of pre-to-post positive affect revealed a significant main effect for Time, $F(1,75)=21.3$, $p<.001$. Examination of the means reveals that positive affect decreased over time for all participants. The analysis also revealed a trend towards a two-way interaction between Time and Condition, $F(2,75)=2.98$, $p=.06$. Although the interaction was not significant, the direction of the means seems to be falling in the direction predicted by the DAH. That is, positive affect was lower after both the achievement threat ($M=25.2$) and interpersonal threat ($M=23.8$) conditions compared to the neutral condition ($M=26.0$).

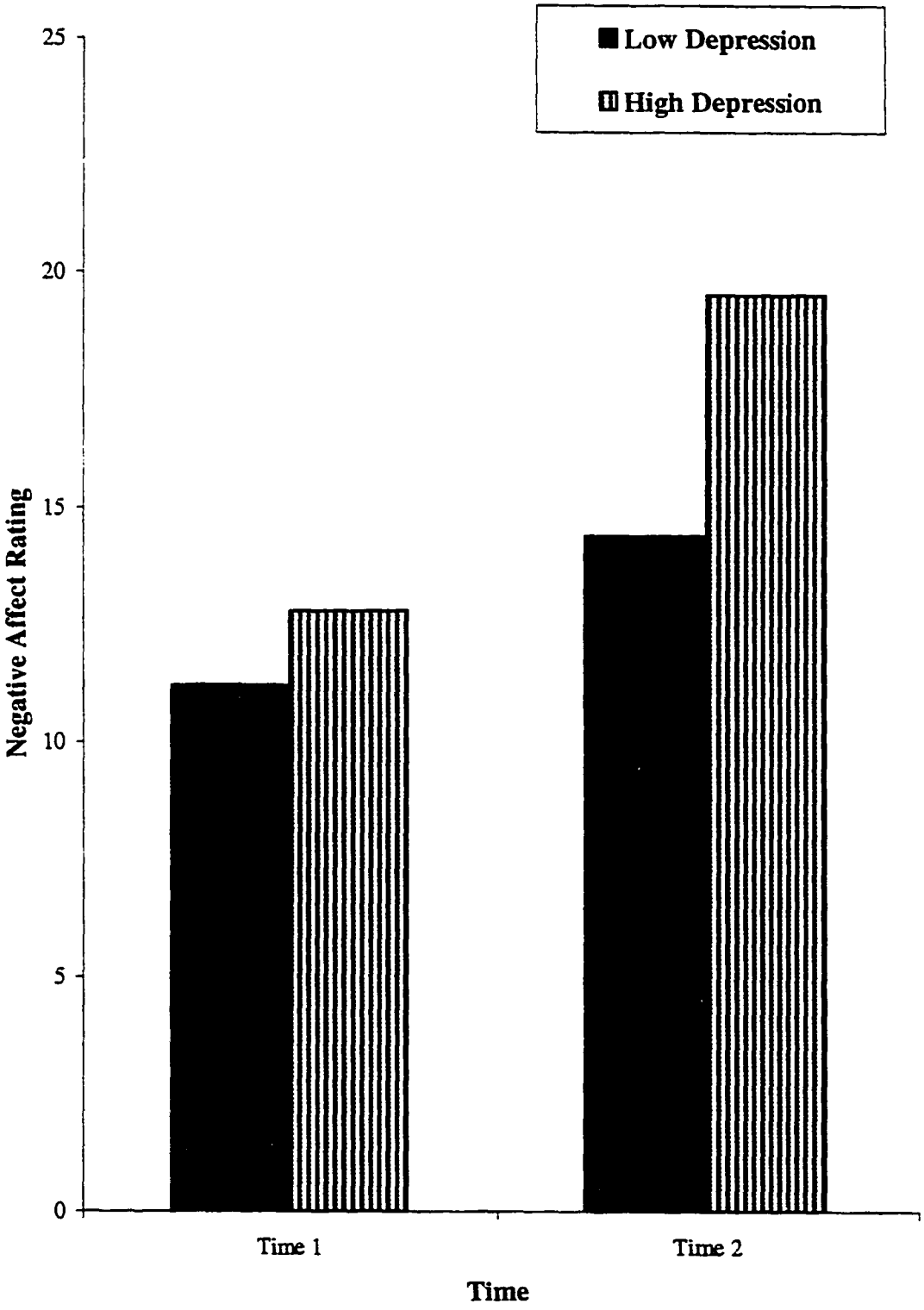
Analysis of pre-to-post negative affect revealed a trend towards a two-way interaction between Time and Level of Depression, $F(26,71)=1.63$, $p=.06$. Anxiety was significant as a covariate in this analysis, $F(1,71)=4.39$, $p<.05$, and was therefore retained for all subsequent analyses of negative affect. The Time by Level of Depression trend is illustrated in Figure 3. Examination of Figure 3 reveals that negative affect increased over time for all participants, but this effect was more pronounced in subjects with higher levels of depression. The increase in negative affect over time, even for subjects with low depression, may be a consequence of feelings of agitation and restlessness associated with completing a mildly frustrating and attention-demanding task.

Table 8. *Pre and post positive and negative affect for sociotropic/dependent and autonomous self-critical subjects as a function of condition and level of depression. Standard deviations are presented in brackets.*

Condition, Personality Style & Depression Level	Positive Affect		Negative Affect	
	Pre	Post	Pre	Post
Neutral				
Soc./Dep.				
Low Dep'n	29.53 (6.09)	29.20 (6.90)	10.87 (1.51)	13.60 (4.81)
High Dep'n	27.27 (6.23)	25.64 (5.30)	11.72 (1.19)	15.54 (4.84)
Aut./S.C.				
Low Dep'n	26.73 (6.90)	27.33 (6.75)	11.36 (1.74)	12.71 (3.63)
High Dep'n	24.80 (7.26)	22.60 (6.60)	13.89 (5.90)	16.26 (6.10)
Int. Threat				
Soc./Dep.				
Low Dep'n	28.80 (8.49)	24.40 (6.39)	10.53 (.92)	15.33 (5.81)
High Dep'n	28.17 (5.88)	22.67 (8.06)	12.58 (4.54)	22.42 (9.77)
Aut./S.C.				
Low Dep'n	26.80 (6.87)	25.27 (7.55)	11.33 (1.30)	15.92 (4.62)
High Dep'n	26.69 (9.53)	22.88 (5.84)	12.75 (3.53)	21.56 (7.60)
Ach. Threat				
Soc./Dep.				
Low Dep'n	24.31 (8.62)	25.25 (8.53)	12.37 (3.32)	13.13 (2.96)
High Dep'n	32.00 (5.46)	26.73 (8.23)	12.09 (2.55)	23.18 (8.48)
Aut./S.C.				
Low Dep'n	26.07 (9.71)	25.86 (9.27)	10.43 (.94)	16.36 (8.92)
High Dep'n	25.88 (6.12)	23.56 (6.52)	12.88 (2.55)	19.44 (7.25)

Note. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism, Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat, Low Dep'n = Low Depression, High Dep'n = High Depression.

Figure 3. Mean ratings of negative affect over time for all subjects as a function of level of depression.



Summary of the Manipulation Check and Mood Data

Overall, subjects reported that they were very successful at completing the imagery procedures, with the mean rating for imagery success being 6.7 (s.d.=.07) on an 8-point scale. Although sociotropic/dependents were better able at imagining the interpersonal threat than autonomous/self-critical subjects, this difference was less pronounced when comparing sociotropic/dependent subjects with the most depressed autonomous/self-critical subjects. The results from the visual analogue mood scales and the positive affect subscale of the PANAS provided further validity that the inductions were successful. All subjects reported significantly greater levels of unhappiness, significantly higher levels of irritability, and a trend towards lower levels of positive affect, after the two threat conditions compared to the neutral condition.

In general, only one of the mood measures, for one personality style, was consistent with the predictions made by the congruency hypothesis. On the happy/unhappy scale, sociotropic/dependents reported being significantly more unhappy after imagining the interpersonal threat compared to the achievement threat. In comparison, the rest of the mood measures, and the responses of autonomous/self-criticals on the happy/unhappy scale, were more consistent with predictions made by the DAH. On the happy/unhappy scale, autonomous/self-criticals reported being equally unhappy after imagining both the interpersonal and achievement threats. In addition, on the relaxed/irritable scale, sociotropic/dependents reported being more irritable after *both* the interpersonal and achievement threats compared to the neutral condition. A similar pattern was evident in the irritability means for autonomous/self-critical individuals, but was not statistically significant. Last, the responses of sociotropic/dependents and autonomous/self-criticals on the positive affect scale suggest that positive affect was lower after both the interpersonal and achievement threats compared to the neutral situation, although this trend was not statistically significant.

Deployment of Attention Analysis - Pattern Analyses

As mentioned earlier, three types of word pairs were constructed for presentation to subjects on the DOAT in both the interpersonal and achievement domains: a negative word paired with a neutral word ("NEGNEU"), a negative word paired with a positive word ("NEGPOS"), and a positive word paired with a neutral word ("POSNEU"). For ease of explanation, the interpersonally-based word pairs will be prefaced with the letter "I", and the achievement-based word pairs will be prefaced with the letter "A." Therefore, INEGNEU represents the interpersonal negative/neutral word pair, INEGPOS represents the interpersonal negative/positive word pair, and IPOSNEU represents the interpersonal positive/neutral word pair. Similarly, ANEGNEU, ANEGPOS, and APOSNEU represent the same types of word pairs, but with achievement-based words instead of interpersonally-based ones.

For the pattern analyses, the "target" in the INEGNEU, INEGPOS, ANEGNEU, and ANEGPOS word pairs was defined as the negative word. In the IPOSNEU and APOSNEU word pairs the "target" was defined as the positive word. Pattern of attentional allocation was determined by assessing whether each of the obtained proportions on the word pairs is significantly different from .5, and then examining the *pattern* of the three means (i.e., NEGNEU, NEGPOS, POSNEU) across the interpersonally- and achievement-based word pairs. For example, attentional allocation *away* from negative target words would be reflected by a proportion significantly less than .50 in the INEGNEU, INEGPOS, ANEGNEU, and ANEGPOS word pairs. In comparison, *equal* attention to both words would be reflected in a proportion that was not significantly different from .50.

When one considers that in each of the *three* word pairs (i.e., NEGNEU, NEGPOS, POSNEU) there are *three* possible outcomes for the target proportions (i.e., less than .5, equal to .5, greater than .5), there are 3^3 (or 27) possible arrangements of proportions across the three word pairs. Out of these 27 possible arrangements, the protective or positive bias is represented by only two arrangements across the three word pairs. Given these two possible outcomes, the probability of finding a protective or positive bias pattern across the three proportions is only 2/27 or $p=.07$. To reiterate, a positive bias is demonstrated when subjects shift their attention *away* from negative

targets in both the NEGNEU and NEGPOS word pairs, and *towards* the positive target in the POSNEU word pair. Therefore, a positive bias is represented by values across the NEGNEU, NEGPOS, and POSNEU word pairs of less than .5, less than .5, and greater than .5, respectively. In comparison, a protective bias is demonstrated when subjects shift their attention *away* from negative targets in both the NEGNEU and NEGPOS word pairs, but attend *equally* to the positive and neutral words in the POSNEU word pair. Therefore, a protective bias is represented by values across the NEGNEU, NEGPOS, and POSNEU word pairs of less than .5, less than .5, and equal to .5, respectively. When one considers that the four previous studies using the DOAT have demonstrated a positive or protective bias (Gotlib et al., 1988; Gotlib & McCabe, 1995; McCabe et al., in press; McCabe & Toman, 1999), with each having a pattern significance of at least .07, the probability of such consistency is $(.07)^4$ or .000024. Clearly, the positive or protective bias is a very robust finding. Pattern analysis was used to assess attentional allocation in the current study because it is considered to be a stronger and more conservative approach to hypothesis testing than traditional approaches (see Meehl, 1978, Lykken, 1991), and previous research allows one to make very specific directional predictions for the DOAT.

Pattern analyses are calculated by using t-tests with each group of subjects separately, and then comparing the pattern of the mean proportions across the three word pairs. Due to the necessity of comparing groups, sociotropic/dependent and autonomous/self-critical subjects' scores on the BDI were dichotomized at their overall mean, which allowed for the creation of a "high depression" and "low depression" set of subjects for each personality style. Sociotropic/dependent and autonomous/self-critical subjects with scores less than or equal to nine on the BDI were classified as "low depression", and subjects with scores greater than or equal to ten were classified as "high depression". Planned t-tests were run for the low depression and high depression sociotropic/dependent and autonomous/self-critical groups separately. Mean proportions and standard deviations on the interpersonally- and achievement-based word pairs for sociotropic/dependent and autonomous/self-criticals subjects can be found in Table 9.

Table 9. *Mean proportions of trials in which target word was chosen by sociotropic/dependent and autonomous/self-critical individuals in all conditions as a function of depression level, domain of word pair, and valence of word pair.*

Condition, Personality Style & Depression Level	Interpersonal Word Pairs			Achievement Word Pairs		
	INEGNEU	INEGPOS	IPOSNEU	ANEGNEU	ANEGPOS	APOSNEU
Neutral						
Soc./Dep.						
Low Dep'n	.35 (.14)	.32 (.16)	.62 (.13)	.44 (.13)	.45 (.13)	.54 (.18)
High Dep'n	.52 (.97)	.50 (.59)	.42 (.13)	.47 (.09)	.49 (.09)	.47 (.10)
Aut./S.C.						
Low Dep'n	.36 (.19)	.38 (.21)	.61 (.85)	.41 (.14)	.41 (.15)	.48 (.15)
High Dep'n	.55 (.13)	.49 (.14)	.56 (.18)	.48 (.11)	.48 (.09)	.49 (.14)
Int. Threat						
Soc./Dep.						
Low Dep'n	.52 (.13)	.50 (.11)	.51 (.96)	.48 (.09)	.45 (.15)	.48.18)
High Dep'n	.45 (.16)	.48 (.13)	.56 (.12)	.50 (.10)	.54 (.14)	.55 (.15)
Aut./S.C.						
Low Dep'n	.47 (.16)	.46 (.15)	.51 (.14)	.44 (.12)	.47 (.13)	.54 (.13)
High Dep'n	.50 (.17)	.51 (.16)	.51 (.09)	.53 (.14)	.47 (10)	.50 (.13)

Table 9 continued on next page.

Table 9 continued.

Condition, Personality Style & Depression Level	Interpersonal Word Pairs			Achievement Word Pairs		
	INEGNEU	INEGPOS	IPOSNEU	ANEGNEU	ANEGPOS	APOSNEU
Ach. Threat						
Soc./Dep.						
Low Dep'n	.41 (.12)	.52 (.10)	.56 (.12)	.46 (.14)	.48 (.14)	.53 (.14)
High Dep'n	.57 (.14)	.48 (.19)	.53 (.17)	.56 (.13)	.44 (.16)	.44 (.13)
Aut./S.C.						
Low Dep'n	.47 (.12)	.46 (.11)	.54 (.11)	.54 (.12)	.52 (.14)	.56 (.20)
High Dep'n	.56 (.16)	.48 (.15)	.50 (.13)	.53 (.15)	.44 (.15)	.51 (.15)

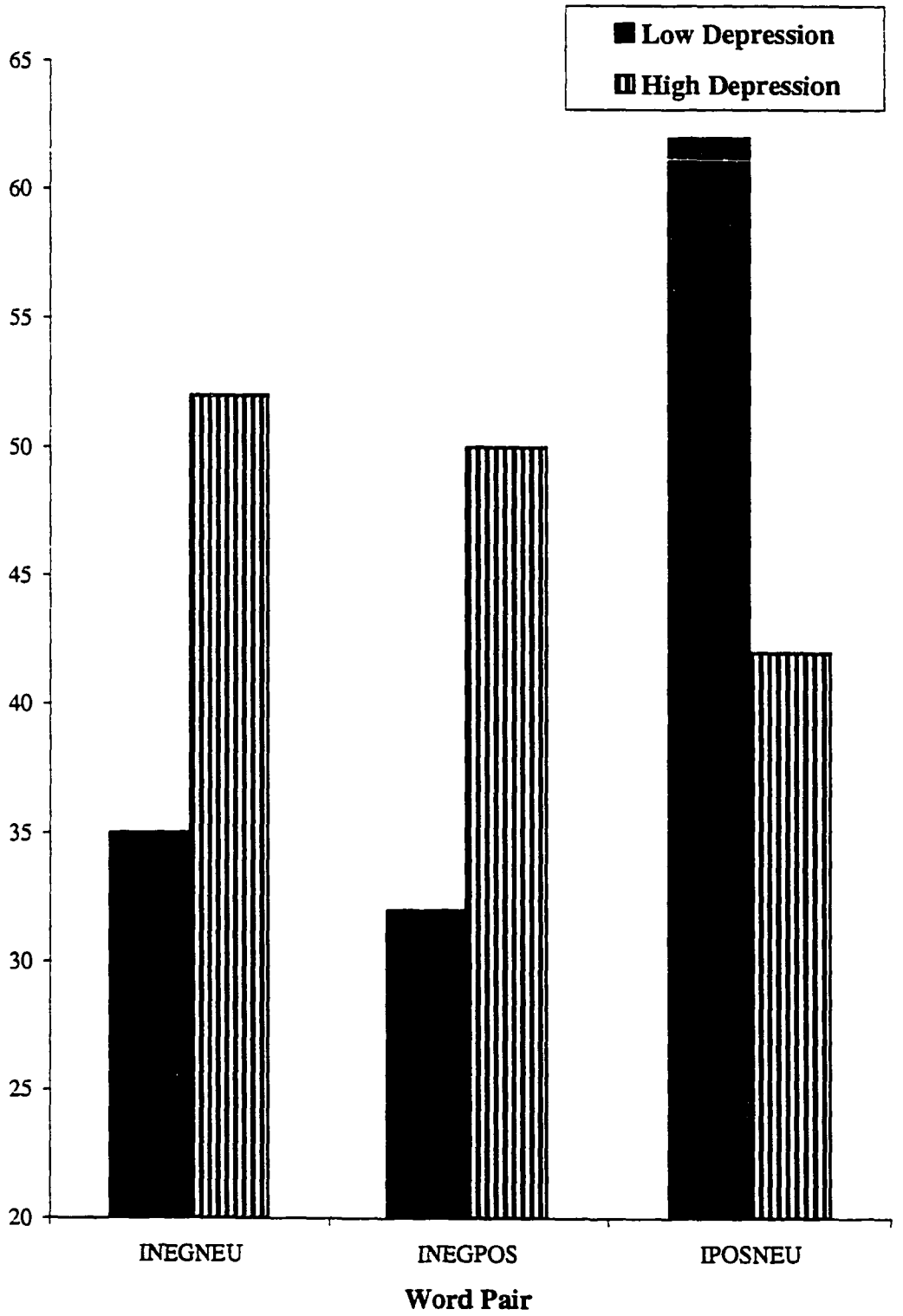
Note. INEGNEU = Interpersonal negative/neutral, INEGPOS = Interpersonal negative/positive, IPOSNEU = Interpersonal positive/neutral, ANEGNEU = Achievement negative/neutral, ANEGPOS = Achievement negative/positive, APOSNEU = Achievement positive/neutral. Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat, Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism, Low Dep'n = depression scores below the mean, High Dep'n = depression scores above the mean. Standard deviations are presented in brackets.

Sociotropic/Dependent Individuals. For sociotropic/dependents, pattern analyses were first conducted on the interpersonal target words (i.e., INEGNEU, INEGPOS, IPOSNEU) in each of the three conditions. To reiterate the predictions briefly, results consistent with the congruency hypothesis would show that (1) sociotropic/dependents, with lower levels of depression, demonstrated a positive or protective bias in the neutral *and* achievement threat conditions, that (2) sociotropic/dependents, with lower levels of depression, would *lose* their positive or protective bias after imagining the interpersonal threat, and that (3) sociotropic/dependents, with higher levels of depression, would demonstrate an "even-handed" attentional style across all conditions.

In comparison, results consistent with the DAH would show that (1) sociotropic/dependents, with lower levels of depression, demonstrated a positive or protective bias in the neutral condition, that (2) sociotropic/dependents, with lower levels of depression, would lose their positive or protective bias after imagining the interpersonal *and* achievement threats, and that (3) sociotropic/dependents, with higher levels of depression, would demonstrate an "even-handed" attentional style across all conditions and word pairs. Planned t-tests were conducted separately for "low depression" and "high depression" sociotropic/dependents in the neutral, interpersonal threat, and achievement threat conditions.

In the neutral condition, planned t-tests revealed that sociotropic/dependent subjects, with lower levels of depression, demonstrated a positive bias, with means for INEGNEU (.35) and INEGPOS (.32) being significantly less than .50, $t(14) = -4.09$, $p<.01$ and $t(14) = -4.41$, $p<.01$, respectively, and the mean for IPOSNEU (.62) being significantly greater than .50, $t(14) = 3.47$, $p<.01$. In comparison, sociotropic/dependent subjects, with higher levels of depression, demonstrated an "even-handed" attentional style, with means for INEGNEU (.52), INEGPOS (.50), and IPOSNEU (.42), not significantly differing from .50, $t(10) = .65$, n.s., $t(10) = -.26$, n.s., and $t(10) = -2.01$, n.s., respectively. These results support previous findings that subjects with low levels of depression demonstrate a positive bias in the face of nonthreatening events, but *lose* this bias, and demonstrate an "even-handed" processing style as depression scores increase. See Figure 4.

Figure 4. Mean proportions of trials in the neutral condition in which target interpersonal words were chosen by sociotropic/dependents as a function of level of depression.



In the interpersonal threat, or congruent threat, condition, planned t-tests revealed that sociotropic/dependents, with lower levels of depression, demonstrated an "even-handed" attentional style, with means for INEGNEU (.52), INEGPOS (.50), and IPOSNEU (.51), not significantly differing from .50, $t(14)=.52$, n.s., $t(14)=-.12$, n.s., and $t(14)=.40$, n.s., respectively. Similarly, sociotropic/dependents, with higher levels of depression, exhibited an "even-handed" attentional style, with means for INEGNEU (.45), INEGPOS (.48), and IPOSNEU (.56) not significantly differing from .50, $t(11)=-1.00$, n.s., $t(11)=-.67$, n.s., and $t(11)=1.81$, n.s., respectively. These results suggest that after the occurrence of an interpersonal threat, or congruent stressor, sociotropic/dependent subjects, with lower levels of depression, *lose* their positive bias (compared to the neutral condition) and perform the same way as subjects with higher levels of depression. See Figure 5.

In the achievement threat, or incongruent threat, condition, planned t-tests revealed that sociotropic/dependent subjects, with lower levels of depression, demonstrated a near perfect protective bias, with the mean for INEGNEU (.41) being significantly less than .50, $t(15)= -3.00$, $p<.01$, and the mean for IPOSNEU (.56) not significantly differing from .50, $t(15)= 1.90$, n.s. Unexpectedly, the mean for INEGPOS (.52) was not significantly less than .50, $t(15)=-1.01$, n.s., which was required to identify a perfect protective bias. In comparison, sociotropic/dependents, with higher levels of depression, demonstrated an "even-handed" attentional style, with means for INEGNEU (.57), INEGPOS (.48), and IPOSNEU (.53), not significantly differing from .50, $t(9)= 1.70$, n.s., $t(9)=-.52$, n.s., and $t(9)=1.99$, n.s., respectively. These results suggest that after the occurrence of an achievement, or incongruent, threat, sociotropic/dependent subjects, with lower levels of depression, demonstrate a near protective bias, but lose this bias, and demonstrate an "even-handed" processing style as level of depression increases. See Figure 6.

Pattern analyses were also conducted for sociotropic/dependent individuals to the achievement target words (i.e., ANEGNEU, ANEGPOS, APOSNEU) in each of the three conditions. Results consistent with the congruency hypothesis would show that sociotropic/dependents, with lower levels of depression, demonstrated a positive or protective bias in the neutral and achievement-threat conditions, and an "even-

Figure 5. Mean proportions of trials in the interpersonal threat condition in which target interpersonal words were chosen by sociotropic/dependents as a function of level of depression.

