**The Nature, Specificity, and Temporal Stability of Emotional
Information Processing in Sociotropic and Independent Women**

by

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DEDICATION

This doctoral thesis is dedicated to the loving

memory of my mother, Sudha Gupta.

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ABSTRACT

Beck's cognitive theory of depression proposes two personality dimensions, sociotropy and autonomy (independence), that may predispose for depression. Two studies were conducted to determine whether a biased processing for social material characterizes sociotropy and whether information processing bias for achievement related material is related to autonomy. In the first study, 114 undergraduate women were selected as highly sociotropic (n = 39), highly autonomous (independent) (n = 36), or controls (n = 39) based on their scores on the Revised Sociotropy-Autonomy Scale (SAS-R). Participants were given a Self-Referent Encoding Task consisting of Blackburn's (1993) 72 positive and negative autonomous, sociotropic, and neutral trait adjectives. Analysis revealed self-relevance ratings and trait adjective recall bias of positive sociotropic words for the *Sociotropic* individuals whereas the *Independent* individuals showed less selective processing of positive autonomous trait words. In the second study, presence of an attentional bias for personality congruent trait words was investigated in 85 *Sociotropic*, *Independent*, and *Control* undergraduate women. The modified Stroop Color Naming task was used to examine the presence of both effortful and automatic attentional biases using a backward masking procedure after participants were primed by a sad or neutral musical mood induction. After exclusion of participants who did not show stability of group membership, analysis revealed that *Sociotropic* individuals in the Sad mood condition took significantly longer (less facilitation) to color-name sociotropic trait words, and *Independent* individuals in the Sad mood condition took significantly longer (interference) to color-name autonomous trait adjectives. The results of these two studies

are discussed in terms of the automatic and controlled information processing of

personality congruent stimuli evident in personality vulnerability to depression.

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CHAPTER I

INTRODUCTION

Why do some people become depressed and others do not despite experiencing similar life events? If the presence of negative life events, a recognised causal factor in depression, accounts at most for 15% of the variance in depression onset (e.g., Billings & Moos, 1982; Brown, Bifulco, & Harris, 1987; Brown & Harris, 1978; Paykel, 1979), what other factors are involved in the onset of depressive states? Over the years, psychiatric and psychological research on depression has recognized that hereditary, neurochemical abnormalities, personality, inadequate coping mechanisms, developmental traumas, and environmental stressors all contribute singly or together as etiological contributors to the pathogenesis of depression.

More recently a number of cognitive models have addressed this question by proposing that individuals prone to depression may possess an underlying cognitive or personality vulnerability to depression in the form of negative attributional style, self-focused attention, self-criticism, or perfectionism (e.g., Abramson, Seligman, & Teasdale, 1978 ; Beck, 1967; Blatt, 1974; Hewitt & Flett, 1991; Kuiper, Derry, & MacDonald, 1982; Lewinsohn, Hoberman, Teri, & Hautzinger, 1985; Pyszczynski, Holt, & Greenberg, 1987). Moreover, it has been generally agreed that the meaning which individuals attach to life events may mediate the impact of the event (e.g., Brown & Harris, 1978; Paykel, 1979).

Beck's (1967, 1976) information processing model of depression proposes that particular cognitive variables are an integral part of the symptom presentation of

depression, while other cognitive variables may play a more causal role in depression

onset. At both the descriptive (symptom) and causal levels, Beck assigns a central role to

information processing concepts in an attempt to explain individual differences in the onset

and persistence of depression. The information processing paradigm "conceptualizes the

person as an information processing system and focuses largely upon the structure and

operations within the system and how they function in the selection, transformation,

encoding, storage, retrieval, and generation of information" (Ingram & Kendall, 1986,

p. 5). This approach has been used in experimental psychology to examine factors such as

intelligence, memory, and language. Recently, a number of researchers have extended the

information processing paradigm from experimental cognitive psychology to clinical

psychology to account for normal and abnormal emotional experiences. It has been

proposed that this paradigm can guide and assist conceptualization and prediction as well

as facilitate empirically-based research on cognitive aspects of psychopathology (Ingram

& Kendall, 1986).

Cognitive clinical theories, such as the one developed by Beck, rely on information

processing concepts to explain individual differences in susceptibility to depressive

episodes. This notion of cognitive vulnerability asserts that some individuals possess

stable, enduring cognitive characteristics that make them more susceptible to the impact of

stress and, therefore, increase their risk of depression (Beck, 1987; Brewin, 1988;

Hammen, 1988). Beck's model proposes that two cognitive-personality constructs,

sociotropy and autonomy, place individuals at risk for depression when they encounter

negative life events that match their personality orientation. The result is that they engage

in selective processing of negative self-referent information, thereby setting in motion a reactive depressive process.

The application of information processing concepts to examinations of individual differences in susceptibility to depression has raised several questions. The proposed study will address a number of these research questions as they are relevant to the causal or contributory aspect of Beck's cognitive model of depression. First, how general or specific is the negative self-referent-processing bias in individuals who possess the cognitive personality constructs of sociotropy or autonomy? Do individuals with these personality orientations have an underlying negative self-referent processing bias? Do individuals who are high on sociotropy have a bias for socially related information? Is the information processing bias a general bias, relevant to all negative material, or is it content-specific and connected to the current concerns and personality orientation of the individual? Thus, do individuals high on sociotropy have a specific encoding and retrieval bias for socially relevant stimuli, and do individuals high on independence have a selective bias for autonomously related material? Second, is the negative self-referent-processing bias an enduring characteristic or is it the result of one's current mood state? That is, is the processing bias a personality vulnerability trait or a symptom of depression? Third, at what level of the information processing system is this bias apparent? Is it apparent at the automatic processing level, the controlled processing level, or both?

1.1 Beck's Cognitive Model

Beck's (1967, 1976) cognitive theory asserts that humans have evolved an elaborate system of processing environmental information in order to survive. Thus, each

person's reality is actively constructed by selecting, transforming, encoding, storing, and retrieving information (Beck, 1967).

1.1.1 Dysfunctional Schemas

Beck's cognitive theory is a schema-based model of information processing. Schemas refer to structures of relatively enduring representations of prior knowledge and experience that guide the screening, encoding, organizing, storing, and retrieving of stimuli (Beck, 1967, 1976, 1987; Beck, Rush, Shaw, & Emery, 1979; Greenberg & Beck, 1989). Beck proposed that these structures or schemas are organized hierarchically into constellations which render individuals vulnerable to psychopathology. Schemas dominant in psychopathology are idiosyncratic, rigid, and maladaptive. Moreover, their influence on stimuli is relatively enduring over time. These maladaptive schemas are hypothesized to account for the existence of relatively consistent individual differences in the tendency to exhibit negative self-evaluations, thereby leading, if the circumstances are right, to depression (Beck, 1967).

For the individual at high risk for depression, maladaptive schemas have an overwhelming negative content. These maladaptive schemas consist of concepts which include a negative view of the self, the world, and the future, or what is referred to by Beck as the "negative cognitive triad" (Beck, 1967). Dysfunctional schemas are assigned a primary role in the etiology, maintenance, and treatment of depressive symptomatology. Maladaptive schemas are assumed to be an enduring dimension in the individual's cognitive organization (Beck, 1987). They are thought to arise mainly from early childhood experience but lie dormant until activated by a schema-congruent life stressor

(e.g., failure, loss, rejection). In other words, maladaptive schemas are activated by a limited range of events that match their content.

1.1.2 Personality Vulnerability

Recently, Beck and colleagues (Beck, 1983 , 1987; Beck, Epstein, & Harrison, 1983) have modified the original cognitive theory to include personality organization as a vulnerability factor in depression. In cognitive theory, personality traits are viewed as "superordinate schemas" or "modes" (i.e., clusters of dysfunctional attitudes dealing with diverse situations). The model asserts that when there is a match between the pre-depressive personality of an individual (the cognitive diathesis) and that individual's particular experiences (stressors), depression may be activated (Beck, 1983).

Two types of personality dimensions or modes that have been identified as cognitive diatheses are: (1) sociotropy, which refers to attitudes and goals that place a high value on interpersonal relations, acceptance, and affection received from others; and (2) autonomy, which involves attitudes and goals that are organized around independence, achievement, freedom of action, privacy, and self-determination (Beck, 1983). According to Beck (1983, p. 272), sociotropy " refers to the person's investment in positive interchange with other people. This cluster includes passive-receptive wishes (acceptance, intimacy, understanding, support, guidance); 'narcissistic' wishes (admiration, prestige, status); and feedback validation of beliefs and behaviour." When sociotropic individuals believe they have been blocked from social needs, they are prone to develop depression focused on themes of deprivation and loss. In contrast, autonomy "refers to the person's investment in preserving and increasing his independence, mobility, and personal rights;

freedom of choice, action, and expression; protection of his domain; and defining his boundaries" (Beck, 1983, p. 272). Autonomous individuals are concerned with "attaining meaningful goals" and their "standards and goals are different from and often higher than the conventionally accepted norms" (p. 272-273). When autonomous individuals perceive they are being prevented from meeting their goals, they are vulnerable to depression with themes of failure and defeat. Sociotropy and autonomy are considered to be orthogonal personality dimensions so that individuals may show a predominance of one trait over the other, or a mixture of both personality dimensions.

According to Beck's cognitive diathesis-stress model of depression, highly sociotropic individuals are more vulnerable to depression when they experience events that are appraised as threatening their social resources whereas highly autonomous individuals are more vulnerable to depression when they experience events that prevent them from maintaining role expectations (Beck, 1987, 1991). This cognitive diathesis-stress hypothesis holds that reactive depression only develops when an individual's depressogenic schemas are activated by a schema-congruent event. It is considered essential that the event be highly meaningful to the individual. "The concept of meaningful events refers to the appraisal of events as relevant to the definition and evaluation of the self" (Hammen, Ellicott, Gitlin, & Jamison, 1989a, p. 4). Therefore, the meaning of the event must match an individual's dominant personality mode (Clark, Beck, & Stewart, 1989). In other words, the event must involve some threat to the individual's sense of self-worth and efficacy. In individuals high on sociotropy, this threat is focused on social relations and in individuals high on independence this threat is focused on personal freedom.