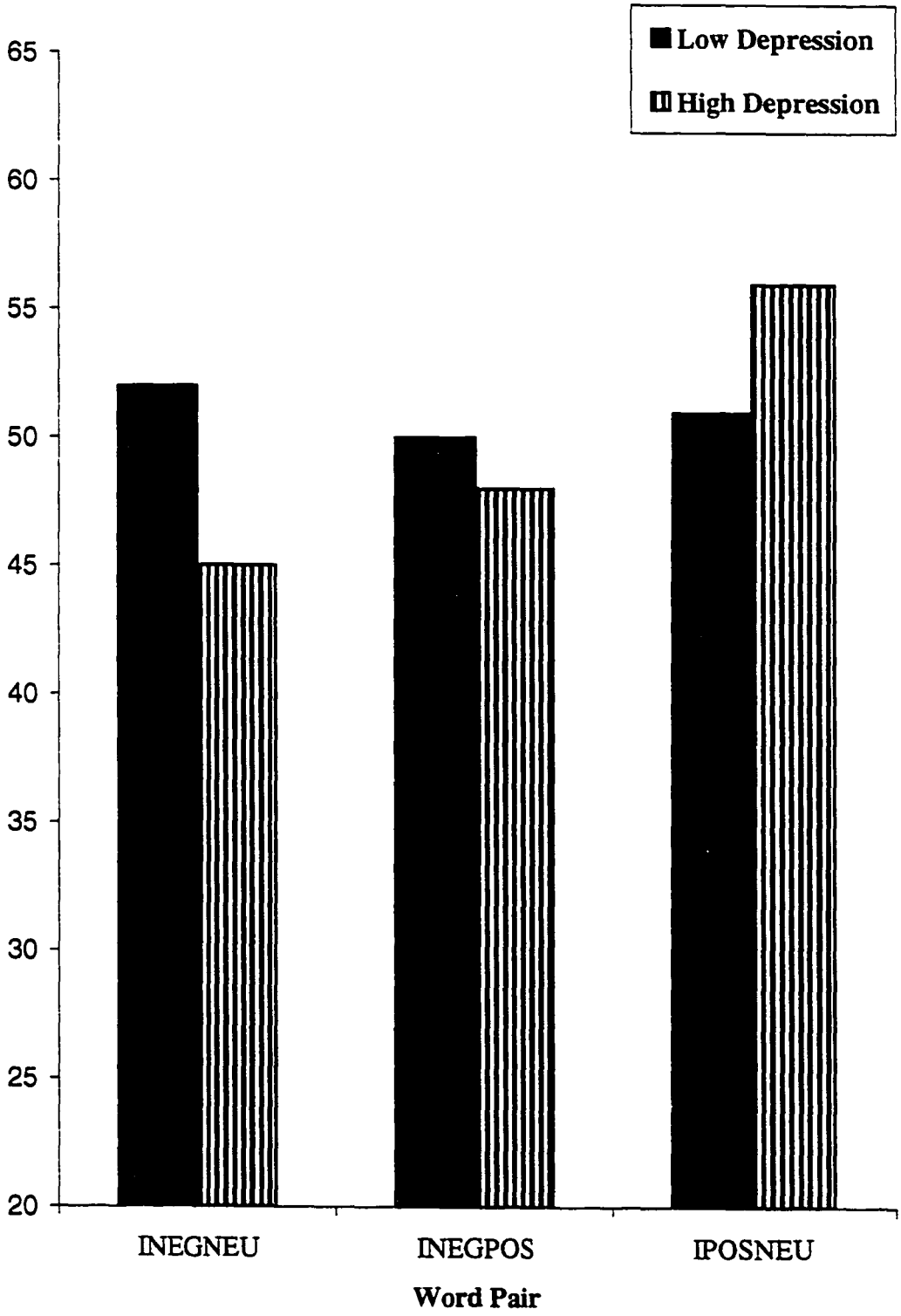
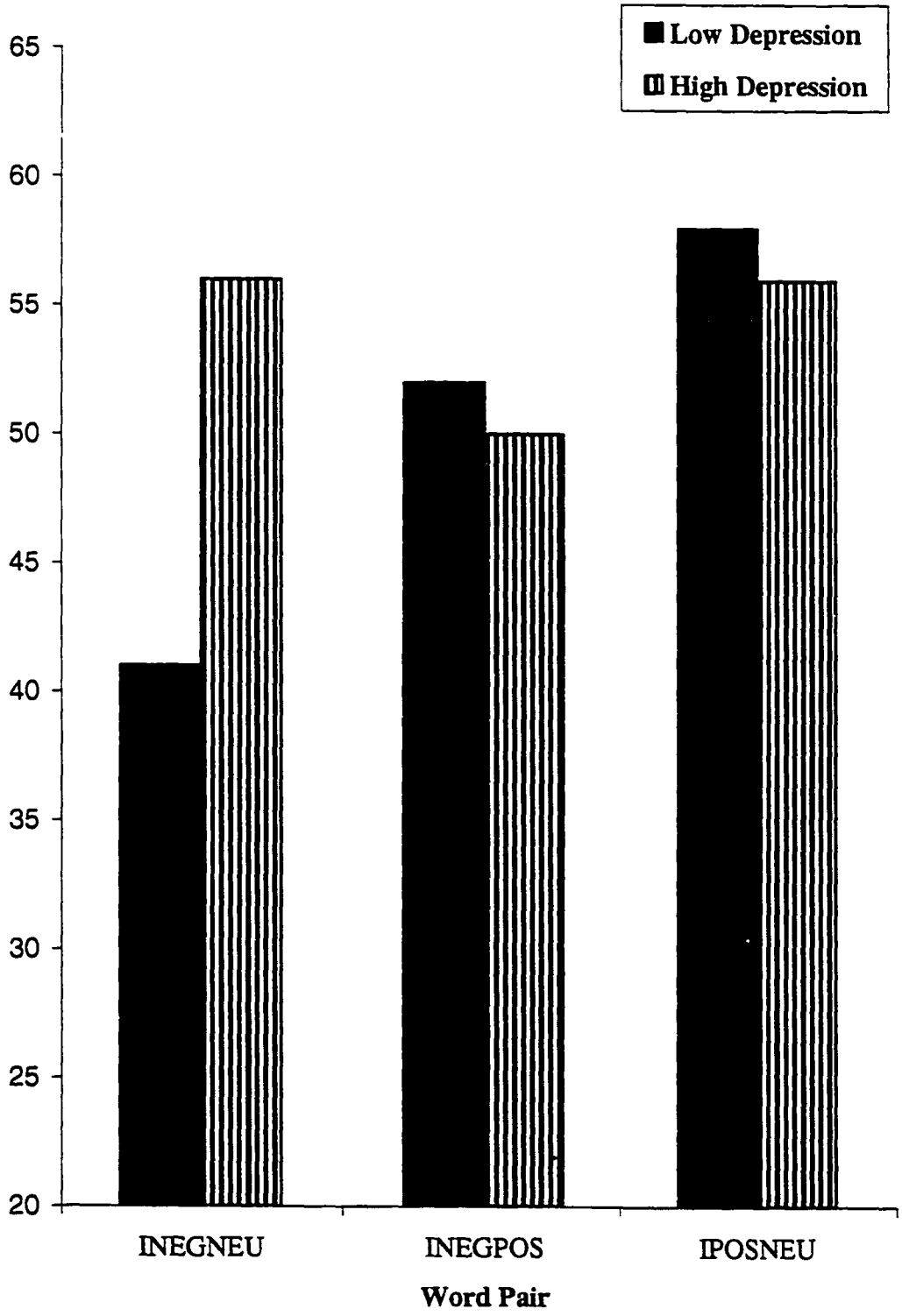


Figure 6. Mean proportions of trials in the achievement threat condition in which target interpersonal words were chosen by sociotropic/dependents as a function of level of depression.



handed" attentional style in the interpersonal threat condition. In comparison, results consistent with the DAH would show that sociotropic/dependents, with lower levels of depression, demonstrated a positive or protective bias in the neutral condition, and an "even-handed" attentional style in the interpersonal *and* achievement threat conditions. Sociotropic/dependent subjects, with higher levels of depression, were expected to demonstrate an "even-handed" attentional style to the three word pairs across all of the conditions.

In the neutral condition, contrary to the predictions made by the congruency hypothesis *and* the DAH, planned t-tests revealed that sociotropic/dependent subjects, with lower levels of depression, demonstrated an "even-handed" attentional style, with means for ANEGNEU (.44), ANEGPOS (.45), and APOSNEU (.54), not significantly differing from .50, $t(14)=-1.66$, n.s., $t(14)=-1.48$, n.s., and $t(14)=.86$, n.s., respectively. However, as expected, sociotropic/dependent subjects, with higher levels of depression, demonstrated an "even-handed" attentional style to the ANEGNEU (.47), $t(10)=-1.12$, n.s., ANEGPOS (.49), $t(10)=-.34$, n.s., and APOSNEU (.47) word pairs, $t(10)=-.91$, n.s.

In the interpersonal threat condition, sociotropic/dependents, with lower levels of depression, demonstrated an "even-handed" attentional style, with means for ANEGNEU (.48), $t(14)=-.72$, n.s., ANEGPOS (.45), $t(14)=-1.19$, n.s., and APOSNEU (.48), $t(14)=-.39$, n.s., not significantly differing from .50. Similarly, sociotropic/dependents, with higher levels of depression, demonstrated an "even-handed' attentional style to the ANEGNEU (.50), $t(11)=.06$, n.s., ANEGPOS (.54), $t(11)=.89$, n.s., and APOSNEU (.55), $t(11)=1.14$, n.s. word pairs.

Last, in the achievement threat condition sociotropic/dependents, with lower levels of depression, demonstrated an "even-handed" attentional style, with means for ANEGNEU (.46), $t(15)=-1.13$, n.s., ANEGPOS (.48), $t(15)=-.61$, n.s., and APOSNEU (.53), $t(10)=-1.38$, not significantly differing from .50. An "even-handed" attentional style was also demonstrated in sociotropic/dependents, with higher levels of depression, ANEGNEU (.56), $t(10)=1.66$, n.s., ANEGPOS (.44), $t(10)=-1.26$, n.s., and APOSNEU (.44), $t(10)=-1.38$.

Overall, the results for sociotropic/dependent subjects were more consistent with predictions made by the congruency hypothesis than by the DAH. On the interpersonally-based word pairs, sociotropic/dependent individuals, with lower levels of depression, demonstrated a positive bias after imagining the neutral situation, a protective bias after imagining the incongruent threat (save for one comparison), and an "even-handed" attentional style after imagining the congruent threat. After imagining the congruent threat, the performance of sociotropic/dependents with lower levels of depression was similar to sociotropic/dependents with higher levels of depression. Unexpectedly, sociotropic/dependents, with lower levels of depression, did not demonstrate a positive or protective bias on the achievement-based word pairs. A potential explanation for this lack of effect will be addressed later. A summary of the results from the pattern analyses for sociotropic/dependent subjects, with lower and higher levels of depression, on the interpersonally-based word pairs can be found in Table 10-A, and on the achievement-based word pairs can be found in Table 10-B.

Autonomous/Self-Critical Individuals. For autonomous/self-criticals, pattern analyses were first conducted on the achievement target words (i.e., ANEGNEU, ANEGPOS, APOSNEU) in each of the three conditions. To reiterate the predictions briefly, results consistent with the congruency hypothesis would show that (1) autonomous/self-criticals, with lower levels of depression, demonstrated a positive or protective bias in the neutral and interpersonal threat conditions, that (2) autonomous/self-criticals, with lower levels of depression, would lose their positive or protective bias after imagining the achievement threat, and that (3) autonomous/self-criticals, with higher levels of depression, would demonstrate an "even-handed" attentional style across all conditions.

In comparison, results consistent with the DAH would show that (1) autonomous/self-criticals, with lower levels of depression, demonstrated a positive or protective bias in the neutral condition, that (2) autonomous/self-criticals, with lower levels of depression, would lose their positive or protective bias after imagining the interpersonal *and* achievement threats, and that (3) autonomous/self-criticals, with higher levels of depression, would demonstrate an "even-handed" attentional style

Table 10-A. *Patterns of attentional allocation on the DOAT, on the interpersonally-based word pairs, for sociotropic/dependent individuals, with low and high levels of depression, in each condition.*

	Condition		
Level of Depression	Neutral	Int. Threat	Ach. Threat
Low Depression	Positive Bias	Even-handed	Protective Bias*
High Depression	Even-handed	Even-handed	Even-handed

Note. Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat.

*save for one comparison.

Table 10-B. *Patterns of attentional allocation on the DOAT, on the achievement-based word pairs, for sociotropic/dependent individuals, with low and high levels of depression, in each condition.*

	Condition		
Level of Depression	Neutral	Int. Threat	Ach. Threat
Low Depression	Even-handed	Even-handed	Even-handed
High Depression	Even-handed	Even-handed	Even-handed

Note. Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat.

across all conditions. Planned t-tests were conducted separately for "low depression" and "high depression" autonomous/self-criticals in the neutral, interpersonal threat, and achievement threat conditions.

In the neutral condition, planned t-tests revealed that autonomous/self-critical subjects, with lower levels of depression, demonstrated a protective bias, with means for ANEGNEU (.41) and ANEGPOS (.41) being significantly less than .50, $t(14) = -2.62$, $p<.05$ and $t(14) = -2.36$, $p<.05$, respectively, and the mean for APOSNEU (.48) not significantly differing from .50, $t(14) = -.51$, n.s. In comparison, autonomous/self-critical subjects, with higher levels of depression, demonstrated an "even-handed" attentional style, with means for ANEGNEU (.48), ANEGPOS (.48), and APOSNEU (.49), not significantly differing from .50, $t(19) = -.79$, n.s., $t(19) = -.84$, n.s., and $t(19) = -.35$, n.s., respectively. These results support previous findings that subjects with lower levels of depression demonstrate a protective bias in the face of nonthreatening events, but *lose* this bias, and demonstrate an "even-handed" processing style as depression scores increase. See Figure 7.

In the achievement threat, or congruent threat, condition, planned t-tests revealed that autonomous/self-critical subjects, with lower levels of depression, demonstrated an "even-handed" attentional style, with means for ANEGNEU (.54), ANEGPOS (.52), and APOSNEU (.56), not significantly differing from .50, $t(13) = 1.33$, n.s., $t(13) = .61$, n.s., and $t(13) = 1.10$, n.s., respectively. Similarly, autonomous/self-criticals, with higher levels of depression, exhibited an "even-handed" attentional style, with means for ANEGNEU (.53), ANEGPOS (.44), and APOSNEU (.51) not significantly differing from .50, $t(16) = .73$, n.s., $t(16) = -1.66$, n.s., and $t(16) = .37$, n.s., respectively. These results suggest that autonomous/self-criticals, with lower levels of depression, lose their protective bias after the occurrence of a congruent stressor, and demonstrate an "even-handed" attentional style characteristic of subjects with higher levels of depression. See Figure 8.

In the interpersonal threat, or incongruent threat, condition, planned t-tests revealed that autonomous/self-critical subjects, with lower levels of depression, demonstrated an "even-handed" attentional style, with means for ANEGNEU (.44), ANEGPOS (.47), and APOSNEU (.54), not significantly differing from .50, $t(14) = -$

Figure 7. Mean proportions of trials in the neutral condition in which target achievement words were chosen by autonomous/self-criticals as a function of level of depression.

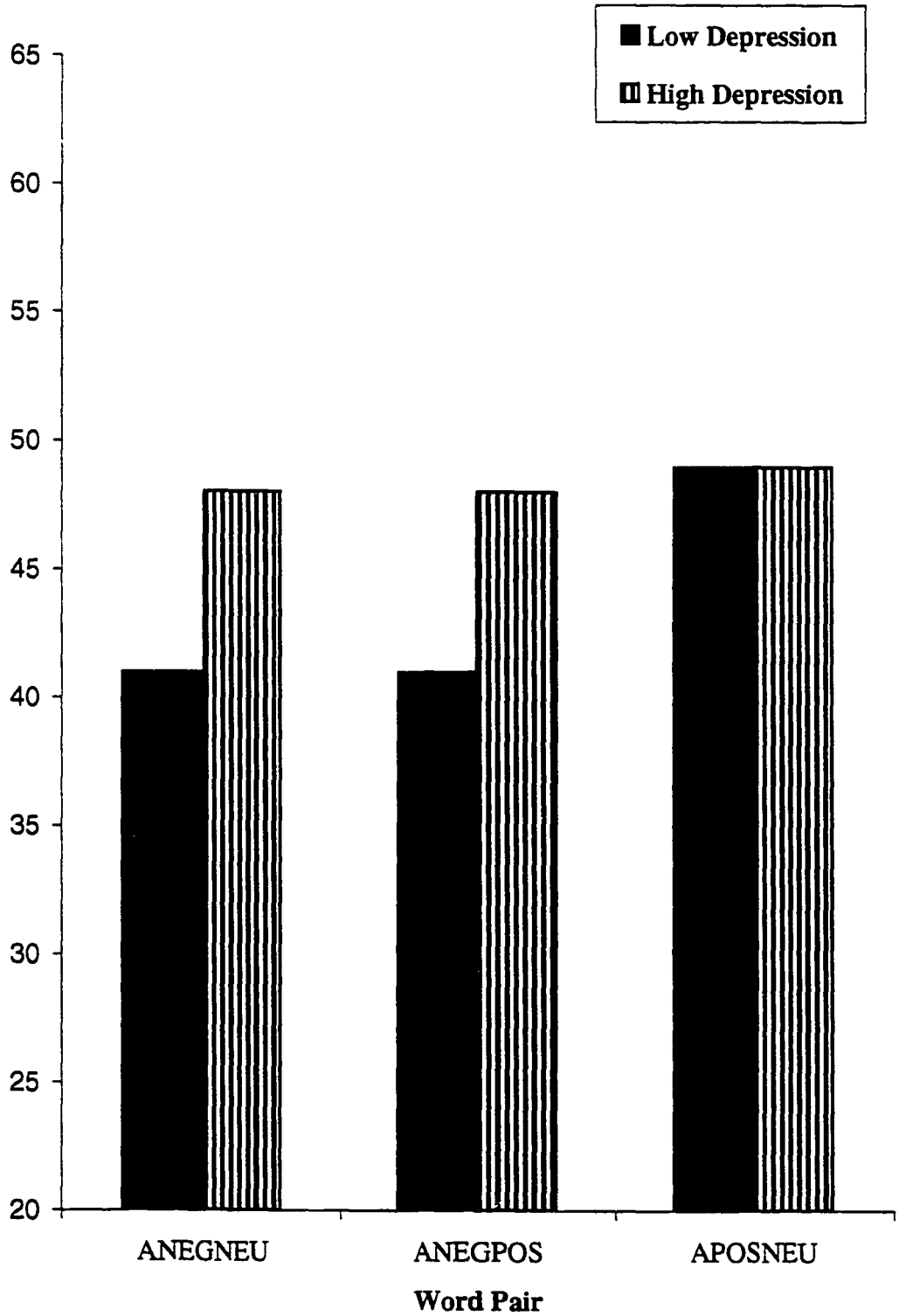
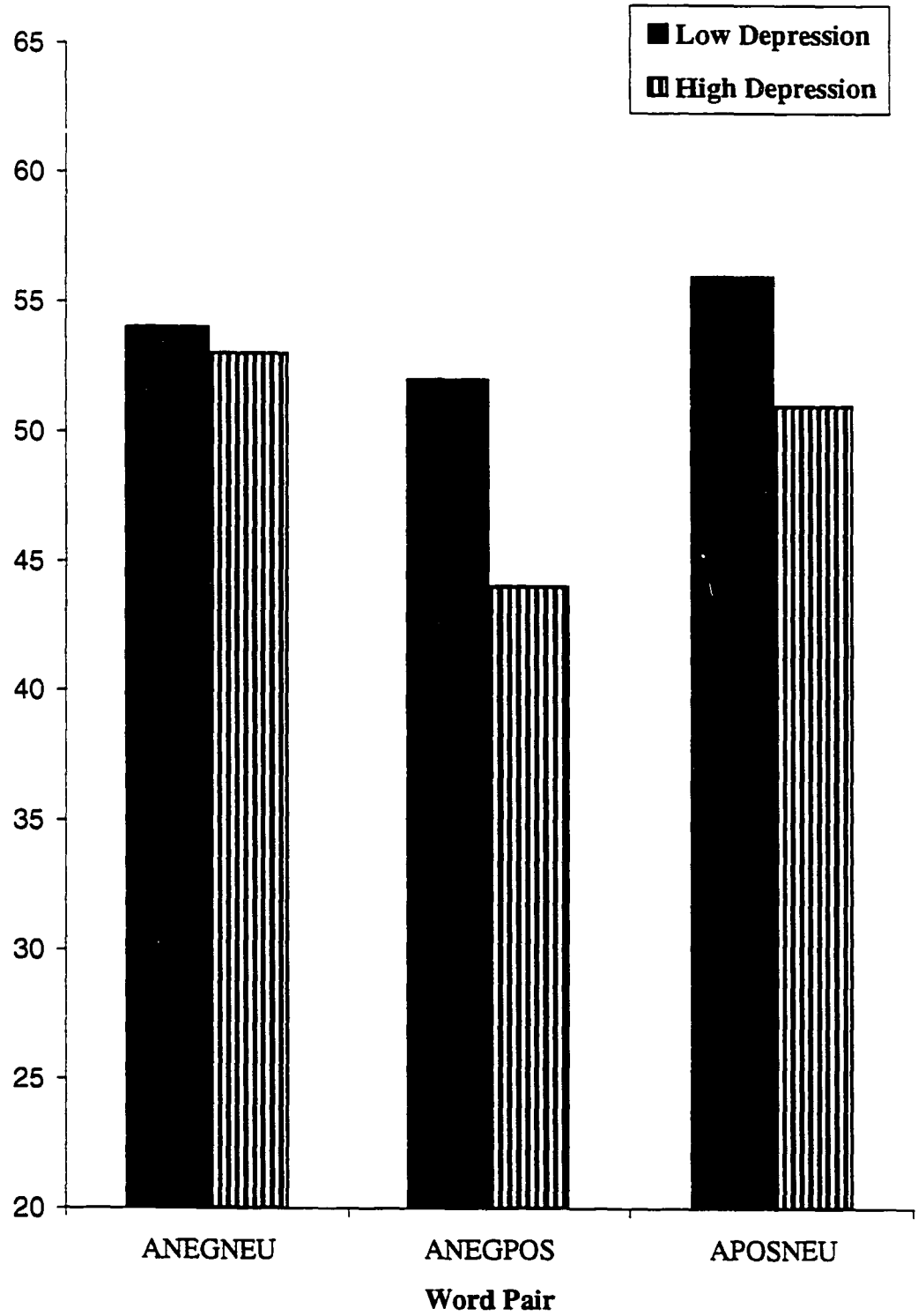


Figure 8. Mean proportions of trials in the achievement threat condition in which target achievement words were chosen by autonomous/self-criticals s as a function of level of depression.



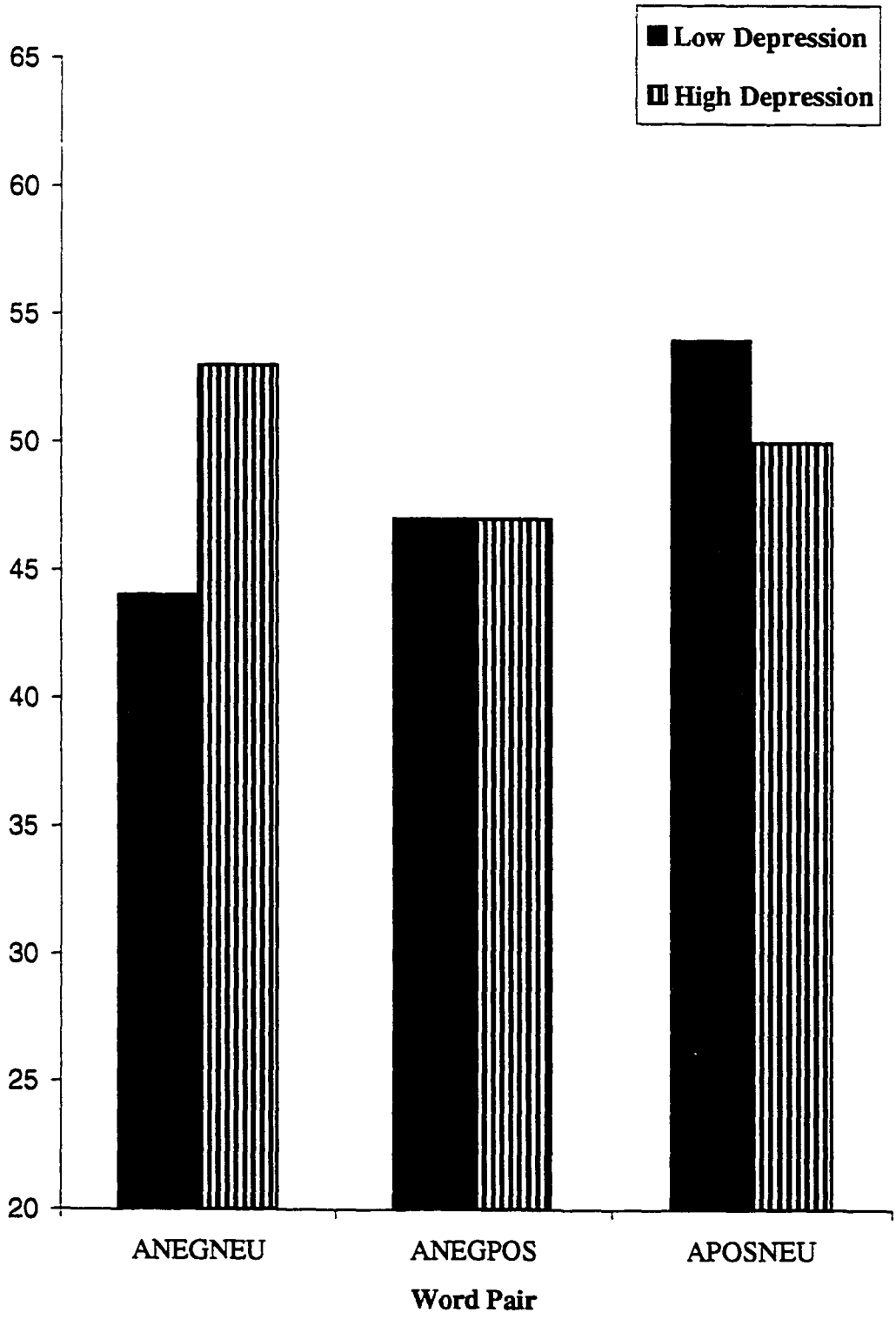
1.89, p=.07, t(14)=.95, n.s., and t(14)= 1.04, n.s., respectively. Similarly, autonomous/self-critical subjects, with higher levels of depression, demonstrated an "even-handed" attentional style, with means for ANEGNEU (.53), ANEGPOS (.47), and APOSNEU (.50), not significantly differing from .50, t(16)= .79, n.s., t(16)= -1.17, n.s., and t(16)= -.04, n.s., respectively. These results suggest that even after the occurrence of an *incongruent* threat, autonomous/self-critical subjects, with low levels of depression, lose their protective bias and demonstrate an "even-handed" attentional style characteristic of subjects with higher levels of depression. See Figure 9.

Pattern analyses were also conducted for autonomous/self-critical individuals to the interpersonal target words (i.e., INEGNEU, INEGPOS, IPOSNEU) in each of the three conditions. Results consistent with the congruency hypothesis would show that autonomous/self-criticals, with lower levels of depression, demonstrated a positive or protective bias after the neutral and interpersonal threat conditions, and an "even-handed" attentional style after the achievement threat condition. In comparison, results consistent with the DAH would show that autonomous/self-criticals, with lower levels of depression, demonstrated a positive or protective bias in the neutral condition, and an "even-handed" attentional style after the interpersonal *and* achievement threat conditions. Autonomous/self-critical subjects, with higher levels of depression, were expected to demonstrate an "even-handed" attentional style to the word pairs across all conditions.

In the neutral condition, planned t-tests revealed that autonomous/self-critical subjects, with lower levels of depression, demonstrated a positive bias, with the means for INEGNEU (.36), and INEGPOS (.38), being significantly less than .50, t(14)= -2.89, p<.05 and t(14) = -2.27, <.05, respectively, and the mean for IPOSNEU (.61) being significantly greater than .50, t(14)= 4.83, p<.001. In comparison, autonomous/self-critical subjects, with higher levels of depression, demonstrated an "even-handed" attentional style to the INEGNEU (.55), t(19)= 1.58, n.s., INEGPOS (.49), t(19)=-.33, n.s., and IPOSNEU (.56) word pairs, t(19)= 1.47, n.s.

In the interpersonal threat condition, autonomous/self-critical subjects, with lower levels of depression, demonstrated an "even-handed" attentional style, with means for INEGNEU (.47), INEGPOS (.46), and IPOSNEU (.51), not significantly

Figure 9. Mean proportions of trials in the interpersonal threat condition in which target achievement words were chosen by autonomous/self-criticals as a function of level of depression.



differing from .50, t(14)= -.83, n.s., t(14)= -.95, n.s., and t(14)= .32, n.s., respectively. Similarly, autonomous/self-critical subjects, with higher levels of depression, demonstrated an "even-handed" attentional style to the INEGNEU (.50), t(16)= .04, n.s., INEGPOS (.51), t(16)=-.30, n.s., and IPOSNEU (.51) word pairs, t(16)= .40, n.s.

Last, in the achievement threat condition autonomous/self-critical subjects, with lower levels of depression, demonstrated an "even-handed" attentional style to the INEGNEU (.47), t(13)=-1.03, n.s., INEGPOS (.46), t(13)= -1.51, n.s., and IPOSNEU (.54), t(13)= 1.45, word pairs, as did autonomous/self-criticals with higher levels of depression, INEGNEU (.56), t(16)=1.57, n.s., INEGPOS (.48), t(16)= -.47, n.s., and IPOSNEU (.50), t(16)= -.07.

Overall, the results for autonomous/self-critical subjects provide much better support for DAH than the congruency hypothesis. Autonomous/self-criticals, with lower levels of depression, demonstrated a protective bias (to the achievement-based words) and positive bias (to the interpersonal words) in the neutral condition, and an entire loss of these biases, and an "even-handed" attentional style, after imagining *both* the congruent and incongruent threats.

A summary of the results from the pattern analyses for autonomous/self-critical subjects, with lower and higher levels of depression, on the interpersonally-based word pairs can be found in Table 11-A, and on the achievement-based word pairs can be found in Table 11-B. In the interest of completeness, a traditional ANOVA was also conducted on the DOAT and the results can be found in Appendix G.

Feelings Assessment Questionnaire.

To reiterate briefly, the FAQ was designed to evaluate the types of concerns and/or worries that sociotropic/dependent and autonomous/self-critical individuals experience after different types of events. The FAQ was divided into two sections: interpersonally-based concerns ("interpersonal worry") and achievement-based concerns ("achievement worry"). Higher scores on each scale reflect endorsement of more concerns in that area.

Table 11-A. *Patterns of attentional allocation on the DOAT, on the interpersonally-based word pairs, for autonomous/self-critical individuals, with low and high levels of depression, in each condition.*

	Condition		
Level of Depression	Neutral	Int. Threat	Ach. Threat
Low Depression	Positive Bias	Even-handed	Even-handed
High Depression	Even-handed	Even-handed	Even-handed

Note. Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat.

Table 11-B. *Patterns of attentional allocation on the DOAT, on the achievement-based word pairs, for autonomous/self-critical individuals, with low and high levels of depression, in each condition.*

	Condition		
Level of Depression	Neutral	Int. Threat	Ach. Threat
Low Depression	Protective Bias	Even-handed	Even-handed
High Depression	Even-handed	Even-handed	Even-handed

Note. Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat.

Results consistent with the congruency hypothesis would show that sociotropic/dependent and autonomous/self-critical individuals reported having significantly more concerns following the congruent threat than following the incongruent threat or the neutral situation. In comparison, results consistent with the DAH would show that sociotropic/dependent and autonomous/self-critical individuals reported having an equal number of concerns following congruent *and* incongruent negative threats. Means and standard deviations for achievement worry and interpersonal worry as assessed by the FAQ scales for sociotropic/dependent and autonomous/self-critical subjects can be found in Table 12. To ease illustration, depression scores were categorized into high depression and low depression by dichotomizing depression scores at the mean.

Analysis of Variance using General Linear Modeling procedures was performed on achievement worry with Level of Depression, Personality Style (Sociotropic/Dependent, Autonomous/Self-Critical), and Condition (Neutral, Interpersonal Threat, Achievement Threat) as independent variables. This revealed a main effect for Condition, $F(2,75)=103.75$, $p<.001$, on achievement worry. Post-hoc Scheffé analysis of means showed that *all* individuals endorsed the least number of achievement worries after the neutral condition ($M=27.6$), a significantly greater number of achievement worries after the interpersonal condition ($M=38.3$), and the significantly greatest number of achievement worries after the achievement threat condition ($M=44.4$).

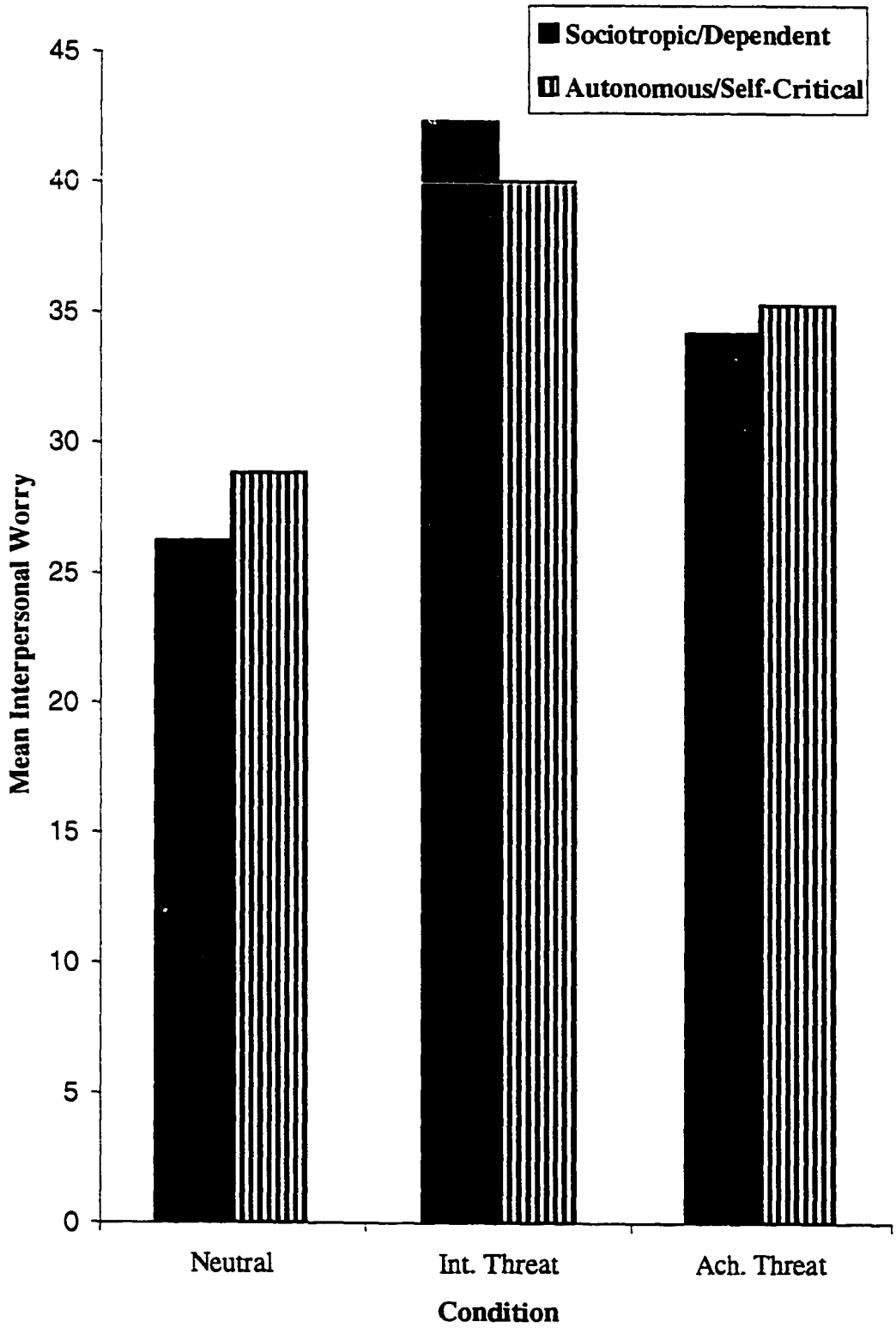
Analysis of Variance using General Linear Modeling procedures was also performed on interpersonal worry. This revealed a significant main effect for Condition, $F(2,75)=86.75$, $p<.001$, but this was qualified by a significant two-way interaction between Condition and Personality Style, $F(2,75)=3.30$, $p<.05$, on interpersonal worry. The interaction between Condition and Personality Style on interpersonal worry is illustrated in Figure 10. Analysis of the simple main effects for each personality style revealed that Condition was significant for both sociotropic/dependents, $F(2,36)=77.25$, $p<.001$, and autonomous/self-criticals, $F(2,39)=25.69$, $p<.001$. For both sociotropic/dependent and autonomous/self-criticals,

Table 12. *Means and standard deviations for achievement worry and interpersonal worry for sociotropic/dependent and autonomous/self-critical individuals as a function of condition and level of depression.*

Personality Style & Depression Level	Condition					
	Neutral		Int. Threat		Ach. Threat	
	FAQ-A	FAQ-I	FAQ-A	FAQ-I	FAQ-A	FAQ-I
Soc./Dep.						
Low Dep'n	27.07 (2.05)	26.07 (3.32)	37.27 (4.32)	42.20 (2.91)	43.06 (5.35)	33.06 (3.68)
High Dep'n	26.18 (1.83)	26.45 (2.38)	40.83 (5.97)	42.23 (4.00)	44.18 (4.73)	35.91 (3.39)
Aut./S.C.						
Low Dep'n	26.73 (1.98)	27.87 (3.16)	35.20 (6.38)	38.40 (5.04)	43.08 (4.34)	33.38 (5.87)
High Dep'n	28.10 (3.88)	29.45 (5.08)	39.53 (5.23)	41.59 (3.89)	44.18 (5.25)	36.82 (4.84)

Note. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism, Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat, FAQ-A = achievement worry as assessed by the FAQ, FAQ-I = interpersonal worry as assessed by the FAQ, Low Dep'n = Low Depression, High Dep'n = High Depression. Standard deviations are presented in brackets.

Figure 10. Mean interpersonal worry as a function of personality style and condition.



post-hoc Scheffé analysis of means demonstrated that interpersonal worry was significantly lower after the neutral condition (M=26.2 and 28.9, respectively) compared to the two threat conditions, and significantly higher in the interpersonal threat condition (M=42.3 and 40.1. respectively) than in the achievement threat condition (M=34.2 and 35.3, respectively).

The results from the FAQ suggest that both sociotropic/dependent and autonomous/self-critical subjects endorse having significantly *more* interpersonal worries after the interpersonal threat than after the achievement threat, and significantly *more* achievement worries after the achievement threat compared to the interpersonal threat. Both sociotropic/dependents and autonomous/self-criticals endorsed having a significant number of worries after both types of threats compared to the neutral condition. These results are more consistent with the DAH than with the congruency hypothesis.

Narrative Measures Analyses.

Thought Sample of Concerns. For the thought sample of concerns, subjects were asked to write down the thoughts, concerns, and/or worries that they would have if the imagined situation had actually happened to them. Subjects' answers were coded for valence (i.e., positive, negative, or neutral) and domain of statement (i.e., achievement-based, interpersonally-based, or undifferentiated). Statements that were neutral in valence or undifferentiated in domain were included in the coding system in an attempt to code all possible answers, but they were not included in the analyses because they did not relate directly to the hypotheses of the current study. As the purpose of the thought sample was to examine concerns and/or worries, an overall negative score was calculated for achievement-based and interpersonally-based statements by subtracting the positive statements from the negative ones. This resulted in a "net" level of reported negative statements, or concerns, for the achievement and interpersonal domains.

Analysis of Variance using General Linear Modeling procedures was performed on the net negative score with Level of Depression, Condition (Neutral, Interpersonal Threat, Achievement Threat), and Personality Style

(Sociotropic/Dependent, Autonomous/Self-Critical) as between-subjects factors, and Domain (Achievement, Interpersonal) as a within-subjects factor. Means and standard deviations for the net level of negative statements can be found in Table 13. The results showed a significant main effect for Domain, $F(1,76)=6.24$, $p<.05$, but this was qualified by a significant two-way interaction between Domain and Condition, $F(2,76)=27.77$, $p<.001$. Post-hoc Scheffé analysis of means showed that all subjects reported having more concerns after the two threat conditions ($M=2.7$) compared to the neutral condition ($M=.0$), and that all subjects reported significantly greater interpersonal worries after the interpersonal threat ($M=4.0$) compared to the achievement threat ($M=2.3$), and significantly greater achievement worries after the achievement threat ($M=3.9$) compared to the interpersonal threat ($M=.7$). See Figure 11. These results suggest that sociotropic/dependents and autonomous/self-criticals report having concerns after both congruent *and* incongruent threats, and that the content of their concerns tends to match the content of the threat rather, than their underlying vulnerability. These results are more consistent with the predictions made by the DAH than by the congruency hypothesis.

Recruitment of Personal Memories: Latencies to Memories. The length of time required to recruit the first personal memory to positive and negative achievement and interpersonal words was analyzed as an index of schema accessibility. The shorter the latency to respond, the greater the hypothesized accessibility of the schema. Latencies to the first positive achievement, negative achievement, positive interpersonal, and negative interpersonal memories, were calculated by averaging the latency to the two cue words for each of these areas.

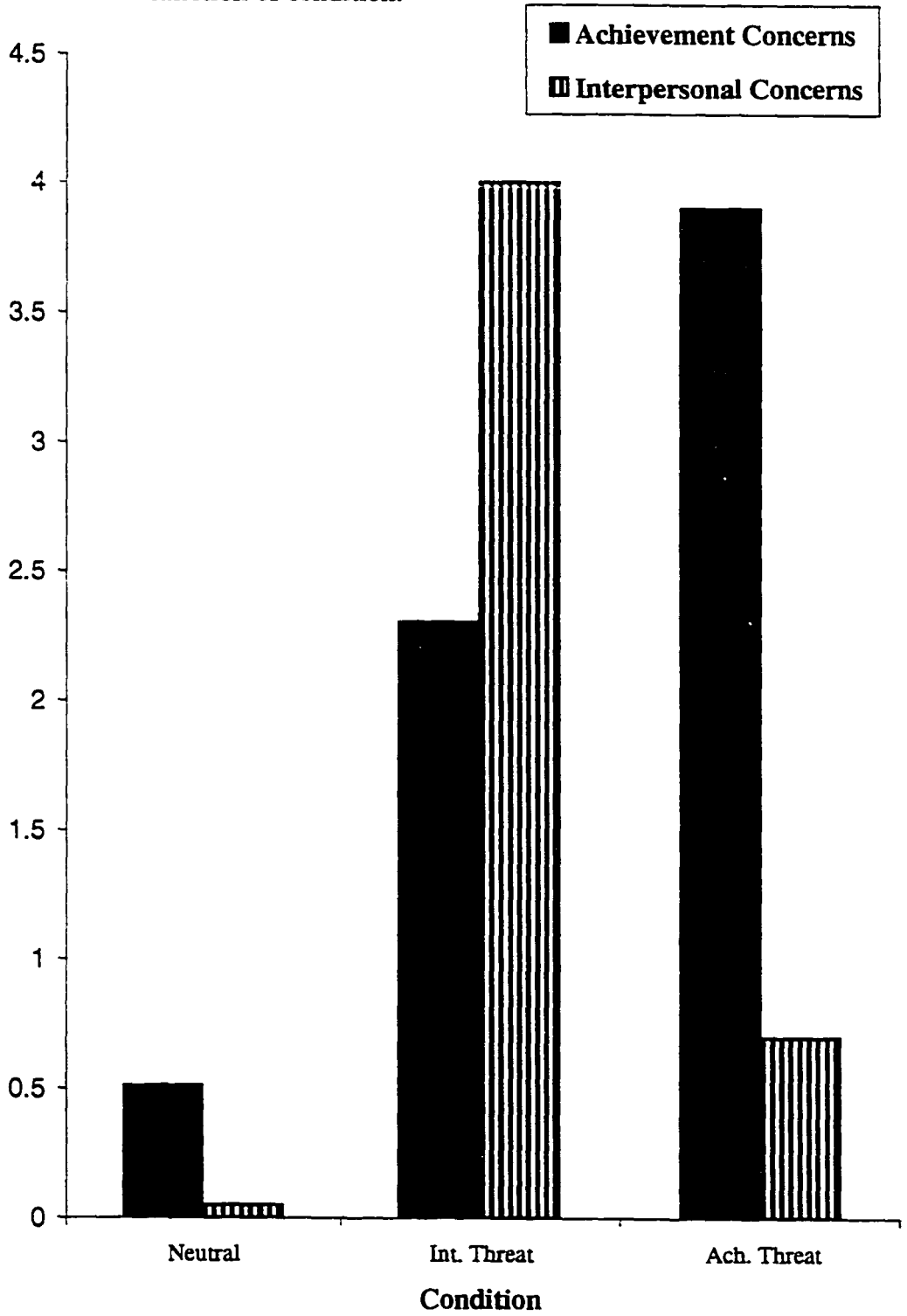
Analysis of Variance using General Linear Modeling procedures was performed with Level of Depression, Condition (Neutral, Interpersonal Threat, Achievement Threat) and Personality Style (Sociotropic/Dependent, Autonomous/Self-Critical) as between-subjects factors and Domain (Achievement, Interpersonal) and Valence (Positive, Negative) as repeated-measures factors. Mean latency, in seconds, was the dependent variable. ANOVA revealed a main effect for Domain, $F(1,65)=5.53$, $p<.05$, but this was qualified by significant

Table 13. *Net number of statements, or concerns, reported by sociotropic/dependent and autonomous/self-critical subjects as a function of condition, level of depression, and domain.*

Domain of Concerns, Personality Style & Depression Level	Condition		
	Neutral	Int. Threat	Ach. Threat
Interpersonal Concerns			
Sociotropy/Dependency			
Low Depression	-.33 (.61)	4.60 (3.60)	.50 (.82)
High Depression	-.05 (.44)	4.50 (3.26)	.73 (.90)
Autonomy/Self-Criticism			
Low Depression	-.13 (.64)	4.07 (2.96)	.43 (.85)
High Depression	.15 (.49)	4.18 (2.88)	.65 (.86)
Achievement Concerns			
Sociotropy/Dependency			
Low Depression	.26 (1.16)	2.27 (1.94)	4.75 (3.49)
High Depression	.73 (.90)	1.25 (1.71)	6.09 (4.98)
Autonomy/Self-Criticism			
Low Depression	-.13 (1.99)	1.27 (1.94)	.36 (4.14)
High Depression	.90 (2.20)	3.18 (3.71)	4.82 (3.54)

Note. Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat. Standard deviations are presented in brackets.

Figure 11. Net number of interpersonally-based and achievement-based concerns reported by all subjects as a function of condition.



two-way interactions between Domain and Valence, $F(1,65)=7.61$, $p<.01$, Domain and Level of Depression, $F(26,65)=1.85$, $p<.05$, and Domain and Personality Style, $F(1,65)=5.12$, $p<.05$. There was also a significant two-way interaction between Valence and Level of Depression, $F(26,65)=9.28$, $p<.001$. Means and standard deviations can be found in Table 14.

For the significant two-way interaction between Domain and Valence, $F(1,65)=7.61$, $p<.01$, analysis of the simple effects was conducted separately for latency to positive and negative memories. ANOVA revealed that latency to recruit memories in the achievement and interpersonal domains was significant for negative memories, $F(1,159) = 20.12$, $p<.001$, but not for positive memories, $F(1,159)=1.28$, n.s. All subjects required less time to recruit negative achievement memories ($M=5.1$) than negative interpersonal memories ($M=6.4$).

For the significant two-way interaction between Domain and Personality Style, $F(1,65)=5.12$, $p<.05$, analysis of the simple effects for each Personality Style revealed that latency to Domain was significant for autonomous/self-critical individuals, $F(1,83)=14.50$, $p<.001$, but not for sociotropic/dependent individuals, $F(1,69)= <1$, n.s Post-hoc Scheffé analysis of means, in autonomous/self-critical individuals, revealed that autonomous/self-criticals required significantly less time to recruit achievement-based memories ($M=5.2$) than interpersonally-based memories ($M=6.6$).

For the significant two-way interaction between Domain and Level of Depression, $F(26,65)=1.85$, $p<.05$, analysis of the simple effects was examined separately for latency to interpersonally- and achievement-based memories. ANOVA revealed that Level of Depression was significant for latency to recruit memories in the achievement domain, $F(26,131)=2.46$, $p<.001$, but not in the interpersonal domain, $F(26,135)=1.22$, n.s. The interaction between Domain and Level of Depression is illustrated in Figure 12. Examination of Figure 12 reveals that subjects with lower levels of depression required more time to generate an achievement-based memory than subjects with higher levels of depression.

For the significant interaction between Valence and Level of Depression, $F(26,65)=9.28$, $p<.001$, analysis of the simple effects was conducted separately for latency to positive and negative memories. ANOVA revealed that Level of

Table 14. *Mean latency (in seconds) required to generate positive and negative personal memories by sociotropic/dependent and autonomous self-critical subjects as a function of condition, level of depression, and domain. Standard deviations are presented in brackets.*

Condition, Personality Style & Depression Level	Domain of Statement			
	Achievement		Interpersonal	
	Positive	Negative	Positive	Negative
Neutral				
Soc./Dep.				
Low Dep'n	4.64 (.69)	4.46 (1.38)	5.39 (2.07)	4.57 (1.54)
High Dep'n	5.06 (2.74)	6.44 (6.70)	4.83 (1.89)	5.94 (2.63)
Aut./S.C.				
Low Dep'n	4.58 (1.79)	3.83 (1.56)	3.87 (1.46)	6.87 (4.48)
High Dep'n	5.25 (4.36)	5.30 (4.67)	6.92 (5.53)	8.83 (6.55)
Int. Threat				
Soc./Dep.				
Low Dep'n	4.61 (1.29)	4.81 (1.18)	3.81 (1.56)	4.96 (1.61)
High Dep'n	8.00 (15.30)	5.36 (4.29)	8.03 (9.48)	6.25 (2.64)
Aut./S.C.				
Low Dep'n	12.86 (8.67)	12.07 (8.98)	13.50 (8.87)	4.57 (10.28)
High Dep'n	17.35 (22.12)	11.88 (7.95)	15.82 (25.12)	3.41 (8.20)

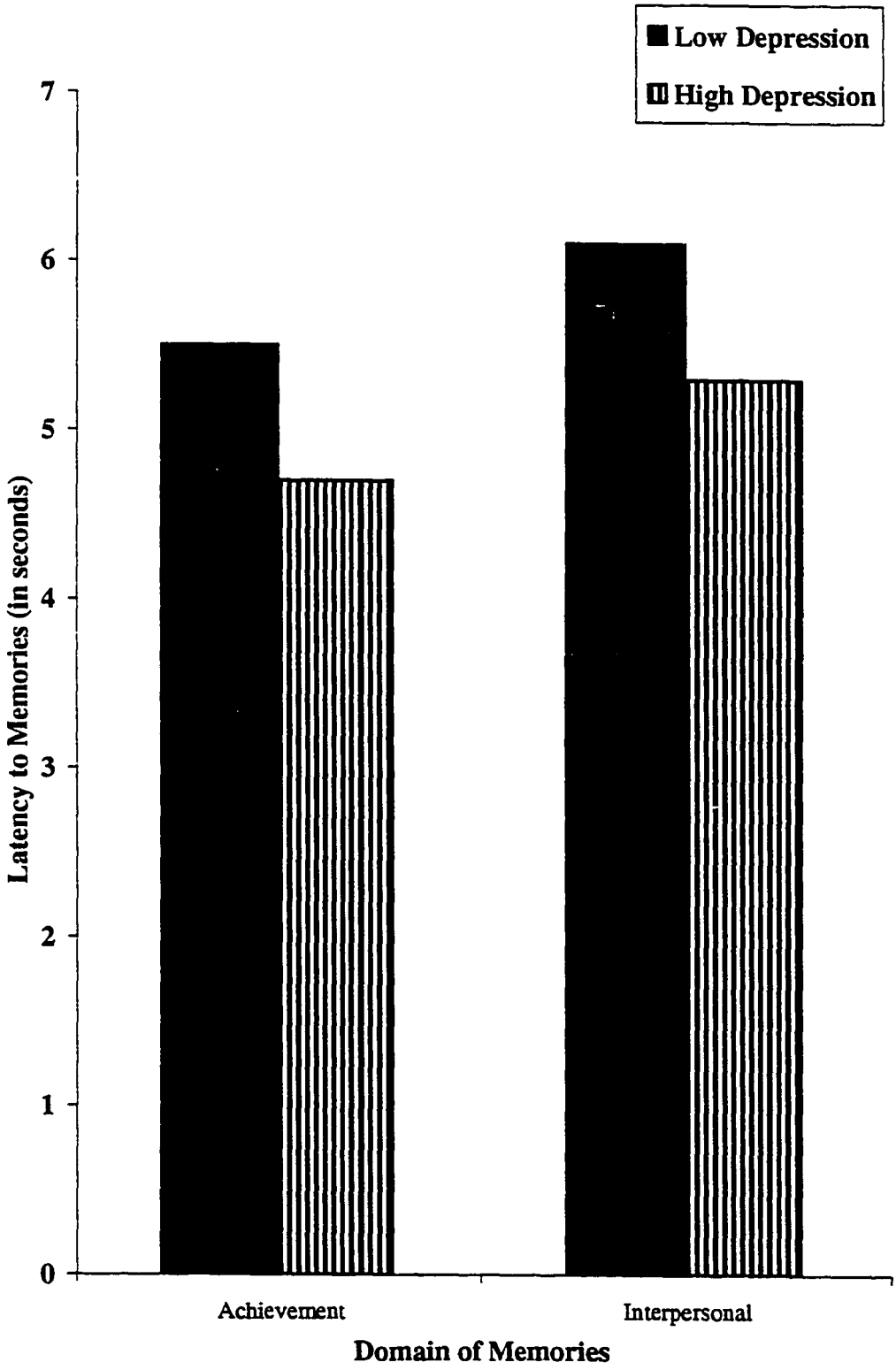
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Table 14 continued.

Condition, Personality Style & Depression Level	Domain of Statement			
	Achievement		Interpersonal	
	Positive	Negative	Positive	Negative
Ach. Threat				
Soc./Dep.				
Low Dep'n	4.83 (2.02)	4.80 (2.27)	4.03 (1.75)	5.07 (2.52)
High Dep'n	4.67 (1.25)	4.67 (1.17)	4.67 (3.10)	6.17 (3.07)
Aut./S.C.				
Low Dep'n	5.15 (2.57)	5.85 (2.40)	5.42 (2.83)	6.15 (3.08)
High Dep'n	5.07 (2.74)	4.97 (1.55)	6.33 (3.24)	7.00 (2.98)

Note. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism. Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat, Low Dep'n = Low Depression, High Dep'n = High Depression.