Once the constellation of structures containing negative content are activated or primed by a congruent stressor, they are believed to override more functional schemas by exerting a systematic bias in the cognitive processing of self-referent information. Therefore, the processing of information by a faulty information processing system arises because of the activation of maladaptive (i.e., depressogenic) schemas. Incoming information is assimilated to the maladaptive self-schemas thereby strengthening its dominance over the information processing system (Beck et al., 1979; Beck & Clark, 1988). This process leads to various symptoms of depression. Beck et al. (1979) have identified several biasing cognitive operations evident in depression, including the overgeneralization of negative experiences, selective abstraction of negative details, and excessive personalization of negative events (Clark & Beck, 1989; also see Beck & Clark, 1988 for a review of this literature).

1.1.3 Negative Automatic Thoughts

Negative automatic thoughts are believed to be a product of the biased information processing system and so reflect the content of the dominant maladaptive self-schemas. These self-verbalizations or automatic thoughts are transient, state-like, and occur parallel to the dominant self-verbalizations that occupy the stream of consciousness. Beck (1967) noted that clinically depressed individuals' ideation, both voluntary and automatic, primarily involve themes of personal deficiency, self-blame, and negative expectations. These observations have since been corroborated by numerous studies (Beck, Brown, Steer, Eidelson, & Riskind, 1987; Blackburn, Jones, & Lewin, 1986; Crandell & Chambless, 1986; Dobson & Shaw, 1986; Eaves & Rush, 1984; Harrell & Ryon, 1983;

Hollon, Kendall, & Lumry, 1986) using structured questionnaires (e.g., Automatic Thoughts Questionnaire, Cognitions Checklist, Crandell Cognitions Inventory). Eaves and Rush (1984) provided evidence that these negative cognitive phenomena are present in all diagnostic types of depression. Together, these studies provide support for Beck's negativity and exclusivity hypothesis: that negative thinking appears to be universal in depression and that positive self-evaluations are largely absent in depression states (also see Schwartz & Garomoni, 1986).

1.2 Empirical Support For Cognitive Vulnerability

The presence of trait-like or enduring aspects of cognitive organization in individuals predisposed to depression has been assessed using self-report measures, such as the Dysfunctional Attitude Scale and the Sociotropy-Autonomy Scale, and experimental methods, such as the self-referent encoding task, the emotional Stroop task, and autobiographical memory recall. Most of these studies have used cross-sectional research designs in which depressed individuals are compared with nondepressed individuals, individuals recovering from depression, and individuals at risk for developing depression. Studies used mixed samples of men and women unless specified otherwise.

1.2.1 Empirical Studies of Dysfunctional Schemas

1.2.1.1 Dysfunctional Attitudes Scale. The most widely used structured self-report measure of the content of underlying dysfunctional attitudes and beliefs is the Dysfunctional Attitudes Scale (Weissman & Beck, 1978). This 40-item scale assesses dysfunctional attitudes in negative self-schemata, such as perfectionistic performance standards, rigid ideas about the world, and concern about the judgement of others. Items

relate to idiosyncratic beliefs about love, achievement, autonomy, demandingness, approval, and perfectionism which have been elicited from inpatients during treatment. Individuals indicate on a 7-point scale their level of agreement with statements describing contingencies between behaviour and self-worth. Alternatively, dysfunctional schemas have been measured by asking individuals to verbalize how they would think in different hypothetical scenarios involving potentially depressing situations (e.g., Fennell & Campbell, 1984; Wilkinson & Blackburn, 1981).

Empirical studies have found that the Dysfunctional Attitude Scale correlates positively with severity of depression (Dobson & Shaw, 1986; Hollon et al., 1986) and can distinguish clinically depressed inpatients from nondepressed psychiatric participants and non-depressed participants (Dobson & Shaw, 1986; Hamilton & Abramson, 1983). However, more recent evidence suggests that the Dysfunctional Attitude Scale has poor specificity (Barnett & Gotlib, 1988a). That is, individuals presenting with different psychopathological states have elevated Dysfunctional Attitude Scale scores (e.g., Zimmerman, Coryell, Corenthal, & Wilson, 1986), prompting some researchers to suggest that the Dysfunctional Attitude Scale assesses a general distress or self-worth factor rather than specific characteristics of depression (Hammen, Jacobs, Mayol, & Cochran, 1980; Hollon et al., 1986; Segal & Shaw, 1986). Cross-sectional studies with university student samples indicate that high Dysfunctional Attitude Scale scorers who also experience a negative event have significantly higher levels of depression than students who endorse a low number of dysfunctional attitudes (Olinger, Kuiper, & Shaw, 1987; Wise & Barnes, 1986).

Prospective studies examining the interaction of dysfunctional attitudes and a variety of life events have reported mixed results. O'Hara, Rehm, and Campbell (1982) found that dysfunctional attitudes measured during pregnancy did not significantly predict severity of postpartum depression in these women. Rush, Weissenberger, and Eaves (1986), however, found that Dysfunctional Attitude Scale scores predicted levels of depressive symptoms in one of three measures of depression during a six-month follow-up in female inpatients whose depression was in remission. Stiles and Gotestam (1988) examined the interaction of Dysfunctional Attitude Scale and the interpersonal separation stress of leaving home for military service. They examined 81 male military recruits before and after three months of military service away from home. They found that high Dysfunctional Attitude Scale scores interacted with the interpersonal separation stressor to predict future depression scores. In a sample of college students, Wong and Whitaker (1994) found that the best predictor of future level of depression was initial level of depression. The Dysfunctional Attitude Scale however, did interact with the number of life events, self-esteem, and the level of traditional feminine characteristics to predict depressive symptoms. Barnett and Gotlib (1990) examined the effects of dysfunctional attitudes on the relations of depression with social support and with stressful life events separately in undergraduate male and female students. They failed to find an interaction between negative life events and dysfunctional attitudes in predicting depressed mood three months later, but they replicated and extended an earlier finding (Barnett & Gotlib, 1988b) that high dysfunctional attitudes interacted with low social support to predict greater depressed mood in women. Overall, an interaction between the Dysfunctional

Attitude Scale and stressful events to predict future depression has not been consistently found across studies.

Another problem has been encountered with research on the Dysfunctional Attitude Scale. Several studies examining whether depressogenic self-schemas persist beyond remission of a current depressive episode, have failed to find continued elevation in Dysfunctional Attitude Scale scores at post-treatment which would be expected if dysfunctional attitudes represented a stable characteristic of depressed in or outpatients' personality (e.g., Blackburn & Bishop, 1983; Blackburn & Smyth, 1985; Fennell & Campbell, 1984; Hamilton & Abramson, 1983; Hammen, Miklowitz, & Dyck, 1986; Silverman, Silverman, & Eardley, 1984; Simons, Garfield, & Murphy, 1984; Wilkinson & Blackburn, 1981). Only a few studies have supported the temporal stability of the Dysfunctional Attitude Scale (e.g., Dobson and Shaw, 1986; Eaves & Rush, 1984). However, Teasdale (1988) suggests that Eaves and Rush's (1984) findings may have been the result of using brief remission periods of only two to three weeks. Therefore, he suggests that the elevated scores may reflect incomplete recovery rather than the in or outpatient's state of remission. Both Rush, Weissenburger, and Eaves (1986) and Simons, Murphy, Levine, and Wetzel (1986) found that elevated scores on the Dysfunctional Attitude Scale at post-treatment predicted relapse among individuals whose depression had remitted. A more powerful demonstration would be to see whether high Dysfunctional Attitude Scale scores can predict onset of depression in individuals who had never before been depressed.

Taken together, these studies suggest that the Dysfunctional Attitude Scale may

not be an adequate measure of depressotypic schema content. The high Dysfunctional

Attitude Scale scores are not specific to depression and do not appear to reflect an

enduring trait-like characteristic. Also, it has been argued that self-report measures are

especially sensitive to demand characteristics (Coyne & Gotlib, 1983, Ingram & Reed,

1986; Segal, 1988). Power (1990) points out that self-report measures may be influenced

by response-bias and mood congruency effects (see, for example, Williams, 1984). The

presence of a negative mood during depression may bias an individual towards endorsing

negative items, whereas the more positive mood of non-depressed individuals may lead to

a biased endorsement of positively toned items.

Some researchers have responded to the criticism that the Dysfunctional Attitude

Scale Total Score is too general an index to adequately test Beck's theory by examining

the more specific Dysfunctional Attitude Scale subscales, "Performance Evaluation" and

"Approval of Others." Cane, Olinger, Gotlib, and Kuiper (1986) factor analysed the

Dysfunctional Attitude Scale-Form A and found two factors which they labelled

"Performance-Evaluation" and "Approval-of-Others." Segal, Shaw and Vella (1989)

classified inpatients whose depression had remitted using these subscales of the

Dysfunctional Attitude Scale. They found that the number of negative interpersonal

events during a six month follow-up period predicted higher depression scores for the

Approval-of-Others group, but neither interpersonal or achievement events predicted

depression in the Performance-Evaluation group. Segal, Shaw, Vella, and Katz (1992)

reported a more extensive analysis of these remitted inpatients in a one-year prospective

study examining relapse. They found that the Performance-Evaluation inpatients relapsed

more often after an experience with an achievement-related event than after exposure to an interpersonal-related event. This congruency effect was evident on ratings of both event stressfulness and number of life events. The Approval-of-Others group failed to provide evidence of a congruency effect of personality and life event at the time of relapse, but they did show such a congruency effect two months prior to relapse.

Brown, Hammen, Craske, and Wickens (1995) used a similar research design to that of Segal et al. (1992), but their Dysfunctional Attitude Scale subscale scores were based on a factor analysis by Beck, Brown, Steer, and Weissman (1991). In addition, they examined a non-clinical student population, the majority of whom were taking their first ever college-level exam. They found that the Dysfunctional Attitude Scale Perfectionistic-Achievement factor interacted with a congruent stressor (poorer than expected performance on the exam) to predict increases in depressive symptoms. However, the high intercorrelations among the Dysfunctional Attitude Scale subscales in a recovered depressed sample (Segal et al., 1992) raises concerns about subscale independence. These studies are relevant for the present study because the Dysfunctional Attitude Scale subscales, Approval-of-Others and Performance-Evaluation, are quite similar to Beck's two types of personality vulnerabilities (sociotropy and autonomy). Studies of the questionnaire measures of these two constructs will now be examined.

1.2.2 Empirical Studies of Personality Vulnerability

Recently, empirical investigation of dysfunctional schemas has shifted attention to Beck's theoretical proposal of two cognitive personality vulnerabilities: sociotropy and autonomy. Support for these hypothesized personality vulnerabilities must establish their

stability, their symptom specificity, and most importantly, their interaction with stress (i.e., cognitive diathesis) to predict depression.