Figure 12. Latency to first achievement- and interpersonally-based memories as a function of level of depression.

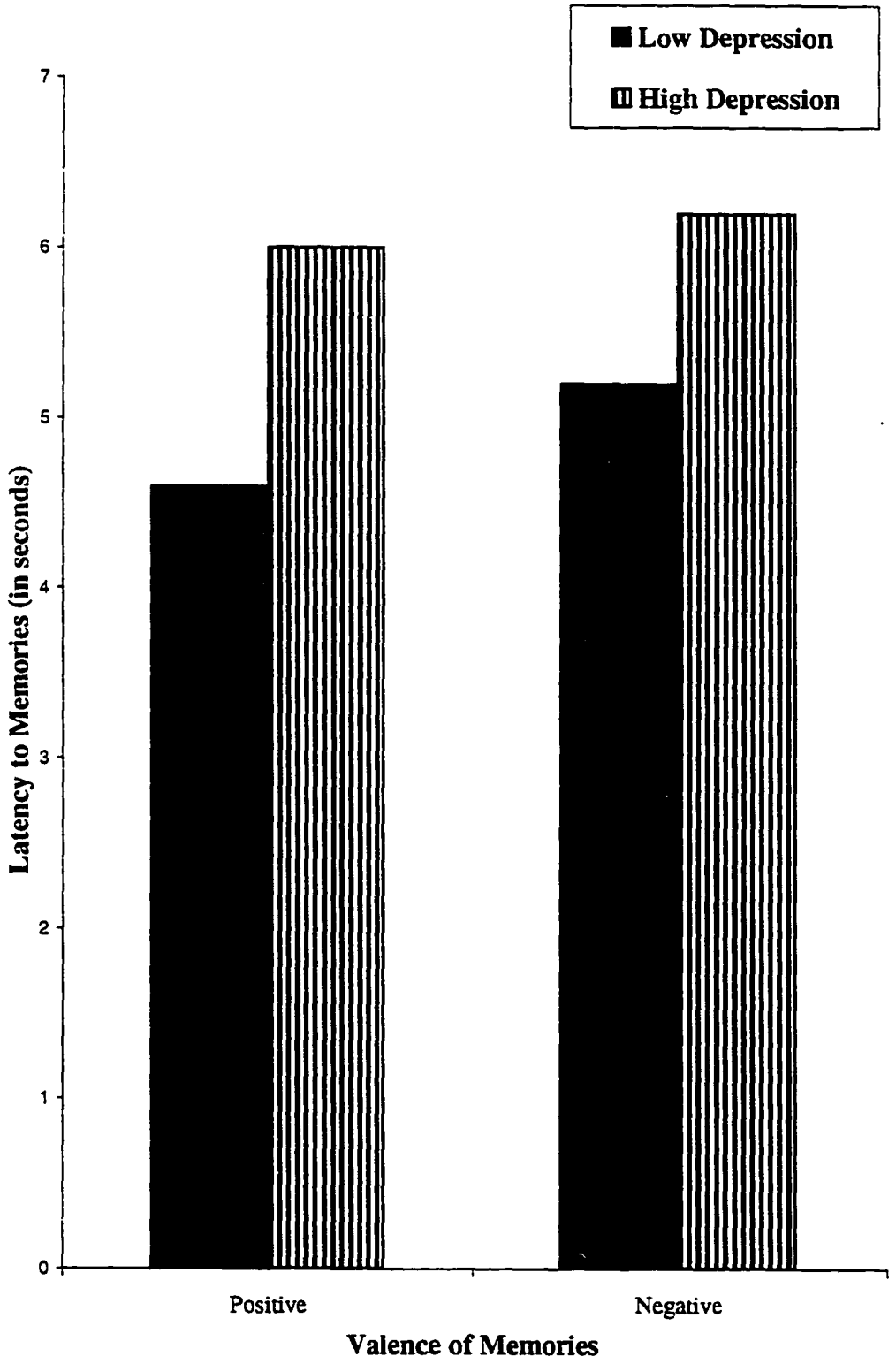


Depression was significant for latency to recruit positive memories, F(26, 133)=3.00, p<.001, but not for latency to recruit negative memories, F(26,133)=1.14, n.s. The interaction between Valence and Level of Depression is illustrated in Figure 13. Examination of the means reveals that subjects with lower levels of depression require less time to recruit positive memories than subjects with higher levels of depression.

Overall, the latency results suggest that that subjects with lower levels of depression were faster at recruiting positive memories, but were slower to recruit achievement-based memories, than subjects with higher levels of depression. Subjects with lower levels of depression may have recruited positive memories faster than subjects with higher levels of depression because positive material was more accessible to them as a consequence of their less depressed mood. The latency results also showed that all subjects recalled negative achievement-based memories faster than negative interpersonally-based memories, but autonomous/self-criticals were faster at recruiting achievement-based memories than interpersonally-based memories. The fact that autonomous/self-criticals were faster at recruiting achievement-based memories than interpersonally-based memories supports a schema-based model of personality (Cane et al., 1986), which postulates that achievement-based material should be generally more available to autonomous/self-criticals than interpersonally-based material. Overall, the latency results were more consistent with a schema-based model of personality (Cane et al., 1986) than with the congruency hypothesis or the DAH.

Recruitment of Personal Memories: Number of Memories Generated. Subjects were presented with a list of positive and negative undifferentiated, achievement-based, and interpersonally-based words, and were asked to recruit personal memories that would provide evidence of how they were personally *similar* to the given the word (e.g., "achieving", "rejected"). Subjects were asked to recruit personal memories to two words of each type. The overall number of supportive personal memories generated to positive achievement, negative achievement, positive interpersonal, and negative interpersonal words was calculated by combining the evidence generated to the two cue words in each of these areas.

Figure 13. Latency to first positive and negative memories as a function of level of depression.



Analysis of Variance using General Linear Modeling procedures was performed with Level of Depression, Condition (Neutral, Interpersonal Threat, Achievement Threat), and Personality Style (Sociotropic/Dependent, Autonomous/Self-Critical) as between-subjects factors, Domain (Achievement, Interpersonal) and Valence (Positive, Negative) as within-subjects factors, and the total number of personal supportive memories as the dependent variable. The results showed significant main effects for Domain, $F(1,74)=5.71$, $p<.05$, and Valence, $F(1,74)=32.57$, $p<.001$, significant two-way interactions between Valence and Level of Depression, $F(26,74)=1.77$, $p<.05$, Domain and Valence, $F(1,74)=10.57$, $p<.01$, and Domain and Personality Style, $F(1,74)=33.97$, $p<.001$. Means and standard deviations for the overall number of positive and negative memories recruited can be found in Table 15. As the main effects for Domain and Valence were subsumed within the two-way interactions between Domain and Personality Style, Domain and Valence, and Valence and Level of Depression, only the two-way interactions were decomposed.

For the significant interaction between Domain and Personality Style, $F(1,74)=33.97$, $p<.001$, analysis of the simple effects was conducted separately for each Personality Style. ANOVA revealed that Domain was significant for sociotropic/dependent individuals, $F(1,77)=19.11$, $p<.001$, and for autonomous/self-critical individuals, $F(1,92)=72.5$, $p<.001$. Examination of the means reveals that sociotropic/dependents recruited significantly more interpersonally-based memories ($M=6.6$) than achievement-based memories ($M=5.6$), and autonomous/self-criticals recruited significantly more achievement-based memories ($M=7.0$) than interpersonally-based memories ($M=4.6$).

For the significant two-way interaction between Domain and Valence, $F(1,74)=32.57$, $p<.001$, analysis of the simple effects was done separately for interpersonally- and achievement-based memories. ANOVA revealed that Valence was significant for achievement-based memories, $F(1,170)=25.12$, $p<.001$, and for interpersonally-based memories, $F(1,170)=77.62$, $p<.001$. All subjects recruited more positive achievement-based ($M=13.8$) and interpersonally-based ($M=13.3$) memories than negative achievement-based ($M=11.7$) and negative interpersonally-based

Table 15. *Number of positive and negative personal memories generated by sociotropic/dependent and autonomous self-critical subjects as a function of condition, level of depression, and domain. Standard deviations are presented in brackets.*

Condition. Personality Style & Depression Level	Domain of Statement			
	Achievement		Interpersonal	
	Positive	Negative	Positive	Negative
Neutral				
Soc./Dep.				
Low Dep'n	12.60 (4.58)	7.67 (3.62)	15.87 (5.28)	6.60 (4.70)
High Dep'n	12.73 (5.60)	6.09 (4.70)	14.81 (11.11)	9.18 (5.88)
Aut./S.C.				
Low Dep'n	14.14 (10.42)	13.29 (8.00)	13.14 (8.50)	6.28 (5.18)
High Dep'n	14.52 (10.01)	13.79 (7.30)	9.21 (5.60)	8.79 (7.28)
Int. Threat				
Soc./Dep.				
Low Dep'n	14.92 (7.78)	10.38 (3.59)	19.08 (10.84)	13.00 (7.29)
High Dep'n	11.00 (7.50)	8.92 (5.63)	14.25 (6.52)	12.08 (6.20)
Aut./S.C.				
Low Dep'n	13.36 (9.20)	12.93 (9.89)	13.21 (8.93)	8.14 (7.93)
High Dep'n	13.50 (6.10)	12.62 (6.76)	9.75 (5.90)	8.23 (3.07)

Table 15 continued on the next page.

Table 15 continued.

Condition, Personality Style & Depression Level	Domain of Statement			
	Achievement		Interpersonal	
	Positive	Negative	Positive	Negative
Ach. Threat				
Soc./Dep.				
Low Dep'n	14.69 (7.25)	12.50 (7.23)	16.94 (10.25)	11.19 (8.21)
High Dep'n	11.54 (5.92)	11.18 (4.17)	15.27 (10.07)	10.82 (6.85)
Aut./S.C.				
Low Dep'n	15.43 (13.08)	15.21 (10.91)	13.50 (10.27)	7.29 (6.06)
High Dep'n	15.25 (7.55)	13.56 (5.58)	8.50 (4.49)	5.87 (3.34)

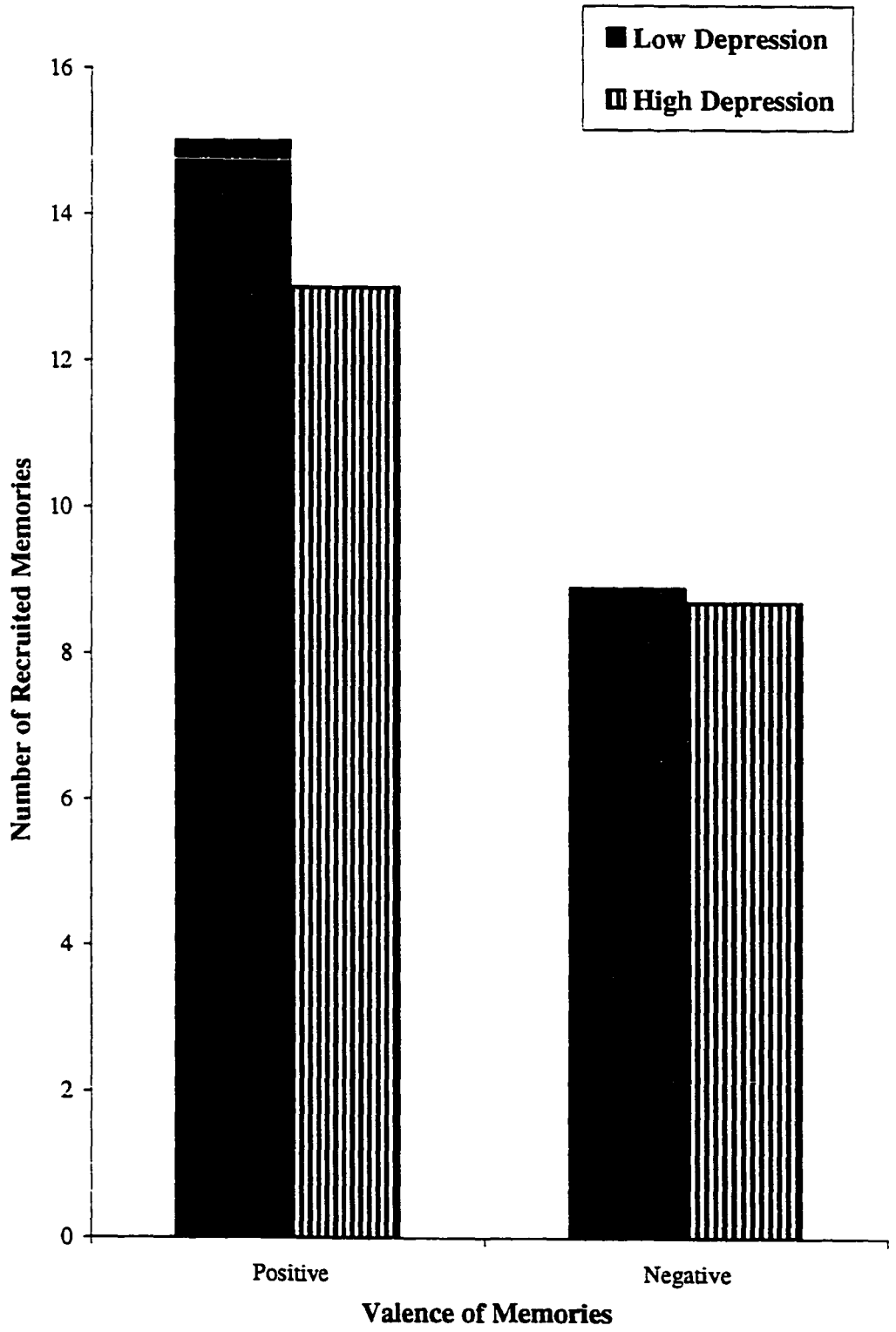
Note. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism, Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat, Low Dep'n = Low Depression, High Dep'n = High Depression.

(M=8.8) memories, but this difference was more pronounced for interpersonally-based memories.

Last, for the significant two-way interaction between Valence and Level of Depression, $F(26,74)=1.77$, $p<.05$, simple effects examined separately for positive and negative memories. ANOVA revealed that Level of Depression was not significant for positive memories, $F(26,144)<1$, n.s., or for negative memories, $F(26,144)<1$, n.s. The interaction between Valence and Level of Depression is illustrated in Figure 14. For ease of illustration, depression scores were dichotomized at the mean. Examination of Figure 14 reveals that all subjects recruited more positive than negative memories, but individuals with lower levels of depression recalled more positive memories than individuals with higher levels of depression.

Overall, the results from the memory recruitment task suggest that sociotropic/dependents generated more interpersonally-based than achievement-based memories, and that autonomous/self-criticals generated more achievement-based than interpersonally-based memories. These results support a schema-based model of personality (Cane et al., 1986) which suggests that the content of cognitive products should differ between sociotropic/dependents and autonomous/self-criticals, such that sociotropic/dependents should have interpersonally-based material more available to them than achievement-based material, and autonomous/self-criticals should have achievement-based material more available to them than interpersonally-based material. The results from the memory recruitment task also demonstrated that all subjects recalled more positive than negative interpersonally-based and achievement-based memories, and that subjects with lower levels of depression recalled more positive memories than subjects with higher levels of depression. This was not unexpected, as nondepressed individuals are hypothesized to have more positive material in their self-schemata than mildly depressed individuals. Overall, the memory recruitment results were more consistent with predictions made by a schema-based model of personality (Cane et al., 1986) than by the congruency hypothesis or the DAH.

Figure 14. Number of positive and negative memories recruited as a function of level of depression.



Prediction of Future Behaviour. Subjects were asked to generate predictions about the types of events that might reasonably happen to them at three points in the future: the next week, the next year, and the next five to ten years. Predictions were coded as being positive or negative, as well as achievement-based or interpersonally-based. As the predicted effects were not expected to differ across time periods (MacLeod & Byrne, 1996), the total number of positive and negative achievement-based and interpersonally-based predictions was calculated by combining the predictions across the three time periods. In spite of combining the data in this way, the mean number of statements of each type was fairly small (positive achievement: M=9.0; positive interpersonal: M=4.9; negative achievement: M=.9; negative interpersonal: M=.4)

Analysis of Variance using General Linear Modeling procedures was performed with Level of Depression, Condition (Neutral, Interpersonal Threat, Achievement Threat), and Personality Style (Sociotropic/Dependent, Autonomous/Self-Critical) as between-subjects factors, Domain (Achievement, Interpersonal) and Valence (Positive, Negative) as repeated-measures factors, and the number of future predictions as the dependent variable. Means and standard deviations for the overall number of future behaviour predictions can be found in Table 16. Results showed significant main effects for Domain, $F(1,70)=98.61$, $p<.001$, and Valence, $F(1,70)=660.05$, $p<.001$, significant two-way interactions between Domain and Personality Style, $F(1,70)=5.68$, $p<.05$, Valence and Level of Depression, $F(26,70)=1.74$, $p<.05$, and Domain and Valence, $F(1,70)=75.80$, $p<.001$, and a significant three-way interactions between Valence, Condition, and Level of Depression, $F(36,70)=2.13$, $p<.01$, and Domain, Valence, and Level of Depression, $F(26,70)=1.74$, $p<.05$. As the main effects for Domain and Valence, and the two-way interactions between Valence and Level of Depression, and Domain and Valence, were subsumed within the higher order interactions, only the two-way interaction between Domain and Personality Style, and the three-way interactions were decomposed.

Table 16. *Total number of positive and negative future predictions by sociotropic/dependent and autonomous self-critical subjects as a function of condition, level of depression, and domain. Standard deviations are presented in brackets.*

Condition, Personality Style & Depression Level	Domain of Statement			
	Achievement		Interpersonal	
	Positive	Negative	Positive	Negative
Neutral				
Soc./Dep.				
Low Dep'n	9.07 (2.89)	.47 (.64)	5.87 (2.95)	.40 (1.30)
High Dep'n	7.10 (4.28)	.80 (.92)	6.50 (3.34)	.01 (.30)
Aut./S.C.				
Low Dep'n	9.00 (3.37)	1.29 (1.98)	4.57 (2.17)	.50 (1.09)
High Dep'n	8.11 (4.00)	1.28 (1.96)	4.72 (3.53)	1.11 (1.57)
Int. Threat				
Soc./Dep.				
Low Dep'n	9.85 (2.97)	.69 (1.11)	6.38 (3.07)	.23 (.60)
High Dep'n	6.92 (1.98)	1.00 (1.21)	5.33 (3.14)	.67 (1.23)
Aut./S.C.				
Low Dep'n	8.07 (4.41)	.50 (.85)	4.36 (3.32)	.21 (.58)
High Dep'n	9.94 (3.57)	.94 (1.00)	4.56 (2.66)	.37 (.81)

Table 16 continued on the next page.

Table 16 continued.

Condition, Personality Style & Depression Level	Domain of Statement			
	Achievement		Interpersonal	
	Positive	Negative	Positive	Negative
Ach. Threat				
Soc./Dep.				
Low Dep'n	9.00 (3.27)	.63 (1.15)	5.25 (3.26)	.31 (.60)
High Dep'n	9.00 (3.13)	.91 (.83)	5.55 (3.62)	.91 (1.04)
Aut./S.C.				
Low Dep'n	9.69 (2.95)	.85 (.90)	3.23 (1.74)	.23 (.60)
High Dep'n	8.06 (3.82)	1.81 (2.20)	3.37 (1.63)	.19 (.54)

Note. Soc./Dep. = Sociotropy/Dependency, Aut./S.C. = Autonomy/Self-Criticism, Int. Threat = Interpersonal Threat, Ach. Threat = Achievement Threat, Low Dep'n = Low Depression, High Dep'n = High Depression.

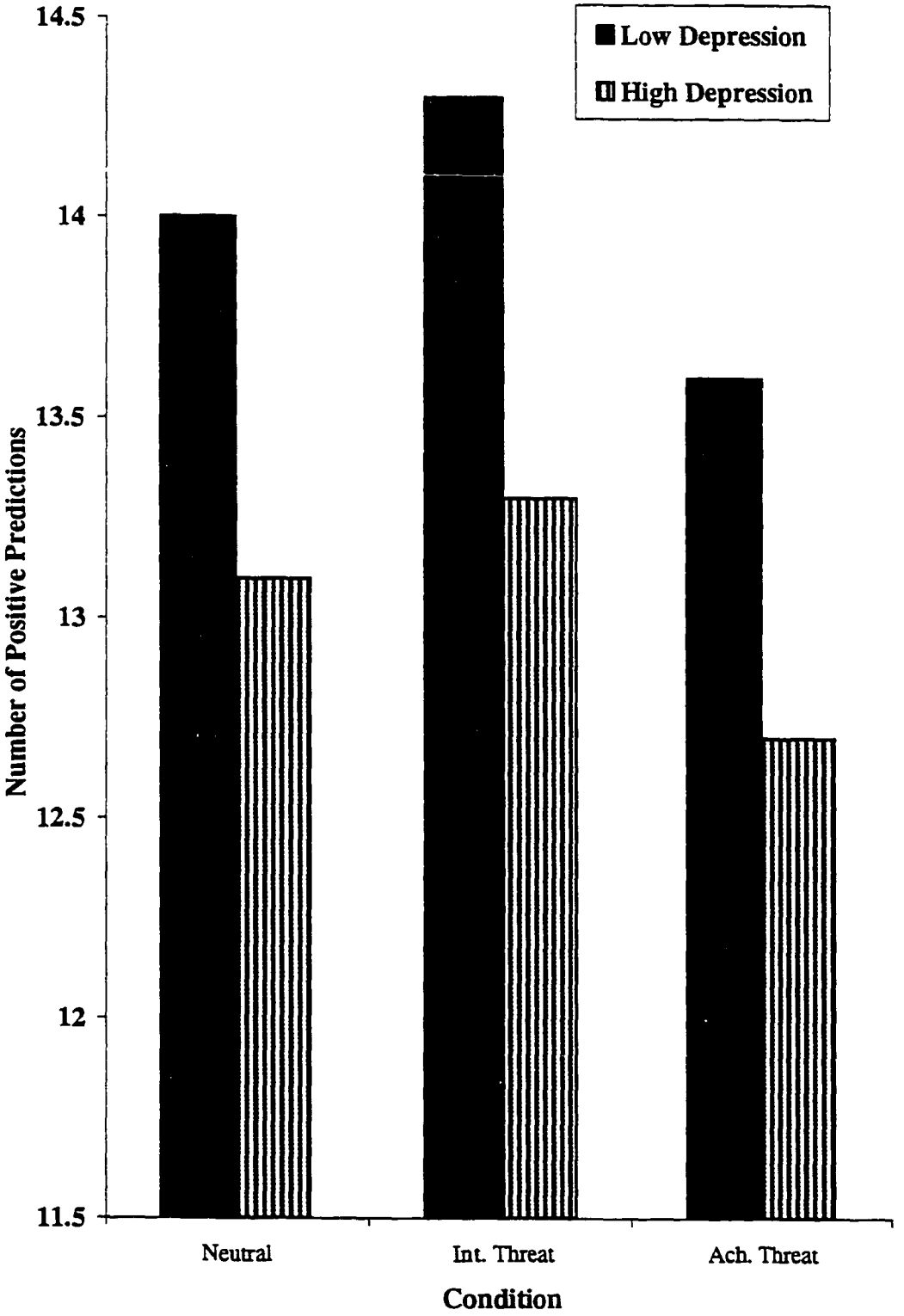
For the significant interaction between Domain and Personality Style, $F(1,70)=5.68$, $p<.05$, analysis of simple effects was done separately for interpersonally- and achievement-based predictions. ANOVA revealed that Personality Style was significant for interpersonally-based predictions, $F(1,166)=10.2$, $p<.01$, but not for achievement-based predictions, $F(1,166)=1.19$, n.s. Examination of the means reveals that sociotropic/dependent individuals made significantly more interpersonally-based predictions for the future ($M=6.2$) than autonomous/self-criticals ($M=4.6$), but that sociotropic/dependent and autonomous/self-criticals made a similar number of achievement-based predictions for the future (M's=9.3 and 9.9, respectively).

For the significant three-way interaction between Valence, Condition, and Level of Depression, $F(1,70)=5.68$, $p<.05$, simple interaction effects were analyzed separately for positive and negative predictions. ANOVA revealed that Condition by Level of Depression was significant for positive future predictions, $F(37,102)=1.78$, $p<.05$, but not for negative future predictions, $F(37,102)<1$, n.s.

The effect of Level of Depression on positive future predictions was then examined at each level of Condition. ANOVA revealed that Level of Depression was significant in the interpersonal threat condition, $F(20,34)=2.50$, $p<.01$, but not in the neutral, $F(23.33)=1.42$, n.s., or achievement threat, $F(20,35)=1.10$, n.s., conditions. The interaction between Condition and Level of Depression on positive future predictions is illustrated in Figure 15. For ease of illustration, depression scores were dichotomized at the mean. Examination of Figure 15 reveals that subjects with lower levels of depression made more positive future predictions than subjects with higher levels of depression, and this effect was most pronounced in the interpersonal threat condition.

For the significant three-way interaction between Domain, Valence, and Level of Depression, $F(26,70)=1.74$, $p<.05$, analysis of the interaction effects was done separately for interpersonally- and achievement-based predictions. ANOVA revealed that the Valence by Level of Depression interaction was significant for achievement-based predictions, $F(26,141)=1.72$, $p<.05$, but not for interpersonally-based predictions, $F(26,141)<1$, n.s.

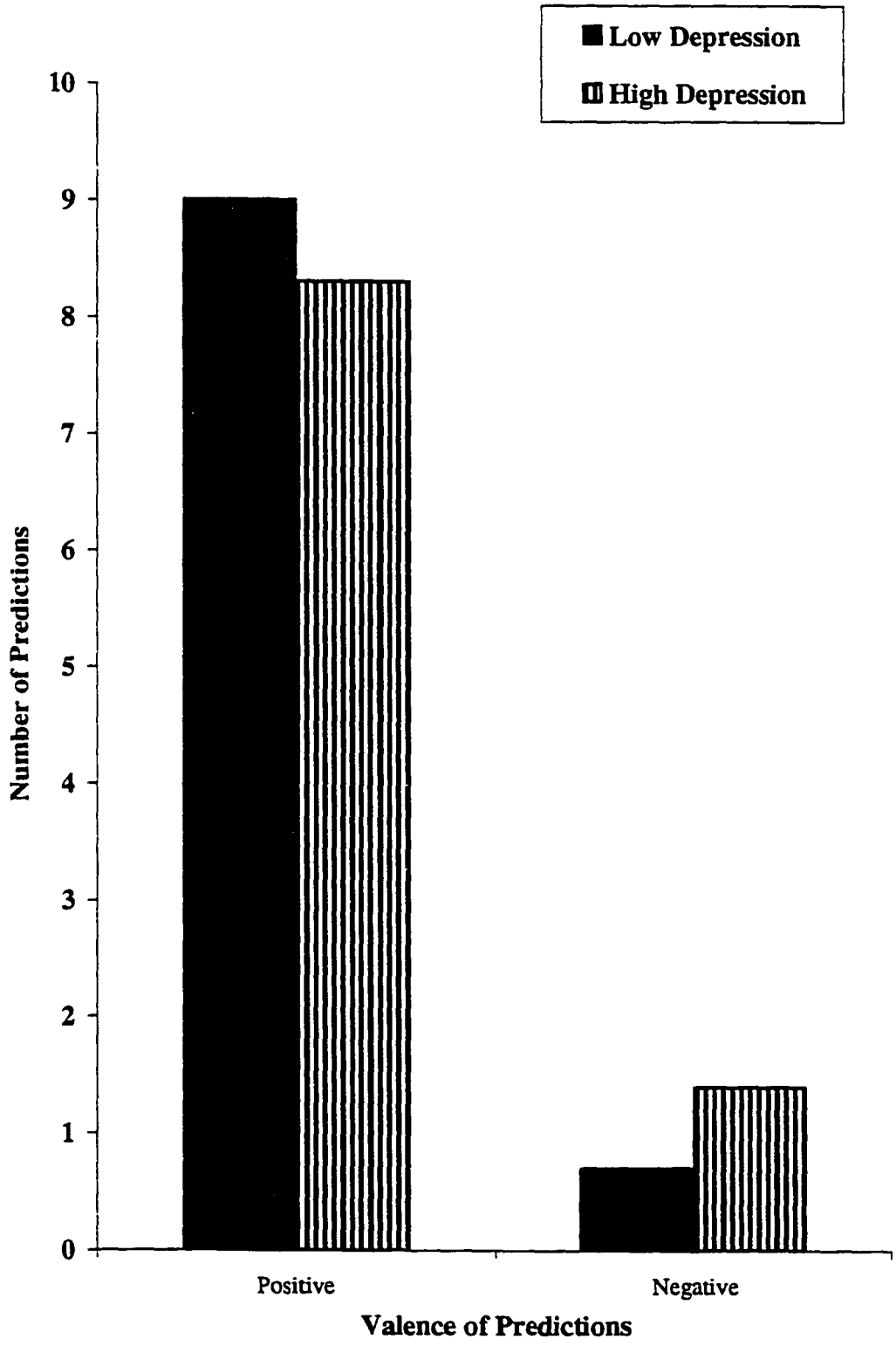
Figure 15. Predictions of future positive events as a function of condition and level of depression.



The effect of Level of Depression on achievement-based predictions was then examined separately for positive and negative predictions. ANOVA revealed that Level of Depression was significant for negative achievement-based predictions, $F(26,141)=2.70$, $p<.001$, but not for positive achievement-based predictions, $F(26,141)=1.38$, n.s. The significant interaction between Valence and Level of Depression on achievement-based predictions is illustrated in Figure 16. Examination of Figure 16 reveals that subjects with higher levels of depression made significantly more negative achievement-based predictions for the future, and fewer positive achievement-based predictions, than subjects with lower levels of depression.

Overall, the results of the future behaviour predictions task suggest that sociotropic/dependent and autonomous/self-critical individuals have equally positive achievement-based expectations about the future, but sociotropic/dependents expect to have significantly more positive interpersonal experiences in the future than autonomous/self-criticals. In addition, subjects with lower levels of depression made more positive predictions about the future than subjects with higher levels of depression, and subjects with higher levels of depression made, in particular, more negative achievement-based predictions for the future than subjects with lower levels of depression. Overall, these results provide modest support for a schema-based model of personality (Cane et al., 1986), at least in sociotropic/dependent individuals, but are not consistent with the predictions made by the congruency hypothesis or the DAH.

Figure 16. Prediction of future positive and negative achievement-based events as a function of level of depression.



Discussion

The current investigation compared the ability of the congruency hypothesis (Segal et al., 1989) to the Differential Activation Hypothesis (DAH; Teasdale, 1983) in accounting for changes in cognitive processes and cognitive products, in sociotropic/dependent and autonomous/self-critical individuals, immediately following imagined negative events. Changes in cognitive processes were assessed by examining pattern of attentional allocation on a computerized attention task (i.e., the DOAT), and changes in cognitive products were assessed by examining the content of several types of personal narratives. Relative support for the congruency hypothesis and the DAH will be discussed with respect to the variables of major interest, and the role of personality in vulnerability to depression. Finally, the limitations of the current investigation will be addressed.

Changes in Mood and Cognitive Processing

To reiterate, the congruency hypothesis is a diathesis-stress model of vulnerability to depression which predicts that changes in mood, cognitive processes, and cognitive products should only happen after the occurrence of a negative life event that matches an individual's underlying vulnerability. In the congruency hypothesis, the underlying vulnerability is conceptualized to be a personality style of either sociotropy/dependency or autonomy/self-criticism. In contrast, the DAH is a mood-state hypothesis which predicts that changes in cognitive processes and cognitive products will occur in the face of negative mood, and that negative life events do not have to match an underlying vulnerability in order to lead to changes in information processing.

With respect to *mood changes*, the majority of the results of the current study are more supportive of the DAH than the congruency hypothesis. Sociotropic/dependent and autonomous/self-critical subjects reported lower levels of positive affect and higher levels of irritability after *both* congruent and incongruent threats compared to the neutral situation. Autonomous/self-critical individuals also reported being more unhappy after both threat conditions compared to the neutral situation. One exception to these findings is that sociotropic/dependents reported

being significantly more unhappy after the interpersonal (or congruent) threat, than after the achievement (or incongruent) threat. Although this effect provides some support for the congruency hypothesis in sociotropic/dependents, the mood effects in the current study, as a whole, appear to be better supported by the DAH than by the congruency hypothesis. The results of the current study suggest that mood changes, in response to imagined negative events, may be *nonspecific*, with sociotropic/dependents and autonomous/self-criticals showing mood reactivity in the face of all types of negative events. These mood results are consistent with the general literature, which suggests that it is common for individuals to react to all types of negative events with distress and depressive affect (Ingram et al., 1998).

In comparison to these nonspecific mood reactions, the *DOAT results* for sociotropic/dependent individuals (on the interpersonal word pairs) were more consistent with predictions made by the congruency hypothesis than by the DAH, whereas the DOAT results for autonomous/self-critical individuals appear to be better accounted for by the DAH than the congruency hypothesis. To reiterate briefly, results consistent with the congruency hypothesis would show that sociotropic/dependents and autonomous/self-criticals, with lower levels of depression, (1) demonstrated a positive or protective bias after imagining the neutral situation and incongruent threat, and (2) demonstrated an "even-handed" attentional style after imagining the congruent threat. In comparison, results consistent with the DAH would show that sociotropic/dependent and autonomous/self-critical individuals (1) demonstrated a positive or protective bias after imagining the neutral situation, and (2) demonstrated an "even-handed" attentional style after imagining the congruent and incongruent threats. The DOAT findings for sociotropic/dependent individuals, on the interpersonally-based word pairs, will be discussed first, and a potential explanation for the lack of parallel effects for sociotropic/dependents on the achievement-based word pairs, and for autonomous/self-critical individuals, will be addressed later.

In the neutral condition, sociotropic/dependents, with lower levels of depression, displayed a positive bias by directing their attention *away* from negative words and *towards* positive words. This supports previous findings that subjects with low levels of depression demonstrate either a positive or protective bias on the DOAT

when they are in a neutral mood (Gotlib et al., 1988; McCabe, Gotlib, & Martin, in press). These results suggest that sociotropic/dependents with lower levels of depression tend to filter out negative information in their environment, *and* that they tend to focus their attention on more positive information. Although this finding is limited in the current study to attention to positive and negative words, the general finding that nondepressed individuals filter out negative information in the environment is quite robust. In fact, the current DOAT results support previous findings that nondepressed people recall more positive than negative information about the self (Kuiper & Derry, 1981), and generally demonstrate positive illusions about the self (Morris, 1996; Dobson & Franche, 1989). Research has demonstrated that a positive bias, and the ability to filter out negative information in the environment, helps to maintain or enhance a person's mood (Brown, 1991; Taylor & Brown, 1988), and this is one of the skills that is emphasized in cognitive approaches to therapy (Beck, 1983). Therefore, the existence of a positive bias in nondepressed individuals seems to reflect a healthy, adaptive process.

In contrast, sociotropic/dependents, with higher levels of depression, demonstrated an "even-handed" attentional style on the DOAT across all conditions. That is, sociotropic/dependents with higher levels of depression attended *equally* to positive and negative words. Again, this effect has been reliably demonstrated on the DOAT in dysphoric and depressed subjects (Gotlib et al., 1988; McCabe & Gotlib, 1995; McCabe & Toman, 1999) and suggests that once depressive symptoms are present individuals no longer *automatically* filter out negative information in their environment. The tendency for dysphoric or depressed individuals to give positive and negative information in the environment equal weight is also quite robust, and has been demonstrated in studies of depressive realism (Alloy & Abramson, 1979). But is this tendency of depressed individuals to attend equally to positive and negative information a consequence of negative mood, or a consequence of having positive information *less* available in their self-schemata? This issue will be discussed next.

There are two potential ways of understanding the tendency of depressed individuals to focus equally on positive and negative information in the environment. First, the work of Kuiper and MacDonald (1982) suggests that once individuals

experience prolonged depressive symptoms, their self-schemata becomes less positive and negative information is incorporated. Kuiper and MacDonald's (1982) approach would suggest that sociotropic/dependents with higher levels of depression in the current study had positive information generally *less* available, and negative information generally *more* available, in their self-schemata than sociotropic/dependents with lower levels of depression. As a consequence, subjects with higher levels of depression attended to the positive *and* negative words on the DOAT because both types of words were self-relevant (i.e., both positive and negative material was represented in their self-schemata).

A second way of understanding the tendency of depressed individuals to give positive and negative information equal weight is through mood congruent cognition (Bower, 1981; Teasdale, 1983; Blaney, 1986), which suggests that negative mood colours one's attentional and retrieval processes (Dalgleish & Watts, 1990, Blaney, 1986). Consequently, this approach would suggest that subjects with higher levels of depression might have attended to the negative words on the DOAT more than subjects with lower levels of depression because these words were more consistent with their mood. The fact that sociotropic/dependents with higher levels of depression attended equally well to negative and *positive* words on the DOAT does not invalidate this argument, as mildly depressed people tend to recall positive and negative information equally well (Derry & Kuiper, 1981; Kuiper & MacDonald, 1982), and even highly depressed individuals attend equally well to positive and negative words on the DOAT (Gotlib et al., 1988; Gotlib & McCabe, 1995). So, are the DOAT results for sociotropic/dependents with lower levels of depression in the current study more due to mood congruent cognition, or the relative availability of self-schematic material? This question essentially pits the predictions of the DAH against those of the congruency hypothesis, respectively, and this question was addressed by examining changes in attentional allocation after the two types of imagined stressors.

In the congruent threat (i.e., interpersonal threat) condition on the DOAT, sociotropic/dependent subjects with lower levels of depression lost their positive bias, and demonstrated an "even-handed" attentional style characteristic of subjects with higher levels of depression. That is, after imagining the congruent stressor,

sociotropic/dependents with lower levels of depression attended *equally* to the negative and positive words. This result confirmed previous findings that vulnerable individuals who experience negative mood are likely to lose their positive or protective bias, and perform similarly on the DOAT to individuals who are highly depressed (McCabe, Gotlib, & Martin, in press). However, although this change in attentional allocation as a consequence of imagining the threat was interesting in itself, it was still unclear whether such a change in attentional focus was a consequence of *negative mood* or underlying *schematic activation*. One way to test whether negative mood or underlying schematic activation was driving these changes is to examine attentional processing changes in response to the *incongruent* threat condition. If *negative mood* best accounted for changes in attentional processing, then sociotropic/dependents with lower levels of depression should also have displayed an "even-handed" attentional style after imagining the incongruent stressor (because they reported a comparable degree of negative mood in response to the congruent stressor, and significantly greater negative mood compared to the neutral condition). In contrast, if *schematic activation* was a better explanation for changes in attentional processing, then sociotropic/dependents with lower levels of depression should have demonstrated a positive or protective bias after imagining the incongruent stressor. Evidence of a positive or protective bias after imagining the incongruent threat would suggest that underlying schemata had *not* been activated, even though negative mood *had* been induced by the imagery.

In the incongruent threat (i.e., achievement threat) condition on the DOAT, sociotropic/dependent subjects, with lower levels of depression, demonstrated a near perfect protective bias. To reiterate, a protective bias refers to a pattern of attentional allocation in which an individual selectively *avoids* attending to negative words, but attends *equally* to positive and neutral words (Gotlib & McCabe, 1995; McCabe et al., in press). After imagining the incongruent threat, sociotropic/dependents, with lower levels of depression, shifted their attention away from the negative words in the INEGNEU word pair, and attended equally to the positive and neutral words in the IPOSNEU word pair. To represent a full protective bias, subjects also needed to shift their attention *away* from the negative words in the INEGPOS word pair, but

sociotropic/dependents with low levels of depression in the current study attended *equally* to the negative and positive words in the INEGPOS word pair. A potential explanation for this lack of predicted effect in the INEGPOS word pair will be discussed later. In general, it appears that sociotropic/dependents with lower levels of depression continued to shift their attention away from negative words after imagining the incongruent threat, even though they experienced a similar degree of negative mood as after imagining the congruent threat. One can infer that the self-schemata of sociotropic/dependents may not have been activated after imagining the incongruent threat, and consequently, subjects did not start attending equally to positive and negative information in the environment. As mentioned above, these results are more consistent with predictions made by the congruency hypothesis than by the DAH.

Counter to the predictions made by both the congruency hypothesis *and* the DAH, sociotropic/dependents, with lower levels of depression, did not demonstrate a positive or a protective bias to any of the achievement-based word pairs in any condition. In fact, sociotropic/dependents, with lower levels of depression, displayed an "even-handed" attentional style across all conditions, attending equally to positive, negative, and neutral achievement-based words. This result was unexpected and may be a consequence of sociotropic/dependents only responding to the word pairs specifically related to their personality style. Such specificity may be explained by an availability schema model (Higgins & King, 1981; Rector, Segal, & Gemar, 1998), which suggests that interpersonal content should be better represented, and is consequently more available, than achievement information in the self-schema of sociotropic/dependents. If sociotropic/dependents have a greater "database" of interpersonal information and themes available in their self-schemata, and if interpersonal information is more central to their sense of self-worth than achievement information, they may be more likely to attend to interpersonal information in the environment. In comparison, if achievement information is not as important to sociotropic/dependents as interpersonal information, they may process positive and negative achievement-based information equally well, thus accounting for their even-handed attentional style to the achievement-based words on the DOAT. However, this specificity of responding to some word pairs but not others on the DOAT has not been

demonstrated previously, and only further research will be able to confirm if this effect is reliable and actually due to schematic processing differences.

As mentioned earlier, parallel congruency effects were not found for autonomous/self-critical individuals on the DOAT. In fact, the performance of autonomous/self-criticals on the DOAT appears to be *best* accounted for by the DAH. The DOAT results showed that autonomous/self-criticals, with lower levels of depression, demonstrated a positive bias (on the interpersonal word pairs) and a protective bias (on the achievement word pairs) in the neutral condition, and an entire loss of both of these biases after imagining both the congruent *and* incongruent threats. After imagining both the congruent and incongruent threats, autonomous/self-critical subjects, with lower levels of depression, displayed an "even-handed" attentional style characteristic of subjects with higher levels of depression. The lack of congruency effects on the DOAT for autonomous/self-criticals supports previous findings that congruency effects are more reliably demonstrated for the interaction between sociotropy/dependency and negative interpersonal events than between autonomy/self-criticism and negative achievement events (Nietzel & Harris, 1990; Coyne & Whiffen, 1995).

The lack of congruency effects for autonomous/self-critical individuals in the current study may be a consequence of difficulty measuring the construct of autonomy/self-criticism. Some researchers have argued that the entire construct of autonomy/self-criticism may be insufficiently measured by the current assessment tools (Coyne & Whiffen. 1995), and consequently, subjects selected as being autonomous/self-critical on a single questionnaire may not offer a valid reflection of the construct as conceptualized by Beck (1983) and Blatt (1990). Due to this concern, the mean scores of sociotropic/dependents and autonomous/self-criticals in the current study were compared on the Autonomy and Sociotropy scales of the Personality Style Inventory (PSI; Robins et al., 1994). The PSI was used as a comparison measure because it is often an alternate measure of these personality styles (Coyne & Whiffen, 1995) and has been theorized to be relatively free of the psychometric problems found in other measures of these personality styles (Blatt & Zuroff, 1992). If the DEQ classification system used in the current study was valid, sociotropic/dependents

should have had significantly higher scores on PSI Sociotropy than autonomous/self-criticals, and autonomous/self-criticals should have had significantly higher scores on PSI Autonomy than sociotropic/dependents. Examination of the mean scores revealed that this was the case. Sociotropic/dependent subjects had a significantly higher mean score on PSI-Sociotropy than autonomous/self-critical subjects, and autonomous/self-critical subjects had a significantly higher mean score on PSI-Autonomy than sociotropic/dependent subjects.

These results suggest that the sample of autonomous/self-criticals in the current study was a valid reflection of the construct of autonomy/self-criticism as measured by two common questionnaires of this personality style. However, one wonders that if *all* of the current measures of these personality styles have difficulty tapping the construct of autonomy/self-criticism, then *any* sample selected by these measures, regardless of the amount of convergent validity between them, will not be a valid reflection of the construct. Therefore, the lack of congruency effects on the DOAT for autonomous/self-critical individuals in the current study may be a consequence of several factors. First, the entire construct of autonomy/self-criticism may be insufficiently tapped by the current measures of these personality styles. Second, to the extent that the current measures of autonomy/self-criticism may have difficulty tapping the construct as theorized by Beck (1983) and Blatt (1990), and the word stimuli designed for use in the current study was based *as closely as possible* on the theoretical writings of Beck (1983) and Blatt (1974; 1990), the set of word stimuli used in the DOAT may not have been a good "match" for the actual vulnerabilities of the current sample. Last, the construct of autonomy/self-criticism may have been measured adequately by the current assessment tools, and the word stimuli may have been a satisfactory match for their underlying vulnerabilities, but the DAH is better at accounting for changes in cognitive processing than the congruency hypothesis in autonomous/self-criticals after imagined negative events.

As mentioned earlier, sociotropic/dependents, with lower levels of depression, did not demonstrate the expected pattern of attentional allocation to the INEGPOS word pair after imagining the incongruent threat. That is, sociotropic/dependents, with lower levels of depression, attended *equally* to the positive and negative words in the

INEGPOS word pair instead of selectively avoiding the negative words. There are two potential explanations for this lack of expected effect. First, it is possible that this lack of effect was due to random error in the data. However, this possibility can only be confirmed or disconfirmed by further research with the DOAT to see if this effect is reliable. It seems possible that this effect was due to random error, as this is the first time in four studies using the DOAT, using different stimuli (i.e., adjectives & nouns), different mechanics of stimulus presentation (i.e., tachistoscope & computer), different stimulus presentation intervals (i.e., 500 to 1500 ms), and different populations (i.e., undergraduates and middle-aged women), that subjects demonstrated a different pattern of attentional allocation to the INEGPOS word pair than to the INEGNEU word pair (Gotlib et al., 1988; Gotlib & McCabe, 1995; McCabe et al., in press; McCabe & Toman, 1999).

An alternative explanation for the lack of expected effect in the INEGPOS word pair is that sociotropic/dependents may have experienced some unintended schematic activation in response to the incongruent threat. It is possible that sociotropic/dependents may have been demonstrating a subtle change in cognitive processing as a consequence of imagining the incongruent stressor. In fact, research suggests that it is not uncommon for sociotropic/dependents to respond to supposedly schema-incongruent threats (see Coyne & Whiffen, 1995, for a review). However, even if sociotropic/dependents in the current study *were* responding to the incongruent threat, it is still hard to determine unequivocally whether the small change in cognitive processing was due to unintended schematic activation or merely dysphoric mood.

Although Beck (1983) would argue that schematic activation in the face of an objective incongruent threat would be unlikely, as the content of the threat does not match the underlying vulnerability, it is hard to disentangle the *objective* content of a threat from the way an individual *interprets* it. For example, although stressors in the current study were designed to be as incongruent for each personality style as possible, sociotropic/dependents and autonomous/self-criticals may have interpreted the incongruent threats in a schema-congruent way. That is, sociotropic/dependents in the current study may have reacted to the achievement threat with thoughts of how friends and families would react to their failure, even though they were not explicitly asked to

think about this. If this is true, then a change in cognitive processing in response to the incongruent threat may actually have been due to schematic activation and not merely dysphoric mood.

The Feelings Assessment Questionnaire (FAQ) in the current study was designed to address the afore-mentioned possibility; that sociotropic/dependents and autonomous/self-criticals may have reacted to the *incongruent* threat with *schema-congruent* concerns. In fact, the FAQ results showed that sociotropic/dependents *did* react to the *achievement* threat with a significant number of *interpersonal* concerns, and that autonomous/self-criticals reacted to the *interpersonal* threat with a significant number of *achievement* concerns. Therefore, it is possible that sociotropic/dependents could experience a change in cognitive processing after incongruent threats as a consequence of schematic activation. Perhaps *all* individuals evaluate negative events in light of what is important to their sense of self, and sociotropic/dependents, in particular, ground their experiences in an interpersonal context. If this is true, this would help to explain why previous research has found that sociotropic/dependents and autonomous/self-criticals often react to congruent *and* incongruent negative events (Coyne & Whiffen, 1995). Although the tendency of sociotropic/dependents and autonomous/self-criticals to react to incongruent threats has generally been interpreted as a lack of specificity, it may, in fact, be representing over-generalization. That is, sociotropic/dependents may interpret *many* or most events with respect to interpersonal themes, even those which seem to be primarily achievement-based. Future research needs to address whether it is indeed even possible for individuals to disentangle their *interpretations* of the consequences of a threat from the *objective* consequences of a threat.

Overall, there are several aspects of the DOAT results that make them particularly noteworthy as a test of the congruency hypothesis versus the DAH. First, many studies of the congruency hypothesis fail to control for the effects of initial depression, and whether or not pre-existing levels of depression are confounded with personality style (Coyne & Whiffen, 1995). In the current study, level of depression was included as a continuous independent variable in an attempt to look at the contributory effects of personality style, depression, and their interaction. In fact, the

results of the DOAT demonstrated that examining level of depression separately is critical to finding predicted effects, as cognitive processing dramatically differs between subjects with higher and lower levels of depression. Second, the current study was primarily focused on identifying cognitive processing changes in individuals with low rates of previous depression. Most studies of the congruency hypothesis have examined remitted depressed patients (Coyne & Whiffen, 1995) and it is consequently unclear if the congruency effects obtained in these studies were due to a match between personality vulnerability and negative life event, or activation of a general depressive self-schema. By checking after the fact that the base rate of previous depression was quite low, and not significantly different across conditions, the current study was able to demonstrate that changes in cognitive processing are not entirely dependent on a previous episode of depression. Last, use of the DOAT itself provided a stringent test of the congruency hypothesis because it relied on cognitive processes outside of conscious awareness to demonstrate its effectiveness. To date, studies of the congruency hypothesis have focused on predicting differences in the severity of depression symptoms as a function of different life events, and have been ambiguous as to the *processes* that might be occurring that give rise to these mood states (Coyne & Whiffen, 1995). The current study attempted to demonstrate that changes in cognitive processing may be occurring *immediately following* different types of negative life events. Obviously further research is needed to assess how changes in attentional allocation may be related to the eventual onset of clinical depression, but the current study has broken new ground in its examination of the congruency hypothesis with respect to cognitive processing.

Changes in Mood and the Accessibility of Cognitive Products

As discussed earlier, the results of the current study suggest that mood changes in response to negative stressors may be nonspecific, and are generally better accounted for by the DAH than the congruency hypothesis. The results of one of the narrative measures also demonstrated support for the DAH. However, the majority of the findings from the narrative measures were more consistent with a schema-based model of personality (Cane et al., 1986) than *either* the congruency hypothesis or the

DAH. The results of the narrative measures, and an explanation for the lack of clear results for the DAH or the congruency hypothesis, will be discussed next.

The results from the open-ended thought sample were more consistent with predictions made by the DAH than by the congruency hypothesis. In the open-ended thought sample, sociotropic/dependent and autonomous/self-critical individuals reported having significantly more concerns after both threat conditions compared to the neutral condition. This supports previous findings that dysphoric mood leads to the increased accessibility of mood-congruent constructs (Teasdale, 1988; Clark & Teasdale, 1982; Teasdale & Fogarty, 1979). In addition, subjects' responses on the open-ended thought sample suggested that the content of their concerns were primarily related to the threat, not to their hypothesized vulnerability. That is, both sociotropic/dependent and autonomous/self-criticals spontaneously reported significantly more achievement concerns after the achievement threat compared to the interpersonal threat, and significantly more interpersonal concerns after the interpersonal threat compared to the achievement threat.

In comparison to the results from the open-ended thought sample, the results from the cued-autobiographical memory task and the future behaviour predictions task were not supportive of *either* the congruency hypothesis or the DAH. Instead, the results of the memory and prediction tasks were more supportive of a schema model (Cane et al., 1986), or an availability model (Higgins & King, 1981; Rector et al., 1998), of personality. To briefly review these models, a schema model of personality refers to the idea that sociotropy/dependency and autonomy/self-criticism may reflect two core "depressogenic" schemata that revolve around beliefs related to interpersonal neediness and achievement, respectively. An availability model refers to whether or not certain schemata exist, and how different schematic content may be better represented in one person's schema rather than in another's (Higgins & King, 1981; Rector et al., 1998). According to these models, material that is better represented in an individual's self-schema is more readily accessible to conscious awareness than material that is poorly represented. Therefore, interpersonal material should be more easily accessible to sociotropic/dependents than achievement material, and

achievement material should be more easily accessible to autonomous/self-criticals than interpersonal material.