1.2.2.1 Sociotropy/Autonomy Scale. The Sociotropy-Autonomy Scale was developed to assess these two personality constructs (Beck, Epstien, Harrison, & Emery, 1983). The Sociotropy-Autonomy Scale questionnaire consists of 30 sociotropic and 30 autonomous statements. The sociotropic items contribute to three factors: Concern-About-Disapproval, Attachment/Separation, and Pleasing-Others. The autonomy items also contribute to three factors: Individualistic-Achievement, Freedom-From-Control-by-Others, and Preference-for-Solitude.

Some studies have investigated the stability and specificity of these constructs in an attempt to evaluate their potential as personality vulnerability markers. Other studies have examined the sociotropy and autonomy measures by investigating their ability to predict clinical presentation and treatment utility. These studies will be reviewed in turn.

1.2.2.2 Sociotropy-Autonomy Scale and stability. Support for sociotropy and autonomy as enduring vulnerability markers for depression was found in a study by Moore and Blackburn (1996). They assessed the stability of the Sociotropy-Autonomy Scale subscales in a sample of 119 inpatients diagnosed with unipolar depression who were undergoing inpatient treatment with cognitive therapy and medication. No significant change was found on the sociotropy and autonomy scores 16 weeks later, despite a highly significant reduction in the severity of depression. Although inpatients who had responded to treatment did exhibit a significant decrease in sociotropy, their scores remained significantly higher than those of non-depressed control participants from a previous

study.

1.2.2.3 Sociotropy-Autonomy Scale and symptom specificity. The specificity and concurrent validity of the Sociotropy-Autonomy Scale has also been investigated. Studies have found that sociotropy is significantly associated with neuroticism but not extroversion, and that autonomy is unrelated to both neuroticism and extroversion in a university student sample (Cappeliez, 1993), a sample of inpatients with mixed diagnoses (Gilbert & Reynolds, 1990), and a sample of depressed inpatients (Moore & Blackburn, 1994).

Moore and Blackburn (1994) also examined whether the relationship between sociotropy, autonomy, and severity of symptoms would be specific to depression rather than anxiety. Sociotropy exhibited some specificity to depression with an association with depressive symptoms independent of anxiety symptoms. Conversely, the association with anxiety symptoms was mediated by depressive symptoms. Autonomy showed no significant association with depressive or anxious symptoms. This study, then, offers some support for the specificity of the Sociotropy scale but not for the Autonomy scale.

Alford and Gerrity (1995) also examined the specificity of sociotropy and autonomy to depression and anxiety using a university student population in a prospective research design. They found that sociotropy was moderately related to depression and anxiety scores at time of administration and four weeks later. Autonomy was not related to either depression or anxiety scores. Hierarchical multiple regression analyses also found that sociotropy four weeks later predicted anxiety, but not depression. Their study suggests that the relationship of sociotropy to depression is not specific or unique.

Another hypothesis proposed by Beck and his associates (Beck, 1983; Beck,

Epstein, & Harrison, 1983) is that sociotropic individuals and autonomous individuals

experience different symptoms of depression. The depressive symptom profile for highly

sociotropic individuals is proposed to center around the theme of deprivation with a

clinical presentation characteristic of anxious depression, which includes symptoms such

as requests for help, dwelling on loss of gratification, more likely to cry, concern about

personal attractiveness and other social attributes, greater optimism about benefits of help,

responsivity (temporary) to reassurance and support, lability of mood, greater reactivity to

positive and negative events, and reports of loneliness and sadness (Beck, 1983). The

depressive symptom profile for highly autonomous individuals is proposed to center

around the theme of defeat with a clinical presentation characteristic of endogenous

depression, which includes symptoms such as anhedonia, self-criticism, loss of interest in

and withdrawal from other people, decreased probability of crying, depressed mood that is

unremitting and not reactive to positive or negative events, low probability of seeking

voluntary help, greater pessimism about being helped, attributing present difficulties to

own personal deficiencies, and concern about personal ineffectiveness (Beck, 1983).

Robins et al. (1989) found that sociotropy was related to many of the predicted

clinical features of depression and was unrelated to the clinical features predicted to be

associated with autonomy. However, the predicted relations between autonomy and

clinical presentation were not found. They suggested that problems with the autonomy

measure may explain these results. Other problems with this study included an atypical

sex ratio and lack of a comprehensive assessment of the clinical features associated with

sociotropy and autonomy described by Beck (1983). In a cross-sectional study with a

sample of 50 unipolar depressed inpatients, Robins and Luten (1991) tried to deal with

some of the shortcomings of the above study by using a more comprehensive assessment

of depressive symptoms and a newly developed scale of sociotropy and autonomy, the

Personal Style Inventory (Robins, Ladd, Wilkowitz, Blaney, Diaz, & Kutcher, 1994).

They found a significant relationship between sociotropy and expected clinical features,

such as optimism about treatment, responding to reassurance, variability in mood, and

reactivity of mood. Autonomy also was related to predicted clinical features, such as loss

of interest or pleasure, feeling like a failure, self-blame, and irritability. These findings of

specific Sociotropy-Autonomy Scale symptom specificity were replicated in a later

prospective study in a non-clinical sample (Robins, Hayes, Block, Kramer, & Villena,

1995).

Persons and Miranda (1988) obtained similar symptom-personality congruency in a

sample of depressed inpatients using selected items from the Dysfunctional Attitude Scale

to define dependency (sociotropy) and autonomy, and selected items from the Beck

Depression Inventory to define sociotropic and autonomous symptoms. However, in a

subsequent study using the Dysfunctional Attitude Scale, support for symptom-personality

specificity was found for the achievement factor but not for the dependency factor

(Persons, Miranda & Perloff, 1991). Clark, Steer, Haslam, Beck, and Brown (1997)

derived four sociotropic and autonomous personality types from a series of cluster

analyses performed on 2,067 adult psychiatric outpatients. These four Sociotropy-

Autonomy Scale personality types, Independence (aspect of autonomy), Dependence (or

sociotropy), Individualistic-Achievement (feature of autonomy), and Low-Scoring-

Controls, failed to be differentially associated with the hypothesized sociotropic and

autonomous symptom patterns or specific DSM-III-R mood and anxiety diagnoses.

However, Robins, Bagby, Rector, Lynch, and Kennedy (1997) found a relationship

between Personal Style Inventory measures of sociotropy and autonomy and symptoms of

psychopathology in 103 inpatients with depression. Sociotropy was related to

interpersonal sensitivity, guilt and self-blame, and symptoms characteristic of anxious

depression. Autonomy was related to interpersonal distance and hostility,

hopelessness/suicidality, feelings of failure, and anhedonia. Therefore, there is some

evidence to suggest that sociotropy and autonomy are associated with specific symptom

patterns when using Personal Style Inventory measures of sociotropy and autonomy.

1.2.2.4 Sociotropy-Autonomy Scale and treatment response. A few studies have

also examined Beck's (1983) hypothesis that sociotropy/autonomy may also interact with

treatment variables. Beck (1983) hypothesized that sociotropic individuals would be more

responsive to psychotherapy focusing on interpersonal strategies whereas autonomous

individuals would benefit more from therapeutic strategies using mastery techniques.

Although Beck (1983) makes no predictions with regard to differential treatment

responses of sociotropic and autonomous individuals to pharmacotherapy, Peselow,

Robins, Sanfilipo, Block, and Fieve (1992) predicted that autonomy would be associated

with a positive response to drug treatment, whereas sociotropy would not. Autonomous

individuals have endogenous features which is believed to predict a good response to

treatment. They examined the responsiveness of 217 depressed outpatients to drug

treatment and found that sociotropy was strongly related to non-endogenous depression and a poor response to antidepressants. In contrast, autonomy was strongly related to endogenous depression and good response to drugs. Furthermore the sociotropy/autonomy distinction was a stronger predictor of pharmacotherapeutic response than the endogenous/non-endogenous distinction.

Zettle and her associates (Zettle, Haflich, & Reynolds, 1992; Zettle & Herring, 1995) also evaluated the therapeutic implications derived from Beck's conceptualization of sociotropy/autonomy. They hypothesized that depressed sociotropic individuals, with their concern for social support and attachment, would benefit more from group therapy than from individual cognitive therapy. Conversely, depressed autonomous individuals, with their individualistic problem-solving orientation, were expected to respond better to individual therapy than to group cognitive therapy. Zettle et al. (1992) found that inpatients matched for personality and therapy reported significantly greater reductions in depression than patients mismatched for personality and type of therapy. They also reported that both patients matched and mismatched on their personality and therapy type displayed significant reductions in depression over the course of the treatment, although a significantly greater proportion of matched participants reported marked improvement at follow-up. Therefore, the sociotropy/autonomy distinction is an important predictor of treatment responsiveness and can help plan effective treatment.

1.2.2.5 Sociotropy-Autonomy Scale and cognitive diathesis. Validation of the Sociotropy-Autonomy Scale and the predictive validity of the constructs of sociotropy and autonomy have also been tested in a series of cross-sectional and prospective studies on

personality and life event interactions. The purpose of these studies is to investigate the contribution of the Sociotropy-Autonomy Scale to predicting depression vulnerability. Robins (1986) examined the effects on mood of tapes with social rejection or achievement failure themes of individuals assessed with the Sociotropy-Autonomy Scale as having either sociotropic or autonomous personalities. He found that listening to a taped message of social rejection induced a significant depressive mood in sociotropic individuals whereas listening to an achievement failure tape did not affect the moods of individuals high on sociotropy. However individuals' scores on autonomy did not interact with the effects of either mood manipulation.

Robins and Block (1988) also conducted a naturalistic correlational study in which university undergraduates completed the Sociotropy-Autonomy Scale and the Life Events Inventory. These participants reported which of 55 positive and negative events they experienced during the past three months. Sociotropy was found to be associated with depression level, and this relation was increased by recently reported events judged a priori as socially-related. However, sociotropy also demonstrated unpredicted interaction effects with autonomy-related negative events. Autonomy was unrelated to depression and showed no evidence of increased vulnerability to either social or autonomous events.