On the cued autobiographical memory task, sociotropic/dependents recalled significantly more interpersonally-based memories than achievement-based memories, and autonomous/self-criticals recalled significantly more achievement-based memories than interpersonally-based memories. In addition, autonomous/self-criticals required significantly less time to recruit achievement-based memories than interpersonally-based memories. Similarly, the results of the future behaviour prediction task demonstrated that although *both* sociotropic/dependents and autonomous/self-criticals with lower levels of depression reported more positive expectations for the future than sociotropic/dependents and autonomous/self-criticals with higher levels of depression, sociotropic/dependents reported expecting to have significantly more positive interpersonal experiences in the future than autonomous/self-criticals. Together, these results suggest that interpersonally-based material may be more readily accessible to sociotropic/dependents, and achievement-based material may be more readily accessible to autonomous/self-criticals. These results provide some support for a schema-based model of personality, as the type of material that is most accessible to sociotropic/dependents and autonomous/self-criticals appears to be thematically related to their hypothesized vulnerabilities (Morris, 1996). Unexpectedly, however, on the memory task both autonomous/self-critical *and* sociotropic/dependent subjects recruited significantly more positive than negative achievement-based memories. This result is not consistent with the predictions of the DAH, the congruency hypothesis, *or* a schema-based model of personality, and may be a result of the undergraduate sample used. As the current sample was entirely composed of first-year undergraduate students, it is possible that these individuals have more recent examples of behaviours that would be classified as achieving accessible to them (i.e., getting into University, repeated examination and tests in their classes, term papers, etc.) than samples of other ages or in other settings.

The results of the autobiographical memory task also demonstrated that subjects with lower levels of depression were better at recruiting positive personal memories, and required less time to recruit these memories, than subjects with higher

levels of depression. On the future behaviour predictions task, individuals with lower levels of depression also made significantly more positive predictions for the future than individuals with higher levels of depression. These results are consistent with previous research on mood congruent cognition, which suggests that positive material is more accessible to nondysphoric individuals than to dysphoric individuals (Blaney, 1986; Teasdale, 1983).

There are a couple of potential explanations for the lack of support for the congruency hypothesis or the DAH on the memory and future behaviour prediction tasks. First, changes in the accessibility of cognitive products may have been difficult to detect because these narrative procedures followed a second imagery induction. Individuals in the current study may have been fatigued and less motivated to perform after having completed the first induction, the DOAT, several questionnaires, and the open-ended thought sample. If subjects were fatigued, or less motivated to perform, they may have been less successful at generating the imagery necessary to lead to the expected effects.

A second possibility for the lack of clear support for the DAH or the congruency hypothesis is that the narrative coding system used a frequency count of the number of positive and negative, as well as achievement-based and interpersonally-based self-statements As the base rates for the total number of statements was quite low, it is possible that this coding system did not provide a sufficient amount of variance in the data to detect significant interactions between condition and personality style. However, the fact that the current coding system was able to detect *some* differences in self-representation between sociotropic/dependents and autonomous/self-criticals suggests that narratives may be a useful technique for assessing cognitive products in the future.

Last, the lack of parallel effects for the cognitive processing (i.e., DOAT) and cognitive products (i.e., narratives) tasks may be due to the fact that they fall into different "cognitive categories" (Ingram et al., 1998). That is, although both types of tasks are cognitive in nature, attention is often thought of as an unconscious process, whereas self-statements, or narratives, are generally considered to be products of conscious awareness (Ingram et al., 1998). Immediate changes in response to

congruent versus incongruent stressors may be completely automatic and outside of an individual's control, whereas we know that individuals are able to consciously recruit all kinds of thoughts. In fact, the ability of an individual to recruit all kinds of thoughts, and to counter negative thoughts with positive ones, is a central premise of cognitive approaches to therapy (Beck, 1983). The lack of parallel effects between the DOAT and the narrative measures may be a result of the dimensions behind self-construal being more implicit than explicit (Ingram et al., 1998), and the consequent difficulty that individuals would have introspecting about processes that exist outside of conscious awareness.

The Role of Personality, Mood, and Cognition, in Vulnerability to Depression

In general, the results of the current investigation suggest that sociotropic/dependents and autonomous/self-criticals *do* differ in their self-representation, and that some of these differences are detectable through measures of unconscious processing (i.e., attentional allocation) and self-report techniques (i.e., narratives). However, a notable result from the current study was that sociotropic/dependents, and autonomous/self-criticals, *in particular*, responded to schema-*incongruent* material more than would have been predicted by the theoretical writings of Beck (1983) and Blatt (1990). Although one explanation for this in autonomous/self-criticals is that the construct of autonomy/self-criticism is difficult to measure, another potential explanation is that the self-schemata of *both* sociotropic/dependents and autonomous/self-criticals may be more differentiated than has been previously theorized.

If sociotropy/dependency and autonomy/self-criticism are conceptualized as different types of self-schemata, this presumes that they have fairly unitary schematic content. That is, a sociotropic/dependent self-schema is hypothesized to contain predominantly interpersonal content, and an autonomous/self-critical self-schema is hypothesized to contain predominantly achievement content. Although this conceptualization of self-schemata makes specific hypotheses easier to test, it is questionable whether the self-schemata of sociotropic/dependents and autonomous/self-criticals are truly represented in this way. The current study demonstrated that sociotropic/dependents and autonomous/self-criticals were able to

list schema-*incongruent* concerns, recalled schema-*incongruent* behaviour examples, and made schema-*incongruent* predictions about their future behaviour. These results suggest that although schema congruent material may be generally be *more* available to sociotropic/dependents and autonomous/self-criticals, schema-*incongruent* material is not entirely *un*available to them. Therefore, perhaps the personality characteristics of sociotropy/dependency and autonomy/self-criticism should be conceptualized as highly valued areas of self-definition, or heavy self-representation in a particular domain, rather than as uni-domain self-schemata. Perhaps sociotropic/dependents and autonomous/self-criticals have *multiple* domains of self-definition, but are more extreme or rigid about their self-definition some domains rather than others.

This alternate conceptualization of sociotropy/dependency and autonomy/self-criticism as degrees of self-representation in various domains relates to Kuiper et al.'s work on schema consolidation (Kuiper, Olinger, & MacDonald, 1988b; Kuiper & MacDonald, 1982; MacDonald & Kuiper, 1984; MacDonald, Kuiper, & Olinger, 1985). This body of work suggests that schemata not only differ in terms of specific content, but also in degree of consolidation -- with consolidation referring to how strong the linkages are between the different types of content (Kuiper et al., 1988b). Ingram et al., (1998) have also pointed out that better consolidated content is processed much more efficiently than poorly consolidated content. Perhaps then, sociotropic/dependents and autonomous/self-criticals differ in the degree of consolidation of the interpersonal and achievement content in their self-schemata. One could speculate that sociotropic/dependents have well-consolidated interpersonal content but poorly-consolidated achievement content in their self-schema. Similarly, autonomous/self-criticals may have well-consolidated achievement content but poorly-consolidated interpersonal content in their self-schema. Conceptualizing self-schemata as multiple areas of self-representation, with varying degrees of consolidation, would help to explain why sociotropic/dependents *can* be responsive in the face of incongruent threats, but are more *consistently* responsive in the face of congruent threats (Nietzel & Harris, 1990). Further, conceptualizing self-schemata in this way can account for the existence of individuals who score either high or low on *both* sociotropy/dependency and autonomy/self-criticism scales.

But how do immediate changes in mood and cognitive processing lead to the eventual development of clinical depression in sociotropic/dependent and autonomous/self-critical individuals? Only further research can answer this question. Blatt and Zuroff (1992) suggested that the *processes* by which the vulnerabilities of sociotropic/dependent and autonomous/self-critical individuals lead to depression needed to be investigated. The current study is a first step towards this goal, and suggests that attentional allocation to environmental stimuli changes in the face of congruent stressors for sociotropic/dependent individuals. The onset of depression is undoubtedly caused by many interacting factors, and further research is needed to determine the relative contribution of changes in cognitive processing compared to other variables. Although the current study was not able to account for the development of clinical depression in sociotropic/dependents and autonomous/self-criticals, the results still have important implications for the treatment of depression and depressive symptomatology.

To the extent that changes in cognitive processing could contribute to the onset of depression, and because changes in cognitive processing may be due to the match between underlying vulnerability and specific life event (at least in sociotropic/dependent individuals), treatment approaches may need to focus on ameliorating the vulnerability, and not just negative mood. That is, treatment may need to focus on helping individuals develop a more flexible and multifaceted view of self and consolidate other areas of their self-schemata. Linville (1987; 1992) has noted that self-complexity, or a multifaceted sense of self, can be a buffer for the development of depression. Therefore, treatment approaches which merely focus on improving mood are unlikely to be effective at producing long-lasting changes and reducing an individual's risk for future depressive episodes.

Notably, a new treatment model for personality disorders, proposed by Young (1994), is based on the idea that treatment needs to focus on ameliorating an individual's underlying vulnerability. Young's (1994) approach, known as schema-focused therapy, is primarily focused on helping a client restructure rigidly defined self-schemata and adopt a more flexible view of self. Young has noted that "dependence" and "unrelenting standards" are two maladaptive schemata that tend to

be particularly entrenched in some individuals. Conceptually, these two schemata are highly similar to the personality styles of sociotropy/dependency and autonomy/self-criticism. In general, the results of the current investigation suggest that treatment approaches need to make a client aware of the tendency to focus on negative information in the environment when experiencing dysphoric mood, and to encourage them to counter negative thoughts, and negative interpretations they may be making about themselves or others. In addition, clients may need to be reminded to consciously shift their attention to more positive aspects of their environment, and to consciously recruit positive thoughts when they are experiencing dysphoric mood.

Limitations and Future Research

One of the limitations of the current study involves its degree of ecological validity. There is a natural tradeoff between degree of experimental control and ecological validity (Segal, 1988) and the current investigation opted to increase the level of experimental control in order to test specific hypotheses. First, this study used hypothetical imagery situations instead of real life manipulations to prime subjects' underlying vulnerabilities, in order to control for idiosyncratic recall, and to avoid putting vulnerable individuals at undue risk. Although it may be argued that the imagery situations were not "real" enough to generalize anything meaningful from the results, the imagery procedures *did* seem to be effective at inducing mood changes and priming self-schemata. In addition, many subjects spontaneously reported that they could personally relate to the imagery situations as something that had happened to them, or that they feared could happen. Another ecological validity issue involves assessing cognitive processing changes with a lab-based, computerized attention task. While some may argue that this does not approximate "real life" changes in cognitive processing, the results of the computerized attention task converge with those of other studies which suggest that nondepressed individuals demonstrate positive illusions about the self (Morris, 1996), but focus increasingly on negative information in the environment as depression levels increase (Alloy & Abramson, 1988). In general, any reduction in the level of ecological validity in the current study was more than offset by the amount of experimental control it afforded.

Another clear limitation of the current study is its inability to address the role of previous depression on changes in cognitive processing. In fact, this is a common problem in studies that rely on priming methodologies (Ingram et al., 1998). Although a priming methodology allows for more stringent tests of diathesis-stress models (by selective manipulation of key variables), one of the major limitations to the interpretation of these studies is the existence of previous episodes of depression, or what is known as the "scar hypothesis" (Lewinsohn, Steinmetz, Larson, & Franklin, 1981; see Ingram et al., 1998). The scar hypothesis suggests that previous episodes of depression leave a scar, or vulnerability, that may become activated in vulnerable individuals in response to a prime. Although the current study was able to eliminate previous depression as a potential confound on changes in cognitive processing (i.e., by having the rate of previous depression distributed evenly across cells), the contributory role of previous depression was unable to be assessed. Future studies may want to examine how past depression potentially interacts with personality vulnerabilities in leading to changes in cognitive processing after the occurrence of different life events.

Future studies may also want to examine how the response styles of rumination and distraction may interact with the personality styles of sociotropy/dependency and autonomy/self-criticism in leading to depression. Nolen-Hoeksema's (1987) work on response styles suggests that women are more likely to ruminate following a threatening event, and men are more likely to distract themselves, and this difference in response styles has been postulated to account for the higher rates of depression in women than in men (Nolen-Hoeksema, 1987; Ingram et al., 1998; Weissman & Klerman, 1977; 1985). A future study may want to examine whether rumination and distraction response styles also differ in sociotropic/dependent and autonomous/self-critical individuals. Perhaps rumination patterns are more common in sociotropic/dependents, regardless of gender, particularly in the face of negative interpersonal events. This would be another potential explanation for the finding that the interaction of sociotropy/dependency with negative interpersonal life events is more likely to lead to depressive symptomatology than the interaction between autonomy/self-criticism with negative achievement events (Nietzel & Harris, 1990).

Recently, theorists have identified that the scales used to measure the personality styles of sociotropy/dependency and autonomy/self-criticism can be further differentiated into specific subtypes. Rude and Burnham (1995) have identified two subtypes of sociotropy/dependency, which they have labeled neediness and connectedness. Connectedness is characterized by a valuing of relationships and sensitivity to others, whereas neediness is characterized by anxious concerns regarding possible rejection (Rude & Burnham, 1995). Notably, neediness has been significantly associated with depression (Rude & Burnham, 1995), hostility (Mongrain & Kellington, 1996) and more maladaptive features (e.g., insecure attachment, submissive interpersonal behaviour) than connectedness (Zuroff, Moskowitz & Koestner, 1996). Similarly, the scale of autonomy/self-criticism has been differentiated into two different factors, which have been labeled "independent goal attainment" and "desire for control at the exclusion of others" (Bieling, Brown, & Beck, 1998). Bieling et al. (1998) have found that the desire for control factor was positively associated with psychopathology, and that the independent goal attainment factor was negative associated with psychopathology. Future research on the congruency hypothesis may want to focus on the more pathological subtypes of sociotropy/dependency (i.e., neediness) and autonomy/self-criticism (i.e., desire for control), as congruency effects may be more observable in the pathological subtypes than in the healthier subtypes. Perhaps congruency effects have been difficult to obtain to date because the effects are being suppressed by examining pathological and healthy subtypes as a homogeneous group.

Last, the current study examined how attention to static stimuli changes after imagining congruent and incongruent stressors. Future research needs to examine how attention to dynamic stimuli may change after experiencing congruent and incongruent stressors. For example, how do perceptions of other individuals change after the experience of different negative life events? Do sociotropic/dependents and autonomous/self-criticals see more life events as personally relevant and threatening after they have experienced congruent negative life events? Previous research has demonstrated that when individuals are distressed, they may be particularly attuned to socially relevant information (Ingram, et al., 1998) and may be more vulnerable to

signs of interpersonal rejection (Hunsley, Cohen Silver, & Lee, 1991). In addition, research has demonstrated that individuals in a depressed mood can actually trigger negative responses in others (Coyne, 1976; Hammen & Peters, 1978) and may underestimate the frequency of friendly behaviours in others (Hokanson, Hummer, & Butler, 1991). This last finding is conceptually similar to the loss of a positive bias that was demonstrated in the current investigation. Future research needs to examine how cognitive and interpersonal factors influence each other in the development of depression. Specifically, how does personality style affect perceptions of others, expectations for the future, and interpretations about everyday life events after the occurrence of congruent and incongruent stressors. Research in this area would help to bridge the gap between cognitive and interpersonal approaches to depression, and lead to models of depression that have greater specificity and predictability.

Appendix A -- Consent Form, Information Feedback Form, and Questionnaires Designed for Use in the Study

Consent Form

Principal Investigators:

Shawna Lightbody, Graduate Student, Dept. of Psychology.
Scott B. McCabe, Ph.D., Assistant Professor, Dept. of Psychology

This project has been reviewed and has received ethics approval through the Office of Human Research & Animal Care at the University of Waterloo. However, if you have any concerns resulting from your participation in this study, please contact this Office at 885-1211, x6005.

I, the undersigned, understand that his research is investigating how people react to imagining different types of undergraduate experiences. I further understand that the procedure involves imagining myself in an undergraduate experience described to me, and completing a computer task and a number of questionnaires. This study will take less than 90 minutes to complete.

I also understand that both my anonymity and the confidentiality of my answers will be protected, that I may withdraw from the study at any time without prejudice or jeopardy to my research credit. I understand that all information that I provide will be held in confidence and that I will not be identified in any way in any published report of the results of this study.

I have had the opportunity to receive any additional details I wanted about this study.

Name (please print) _____

Gender M _____ F _____ (check one)

Signed _____

Date _____

Manipulation Check

I was able to imagine myself in the described situation:

1	2	3	4	5	6	7
not at all well						extremely well

Visual Analogue Scales

At the moment, I feel:

1	2	3	4	5	6	7	8
happy			neither happy nor unhappy				unhappy

1	2	3	4	5	6	7	8
relaxed			neither relaxed nor irritable				irritable

Feelings Assessment Questionnaire (FAQ)

This scale consists of a number of different feelings that a person could have if the situation you just imagined had actually happened to them. Read each item and then indicate to what extent *you* would feel this way if the imagined situation had actually happened to you.

1	2	3	4	5
very slightly or not at all	a little	somewhat	quite a bit	extremely

1. I would feel incompetent. _____

2. I would feel that I had no one to lean on. _____

3. I would feel liked. _____

4. I would feel very self-critical. _____

5. I would feel confident in my abilities. _____

6. I would feel superior to others. _____

7. I would feel the need to please others. _____

8. I would feel accepted by others. _____

9. I would feel supported. _____

10. I would feel the need to be with other people. _____

11. I would feel confident and secure in my relationships. _____

12. I would feel empty and alone. _____

13. I would feel useless. _____

14. I would feel connected with others. _____

15. I would feel rejected by others. _____

16. I would feel satisfied with myself. _____

1	2	3	4	5
very slightly or not at all	a little	somewhat	quite a bit	extremely

17. I would feel disappointed with myself. _____

18. I would feel accomplished. _____

19. I would feel that I had not used my abilities. _____

20. I would feel competent. _____

Narrative Measure - Thought Sample of Concerns

Please list the thoughts, feelings, and/or worries that might occur to you if the imagined situation had actually happened.

Narrative Measure - Recruitment of Past Behaviour/Memories

Please cite as many examples as you can remember from your past behaviour that would support the given word as being descriptive of you. Describe as many examples as you can. If you are not able to provide any examples, stay silent and wait for the cue to go to the next word.

ORDINARY:

AGGRESSIVE:

DESERTED:

DEPENDENT:

SOCIABLE:

ACHIEVING:

INDEPENDENT:

CRITICAL:

COMPASSIONATE:

NATURAL:

Narrative Measure - Prediction of Future Behaviour

I want you to think about things that may occur to you over three different time periods in the future. These could be trivial or important things, and they could be things that you know are going to happen, or that you think might reasonably happen. Please try to think of as many things as possible for each time period until the time is up.

Please think of things that may occur in the next week (including today).

Please think of things that may occur in the next year.

Please think of things that may occur in the next five to ten years.

Explanation and Feedback Form

We are interested in how a personality affects the type of information that a person attends to and remembers. Specifically, we are looking at achievement oriented and interpersonally oriented people to see if their attention towards information depends on the type of mood they are in and what schema is activated.

You were asked to imagine yourself in a situation that was either achievement related, interpersonally related, or neutral. Which condition you were in was randomly decided beforehand. The achievement and interpersonally related situations were worded so that they forced you to imagine a threatening situation. The neutral imagery situation was used as a control group. After imagining that situation for five minutes, you were asked to complete a computer task which presented a series of word pairs. Each word pair consisted of a positive interpersonal word paired with a negative interpersonal or neutral word. Two coloured bars then appeared on the screen. Making a choice as to which coloured bar appeared first gives us an idea of what area of the screen, and thus what type of word, you were focusing on. THE BARS ACTUALLY APPEARED SIMULTANEOUSLY, but you were led to believe that one occurred before the other so we would be able to analyze which area of the screen you were focusing on. All the tasks you completed will help us determine what type of information was most readily available to you after imagining the various situations.

We are hoping to show that achievement oriented people who imagine a threat in the achievement domain will move their attention away from positive achievement words towards negative achievement or neutral words on the computer screen. Similarly, we hope to show that interpersonally oriented people who imagine an interpersonal threat will move their attention away from positive interpersonal words towards negative interpersonal or neutral words on the computer screen. This would be evidence that people who experience a threat which is congruent with their personality style have a negative schema "activated" which biased the sort of information they encode and remember.

We want to thank you for your participation in this study. You have provided us with much valuable information about how people with different personality styles process congruent or incongruent information after a threatening experience. We hope that with your participation we will gain a deeper understanding into how people process and recall information after experiencing different events in their lives. If you have any further questions about this study please feel free to contact Ms. Lightbody in the psychology department or Dr. McCabe (PAS 3015, 888-4567, x5955).

Two final points we would like to mention. First, your responses will remain absolutely confidential. When we begin to analyze the data, your names will be converted to code numbers so that no one will be able to connect your name to your responses. Second, we ask you not to tell others about the details of the study. The reason for this is that if potential participants know what the study is about, this information will influence their responses, and we would obtain misleading information from them. Therefore, it is important that you do not talk about this study to your friends or to other people who may be in the experiment in the future, or allow them to read this feedback sheet. Please also do not tell others who may have contact with potential participants. Thank you very much.

If you have any concerns arising from your participation in this study, contact Dr. Susan Sykes, Office of Human Research, 888-4567, x6005.

If you are interested in learning more about this topic, you may find the following articles informative:

Gotlib, I.H. & Cane, D. B. (1987). Construct accessibility and clinical depression: A longitudinal investigation. Journal of Abnormal Psychology, 96(3). 199-204.

Ingram, R.E. (1984). Toward an information-processing analysis of depression. Cognitive Therapy and Research, 8(5), 443-478

Gotlib, I. H., & McCabe, S. B. (1992). Attentional processing in clinically depressed subjects: A longitudinal investigation. Cognitive Therapy and Research, 17, 359-377.

Appendix B -- Imagery Scripts

Imagery Scripts

Practice, neutral:

Imagine: you are sitting at a bus stop on the corner of a quiet, tree-lined street. It is a bright summer day and birds are flitting among the tree branches. You feel peacefully at ease under the trees and the white billowy clouds which drift slowly by in the blue sky.

Please close your eyes and focus on this image. Think about how you would feel here and what you would see.

Neutral:

Imagine: you are sitting in a comfortable chair on your porch on a summer afternoon. You are enjoying this time to yourself after a long month at your summer job. You took a half day off from work so that you could enjoy the beautiful weather. The sun is shining and you can feel the warmth on your face. It is a beautiful day and you are glad to be outside. You finished work in the morning, and decided to take the afternoon off in order to spend some time relaxing. You reach for a cold drink and hear the clink of ice cubes as they knock against the glass. Your drink feels cold and refreshing.

Now imagine that there is a soft warm breeze blowing across your porch. You close your eyes and can feel the wind and the sun caressing your eyelids. You are happy that you decided to take the afternoon off. Feeling relaxed and content, you suspect that you could fall asleep very quickly. A green lawn stretches out before you, and you can hear the songs of birds in the trees. As you listen to the birds, you are further comforted by the smell of wildflowers and freshly cut grass. Scattered trees sway gently with the wind, and you can feel the wind gently blow across your face. The sound of crickets can be heard in the distance. You are feeling peaceful and completely relaxed. You are comfortable and content. You are tempted to lie in a hammock, but your body feels heavy and relaxed in your chair. You decide to stay in your chair and go to sleep. Your legs feel detached from you, as if they are floating. You can feel yourself drifting off. You wish that all summer days could be as nice as this one. You sigh in contentedness as you feel yourself drifting off to sleep.

Please imagine yourself in this situation and what you would be thinking and feeling.

Achievement threat.

Imagine: you have been working really hard for the past three years at the University. At times, it's been a struggle academically, but you've managed to be successful in your courses. In this scenario, you have decided on your major, and by keeping your grades up, you hope to get into the 4th year Honours program. If you don't get into Honours, your dreams of going to graduate school will be crushed.

Now imagine that you are writing your final set of exams in third year, and you have figured out that you need an 80% on your final in the area of your major to guarantee an "A". Without a straight "A" average, you know you will never get into graduate school. While writing your final exam you experience some difficulty and find yourself struggling. Your heart starts to speed up as you look at each question and find that you can't answer them. You are having trouble keeping your thoughts clear and cannot seem to recall the right information. You're hands are shaking as you try to calm yourself. The hairs on your neck start to tingle and you can feel the sweat starting to bead under your arms. If you can't calm down, you know you will blow this exam. You try to get a deep breath, but your chest feels tight. With extra effort you struggle on to answer all the items.

One month later your transcript arrives in the mail. You feel dread as you open the envelope - hoping desperately that you've obtained at least 80% in the critical course of your intended major. You notice that your hands start to shake as you are opening the envelope. Your heart begins to beat harder and your mouth is becoming dry. As you search the transcript, the bad news is revealed, you see that you've obtained a 66%. Knowing it is not a good enough grade, you continue to stare at the transcript.

Please imagine yourself in this situation, and what you would be thinking and feeling.

Interpersonal Threat:

Imagine: you have found coming to University to be a big adjustment. You do not see your family and old friends as much as you would like to, and you're feeling quite lonely at school. At the end of each day you feel isolated, and some nights you do not have anyone to go to dinner with. However, you have been trying hard to make new friends, and seem to be succeeding. You particularly enjoy a group of people you have been getting to know recently, and you're looking forward to spending more time with them.

Now imagine that you are on campus one day, and are feeling particularly lonely, so you go to a coffee house for a drink. You wander in and sit in an empty booth. As you look at the menu, you recognize the voices of the people in an adjoining booth as belonging to two of your new friends. They do not notice you. Feeling happy to see them, you begin to leave your table to join them. However, before you walk any further, you realize that they are talking about you! Your heart starts to speed up and you feel somewhat lightheaded. You strain to hear what they are saying without being recognized. You realize that they are talking about you and laughing. They are showing that they do not really like you, and they make fun of the way you dress and speak. Disbelieving, you fall back into your seat. You look at their table, and sure enough it is two of the people you really like. You can feel your face burn with embarrassment and you feel flushed. Your mouth starts to get dry and your heart continues to race. The sweat starts to bead under your arms and you feel sick to your stomach. Staring at the menu on your table you fight a strong emotion rising.

Please imagine yourself in this situation, and what you would be thinking and feeling.

Appendix C -- Instructional Sets for Judges for Word Ratings and Preliminary Word List

Autonomy Ratings

On the following pages you will find a set of words that can be used to describe people. Beside each word you will see the numbers one through seven. Please circle the number which indicates how much the word describes an autonomous person.