Clark, Beck, and Brown (1992) compared depressed and non-depressed college students on the Sociotropy-Autonomy Scale and a self-report measure (Negative Experiences Inventory) devised specifically to assess participants' perceptions of sociotropic and autonomous life events. Hierarchical multiple regression analysis revealed that depression was predicted by a significant interaction of sociotropy with negative

social life events but not autonomy-related life events. However, the interaction of

autonomy with negative interpersonal or achievement related events failed to show any

significant relationship with depression. Rude and Burnham (1993) and Bartelstone and

Trull (1995) obtained similar findings in their college samples. Robins (1990-Study 1)

also found a significant interaction of sociotropy with negative social events but not

achievement related events in a depressed clinical sample. This interaction was not

present for the nondepressed schizophrenic control group. Again, autonomy failed to

interact with negative autonomous events. Two other studies using college samples also

found no significant personality-event congruency effects (Robins, 1990-Study 2; Smith,

O'Keefe, & Jenkins, 1988).

1.2.3 Summary of Research on Sociotropy and Autonomy

Taken together, these studies provide tentative support for the hypothesis that

social dependency or sociotropy is a vulnerability factor for depression when individuals

experience negative social events. However, this research does not support autonomy as a

vulnerability factor (Nietzel & Harris, 1990). It must be noted though that the above

studies utilized cross-sectional research designs. Cross-sectional studies have a number of

limitations. These designs cannot test the causal status of the personality-event interaction

in the onset of depression, nor can they determine whether the relations between measures

may be due to response bias (Robins, 1990). For example, people may describe

themselves as more sociotropic if they recently experienced a social loss and were

particularly aware of their unmet interpersonal needs. Or individuals high on sociotropy

or independence may tend to recall and report more personality-congruent negative events

than actually occurred and may display a bias against reporting negative events that are inconsistent with their personality orientation. Prospective designs provide a better test of the cognitive vulnerability model because these research designs allow temporal antecedence of the diathesis to be established (Barnett & Gotlib 1988c; Clark, Purdon, & Beck, 1993; Garber & Hollon, 1991; Haaga, Dyck, & Ernst, 1991).

A number of prospective studies carried out with inpatients whose depression had remitted over specified follow-up periods have been more supportive of event-schema specificity in autonomous individuals. Hammen et al. (1989a), using a sample of inpatients with unipolar and bipolar depression, examined whether onset/exacerbation of symptoms occurred for sociotropic and autonomous inpatients (as identified using the Sociotropy-Autonomy Scale) experiencing a preponderance of congruent stress events over a six-month period. They found that inpatients with unipolar depression tended to display specific vulnerability to stressful life events that matched their Sociotropy-Autonomy Scale personality type. However, the relationship could only be tested on the six clinical cases that experienced significant clinical relapse or symptom exacerbation during the six-month follow-up. In a subsequent replication study using a longer follow-up period (up to 2 years), Hammen, Ellicott, and Gitlin (1989b) again found a significant trend towards congruence between personality and event type for patients with unipolar depression symptomatic during the follow-up period. Severity of depressive symptoms was predicted by achievement events and the autonomous personality/achievement event interaction, but not by sociotropy or its interaction with interpersonal events. In a further expanded follow-up study of inpatients with bipolar disorder, Hammen, Ellicott, and Gitlin (1992)

found that onset of a depressive episode in bipolar patients was not predicted by a

personality-by-event congruence, but that symptom severity was significantly predicted by

a sociotropy-by-negative interpersonal event interaction.

It is not known why the clinical studies are more generally supportive of the

schema-event specificity hypothesis. The small sample sizes used in the clinical

prospective studies may account for the weak to moderate and somewhat unstable

significant personality-event interactions (Clark et al., 1993). In addition, it is not clear

whether the use of inpatients whose depression has remitted and then relapsed provide an

adequate test of the diathesis-stress model. It has been suggested that inpatients whose

depression had remitted may be more sensitive to a broader range of negative life events

by having already experienced a depressive episode than never-depressed individuals

(Clark et al., 1993).

Clark et al. (1993) tested the cognitive diathesis-stress model in a prospective

analogue study using university students. They administered the Beck Depression

Inventory and the Revised Sociotropy-Autonomy Scale to undergraduates at the

beginning of the study and had these students complete a life experiences questionnaire

and the Beck Depression Inventory three months later. A hierarchical regression analysis

with initial depression level and gender as covariates revealed a significant interaction

between Sociotropy-Autonomy Scale Sociotropy and the number of negative

interpersonal events in predicting later dysphoria. With respect to the Sociotropy-

Autonomy Scale Autonomy measures, Solitude (i.e., preference for solitude and

insensitivity to others) but not Independence showed a significant interaction with the

number of negative achievement events. Therefore, this study provides partial support for Beck's diathesis stress model with a greater number of interpersonal life events interacting with sociotropy to account for a significant amount of variance in Beck Depression Inventory residual scores and a greater number of negative achievement life events by Solitude accounting for later dysphoria. Using the original Sociotropy-Autonomy Scale, Robins et al. (1995) conducted a prospective study but failed to find specific personality-event congruence for either sociotropy or autonomy in a university student population. They found a more general effect with both of these measures predicting greater increases in dysphoria in association with both interpersonal and achievement stressors.

The importance of event perceptions by sociotropic and autonomous individuals also has been emphasized (Beck, 1987; Clark, Beck, & Brown, 1992; Nietzal & Harris, 1990). It has been assumed that certain events will be interpreted as a threat to one's social resources whereas other events will be interpreted as a threat to one's achievement and freedom. Future studies using the Sociotropy-Autonomy Scale must also include some assessment of the individual's interpretation of whether the event is perceived as threatening to either sociotropic or autonomous goals and values. For example, a sociotropic person might perceive some event, such as losing a job, as a social loss, whereas an autonomous person might see the same event as an interference with personal goals of mastery and independence. Even though the cognitive diathesis-stress model acknowledges the role of event appraisals, few researchers have incorporated this feature into their designs.

1.2.3.1 Sociotropy-Autonomy Scale and event appraisals. Several studies have found significant associations between individuals' appraisal of life events and depression severity after controlling for the frequency of negative life events. Depression severity was significantly associated with variables such as perceived degree of upset, uncertainty, uncontrollability, outcome expectations, amount of change resulting from the event, and perceived degree of social support (Brown & Siegal, 1988; Robins & Block, 1989; Robins, Block, & Peselow, 1990a; 1990b). Variables of appraisal that should be assessed in addition to event frequency include perceived loss in social resources and personal control and its severity, degree of upset, personal responsibility, and coping ability. Clark, Beck, and Brown's study (1992) investigated the role of perceived loss in interpersonal resources or personal control in the life event-personality interaction. Life event appraisal ratings, such as perceptions of personal responsibility for negative events, belief of little control over the event, and belief of minimal ability to cope, were all significant unique predictors of depression. However, contrary to the diathesis-stress model, degree of loss of interpersonal resources or independence did not significantly predict depression or interact with life event type or personality to predict depression. A closer look at coping styles and scales used to rate perceived loss is recommended before abandoning their role in predicting depression in diathesis-stress models.

1.2.3.2 Sociotropy-Autonomy Scale and coping. Barnett and Gotlib's (1988a) review of coping styles and depression suggests that depressed individuals engage in more emotion-focused coping than non-depressed individuals (e.g., Endler & Parker, 1988). There is some evidence that coping is an important mediating variable between life events

and depression (Coyne & Downey, 1991; Folkman, Lazarus, Gruen, & De Longis, 1986; Reynolds & Gilbert, 1991). However, the role of coping styles in Beck's cognitive diathesis model of depression has not been well explored (Nietzel & Harris, 1990).

However, a few studies have begun to examine the possible mediating role of coping strategies to the personality-life event congruency hypothesis. Reynolds & Gilbert (1991) found that high autonomous unemployed men who used active coping strategies were less depressed than less active autonomous unemployed men. Conversely, the use of active coping strategies in high sociotropic unemployed men resulted in higher levels of depression whereas seeking social support failed to interact with sociotropy to predict depression levels. In a university sample, Clark et al. (1992) did not find that coping was a significant predictor of dysphoria, but Clark et al. (1993) did report that coping strategies played an important mediating role in personality-stress diathesis using a prospective design and controlling for initial depression levels. They found that adaptive coping responses interacted with sociotropy in the presence of a negative interpersonal stressor, but this interaction was not related to dysphoria. However, independence interacted with maladaptive coping in the presence of negative achievement stressor to predict dysphoria.

The mixed findings on diathesis-stress and the failure to investigate event appraisals and coping in many studies suggest that Beck's cognitive diathesis-stress model has not yet been sufficiently investigated. Another constraint in this research involves the known psychometric limitations of the Autonomy Scale of the Sociotropy-Autonomy Scale. Robins (1985) found that sub-factors of the autonomy scale were only moderately

intercorrelated and were almost completely unrelated to depression (e.g., Gilbert &

Reynolds, 1990; Robins & Block, 1988). This suggested that several independent and

possibly conflicting constructs may be confounded in the Autonomy scale of the

Sociotropy-Autonomy Scale. As well, the Autonomy scale of the Sociotropy-Autonomy

Scale does not correlate significantly with the Beck Depression Inventory indicating a

possible problem with the Sociotropy-Autonomy Scale (e.g., Barnett & Gotlib, 1988c;

Pilon, 1987; Robins, 1985). Sociotropy, on the other hand, has good convergent and

discriminant validity. It has high concurrent validity with other measures of interpersonal

dependency and affiliation (Barnett & Gotlib, 1988; Blaney & Kutcher, 1991) and it has a

significant relationship with depression and anxiety (Clark & Beck, 1991). However,

some researchers would argue that the above findings of poor correlations between

sociotropy and autonomy with depression may not weaken the value of these personality

constructs as vulnerability markers (Coyne & Whiffen, 1995; Nietzel & Harris, 1990). In

a recent review, Coyne and Whiffen (1995) offer the conflicting viewpoint that the best

measure of vulnerability to depression should show low or nonsignificant correlations with

depression because low correlations would make it easier to distinguish the diathesis

(personality) from the symptoms of depression. Also, low correlations with depression

are a better reflection of what actually happens in real life since at any given time people

who are vulnerable to depression are not necessarily depressed.

In response to the conceptual, psychometric, and empirical inconsistencies of the

Autonomy scale, recent attempts have been made to improve the measurement of

autonomy by revising the Sociotropy-Autonomy Scale. Robins and his colleagues have

developed the Personal Style Inventory (Robins et al., 1994). The Autonomy scale of the Personal Style Inventory is intended to place more emphasis on perfectionistic concerns and less emphasis on potentially adaptive aspirations of striving towards personal goals than the Autonomy scale of the Sociotropy-Autonomy Scale (Blatt & Zuroff, 1992). A 59-item revised Sociotropy-Autonomy Scale also was developed through an extensive revision of the original scale to address some of the psychometric limitations of the Autonomy scale of the Sociotropy-Autonomy Scale (Clark & Beck, 1991; Clark, Steer, Beck and Ross, 1995).