Autonomy, for your information, is defined as "a combination of beliefs, behavioural dispositions, and attitudes that draws an individual to invest in one's self for one's own uniqueness, mastery of one's bodily functioning, and control over one's environment (Beck, 1983)." Autonomous individuals are hypothesized to highly value personal independence, achievement, and control. Autonomy is associated with social isolation, intense achievement striving, and themes of defeat and failure. Autonomes are highly dependent on attaining personal goals and achieving success, and are likely to become self-critical and distressed when faced with their own limitations or failure to achieve their goals. Because autonomes are invested in achieving their own goals and standards, they are hypothesized to avoid close attachments with others because they fear loss of their independence.

Please work through the words quickly without spending too much time on any one word. Note that you are permitted to use the entire range of numbers one through seven in marking your ratings. If the adjective is a positive one, evaluate how well, in your estimation, it describes an autonomous person who is experiencing personal achievement and success, and what they might be feeling. If the adjective is a negative one, evaluate how well, in your estimation, it describes an autonomous person whose personal goals are not being attained, and how they might be feeling.

1	2	3	4	5	6	7
Not at all Autonomous			Moderately Autonomous			Completely Autonomous

Sociotropy Ratings

On the following pages you will find a set of words that can be used to describe people. Beside each word you will see the numbers one through seven. Please circle the number which indicates how much the word describes a sociotropic person.

Sociotropy, for your information, is defined as "a combination of beliefs, behavioural dispositions, and attitudes that draws an individual to attend to and depend on others for personal satisfaction (Beck, 1983)." Sociotropic individuals are hypothesized to rely on interactions with others to maintain their sense of personal worth and are dependent on others for support and gratification. Sociotropes are highly dependent on acceptance and approval by others, and are highly sensitive to real or imagined rejection or abandonment by others. Sociotropes are invested in positive interchanges with other people, social acceptance, and intimacy. Sociotropes are hypothesized to have "heightened needs for acceptance, understanding, support, and guidance from others" (Coyne & Whiffen, 1995), and are preoccupied with issues of loneliness and abandonment.

Please work through the words quickly without spending too much time on any one word. Note that you are permitted to use the entire range of numbers one through seven in marking your ratings. If the adjective is a positive one, evaluate how well, in your estimation, it describes a sociotropic person whose relationships are going well, and how they might be feeling. If the adjective is a negative one, evaluate how well, in your estimation, it describes a sociotropic person whose relationships are not going well, and how they might be feeling because of this.

1	2	3	4	5	6	7
Not at all Sociotropic			Moderately Sociotropic			Completely Sociotropic

Imagery Ratings

Adjectives differ in their capacity to arouse mental images of objects or events. Some arouse a sensory experience, such as a mental picture or sound, very quickly and easily, whereas others may do so only with difficulty (i.e., after a long delay or not at all).

On the following pages you will find a set of adjectives that can be used to describe people. Beside each adjective is a rating scale numbered 1 through 9, On this scale, number 1 indicates "extremely low imagery", and number 9 indicates "extremely high imagery". For example:

	extremely low imagery							extremely high imagery
THRIFTY:	1	2	3	4	5	6	7	8	9

Your task is to rate each of the adjectives as to the ease or difficulty with which they arouse mental images for you. Any adjective, which, in your estimation, arouses a mental image (i.e., a mental picture or sound, or other sensory experience) very quickly and easily should be given an extremely high imagery rating. For example, perhaps for you the adjective "thrifty" would immediately arouse the mental picture of a Scotsman dressed in a kilt, in which case you should give "thrifty" a rating of 9. Any adjective that arouses a mental image with great difficulty, or not at all, should be given an extremely low imagery rating (e.g., a rating of 1). Adjectives that are intermediate in ease or difficulty of imagery should be rated appropriately between the two extremes. When you have decided upon a rating, indicate your choice by circling one of the numbers on the scale by the adjective. It is important that you rate only the ease with which an adjective arouses a mental image of an object or event. Be sure that you do not rate the tendency of adjectives to produce other words as associates (e.g., thrifty-stingy-economical).

Please work through the adjectives in order, without skipping any. Work fairly quickly, and feel free to use the entire range of numbers 1 through 9 in your ratings. As long as you individual ratings are conscientiously completed, do not be concerned if you make several similar ratings in a row. There are no right or wrong answers, so just put down what you honestly feel to be true.

Emotional Intensity Ratings

On the following pages you will find a set of adjectives that can be used to describe people. While the adjectives designate different moods, characteristics, or dispositions, they each reflect a certain degree of emotional intensity. Beside each adjective is a rating scale numbered 1 through 9. On this scale, number 1 indicates "extremely low emotional intensity", and number 9 indicates "extremely high emotional intensity". For example:

extremely low emotional intensity								extremely high emotional intensity
THRIFTY: 1	2	3	4	5	6	7	8	9

Your task is to rate the degree of emotional intensity that you feel when you read each adjective, regardless of whether it is a good or positive feeling. When you have decided upon a rating, indicate your choice by circling one of the numbers on the scale by the adjective. For example, if the adjective "thrifty" has an extremely low degree of emotional intensity for you, then you should circle number 1. Conversely, the adjectives "vicious" and "exhilarated" might both have an extremely high degree of emotional intensity for you, and you should therefore circle number 9 on each adjective's respective rating scale. Adjectives that you feel are intermediate in degree of emotional intensity should be rated appropriately between the two extremes.

Please work through the adjectives in order, without skipping any. Work fairly quickly, and feel free to use the entire range of numbers 1 through 9 in your ratings. As long as your individual ratings are conscientiously completed, do not be concerned if you make several similar ratings in a row. There are no right or wrong answers, so just put down what you honestly feel to be true.

Preliminary Word List

abandoned	1 2 3 4 5 6 7	awful	1 2 3 4 5 6 7
academic	1 2 3 4 5 6 7	bad	1 2 3 4 5 6 7
accelerated	1 2 3 4 5 6 7	beaten	1 2 3 4 5 6 7
accommodating	1 2 3 4 5 6 7	belligerent	1 2 3 4 5 6 7
accomplished	1 2 3 4 5 6 7	bewildered	1 2 3 4 5 6 7
achieving	1 2 3 4 5 6 7	bitter	1 2 3 4 5 6 7
active	1 2 3 4 5 6 7	bleak	1 2 3 4 5 6 7
admired	1 2 3 4 5 6 7	blissful	1 2 3 4 5 6 7
adventurous	1 2 3 4 5 6 7	blue	1 2 3 4 5 6 7
affectionate	1 2 3 4 5 6 7	boastful	1 2 3 4 5 6 7
afflicted	1 2 3 4 5 6 7	bold	1 2 3 4 5 6 7
afraid	1 2 3 4 5 6 7	brave	1 2 3 4 5 6 7
aggressive	1 2 3 4 5 6 7	bright	1 2 3 4 5 6 7
agitated	1 2 3 4 5 6 7	brimming	1 2 3 4 5 6 7
agreeable	1 2 3 4 5 6 7	brisk	1 2 3 4 5 6 7
aimless	1 2 3 4 5 6 7	broken	1 2 3 4 5 6 7
alarmed	1 2 3 4 5 6 7	bubbly	1 2 3 4 5 6 7
alert	1 2 3 4 5 6 7	buoyant	1 2 3 4 5 6 7
alone	1 2 3 4 5 6 7	burdened	1 2 3 4 5 6 7
ambitious	1 2 3 4 5 6 7	callous	1 2 3 4 5 6 7
amorous	1 2 3 4 5 6 7	calm	1 2 3 4 5 6 7
amusing	1 2 3 4 5 6 7	calming	1 2 3 4 5 6 7
angry	1 2 3 4 5 6 7	capable	1 2 3 4 5 6 7
anguished	1 2 3 4 5 6 7	cared-for	1 2 3 4 5 6 7
annoyed	1 2 3 4 5 6 7	carefree	1 2 3 4 5 6 7
anxious	1 2 3 4 5 6 7	careful	1 2 3 4 5 6 7
apathetic	1 2 3 4 5 6 7	careless	1 2 3 4 5 6 7
appealing	1 2 3 4 5 6 7	caring	1 2 3 4 5 6 7
appeasing	1 2 3 4 5 6 7	cautious	1 2 3 4 5 6 7
appreciative	1 2 3 4 5 6 7	certain	1 2 3 4 5 6 7
approving	1 2 3 4 5 6 7	charitable	1 2 3 4 5 6 7
argumentative	1 2 3 4 5 6 7	charming	1 2 3 4 5 6 7
artistic	1 2 3 4 5 6 7	charmless	1 2 3 4 5 6 7
ashamed	1 2 3 4 5 6 7	cheerful	1 2 3 4 5 6 7
aspiring	1 2 3 4 5 6 7	cheerless	1 2 3 4 5 6 7
assertive	1 2 3 4 5 6 7	childish	1 2 3 4 5 6 7
assisting	1 2 3 4 5 6 7	chivalrous	1 2 3 4 5 6 7
attacked	1 2 3 4 5 6 7	chummy	1 2 3 4 5 6 7
attacking	1 2 3 4 5 6 7	civil	1 2 3 4 5 6 7
attentive	1 2 3 4 5 6 7	civilized	1 2 3 4 5 6 7
authoritative	1 2 3 4 5 6 7	clingy	1 2 3 4 5 6 7
autonomous	1 2 3 4 5 6 7	clumsy	1 2 3 4 5 6 7

classy	1 2 3 4 5 6 7	cowardly	1 2 3 4 5 6 7
clever	1 2 3 4 5 6 7	creative	1 2 3 4 5 6 7
clout	1 2 3 4 5 6 7	critical	1 2 3 4 5 6 7
clownish	1 2 3 4 5 6 7	criticized	1 2 3 4 5 6 7
cocky	1 2 3 4 5 6 7	cruel	1 2 3 4 5 6 7
coddling	1 2 3 4 5 6 7	crushed	1 2 3 4 5 6 7
coercive	1 2 3 4 5 6 7	curious	1 2 3 4 5 6 7
cold	1 2 3 4 5 6 7	cursed	1 2 3 4 5 6 7
combative	1 2 3 4 5 6 7	cynical	1 2 3 4 5 6 7
comfortable	1 2 3 4 5 6 7	damned	1 2 3 4 5 6 7
comforting	1 2 3 4 5 6 7	dangerous	1 2 3 4 5 6 7
comical	1 2 3 4 5 6 7	daring	1 2 3 4 5 6 7
commanding	1 2 3 4 5 6 7	deceitful	1 2 3 4 5 6 7
communicative	1 2 3 4 5 6 7	deceivable	1 2 3 4 5 6 7
compassionate	1 2 3 4 5 6 7	deceptive	1 2 3 4 5 6 7
competitive	1 2 3 4 5 6 7	decisive	1 2 3 4 5 6 7
competent	1 2 3 4 5 6 7	defeated	1 2 3 4 5 6 7
complying	1 2 3 4 5 6 7	defenseless	1 2 3 4 5 6 7
compliant	1 2 3 4 5 6 7	defiant	1 2 3 4 5 6 7
composed	1 2 3 4 5 6 7	deficient	1 2 3 4 5 6 7
conceited	1 2 3 4 5 6 7	dejected	1 2 3 4 5 6 7
concerned	1 2 3 4 5 6 7	deliberate	1 2 3 4 5 6 7
condescending	1 2 3 4 5 6 7	delicate	1 2 3 4 5 6 7
confident	1 2 3 4 5 6 7	delighted	1 2 3 4 5 6 7
confiding	1 2 3 4 5 6 7	demanding	1 2 3 4 5 6 7
conforming	1 2 3 4 5 6 7	demeaning	1 2 3 4 5 6 7
confused	1 2 3 4 5 6 7	dependable	1 2 3 4 5 6 7
congenial	1 2 3 4 5 6 7	dependent	1 2 3 4 5 6 7
conscientious	1 2 3 4 5 6 7	depressed	1 2 3 4 5 6 7
conscious	1 2 3 4 5 6 7	deserted	1 2 3 4 5 6 7
considerate	1 2 3 4 5 6 7	desirable	1 2 3 4 5 6 7
consistent	1 2 3 4 5 6 7	desolate	1 2 3 4 5 6 7
consoling	1 2 3 4 5 6 7	despairing	1 2 3 4 5 6 7
constructive	1 2 3 4 5 6 7	desperate	1 2 3 4 5 6 7
contemptible	1 2 3 4 5 6 7	despondent	1 2 3 4 5 6 7
contented	1 2 3 4 5 6 7	destitute	1 2 3 4 5 6 7
controlling	1 2 3 4 5 6 7	destroyed	1 2 3 4 5 6 7
convincing	1 2 3 4 5 6 7	detached	1 2 3 4 5 6 7
conventional	1 2 3 4 5 6 7	determined	1 2 3 4 5 6 7
cooperative	1 2 3 4 5 6 7	devastated	1 2 3 4 5 6 7
courageous	1 2 3 4 5 6 7	devoted	1 2 3 4 5 6 7
courteous	1 2 3 4 5 6 7	diligent	1 2 3 4 5 6 7

directing	1 2 3 4 5 6 7	exceptional	1 2 3 4 5 6 7
disagreeable	1 2 3 4 5 6 7	excitable	1 2 3 4 5 6 7
disappointed	1 2 3 4 5 6 7	excited	1 2 3 4 5 6 7
disciplined	1 2 3 4 5 6 7	exhausted	1 2 3 4 5 6 7
disconnected	1 2 3 4 5 6 7	exhausting	1 2 3 4 5 6 7
discouraged	1 2 3 4 5 6 7	exhilarated	1 2 3 4 5 6 7
disgraced	1 2 3 4 5 6 7	expert	1 2 3 4 5 6 7
disgusting	1 2 3 4 5 6 7	explosive	1 2 3 4 5 6 7
dishonest	1 2 3 4 5 6 7	expressive	1 2 3 4 5 6 7
dismal	1 2 3 4 5 6 7	extraordinary	1 2 3 4 5 6 7
dismissing	1 2 3 4 5 6 7	extravagant	1 2 3 4 5 6 7
distressed	1 2 3 4 5 6 7	exuberant	1 2 3 4 5 6 7
dominant	1 2 3 4 5 6 7	facilitating	1 2 3 4 5 6 7
dominating	1 2 3 4 5 6 7	failing	1 2 3 4 5 6 7
domineering	1 2 3 4 5 6 7	failure	1 2 3 4 5 6 7
doomed	1 2 3 4 5 6 7	fair	1 2 3 4 5 6 7
downcast	1 2 3 4 5 6 7	faithful	1 2 3 4 5 6 7
downhearted	1 2 3 4 5 6 7	fake	1 2 3 4 5 6 7
drained	1 2 3 4 5 6 7	fascinating	1 2 3 4 5 6 7
dramatic	1 2 3 4 5 6 7	fatigued	1 2 3 4 5 6 7
dreary	1 2 3 4 5 6 7	favourable	1 2 3 4 5 6 7
driven	1 2 3 4 5 6 7	fearful	1 2 3 4 5 6 7
droopy	1 2 3 4 5 6 7	fierce	1 2 3 4 5 6 7
dull	1 2 3 4 5 6 7	fighting	1 2 3 4 5 6 7
durable	1 2 3 4 5 6 7	firm	1 2 3 4 5 6 7
dynamic	1 2 3 4 5 6 7	flamboyant	1 2 3 4 5 6 7
eager	1 2 3 4 5 6 7	flashy	1 2 3 4 5 6 7
earnest	1 2 3 4 5 6 7	flawless	1 2 3 4 5 6 7
ecstatic	1 2 3 4 5 6 7	flexible	1 2 3 4 5 6 7
effective	1 2 3 4 5 6 7	focused	1 2 3 4 5 6 7
efficient	1 2 3 4 5 6 7	follower	1 2 3 4 5 6 7
elated	1 2 3 4 5 6 7	foolhardy	1 2 3 4 5 6 7
emotional	1 2 3 4 5 6 7	foolish	1 2 3 4 5 6 7
empty	1 2 3 4 5 6 7	forceful	1 2 3 4 5 6 7
encouraged	1 2 3 4 5 6 7	forgetful	1 2 3 4 5 6 7
energetic	1 2 3 4 5 6 7	forgiving	1 2 3 4 5 6 7
engaging	1 2 3 4 5 6 7	forlorn	1 2 3 4 5 6 7
enjoyable	1 2 3 4 5 6 7	forsaken	1 2 3 4 5 6 7
enterprising	1 2 3 4 5 6 7	forthcoming	1 2 3 4 5 6 7
entertaining	1 2 3 4 5 6 7	fortunate	1 2 3 4 5 6 7
enthusiastic	1 2 3 4 5 6 7	forward	1 2 3 4 5 6 7
evaluating	1 2 3 4 5 6 7	fragile	1 2 3 4 5 6 7

frantic	1 2 3 4 5 6 7	harsh	1 2 3 4 5 6 7
free	1 2 3 4 5 6 7	hasty	1 2 3 4 5 6 7
frenzied	1 2 3 4 5 6 7	hateful	1 2 3 4 5 6 7
friendly	1 2 3 4 5 6 7	haunted	1 2 3 4 5 6 7
frisky	1 2 3 4 5 6 7	headstrong	1 2 3 4 5 6 7
frivolous	1 2 3 4 5 6 7	heartless	1 2 3 4 5 6 7
frustrated	1 2 3 4 5 6 7	heartsick	1 2 3 4 5 6 7
fulfilled	1 2 3 4 5 6 7	hearty	1 2 3 4 5 6 7
funny	1 2 3 4 5 6 7	helpful	1 2 3 4 5 6 7
furious	1 2 3 4 5 6 7	helpless	1 2 3 4 5 6 7
fussy	1 2 3 4 5 6 7	heroic	1 2 3 4 5 6 7
generous	1 2 3 4 5 6 7	hesitating	1 2 3 4 5 6 7
genial	1 2 3 4 5 6 7	high	1 2 3 4 5 6 7
gentle	1 2 3 4 5 6 7	hilarious	1 2 3 4 5 6 7
gifted	1 2 3 4 5 6 7	hollow	1 2 3 4 5 6 7
giggly	1 2 3 4 5 6 7	honest	1 2 3 4 5 6 7
giving	1 2 3 4 5 6 7	hopeful	1 2 3 4 5 6 7
glad	1 2 3 4 5 6 7	hopeless	1 2 3 4 5 6 7
gleeful	1 2 3 4 5 6 7	hospitable	1 2 3 4 5 6 7
gloomy	1 2 3 4 5 6 7	hostile	1 2 3 4 5 6 7
glorified	1 2 3 4 5 6 7	humble	1 2 3 4 5 6 7
glorious	1 2 3 4 5 6 7	humiliated	1 2 3 4 5 6 7
glowing	1 2 3 4 5 6 7	humourous	1 2 3 4 5 6 7
glum	1 2 3 4 5 6 7	hurried	1 2 3 4 5 6 7
good	1 2 3 4 5 6 7	hurt	1 2 3 4 5 6 7
gracious	1 2 3 4 5 6 7	hurtful	1 2 3 4 5 6 7
grateful	1 2 3 4 5 6 7	hyperactive	1 2 3 4 5 6 7
grave	1 2 3 4 5 6 7	icy	1 2 3 4 5 6 7
great	1 2 3 4 5 6 7	idealistic	1 2 3 4 5 6 7
greedy	1 2 3 4 5 6 7	idealized	1 2 3 4 5 6 7
grieved	1 2 3 4 5 6 7	idle	1 2 3 4 5 6 7
grim	1 2 3 4 5 6 7	ignorant	1 2 3 4 5 6 7
grouchy	1 2 3 4 5 6 7	imaginative	1 2 3 4 5 6 7
gruesome	1 2 3 4 5 6 7	immature	1 2 3 4 5 6 7
gruff	1 2 3 4 5 6 7	impatient	1 2 3 4 5 6 7
guarded	1 2 3 4 5 6 7	impersonal	1 2 3 4 5 6 7
guilty	1 2 3 4 5 6 7	impetuous	1 2 3 4 5 6 7
gullible	1 2 3 4 5 6 7	impolite	1 2 3 4 5 6 7
happy	1 2 3 4 5 6 7	important	1 2 3 4 5 6 7
hardened	1 2 3 4 5 6 7	impressive	1 2 3 4 5 6 7
hardworking	1 2 3 4 5 6 7	impulsive	1 2 3 4 5 6 7
harmless	1 2 3 4 5 6 7	inadequate	1 2 3 4 5 6 7

incapable	1 2 3 4 5 6 7	lifeless	1 2 3 4 5 6 7
incompetent	1 2 3 4 5 6 7	light	1 2 3 4 5 6 7
inconsiderate	1 2 3 4 5 6 7	listless	1 2 3 4 5 6 7
independent	1 2 3 4 5 6 7	lively	1 2 3 4 5 6 7
indifferent	1 2 3 4 5 6 7	loathsome	1 2 3 4 5 6 7
individual	1 2 3 4 5 6 7	logical	1 2 3 4 5 6 7
industrial	1 2 3 4 5 6 7	lonely	1 2 3 4 5 6 7
industrious	1 2 3 4 5 6 7	lonesome	1 2 3 4 5 6 7
inferior	1 2 3 4 5 6 7	loser	1 2 3 4 5 6 7
inflexible	1 2 3 4 5 6 7	lost	1 2 3 4 5 6 7
influential	1 2 3 4 5 6 7	loud	1 2 3 4 5 6 7
inhibited	1 2 3 4 5 6 7	lovable	1 2 3 4 5 6 7
inferior	1 2 3 4 5 6 7	loving	1 2 3 4 5 6 7
inquiring	1 2 3 4 5 6 7	low	1 2 3 4 5 6 7
insecure	1 2 3 4 5 6 7	lucky	1 2 3 4 5 6 7
insensitive	1 2 3 4 5 6 7	lusty	1 2 3 4 5 6 7
insightful	1 2 3 4 5 6 7	manipulative	1 2 3 4 5 6 7
insignificant	1 2 3 4 5 6 7	marvelous	1 2 3 4 5 6 7
inspired	1 2 3 4 5 6 7	materialistic	1 2 3 4 5 6 7
intellectual	1 2 3 4 5 6 7	maternal	1 2 3 4 5 6 7
intense	1 2 3 4 5 6 7	mean	1 2 3 4 5 6 7
interested	1 2 3 4 5 6 7	melancholy	1 2 3 4 5 6 7
interesting	1 2 3 4 5 6 7	mellow	1 2 3 4 5 6 7
intimidating	1 2 3 4 5 6 7	merry	1 2 3 4 5 6 7
introspective	1 2 3 4 5 6 7	mischievous	1 2 3 4 5 6 7
inventive	1 2 3 4 5 6 7	miserable	1 2 3 4 5 6 7
invincible	1 2 3 4 5 6 7	moderate	1 2 3 4 5 6 7
involved	1 2 3 4 5 6 7	modest	1 2 3 4 5 6 7
irritable	1 2 3 4 5 6 7	moody	1 2 3 4 5 6 7
irritated	1 2 3 4 5 6 7	moral	1 2 3 4 5 6 7
jealous	1 2 3 4 5 6 7	morbid	1 2 3 4 5 6 7
jittery	1 2 3 4 5 6 7	motivated	1 2 3 4 5 6 7
jolly	1 2 3 4 5 6 7	mournful	1 2 3 4 5 6 7
jovial	1 2 3 4 5 6 7	nasty	1 2 3 4 5 6 7
joyful	1 2 3 4 5 6 7	neat	1 2 3 4 5 6 7
joyous	1 2 3 4 5 6 7	needy	1 2 3 4 5 6 7
jubilant	1 2 3 4 5 6 7	neighbourly	1 2 3 4 5 6 7
just	1 2 3 4 5 6 7	negative	1 2 3 4 5 6 7
kind	1 2 3 4 5 6 7	neglectful	1 2 3 4 5 6 7
lazy	1 2 3 4 5 6 7	nervous	1 2 3 4 5 6 7
leader	1 2 3 4 5 6 7	nurturing	1 2 3 4 5 6 7
lenient	1 2 3 4 5 6 7	obedient	1 2 3 4 5 6 7

objective	1 2 3 4 5 6 7	possessive	1 2 3 4 5 6 7
obliging	1 2 3 4 5 6 7	powerful	1 2 3 4 5 6 7
obnoxious	1 2 3 4 5 6 7	practical	1 2 3 4 5 6 7
offensive	1 2 3 4 5 6 7	precise	1 2 3 4 5 6 7
open-minded	1 2 3 4 5 6 7	prejudiced	1 2 3 4 5 6 7
opinionated	1 2 3 4 5 6 7	pretentious	1 2 3 4 5 6 7
oppressed	1 2 3 4 5 6 7	privileged	1 2 3 4 5 6 7
optimistic	1 2 3 4 5 6 7	productive	1 2 3 4 5 6 7
orderly	1 2 3 4 5 6 7	proud	1 2 3 4 5 6 7
ordinary	1 2 3 4 5 6 7	protecting	1 2 3 4 5 6 7
organized	1 2 3 4 5 6 7	punctual	1 2 3 4 5 6 7
oriented	1 2 3 4 5 6 7	punished	1 2 3 4 5 6 7
original	1 2 3 4 5 6 7	purposeful	1 2 3 4 5 6 7
outgoing	1 2 3 4 5 6 7	pushy	1 2 3 4 5 6 7
outspoken	1 2 3 4 5 6 7	puzzled	1 2 3 4 5 6 7
outstanding	1 2 3 4 5 6 7	quarrelsome	1 2 3 4 5 6 7
overbearing	1 2 3 4 5 6 7	quick	1 2 3 4 5 6 7
oversensitive	1 2 3 4 5 6 7	quiet	1 2 3 4 5 6 7
overwhelmed	1 2 3 4 5 6 7	racing	1 2 3 4 5 6 7
panicky	1 2 3 4 5 6 7	radiant	1 2 3 4 5 6 7
passionate	1 2 3 4 5 6 7	rational	1 2 3 4 5 6 7
passive	1 2 3 4 5 6 7	realistic	1 2 3 4 5 6 7
patient	1 2 3 4 5 6 7	reasonable	1 2 3 4 5 6 7
pathetic	1 2 3 4 5 6 7	rebellious	1 2 3 4 5 6 7
peaceful	1 2 3 4 5 6 7	reckless	1 2 3 4 5 6 7
pensive	1 2 3 4 5 6 7	reflective	1 2 3 4 5 6 7
peppy	1 2 3 4 5 6 7	refreshed	1 2 3 4 5 6 7
perfect	1 2 3 4 5 6 7	regretful	1 2 3 4 5 6 7
perfectionistic	1 2 3 4 5 6 7	rejected	1 2 3 4 5 6 7
persecuted	1 2 3 4 5 6 7	relaxed	1 2 3 4 5 6 7
persistent	1 2 3 4 5 6 7	reliable	1 2 3 4 5 6 7
personable	1 2 3 4 5 6 7	reliant	1 2 3 4 5 6 7
persuasive	1 2 3 4 5 6 7	relieved	1 2 3 4 5 6 7
pessimistic	1 2 3 4 5 6 7	remarkable	1 2 3 4 5 6 7
picky	1 2 3 4 5 6 7	remorseful	1 2 3 4 5 6 7
pitiful	1 2 3 4 5 6 7	renewed	1 2 3 4 5 6 7
plagued	1 2 3 4 5 6 7	repulsive	1 2 3 4 5 6 7
playful	1 2 3 4 5 6 7	resentful	1 2 3 4 5 6 7
pleasant	1 2 3 4 5 6 7	reserved	1 2 3 4 5 6 7
pleased	1 2 3 4 5 6 7	resistant	1 2 3 4 5 6 7
polite	1 2 3 4 5 6 7	resourceful	1 2 3 4 5 6 7
pompous	1 2 3 4 5 6 7	respected	1 2 3 4 5 6 7