Approaches to deal with the psychometric weakness of the Autonomy scale of the Sociotropy-Autonomy Scale also have included abandoning autonomy and exploring other achievement-based constructs. For example, the finding that autonomy is unrelated to depression (e.g., Bartelstone & Trull, 1995; Clark et al., 1993; Rude & Burnham, 1993) has led researchers to explore other achievement-based constructs, such as self-oriented perfectionism. Flett, Hewett, Blankstein, and Mosher (1995) found that self-oriented perfectionists exposed to a major life stressor have increased depressive symptoms three months later.

1.2.3.3 Limitations of the Sociotropy-Autonomy Scale. In conclusion, preliminary evidence for the schema-event specificity hypothesis is at this point tentative. A significant cognitive-event congruence effect can be found for sociotropy, and there is some evidence to suggest that symptom exacerbation is more likely when there is a match between sociotropy and negative interpersonal events. However, inconsistent findings have been found for autonomy. It is suggested that the assessment of personal

interpretation of the stressful event may reduce such inconsistencies and provide a better test of this hypothesis. In addition, Haaga et al. (1991) suggested greater refinement of the specific nature of the relevant stressor in terms of quantity, and whether it is major or minor, or chronic or temporary. This may provide a better test of the cognitive vulnerability hypothesis. In further elaboration, these researchers suggested that one should determine whether the stressor is better conceptualized in terms of quantity of type-congruent negative events, the perceived severity of the worst life event, the frequency of type-congruent "hassles" (e.g., minor work difficulties for an autonomous person), or some combination of the preceding. Clark and Oates' (1995) cross-sectional study with university students found that more severe life events rather than daily hassles may be important in investigations of diathesis-stress interactions in dysphoria.

Commonly held assumptions about the unidirectionality of diathesis-stress relations (Monroe & Simons, 1991) and the many possible ways stressors may achieve a common outcome (Monroe & Simons, 1991; Nietzel & Harris, 1990) may also be important in explaining the discrepant findings. First, are the diathesis and stressor independent of one another with both being necessary to activate depression? Second, is the diathesis the only necessary factor in activating depression or could it affect depression through an influence on other relevant stressors? Or third, is the stressor the only necessary factor and the diathesis acts more as a catalyst? Different associations between the diathesis and the stressor may lead to different theoretical and practical implications.

As with any self-report questionnaire, response bias with the Sociotropy-Autonomy Scale is of concern. One approach to overcoming this problem with self-report

measures is to use psychophysiological recording as an indicator of emotional response.

As a test of the personality-stress congruency hypothesis, Allen, de L. Horne, and Trinder

(1996) examined whether the interaction between personality (sociotropy and autonomy

as measured by the Personal Style Inventory) and type of life stress predicted an

immediate affective response to events in the form of heart rate and facial

electromyographic activity. In this study, university students were asked to imagine

scenes depicting neutral, social rejection, and achievement failure scripts while heart rate

and corrugator supercilii (brow) facial muscle electromyographic activity were measured.

Sociotropy interacted with both social rejection and, to a lesser extent, achievement failure

in predicting a dysphoric response whereas no support was found for autonomy as a

vulnerability factor for either type of stressful script.

Solomon and Haaga (1994) also suggested an important gap between conceptual

and operational definitions of Sociotropy-Autonomy Scale personality measures that may

influence interpretations of the empirical research. Beck (1983) defines sociotropy and

autonomy in terms of placing high value on certain goals and values. However, the

Sociotropy-Autonomy Scale (especially Sociotropy scale) consists largely of negative

items. Solomon et al. (1994) argue that these negative items may account for correlations

between the Sociotropy-Autonomy Scale with indicators of pathology such as depression.

A number of researchers have also responded to limitations of self-report measures by

advocating that experimental information processing procedures be used to assess the

structure and content of dysfunctional schemas at both automatic and strategic processing

levels (e.g., Segal, 1988; Power, 1990). Experimental information processing procedures

are expected to be less influenced by demand characteristics. A review of the current literature using experimental information processing paradigms to examine cognitive vulnerability will now be presented.

1.2.4 Information Processing Research on Depressive Schemas

Segal (1988) described schemas in terms of organized structures of interrelated negative constructs about the self. Inherent in the concept of schemas is the idea that dominant negative self-schemas guide and bias the perception and interpretation of information. If a negative self-schema dominates in depression, a corresponding effect would be expected on how information is processed. Therefore, information processing provides an indirect examination of the organization and content of the schemas. Segal criticizes schema measures, such as the Dysfunctional Attitude Scale, as inadequate because these scales only provide a description of interrelated attitudes and beliefs and cannot assess the functional linkage between elements in a self-structure. He argues that a reliable structurally-based measure of schemas must be developed before a test of their etiological significance in depression can be examined. Without an assessment of schema structure, other competing hypotheses not based on a schema model cannot be ruled out (e.g., Lang's network hypothesis, Lang, 1978). Consequently, self-schemas must be assessed by examining schema content or attitudes as well as their distorted information processing effects which are presumed to result from underlying schema structure. Information processing research in depression that will be reviewed can be categorized in the following manner: (1) tasks involving self-descriptive judgments of stimuli believed to be schema-congruent, (2) self-referent encoding tasks with and without a priming

stimulus, (3) attentional paradigms, such as the Stroop task, and (4) memory retrieval

procedures, such as the autobiographical memory recall task.

1.2.4.1 Personality trait adjective judgements. Studies have examined judgments

by depressed and nondepressed individuals to determine if schema-congruent stimuli are

self-descriptive. In these studies, participants are presented with a list of trait adjectives

and are asked to judge whether the words are "like me" or "not like me." These studies

have found that depressed individuals endorse more negative self-descriptors than do

nondepressed participants (e.g., Bradley & Mathews, 1983; Clifford & Hemsley, 1987;

Derry & Kuiper, 1981; Dobson & Shaw, 1987; Greenberg & Alloy, 1989; Greenberg &

Beck, 1989; Roth & Rehm, 1980). Ross, Mueller, and De La Torre (1986) found that

when trait words were rated for self-descriptiveness, dysphoric college students had more

negative traits in their self-concept that were only descriptive of themselves than did non-

dysphoric college students. These groups did not differ on ratings of positive "self-only"

traits or on ratings of positive or negative shared traits. Therefore, the negative content of

depressed individual's self-concept is specific and personal. However, Ross and Muller

(1989) found that moderately dysphoric students rated negative words more inconsistently

than non-dysphoric students. Additionally, Greenberg and Beck (1989) found that

clinically depressed inpatients endorsed more negative self-, future-, and world-relevant

trait adjectives and fewer positive words than psychiatric controls. An important

limitation of the self-descriptive procedure is that it taps into conscious, controlled

information processing. Also, it is open to demand characteristics and response bias.

Thus, the conscious self-evaluative processes involved in trait adjective judgements are

identical to the processes involved in questionnaire measures and are open to the same

criticism. To overcome the problems of self-report, schema researchers have turned to

memory recall tasks as a means of studying schema content. Most studies of memory

recall have used the self-referent encoding task. Empirical support for cognitive

vulnerability in these studies will now be reviewed.

1.2.4.2 Self-referent encoding task studies. Self-referent encoding task studies

make information available so that it can be processed by individuals with varying levels of

depression, and then use some index (usually information recall) to generate inferences

about how it was encoded. Semantic information processing in depression has been most

commonly examined using the depth-of-processing paradigm methodology originally

derived from memory research (Craik & Lockhart, 1972; Craik & Tulving, 1975). For

example in a typical study Rogers, Kuiper, and Kirker (1977) examined self-referent

encoding. In the depth-of-processing paradigm individuals are presented with adjectives

which they rate on a specified dimension (i.e., using a self and other-referent: of "like me"

or "not like me"). Each dimension is theorized to force the individual to process the

stimulus at a different processing level in order to perform the rating accurately. It is

believed that the deepest processing stage is the self-referent level where the most

information is available (i.e., self-schema). Usually an incidental recall task for the trait

adjectives is given immediately following the encoding phase, although a few studies have

used intentional recall instead. It is expected that information which is most extensively

processed will leave a stronger memory trace and is most likely to be recalled in a free

recall task (Craik & Lockhart, 1972; Craik & Tulving, 1975). According to Beck's

information processing model, depressed people should have more negative information accessible at the self-referent level and, therefore, should encode negative information more deeply as is reflected by superior recall of depressive trait stimulus information.

Early studies of encoding compared self-referent and semantic encoding. These studies found that negative recall of depressed individuals was apparent at the deeper self-referent level and not at the semantic processing level (Kuiper & Rogers, 1979; Rogers, 1977; Rogers, Kuiper, & Kirker, 1977). Thus, depressive processing appeared not to be pervasive, but instead was a specific form of faulty information processing. Studies by Davis and colleagues (Davis, 1979a, 1979b; Davis & Unruh, 1981), however, failed to find differences in recall rates for information processing levels in depressed individuals. These results led them to conclude that negative self-schema in depression does not exist. However, as has been noted subsequently by several researchers, a major methodological flaw with these studies was the failure to vary the affective valence (i.e., negative or depressive versus positive or nondepressive) of the trait adjectives processed by depressed participants. These researchers used neutral target words. The valence of the adjectives is critical to testing the question of negative information processing in depression (Derry & Kuiper, 1981; Ingram, Smith, & Brehm, 1983; Kihlstrom & Nasby, 1981).

When both nondepressive and depressive trait adjectives were used in this paradigm, Derry and Kuiper (1981) found that clinically depressed individuals recalled significantly more self-referent negative traits than positive traits whereas both normal and nondepressed psychiatric controls recalled more positive than negative self-referent traits. These findings, then, were consistent with the negative information processing hypothesis

of the cognitive model. Interestingly, when the same paradigm was used to investigate

college students self-reported with mild dysphoria (Derry & Kuiper, 1981), these

participants evidenced mixed self-referent processing, with equivalent recall of both

positive and negative trait adjectives. However, Ingram and Reed (1986) pointed out that

the self-referent recall rate of positive traits was similar among individuals with clinical and

subclinical levels of depression, suggesting that the difference between these two groups

lies in the enhanced negative encoding of information by those with clinical depression.

Other researchers using the self referent encoding task have found that depressed

individuals recall more negative traits than nondepressed persons (e.g., Bradley &

Mathews, 1983; Denny & Hunt, 1992; Dunbar & Lishman, 1984; Greenberg & Beck,

1989; Kuiper & Derry, 1982; Ruiz-Cabellaro & Gonzalez, 1994). Kuiper and Derry

(1982) argued that these results support Beck's notion of a depressive bias with

maladaptive self-schemas facilitating the processing of congruent negative information.

However, some studies have found that this enhanced processing of depressive

information is restricted to cases in which the individual is actually clinically depressed

(see Hammen et al., 1986; Slife, Miura, Thompson, Shapiro, & Gallagher, 1984), and

many other studies have failed to find an enhanced recall of negative information in

depressed individuals (Clifford & Hemsley, 1987; Dobson & Shaw, 1987; Hasher, Rose,

Zacks, Sanft, & Doren, 1985; Roth & Rehm, 1980). Studies simply measuring decision

times for judging self-relevant adjectives have not supported differential effects between

depressed and nondepressed individuals in the amount of time taken to make such

decisions (e.g., Bradley & Mathews, 1983; Derry & Kuiper, 1981; Dunbar & Lishman,

1984).

A possible reason for the inconsistent findings with respect to recall is that these studies have failed to consider the severity of depression. It has been suggested that a predominance of negative self-schemas may only be found among those with more severe levels of depression (i.e., clinical depression) (Clark & Beck, 1989; Greenberg & Alloy, 1989; Kuiper & Derry, 1982). Clinically depressed patients have demonstrated better memory for negative than positive or neutral information whereas non-depressed persons typically have recalled a greater proportion of positive than negative stimuli. Dysphoric or mildly depressed individuals have been found to recall positive and negative stimuli equally, suggesting that they no longer have the positive bias that characterizes non-depressed persons (Matt, Vazquez, & Campbell, 1992).

Alternatively, others have suggested that variation in mood may have resulted in the discrepant findings. Hammen, Marks, de Mayo and Mayol's (1985) results suggest that a previous depressive experience contributed to greater recall of negative self-referent information even apart from current depressed mood. Therefore, this task may be measuring effects due to accessing mood-congruent information rather than reflecting self-schema structure. Dobson and Shaw (1987) found that self-schema processing is dependent on level of depressed mood. A possible reason for this finding is that this assessment technique (i.e., self-referent encoding task) relies heavily on adjectives that refer to aspects of the state of depression (e.g., down, blue) rather than to the enduring global negative self-evaluative trait adjectives (e.g., inferior, worthless) that are hypothesized to be present in negative self-schemas. In fact, when Teasdale and Dent

(1987) employed a modification of the self-referent encoding task used by Derry and Kuiper (1981), replacing state-dependent adjectives with more enduring negative trait adjectives, they found that recovered-depressed women recalled more global negative words previously rated as self-descriptive than never-depressed women after a depressed mood had been induced. This result supports the notion that information processing in depression is based on more permanent self-schemas rather than mood state.

Recent studies (e.g., D. M. Clark & Teasdale, 1985) have found that trait adjectives as opposed to state adjectives produce better results (i.e., that self-schema processing is dependent on level of depressed mood). Teasdale (1988) recommended that future studies employing this procedure use only negative-trait adjectives which may be a more sensitive and accurate measure of negative self-schemas. Ingram and his associates (Ingram, Fidaleo, Friedberg, Shenk, & Bernet, 1995; Ingram, Partridge, Scott, & Bernet, 1994) have recently examined both incidental and effortful recall of both state and trait adjectives in clinically depressed participants (Ingram et al., 1995) and sub-clinically depressed participants (Ingram et al., 1994). They found that sub-clinically depressed university students recalled more state-depression information (e.g., blue) on the incidental recall task and more trait-depression information (e.g., loser) on the effortful recall task. When depressed inpatients were compared to normal controls, controls demonstrated better overall recall for all stimulus words than depressed participants. However, depressed participants recalled more state and trait depression stimuli than non-depressed stimuli (e.g., good) in the incidental recall task and more state depression stimuli than trait depression stimuli or non-depression stimuli in the effortful recall task. These researchers

concluded that the presence of clinical depression may facilitate the acquisition of any depression relevant information.

A recent study suggests that dysphoric mood (of short duration) cannot account for the loss of positive bias that characterizes depression (Gilboa, Roberts, & Gotlib, 1997). The researchers compared non-depressed, naturally dysphoric, and experimentally-induced dysphoric university students on adjective endorsement, judgement latency, and incidental and intentional recall. They found that for all of these measures, naturally dysphoric individuals exhibited even-handedness of processing whereas non-depressed and experimentally-induced dysphoric participants showed positive biases. However, a study identifying vulnerable non-depressed university students (i.e., high score on the Dysfunctional Attitude Scale and low score on the Beck Depression Inventory), did not show any negative self-schema processing, although mildly depressed individuals showed even-handedness in their negative and positive self-referent recall processing (Kuiper, Olinger, MacDonald, & Shaw, 1985).

The self-referent encoding task studies may also need to consider participants' levels of anxiety by teasing apart the effects due to anxiety versus depression. Bradley, Mogg and Williams (1994) found that university students' depression scores predicted better recall of negative versus neutral words in a self-referent encoding task only when the effects of anxiety were partialled out.

The above studies on recall bias of trait adjectives have generally been supportive of a different self-schema content in depressed and non-depressed individuals and thus offer support to cognitive vulnerability in depression. The enhanced recall of negative

information in depression appears to be more likely in individuals with more severe depression than in individuals with dysphoria. The self-referent recall studies also suggest that the encoding recall bias is more likely with negative trait words rather than words reflecting a negative state.

Although the above studies offer some insights into the content of schemas in depression, no studies to date have addressed Beck's cognitive personality vulnerability constructs of sociotropy and autonomy using the self referent encoding task. More specifically, no studies have examined self-referent recall of negative trait adjectives specifically related to Beck's personality vulnerabilities of sociotropy and autonomy. Such a project would offer a more precise test of Beck's assumption of a differential self-construct basis to sociotropy and autonomy.

1.2.4.3 Retrieval of personal memories. A number of studies have investigated the retrieval of previously stored memories in depressed individuals. Lloyd and Lishman (1975) found that depressed inpatients took less time to retrieve unpleasant memories and more time to retrieve pleasant memories when asked to recall autobiographical memories that were cued with a neutral stimulus. In a similar experiment, Teasdale and Fogarty (1979) found that college students experiencing experimentally-induced elated mood recalled more positive memories than when they were in an experimentally-induced depressed state. Therefore, dysphoria appears to be associated with quicker recall of unpleasant memories than pleasant memories whereas a happy mood is associated with quicker recall of pleasant memories than unpleasant memories or both. Several similar studies have reported that individuals recalled more negative memories in a depressed

mood than when they were in an elated mood. Conversely, significantly fewer pleasant memories were recalled while in the depressed mood than in the elated mood (Natale & Hantas, 1982; Snyder & White, 1982; Teasdale & Taylor, 1981; Teasdale, Taylor, & Fogarty, 1980). These findings were replicated with natural mood variations by examining diurinal variations in the mood of depressed inpatients (Clark & Teasdale, 1982). In this study, the researchers compared inpatients' recall of happy and unhappy memories at a more depressed versus a less depressed occasion during the day. Clark and Teasdale (1985) also obtained similar results with college students, although their findings were limited to females, suggesting a potential sex difference in depressive information processing of personality trait adjectives.

More recently, recall of autobiographical memory in sociotropic and autonomous individuals has been explored. In a sample of 20 unipolar depressed patients, faster recall of negative sociotropic autobiographical memories was found for sociotropic individuals; autonomous individuals did not show faster recall of negative autonomous memories (Moore & Blackburn, 1993). Together, these studies provide some evidence that the retrieval of information from long term memory may be negatively biased in depression. However, Zuroff, Colussy, and Wielgus (1983; 1986) have cautioned against a straightforward interpretation of selective recall bias in depression. They suggest that in order to use self-referent encoding task results to conclude that there is an enhanced recall bias associated with depression one must rule out a competing explanation that the differences are due to a response bias in which depressed individuals are more willing to report remembering negative self-referent information. Although Matin and Clark (1986a;

1986b) acknowledged the potential for such a response bias factor, they argued that evidence for this suggestion has not been substantiated by the existing studies involving signal detection analysis and self-referent encoding task.

1.2.4.4 Attention processing tasks. Possible information processing bias in attention has been investigated by experimental tasks to evaluate whether selective attention facilitates processing of self-referent information or interferes with encoding of other information. These studies are believed to be less susceptible to the effects of response bias and demand characteristics than are the recall studies just were just reviewed. For example, Gerrig and Bower (1982) found that experimentally induced depressed mood did not affect perceptual threshold (i.e., the level of sensory recognition for representation in consciousness). However, Powell and Hemsley (1984) found that depressed individuals tended to recognize a higher ratio of unpleasant to neutral words which were very briefly presented using a tachistoscope. They concluded that individuals with depression may attend selectively to schema congruent words.

MacLeod, Mathews, and Tata (1986) used a visual probe paradigm to examine the effects of attentional bias on location of threat words in anxious, depressed, and control individuals. Participants were presented with pairs of words that appeared briefly and simultaneously on a screen and were asked to name the top word in each pair. On some trials, a dot replaced one of the words and when this occurred, participants had to press a button as fast as possible. In trials that included a threat word (e.g., words such as "criticized" or "emergency"), the position of the threat word in the word pair was varied in a counter-balanced design. They found that anxious individuals responded more quickly

when the dot (the probe) replaced the threat word at the top than when it replaced a neutral word at the top or a threat word at the bottom. This suggests that anxious individuals selectively attended to the location where the threat occurred. Controls showed the opposite pattern of results, suggesting that they switch their attention away from the location where threat occurred. Depressed individuals failed to show biased processing with no interaction between probe position and threat word position. The authors concluded that anxious individuals demonstrated an attentional bias for threat.