respectful	1 2 3 4 5 6 7	solid	1 2 3 4 5 6 7
responsible	1 2 3 4 5 6 7	solitary	1 2 3 4 5 6 7
restless	1 2 3 4 5 6 7	sophisticated	1 2 3 4 5 6 7
revolted	1 2 3 4 5 6 7	sorrowful	1 2 3 4 5 6 7
robust	1 2 3 4 5 6 7	sorry	1 2 3 4 5 6 7
romantic	1 2 3 4 5 6 7	sparkling	1 2 3 4 5 6 7
rude	1 2 3 4 5 6 7	spirited	1 2 3 4 5 6 7
ruined	1 2 3 4 5 6 7	spiteful	1 2 3 4 5 6 7
rushed	1 2 3 4 5 6 7	spontaneous	1 2 3 4 5 6 7
sad	1 2 3 4 5 6 7	stagnant	1 2 3 4 5 6 7
sadistic	1 2 3 4 5 6 7	stressed	1 2 3 4 5 6 7
sarcastic	1 2 3 4 5 6 7	stricken	1 2 3 4 5 6 7
satisfied	1 2 3 4 5 6 7	striving	1 2 3 4 5 6 7
scared	1 2 3 4 5 6 7	strong	1 2 3 4 5 6 7
scholarly	1 2 3 4 5 6 7	stubborn	1 2 3 4 5 6 7
seductive	1 2 3 4 5 6 7	studious	1 2 3 4 5 6 7
self-assured	1 2 3 4 5 6 7	stupid	1 2 3 4 5 6 7
self-conscious	1 2 3 4 5 6 7	subdued	1 2 3 4 5 6 7
selfish	1 2 3 4 5 6 7	submissive	1 2 3 4 5 6 7
sensible	1 2 3 4 5 6 7	successful	1 2 3 4 5 6 7
sensitive	1 2 3 4 5 6 7	suffering	1 2 3 4 5 6 7
sensual	1 2 3 4 5 6 7	suicidal	1 2 3 4 5 6 7
sentimental	1 2 3 4 5 6 7	sunny	1 2 3 4 5 6 7
serious	1 2 3 4 5 6 7	superficial	1 2 3 4 5 6 7
sexy	1 2 3 4 5 6 7	superior	1 2 3 4 5 6 7
shallow	1 2 3 4 5 6 7	supportive	1 2 3 4 5 6 7
shamed	1 2 3 4 5 6 7	suspicious	1 2 3 4 5 6 7
shameful	1 2 3 4 5 6 7	sympathetic	1 2 3 4 5 6 7
sharing	1 2 3 4 5 6 7	systematic	1 2 3 4 5 6 7
shattered	1 2 3 4 5 6 7	talented	1 2 3 4 5 6 7
showy	1 2 3 4 5 6 7	talkative	1 2 3 4 5 6 7
shunned	1 2 3 4 5 6 7	tearful	1 2 3 4 5 6 7
shy	1 2 3 4 5 6 7	temperamental	1 2 3 4 5 6 7
sincere	1 2 3 4 5 6 7	tender	1 2 3 4 5 6 7
sinful	1 2 3 4 5 6 7	tense	1 2 3 4 5 6 7
skillful	1 2 3 4 5 6 7	terrible	1 2 3 4 5 6 7
skilled	1 2 3 4 5 6 7	terrific	1 2 3 4 5 6 7
sluggish	1 2 3 4 5 6 7	terrified	1 2 3 4 5 6 7
smart	1 2 3 4 5 6 7	thinking	1 2 3 4 5 6 7
snobbish	1 2 3 4 5 6 7	thoughtful	1 2 3 4 5 6 7
sociable	1 2 3 4 5 6 7	threatening	1 2 3 4 5 6 7
solemn	1 2 3 4 5 6 7	thrifty	1 2 3 4 5 6 7

thrilled	1 2 3 4 5 6 7	vile	1 2 3 4 5 6 7
thriving	1 2 3 4 5 6 7	violent	1 2 3 4 5 6 7
timid	1 2 3 4 5 6 7	vulnerable	1 2 3 4 5 6 7
tired	1 2 3 4 5 6 7	warm	1 2 3 4 5 6 7
tolerant	1 2 3 4 5 6 7	wary	1 2 3 4 5 6 7
tormented	1 2 3 4 5 6 7	weak	1 2 3 4 5 6 7
tortured	1 2 3 4 5 6 7	weary	1 2 3 4 5 6 7
touchy	1 2 3 4 5 6 7	weird	1 2 3 4 5 6 7
tough	1 2 3 4 5 6 7	whole	1 2 3 4 5 6 7
tragical	1 2 3 4 5 6 7	wilted	1 2 3 4 5 6 7
tranquil	1 2 3 4 5 6 7	witty	1 2 3 4 5 6 7
triumphant	1 2 3 4 5 6 7	withdrawn	1 2 3 4 5 6 7
trivial	1 2 3 4 5 6 7	woeful	1 2 3 4 5 6 7
troubled	1 2 3 4 5 6 7	wonderful	1 2 3 4 5 6 7
trusted	1 2 3 4 5 6 7	worried	1 2 3 4 5 6 7
trustful	1 2 3 4 5 6 7	worthless	1 2 3 4 5 6 7
trusting	1 2 3 4 5 6 7	wretched	1 2 3 4 5 6 7
trustworthy	1 2 3 4 5 6 7	zestful	1 2 3 4 5 6 7
turbulent	1 2 3 4 5 6 7	hated	1 2 3 4 5 6 7
understanding	1 2 3 4 5 6 7	knowledgeable	1 2 3 4 5 6 7
unfair	1 2 3 4 5 6 7	natural	1 2 3 4 5 6 7
unloved	1 2 3 4 5 6 7	suggestible	1 2 3 4 5 6 7
unsociable	1 2 3 4 5 6 7	arrogant	1 2 3 4 5 6 7
unwanted	1 2 3 4 5 6 7	benevolent	1 2 3 4 5 6 7
upset	1 2 3 4 5 6 7	disloyal	1 2 3 4 5 6 7
useless	1 2 3 4 5 6 7	permissive	1 2 3 4 5 6 7
valued	1 2 3 4 5 6 7	popular	1 2 3 4 5 6 7
valuable	1 2 3 4 5 6 7	scientific	1 2 3 4 5 6 7
vengeful	1 2 3 4 5 6 7	secretive	1 2 3 4 5 6 7
vibrant	1 2 3 4 5 6 7	simple	1 2 3 4 5 6 7
victorious	1 2 3 4 5 6 7	skeptical	1 2 3 4 5 6 7
vigilant	1 2 3 4 5 6 7	secure	1 2 3 4 5 6 7
vigorous	1 2 3 4 5 6 7	connected	1 2 3 4 5 6 7

Appendix D -- Set of Words Used in the Deployment of Attention Task

	SOCIOTROPIC/ DEPENDENT	AUTONOMOUS/ SELF-CRITICAL
POSITIVE	Loyal	Brave
	Polite	Perfect
	Loving	Aspiring
	Giving	Academic
	Caring	Powerful
	Chummy	Confident
	Popular	Ambitious
	Helpful	Achieving
	Sociable	Assertive
	Friendly	Productive
	Faithful	Invincible
	Agreeable	Determined
	Nurturing	Disciplined
	Considerate	Hardworking
	Affectionate	Independent
	Compassionate	Intellectual
NEGATIVE	Hurt	Bold
	Empty	Firm
	Needy	Cocky
	Clingy	Tough
	Jealous	Stubborn
	Shunned	Solitary
	Unloved	Forceful
	Unwanted	Dominant
	Helpless	Critical
	Follower	Boastful
	Deserted	Combative
	Desperate	Aggressive
	Dependent	Commanding
	Possessive	Dominating
	Humiliated	Headstrong
	Conforming	Competitive

NEITHER SOCIOTROPIC/DEPENDENT NOR AUTONOMOUS/SELF-CRITICAL

NEUTRAL	Neat
	Idle
	Simple
	Mellow
	Trivial
	Thrifty
	Natural
	Patient
	Lenient
	Ordinary
	Moderate
	Flexible
	Harmless
	Objective
	Realistic
	Reasonable

Judges' Mean Ratings of Sociotropy/Dependency (Soc/Dep), Autonomy/Self-Criticism (Aut/S.C.), Emotional Intensity, and Imagery, for each stimulus word, along with Kucera Francis word frequency and word length (i.e., number of letters). Standard deviations are presented in brackets.

Word Type	Kucera Francis	Number of letters	Soc/Dep. Rating	Aut/S.C. rating	Emotional Intensity	Imagery
Soc/Dep: Positive						
Loyal	018	05	5.8	2.6	4.2	5.4
Polite	007	06	5.8	3.4	3.0	3.4
Loving	015	06	5.0	2.8	6.0	5.0
Giving	000	06	5.4	2.8	5.0	4.8
Chummy	000	06	6.0	1.4	4.0	5.2
Caring	010	06	6.0	3.4	6.2	5.6
Popular	000	07	5.2	2.8	2.8	5.0
Helpful	000	07	5.4	2.8	4.0	5.4
Sociable	004	08	6.2	1.6	4.8	6.0
Friendly	061	08	5.8	2.6	5.6	6.0
Faithful	000	08	6.2	2.8	5.2	6.2
Agreeable	011	09	5.6	3.0	6.8	3.0
Nurturing	000	09	5.2	2.0	5.8	6.0
Considerate	004	11	5.0	2.8	4.4	2.2
Affectionate	006	12	6.2	2.6	7.2	7.2
Compassionate	000	14	5.6	3.2	7.2	5.2
Mean:	7.44 (15.06)	8.00 (2.50)	5.64 (.41)	2.68 (.57)	5.09 (1.40)	4.88 (1.33)
Soc/Dep: Negative						
Hurt	000	04	6.2	3.2	5.8	7.0
Empty	064	05	6.0	3.2	5.8	7.0
Needy	000	05	6.8	1.8	6.2	5.6
Clingy	000	06	6.4	1.0	5.8	7.0
Jealous	000	07	6.0	3.0	7.2	6.4
Shunned	001	07	6.0	2.8	6.0	5.2
Unloved	000	07	6.0	3.2	6.6	4.2
Unwanted	006	08	6.2	3.0	6.6	4.4
Helpless	021	08	6.4	2.2	6.8	6.8
Follower	000	08	6.4	1.4	4.0	5.4
Deserted	015	08	6.6	3.0	8.0	7.4
Desperate	026	09	6.4	2.6	7.6	5.8

Word Type	Kucera Francis	Number of letters	Soc/Dep. Rating	Aut/S.C. rating	Emotional Intensity	Imagery
Soc/Dep: Negative						
Dependent	040	09	6.2	1.4	5.2	4.4
Possessive	000	10	6.2	2.4	6.2	5.2
Humiliated	000	10	5.8	3.0	4.6	5.8
Conforming	000	10	6.0	1.8	3.2	3.8
Mean:	10.81 (18.63)	7.56 (1.86)	6.22 (.26)	2.44 (.74)	5.98 (1.27)	5.71 (1.14)
Aut/S.C.: Positive						
Brave	024	05	5.6	2.0	6.4	7.6
Perfect	000	07	5.6	2.4	5.0	4.4
Aspiring	000	08	6.0	2.8	5.6	4.2
Powerful	063	08	5.8	1.2	6.0	7.2
Academic	000	08	5.8	2.6	3.0	7.0
Assertive	002	08	6.4	2.2	5.6	3.6
Confident	016	09	6.4	2.8	5.2	6.4
Ambitious	016	09	2.0	7.0	5.8	3.2
Achieving	015	09	7.0	3.4	6.0	3.6
Invincible	002	10	5.0	2.2	6.0	7.2
Productive	025	10	6.4	3.0	4.0	4.4
Determined	119	10	6.6	3.0	5.4	6.0
Disciplined	000	11	5.4	2.4	3.2	5.0
Hardworking	000	11	2.2	6.8	2.6	7.0
Independent	000	11	1.0	7.0	3.2	6.2
Intellectual	000	11	5.8	2.4	3.4	7.4
Mean:	17.63 (31.73)	9.06 (1.69)	5.19 (1.80)	3.32 (1.86)	4.78 (1.30)	5.65 (1.56)
Aut/S.C.: Negative						
Bold	021	04	2.2	6.0	5.6	6.0
Firm	000	04	2.0	5.0	3.4	6.0

Word Type	Kucera Francis	Number of letters	Soc/Dep. Rating	Aut/S.C. Rating	Emotional Intensity	Imagery
Aut/S.C.: Negative						
Cocky	000	05	5.4	2.4	4.8	6.2
Critical	058	08	5.4	3.0	6.6	4.4
Forceful	008	08	2.2	5.0	6.0	6.0
Solitary	014	08	6.0	3.2	3.8	6.4
Stubborn	000	08	3.0	5.8	5.7	7.2
Dominant	065	08	6.4	1.6	5.0	7.0
Boastful	000	08	2.8	5.2	4.4	6.2
Combative	000	09	5.0	3.0	7.6	6.4
Aggressive	017	10	5.2	2.4	8.2	8.2
Commanding	000	10	5.4	2.6	6.8	6.0
Dominating	000	10	2.4	5.2	6.6	7.0
Headstrong	000	10	5.2	2.4	4.0	4.8
Competitive	031	11	2.6	6.6	5.0	6.2
Mean:	13.37 (21.10)	7.88 (2.25)	3.97 (1.64)	4.05 (1.61)	5.53 (1.37)	6.13 (1.00)
Neutral						
Neat	021	04	2.6	4.0	2.2	6.0
Idle	000	04	3.8	2.6	1.8	5.4
Simple	000	06	4.0	2.6	2.0	3.8
Mellow	001	06	3.2	2.8	2.6	5.8
Trivial	011	07	4.0	2.2	1.6	3.0
Thrifty	000	07	2.8	3.6	1.8	6.0
Natural	000	07	3.0	3.4	1.8	4.8
Patient	000	07	3.6	3.2	2.6	4.2
Lenient	000	07	3.8	2.6	2.6	4.6
Ordinary	000	08	3.4	3.0	1.2	4.4
Moderate	000	08	3.2	3.2	2.0	2.8
Flexible	000	08	2.8	2.6	2.8	5.4
Harmless	000	08	.6	3.2	2.4	2.8
Objective	000	09	2.2	3.6	1.8	1.8
Realistic	000	09	2.6	3.4	2.0	1.6
Reasonable	000	10	2.6	3.2	2.6	2.0
Mean:	2.63 (6.06)	10.75 (14.03)	3.14 (.62)	3.41 (1.37)	2.36 (1.19)	3.71 (1.64)

Appendix E -- Pilot Data

Pilot Test Data - Deployment of Attention Task

Twelve nondepressed graduate students, with personality style unspecified, were used to test the efficacy of the new set of DOAT words (i.e., sociotropic, autonomous, neutral). As these were nondepressed subjects, it was predicted that if the current set of words was efficacious, a protective bias would be identifiable. Means and standard deviations are presented in Table 1.

Table 1.

	SOCIOTROPIC/ DEPENDENT			AUTONOMOUS/ SELF-CRITICAL		
Word Pair	INEGNEU	INEGPOS	IPOSNEU	ANEGNEU	ANEGPOS	APOSNEU
Mean (SD)	.35** (.14)	.35** (.17)	.59 (.16)	.39* (.14)	.38* (.19)	.56 (.18)

Note: NEGNEU = negative/neutral word pair, NEGPOS = positive/neutral word pair, POSNEU = positive/neutral word pairs, respectively. The first three letters of each word pair indicates the target in that pair. The standard deviation of the entire sample was .186, and this value was used in t-test procedures.

** indicates significance at the $p<.01$ level.
* indicates significance at the $p<.05$ level.

These means demonstrated that the new set of DOAT words were able to detect a protective bias for both sociotropic/dependent and autonomous/self-critical stimuli. The means for the POSNEU word pair for both sociotropic and autonomous word pairs appear to be moving towards a positive bias in the POSNEU (i.e., significantly greater than .50).

Appendix F -- Coding System for Narratives

Narrative Measures Coding System

INTERPERSONAL

Negative Behaviours/Statements

-reports of feelings overwhelmed, disbelief at others bad motivations ("how could they?")
-upset at not being liked, wondering what to do to make new friends
-emotional insurance (i.e., seeking new friends), developing wider friend base
-themes of deprivation, rejection, loneliness, missing friends and family, emptiness, isolation, sense of being singled-out
-fear of disapproval from others (i.e., to be caught eavesdropping)
-reports of embarrassment, helplessness, sense of betrayal by others, despair
-fear of not fitting in, being hurt, unwanted
-a reported urge to cry, emotionality
-worry over others' behaviours
-unsure how to soothe self, who to talk to, ambivalence over taking action
-friend or family member dying
-need for reassurance, nurturance, love, acceptance, guidance, to be cared-for
-feelings of dependency
-self-blame for loss of relationships
-expressed fear of being disapproved of, abandoned
-need to please others, fear of upsetting others by being assertive
-fear of being socially undesirable, or negatively evaluated by others
-themes of being unworthy of others love, trust, affection
-reluctance to express hostility and/or anger
-concerns re: personal attractiveness or other social attributes

Positive Behaviours/Statements
-identifies self as caring person
-high value placed on relationships, find relationships very rewarding/very important
-desire to be with someone, share a good time
-extreme patience with others, sense of optimism
-moving in with friends
-dating, getting married, having children
-going out, partying, visiting friends and family
-becoming an Aunt/Uncle
-getting a pet

Neutral Behaviours/Statements
-any of the above statements without discernible valence
-living at home with no specification as to whether it is good or bad
ACHIEVEMENT

Negative Behaviours/Statements

-failure to attain set goals
-competitiveness
-willingness to express hostility, anger, or displeasure with others
-reluctance to ask or accept help from others
-theme of not caring about others, dismissive
-feelings of inadequacy, failure to live up to standards or reach goals
-feelings of guilt, defeat, worthlessness
-feelings of being controlled, criticized, judged
-sense of personal deficiency, blaming self for falling below standards
-sense of incompetence
-fearful of being seen as incompetent
-pessimism
-sense of being frustrated, bored, tense, feeling like a failure or useless
-fear of making wrong decision
-expressed annoyance, anger, hostility, reactivity, irritability
-treating others poorly
-concerns about school or job future
-indignance (e.g. "how dare they", "that's unfair") or sense of mistreatment
-preference for being alone
-self-doubt
-feelings of inadequacy, stupidity, being hateful or revengeful
-feelings of being useless, having no purpose, having wasted time, effort and/or money
-feelings of hopelessness, worthlessness
-disappointment in self, fear that disappointed others
-fear of financial problems, bouncing cheques
-discouragement, stressed out regarding amount of work to do

Positive Behaviours/Statements

-feelings of independence, achievement, success, freedom to make own decisions
-need or expressed desire to take action
-desire to define self as different from others
-acknowledgment by others , respect, admiration
-sense of control and accomplishment
-assertion of personal rights, self-protection at expense of others, desire to express self
-desire to take action (e.g., "what can I do to fix this")
-expressed confidence, satisfaction, pride, realism
-determination (e.g., "I won't give up", "I will change my plans")
-sense of being a hard worker
-motivation to start and/or finish work, assignments, essays, homework
-expectation of completing academic year, degree, potential graduate or professional school, get job
-living independently, away from home

-buying house or car
-involvement in sporting activities

Neutral Behaviours/Statements
-mention of exam, midterm, homework, essay (without specifying how feel about it)
-change schools with no specification as to good or bad

UNDIFFERENTIATED

Negative Behaviours/Statements
-distraught, worried, sad, uneasy, shame, upset, sweaty, regretful, scared, shocked, depressed, tired, hot, low, lifeless, hysteria, nervous, disoriented (but with no specification as to source)
-sick, dying, not sleeping, going to funeral, going to hospital

Positive Behaviours/Statements
-feelings of being calm, happy, relaxed, meditative, peaceful, contented, complete, secure (but without specification as to source)
-make the best of bad situation, looking on bright side, "not the end of world"
-get in touch with spiritual side
-travel
-take year off
-mature
-stable, healthy life
-having birthday, doctor's appointment

Neutral Behaviours/Statements
-appreciative of weather, general awareness, "anything", hair cut, grocery shop, laundry, "experiencing a lot"

Appendix G -- Analysis of Variance (ANOVA) for the Deployment of Attention Task (DOAT)

Analysis of Variance for the DOAT using General Linear Modeling Procedures.

In addition to the pattern analysis, an Analysis of Variance (ANOVA) was also performed on the DOAT data. Traditional hypothesis testing of the DOAT is not considered as strong, or conservative, an approach as pattern analysis (see Meehl, 1978, Lykken, 1991), but was included here for the sake of completeness.

ANOVA using General Linear Modeling procedures was performed with Level of Depression, Personality Style (Sociotropic/Dependent, Autonomous/Self-Critical), and Condition (Neutral, Interpersonal Threat, Achievement Threat) as between-subjects factors, and Target (**NEG**NEU, **NEG**POS, **POS**NEU) and Domain of word (i.e., Interpersonal or Achievement) as repeated-measures factors. The dependent measure was the proportion of times the subjects identified the colour bar as replacing the target word in each pair.

ANOVA revealed a significant main effect for Target, $F(2,75)=7.16$, $p<.01$, and significant two-way interactions between Target and Level of Depression, $F(52,152)=1.82$, $p<.01$, Target and Condition, $F(4,152)=2.47$, $p<.05$, and Domain and Level of Depression, $F(26,76)=1.68$, $p<.05$. There were also significant three-way interactions between Domain, Level of Depression, and Condition, $F(38,76)=1.67$, $p<.05$, and Target, Domain, and Condition, $F(4,152)=1.72$, $p<.05$, and significant four-way interactions between Target, Level of Depression, Condition, and Personality Style, $F(26,152)=1.57$, $p<.05$, and Target, Domain, Level of Depression, and Personality Style, $F(38,152)=1.96$, $p<.05$. However, *all* of the above effects were qualified by the significant predicted five-way interaction between Target, Domain, Level of Depression, Condition, and Personality Style, $F(26,152)=1.83$, $p<.01$.

The five-way interaction was initially decomposed by examining whether the four-way interaction between Target, Level of Depression, Condition, and Personality Style was significant for *both* domains of words. That is, simple interaction effects were analyzed separately for interpersonal and achievement words. When analyzed separately for domain of word, the four-way interaction between Target, Level of Depression, Condition, and Personality Style, was significant for interpersonal words, $F(26,152)=1.65$, $p<.05$, but not achievement words, $F(26,152)=1.32$, n.s.

Consequently, all subsequent simple interaction effects were only analyzed for interpersonal words.

As it made theoretical sense to examine the interaction effects for each personality style, simple interaction effects were examined separately for sociotropic/dependent and autonomous/self-critical individuals. ANOVA revealed that the three-way interaction between Target, Level of Depression, and Personality Style was significant for sociotropic/dependent subjects, $F(40,72)=1.92$, $p<.01$, but not autonomous/self-critical subjects, $F(62,80)<1$. Therefore, results of the ANOVA so far suggest that significant effects were obtained for sociotropic/dependent subjects on words that matched the content of their hypothesized self-schema (i.e., interpersonal words), but parallel effects were not found for autonomous/self-critical subjects.

The DOAT effects were predicted to be different at each level of Condition, so ANOVA was performed on Target and Level of Depression (for sociotropic/dependent subjects and interpersonal words) at the three levels of Condition. The results indicated that there were significant two-way interactions between Target and Level of Depression in the neutral Condition, $F(26,24)=1.50$, $p<.05$, and the achievement threat condition, $F(28,24)=2.03$, $p<.05$, but *not* in the interpersonal threat condition, $F(28, 24)=1.34$, $p>.05$.

Analysis of the significant simple effects revealed a significant interaction between Target and Level of Depression in the neutral condition, $F(13,12)=3.34$, $p<.05$, and in the achievement threat condition, $F(13,12)=2.89$, $p<.05$. Examination of the means reveals that in the neutral condition, sociotropic/dependent subjects with different levels of depression displayed very different attention allocation ratios to the INEGNEU, INEGPOS, and IPOSNEU word pairs. However, in the achievement threat condition, sociotropic/dependent subjects with different levels of depression demonstrated a different attention allocation ratio to the INEGNEU word pair, but similar attention allocation ratios to the INEGPOS and IPOSNEU word pairs.

Further ANOVA was not conducted because it would only be able to determine whether or not sociotropic/dependents with varying levels of depression differed in their attentional allocation to *each* of the different word pairs, and not whether they were demonstrating an *overall* positive or protective bias. Consequently,

pattern analyses (see McCabe et al., in press; McCabe & Toman, 1999) were used to examine the overall pattern of means compared to each other in order to determine two different things: (1) were sociotropic/dependents *and* autonomous/self-criticals actually biased in their overall attention patterns, and (2) were the pattern of proportions for the INEGNEU, INEGPOS, and IPOSNEU word pairs, as well as the ANEGNEU, ANEGPOS, and APOSNEU word pairs, in the positions predicted by the congruency hypothesis or the DAH. The pattern analyses can be found in the Results section under the Deployment of Attention Analysis.

To address whether the obtained effects on the DOAT were specific to depression, an Analysis of Variance using General Linear Modeling procedures was also performed with Level of Anxiety, Personality Style, and Condition as between-subjects factors, and Target (**NEG**NEU, **NEG**POS, **POS**NEU) and Domain of word (i.e., Sociotropic or Autonomous) as repeated-measures factors. There were no significant effects when level of anxiety was used as an independent variable, which suggests that the DOAT results were specific to depression.

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