Gotlib, McLachlan, and Katz (1988) compared the performance of depressed and control individuals on a modified visual probe task using manic (happy), depressed, and neutral content words. Results indicated that depressed individuals attended equally well to all three groups of words, whereas the controls selectively attended to the manic words. These findings may be interpreted as reflecting "evenhandedness" in depressed individuals and a positive self-serving bias in non-depressed controls. However, Gotlib et al. (1988) could not establish whether the effect was due primarily to depressed mood or to anxious mood as both measures were strongly intercorrelated. In a more recent visual probe detection study, Mogg, Bradley, and Williams (1995) found that inpatients diagnosed with major depression showed an attentional bias towards negative words when compared with non-depressed individuals. One can conclude, then, that studies examining attentional processing in depression have obtained equivocal results.

One task which examines whether selective attention interferes with the processing of other information is the emotional Stroop task. In the Stroop colour naming task, participants are asked to name the ink colour of different content words. In general, any

manipulation which makes the word more difficult to avoid processing serves to increase

the colour naming latency for the word (e.g., Geller & Shaver, 1976; Warren, 1972).

Therefore, latency to name the ink colour provides a measure of the degree to which word

content was processed. In Gotlib and McCann's (1984) study using this test, depressed

and nondepressed university students viewed depressed-content, neutral-content, and

manic-content words and were asked to name the colours in which the words were

printed. They found that only depressed college students exhibited slower response times

for the depressed content words and not the neutral or manic words. This finding

supported the notion of negative self-schema in depressed individuals and was replicated

by Klieger and Cordner (1990) for mild dysphoric students (Beck Depression Inventory

scores between 9 to 16), but not for moderately dysphoric students (Beck Depression

Inventory scores greater than 16).

In a second experiment by Gotilib and McCann (1984), mood was manipulated

using a Velton (1968) mood induction (i.e., individuals read self-referent mood

statements and were urged to try to get into the mood suggested by the statements). The

purpose of the study was to examine whether the interference effects obtained in the first

experiment were due to temporary mood differences or to a more stable difference

between the two groups. The depressive interference effects were replicated and could

not be explained by transient mood differences. Hill and Knowles (1991) also failed to

find selective attention to self-esteem threatening nouns, emotionally negative nouns, and

emotionally positive nouns when comparing dysphoric students and non-depressed

students. From the attention processing studies conducted so far, one can conclude that

there is some evidence for a selective attentional bias for negative self-referent material in depression, but the results are by no means robust or consistent. Whether effects are found appears to depend on which attentional task is used in the study. More consistent results have been obtained with the Stroop and less consistent results with multi-stimuli tasks, such as the visual dot probe task. It may be that attentional bias in depression is more apparent with conceptually-based attentional tasks (i.e., Stroop interference) than more perceptually-based tasks (i.e., the visual dot probe task).

1.2.4.5 Studies employing a priming event. Riskind and Rholes (1984) and more recently, Segal and Ingram (1994) have criticised studies which do not prime maladaptive schemas and propose that this omission may explain the inconsistent findings reported in previous research. They argued that because maladaptive schemas are latent until activated, it is necessary to prime the schemas in order to obtain recall bias.

Ingram et al. (1983) primed recall with either a success or failure situation experienced immediately before a depth-of-processing task. In this study, the stimulus trait words were not predetermined to be either depressive or nondepressive in nature. Instead, participants rated all of the trait words for self-descriptiveness and favorability following the depth-of-processing task. These ratings permitted an examination of the mean personal favorability of the words recalled on the incidental recall portion of the task. The nondepressed participants recalled significantly more favourable self-references in the success condition than in the failure condition. These individuals also exhibited a higher number of favourable self-references recalled in the success condition than did depressed individuals in the success condition. The depressed individuals showed no

differences in personal favorability recall between success and failure conditions. These findings led the authors to suggest that depressed participants failed to make use of the success experience to activate the processing of positive self-referent information. However, these interpretations must remain tentative because a baseline comparison group not receiving either a success or failure experience was not included (Ingram & Reed, 1986).

In another study (Dyck, 1983), depressed and non-depressed college students underwent a happy or sad mood induction by being instructed to recall either a happy or sad personal experience prior to participating in a depth-of-processing task. Overall, when the findings were collapsed over induced mood conditions, non-depressed students recalled significantly fewer negative words than depressed students; there was no difference between depressed and non-depressed students' recall of positive words. However, a differential recall of positive words was found when non-depressed and depressed students were compared in the happy and sad conditions. They found that depressed students recalled significantly more negative words that were rated as "descriptive" and positive words that were rated as non-descriptive in the sad condition than in the happy condition. Conversely, non-depressed students showed no differential recall bias in the sad versus happy mood conditions. Although it was concluded that information processing by individuals with depression may be more dependent on mood activation than information processing by non-depressed individuals, the possibility of demand characteristics influencing the mood manipulation check precludes any interpretation of these findings (Ingram & Reed, 1986). An adequate and thorough

assessment of the impact of mood manipulations in such studies is needed before the effects of mood on cognitive processes can be determined.

Segal and Ingram (1994) reviewed priming studies and suggested that sad mood may act as an analogue to environmental stressors to activate maladaptive cognitive structure or schema. Priming of schema using mood induction in individuals who are theoretically at risk but not currently depressed has supported the view of a negative cognitive structure. Positive findings using priming have been found in studies examining dysfunctional attitudes (Miranda & Persons, 1988; Miranda, Persons, & Byers, 1990); adjective recall (Dent & Teasdale, 1988; Teasdale & Dent, 1987); and tracking errors in a dichotic listening task (Ingram, Bernet, & McLaughlin, 1994).

Other studies have used a modified Stroop Colour-Naming Task with priming to examine the structure of self-schemas in depressed and non-depressed individuals by determining whether negative information about the self is represented in memory with a high degree of interconnection or interrelatedness (e.g., Gotlib & Cane, 1987; Higgins, Van Hook, & Dorfman, 1988; Segal, Gemar, Truchon, Guirguis, & Horowitz, 1995; Segal, Hood, Shaw, & Higgins, 1988; Segal & Vella, 1990). The priming methodology increased the likelihood that the content and other features of the schemas would become more accessible. Greater interconnectedness among features were expected to slow color naming times because increased accessibility of the meaning of the word would interfere with the naming of its color. This task involved colour-naming personal adjectives that had been previously rated as either extremely self-descriptive or neutral. In each trial, a prime word followed by a target word printed in colour was presented. The individual

had to name the colour of the target and in some studies recall the prime. Longer colour-naming latencies were expected when the prime word and the target word were both self-descriptive adjectives compared to when only the target word was self-descriptive and the prime word was not. These studies offered support for the negative structure of self-schemata in depressed individuals. Negative primes led to more interference as indicated by longer latencies with negative targets than did incongruent prime-target comparisons (Gotlib & Cane, 1987; Segal et al., 1988; Segal et al., 1995). This finding suggests that negative self-descriptive information is represented with a higher degree of interrelatedness than non-descriptive information. However, Gotlib and Cane (1987) found that this effect was obtained only while depressed patients were hospitalized but not when they were asymptomatic at discharge. In their study, priming did not alter either the accessibility of negative schemas or the affective state of depressed patients as it did in the studies reviewed above. Further, the finding that participants had significantly longer response latencies for self-descriptive prime-target pairs than for non-descriptive pairs was strongest in depressed individuals compared to normal controls or inpatients with anxiety (Segal et al., 1988), but not when compared to a group of non-depressed individuals who were made to experience elevated levels of self-focused attention (i.e., prime and target were both rated as personally meaningful)(Segal & Vella, 1990).

In another study using the same paradigm (Segal et al., 1995), target adjectives were primed by emotional phrases rather than words and also were varied according to the degree of self-reference. Target adjectives were either positive or negative and also were varied according to degree of self-reference. Again, depressed participants showed slower

color-naming latencies for self-descriptive negative targets primed by self-descriptive

negative phrases than for any other prime-target combination. Depressed participants

showed no prime-target effect for positive adjectives and non-depressed controls showed

no effect of prime-target relation for adjectives in either valence. These results support

the view that negative information about the self is highly interconnected in the cognitive

system of depressed individuals.

In summary, support for Beck's notion of self-schema from the information

processing studies has been mixed, depending on the specific methodological paradigm

used. The literature provides less evidence for an attentional bias in depression whereas

evidence for a memory bias is more consistent. This finding has led researchers, such as

Williams, Watts, MacLeod, and Mathews (1988), to suggest that anxiety is characterised

primarily by a bias in early (pre-attentive and attentional) aspects of processing, whereas

depression is associated with a bias at later stages which involves more elaborate

processing of stimuli. Anxious individuals appear to have a bias for anxiety-relevant

material specific to attention rather than recall processes (e.g., MacLeod et al., 1986;

Mathews, Mogg, May, & Eysenck, 1989; Mogg, Mathews, & Weinman, 1987). In

contrast, depressed individuals show a consistent recall bias for negative information (e.g.,

Blaney, 1986; McLeod et al., 1986) and possibly an attentional bias depending on the

attentional processing task employed in the study (e.g., Gotlib & McCann, 1984; Mogg et

al., 1995). However, the issue of whether the pattern of selectivity occurs automatically

(i.e., not reflecting intentional strategy) or is mediated by conscious awareness has not yet

been adequately tested. Methodological limitations include difficulty finding a task that

can separate automatic versus controlled processing effects, failure to use stimulus material relevant to the individual's personal concerns, and confusion over the clinical concept of automatic thoughts as used by Beck versus the information processing concept of automatic processing (Dalgleish & Watts, 1990).

1.2.4.6 Methodological issues. One methodological issue critical to evaluating information processing in depression is the appropriate use of experimental stimuli. A recurring problem in the research is a failure to consider whether the depressive content of stimuli fits the proposed depressive self-schema; that is, whether it focuses on a domain of personal concern or relevance to the individual. Dykman, Abramson, Alloy, and Hartlage's (1989) study on schematic biases in processing ambiguous and unambiguous feedback in depressed and nondepressed college students underscores the importance of using schema-congruent stimuli. The results of their study suggest that differences between non-depressed and depressed individuals lie in the positive or negative content of their schemas rather than the strategies used to process information. These researchers found that depressed individuals showed negative encoding relative to nondepressed individuals only when their schemas were more negative. Other research using the self referent encoding task (e.g., Teasdale and Dent, 1987) indicates that trait words rather than state words tap more permanent cognitive vulnerability. Also, much of the attentional bias research with depressed individuals has been with anxiety-related stimuli and failed to consider stimulus materials more relevant to the depressed individuals' personal concerns. In particular, no studies thus far have extended the information processing paradigm to Beck's sociotropic and autonomous cognitively vulnerable

personality types.

Another methodological issue is whether the failure to consider the diathesis-stress nature of Beck's theory has led to inappropriate strategies for investigating the presence of enduring vulnerability factors. Do schemas play a passive role or an active role in information processing; that is, must schemas be primed? It has been suggested that inclusion of a priming condition or eliciting event would increase the likelihood that subsequent responding will come under greater schematic control (Power & Champion, 1986; Segal & Ingram, 1994). Perhaps such vulnerability markers must be activated or primed before they can be measured. In particular, the impact of mood on information processing bias needs to be explored further. It is not clear whether evidence of cognitive vulnerability via information processing bias is only present in a depressed mood or can present itself independent of mood.

1.2.4.7 Automatic versus controlled processing. A final methodological issue concerns the level of information processing accessed by these experimental tasks. Many researchers propose that there are two parallel cognitive systems that process information: (1) automatic processes which require minimal attentional capacity, operate outside of conscious awareness, and are fast acting; and (2) controlled processes which are conscious, deliberate and effortful (Dixon, 1981; Hasher & Zacks, 1979; Neely, 1977; Posner & Snyder, 1975; Schneider & Shiffrin, 1977). Most of the experimental paradigms used in previous studies have not distinguished between automatic and controlled information processing and few studies examining information processing in depression have distinguished between automatic and controlled processes. To date, the question of

whether the distorted negative information processing presumed to accompany depression

depends primarily on automatic activation of prior memories, on conscious expectations

and self-presentational strategies, or both has not been adequately addressed.

Ingram and Reed (1986) pointed out that investigation of both processes may be

important because differences may exist in how depressed and non-depressed individuals

process information automatically and in how they attempt to control aspects of their

information processing strategies. Brewin (1988) suggested that conscious attention can

be directed to a particular part of the environment through the development of automatic-

attentive responses. For example, an automatic-attentional process may be operating in

selective abstraction (Beck et al., 1979) in which focusing on a detail or specific aspect of

a situation is used to conceptualize the whole experience.

Conscious attention directed to a stimulus also is believed to inhibit the effect of

automatically processing that stimulus (Posner & Snyder, 1975). For example, it has been

found that a verbal stimulus of which a person is not aware activates a wider range of

associates than one in which there is conscious attention (Dixon, 1981). This restricting

effect of conscious awareness might exert an inhibitory effect on information that was

incongruent with the dominant negative self-schemas in depression. Such a process may

be involved in the rigid, focused negative thinking that characterizes depressed individuals

(Beck et al., 1979). This excessive conscious processing of a limited range of negative

experiences may result in failure to generate contradicting thoughts and ideas of a more

positive nature. Studies that have looked at subliminal/automatic information processing

have used paradigms such as the dot-probe detection task, memory tasks, priming

paradigms, and the Modified Color Naming Stroop Task. Unlike the positive finding

reported previously for supraliminal (above the threshold of awareness) stimulus

presentation on the dot probe detection task, Mogg et al. (1995) found no evidence for

attentional bias in depressed inpatients when stimuli were presented subliminally.

Some studies (e.g., Denny & Hunt, 1992; Watkins, Mathews, Williamson, &

Fuller, 1992) have also examined automatic and controlled emotional information

processing by comparing depressed participants' performance on implicit and explicit

memory tasks. In explicit memory tasks, participants are asked to attempt to remember

some material learned earlier (i.e., conscious recollection). Conversely, implicit memory

tasks show evidence of learning, but no explicit reference is made to the earlier learning

experience and often there is no conscious awareness of the earlier information retained or

of the learning experience. In fact, the information learned is unintentionally recalled in a

subsequent task. For example, performance on the implicit memory task of word

completion is expected to be better (i.e., primed) when the participant has had relevant

prior experience with words than it is in the absence of that experience. Depressed

inpatients showed a bias for depression relevant words on recall (an explicit memory task)

but not on stem completion (an implicit memory task). However, other studies have

found support for a mood-congruent implicit and explicit memory bias in non-clinically

depressed students (e.g., Ruiz-Caballero & Gonzalez, 1994). Bradley et al. (1994)

compared implicit and explicit memory for emotional information in non-clinical

participants. A free recall task was used to assess explicit memory. Supraliminal and

subliminal primes in a lexical decision task were used to assess automatic and controlled

processing, respectively, in implicit memory. The high negative affect participants showed greater subliminal priming of depression-relevant than neutral words compared to the low negative affect group. This effect was more closely related to participants' depression levels than to their anxiety levels. There was little direct evidence of emotion congruent biases on supraliminally primed lexical decision and free recall tasks, although when effects of anxiety were partialled out statistically, depression scores predicted relatively better recall of depression-relevant words.

Power and Brewin (1990) attempted to examine controlled and automatic processing of emotional information in individuals using a priming paradigm in which a task was preceded by the presentation of a related stimulus that activated pre-existing associations (Bower, 1986). For example, the priming stimulus would consist of descriptions of life events such as "you failed an important exam" or "you become seriously ill" and the target stimulus would consist of trait adjectives such as "useless" or 'weak." Previous research on priming in a lexical decision task indicated that very short stimulus onset asynchrony between prime and stimulus produced automatic facilitatory effects whereas longer stimulus onset asynchrony produced separate facilitatory and inhibitory effects. Power and Brewin (1990) modified this task to examine processing of emotion-related material using the Emotion Priming Task. In this task, participants were presented with a prime followed by a target word. They were to judge whether or not the target word was self-descriptive. By increasing the latency interval (stimulus onset asynchrony) between the prime and the target, the task was changed from one requiring automatic processing (i.e., 250 msec interval) to one requiring controlled processing (i.e.,

2000 msec interval). Power and Brewin (1990) found that when non-depressed

individuals were given a negative prime event and negative trait adjective target, an

inhibition effect (i.e., longer response latencies and lower endorsement of negative

adjectives) was obtained only at the controlled (longer stimulus onset asynchrony)

processing level. Therefore, in non-depressed individuals, a prime can act as an inhibitor

only at controlled levels. These researchers did not examine clinically depressed

individuals or assess whether the priming material was personally threatening.

Additionally, they noted that an important methodological weakness of their study was the

failure to include a no-prime condition in order to provide a control condition against

which the prime manipulation could be compared.

Holender (1986), presented a strong argument for incorporating the backward

masking procedure (Neisser, 1967) into the Stroop interference experiment as the only

acceptable methodology for rendering stimuli non-conscious. In this procedure, a brief

stimulus exposure followed rapidly by a meaningless pattern in the same location results in

an inability to report the initial stimulus. Holender recommended monitoring the efficacy

of this manipulation by including "awareness checks" in which participants are asked to

identify the masked stimuli. This backward masking procedure can be incorporated into a

modified colour-naming Stroop task, allowing both conscious and non-conscious

awareness of presented stimulus words. Marcel (1983) previously demonstrated that the

original stroop effect, characterized by increased colour naming latencies on incongruent

colour words, can be observed even when these colour words are backward masked to

prevent awareness. On the basis of this finding, he concluded that the interference by

incongruent colour words occurs automatically.

MacLeod and Rutherford (1991) provided support for the validity of the backward masking procedure using a Modified Stroop Colour Naming Task. In this study, Stroop interference was used to examine whether selective processing of threatening information in anxious individuals reflected automatic or conscious mechanisms. This study also examined the relative involvement of trait and state anxiety in the mediation of selective processing bias by testing university students high and low on trait anxiety on two occasions, once when state anxiety was high and once when state anxiety was low. The 47 undergraduate students were divided into high and low trait anxiety groups on the basis of a median split on their State Trait Anxiety Inventory trait scores (Spielberger, Gorsuch, Luslone, Vagg, & Jacobs, 1983). All participants were tested when state anxiety was high (less than one week before their academic exams) and when state anxiety was low (approximately six weeks following the exam period). To examine whether anxious processing biases were restricted to the area of personal concern, emotionally valenced materials were compared to either a related or unrelated exam threat.

A significant interaction of the between subjects factor, Trait (i.e., low trait anxiety versus high trait anxiety) and the three within groups factors (Stress level (i.e., high stress session versus low stress session); Exposure Mode (i.e., masked versus unmasked presentation); and Valence (i.e., threat word versus non threat word)) emerged. This interaction revealed that different processing biases were present when information was automatically versus consciously processed. When data from the masked condition only (i.e., the automatic processing condition) were considered, further analysis revealed a

significant Trait Anxiety x Stress Level x Valence interaction. Elevation of state anxiety in

high trait participants was associated with an increasing tendency to process selectively

both exam and non-exam threat-related words (i.e., longer latencies or increased selective

interference when colour naming threat stimuli), whereas low trait participants showed an

increasing automatic tendency to avoid processing such threat-related information (i.e.,

shorter latencies or reduction of selective interference when colour naming threat stimuli).

This effect was not specific to exam-related stimuli. In contrast, the precise meaning of

the stimulus was important at the conscious processing level. In the unmasked condition,

a significant Stress Level x Valence x Specificity effect emerged. For both high and low

trait participants, elevations in state anxiety were associated with faster color naming

latencies for exam threat-related information only. It was suggested by these researchers

that selective avoidance of threatening stress information relevant to personal concerns

may represent a conscious control strategy adopted by high state anxious participants.

This Modified Stroop Colour Naming task illustrated an experimental paradigm for

examining information processing effects at both the automatic and conscious processing

levels. Mogg, Bradley, Williams, and Mathews (1993) used this task to examine selective

processing in anxious, depressed, and normal control individuals. The anxious group,

compared to the depressed and control group, showed relatively more color-naming

interference to negative words presented both supraliminally and subliminally.

Interference effects to either subliminal or supraliminal presentation of negative words

were not found for depressed individuals. This result was inconsistent with previous

findings of interference effects for supraliminal presentation of negative words in

depression (eg., Gotlib & Cane, 1987; Gotlib & McCann, 1984) and was surprising given

the high level of anxiety in the depressed group. Further, in a subsequent replication study

with only anxious and normal controls, the processing bias for anxiety was not found

when anxiety and depression co-existed (Bradley, Mogg, White, & Miller, 1995).

Although only a few published studies have used the backward masking modification of

the emotional Stroop task, this experimental task is a promising approach for teasing apart

automatic and controlled information processing. Therefore the studies to date suggest

that the information processing bias in depression may occur mainly at the controlled

processing level.

1.3 Summary of the Findings and Rationale for Present Studies

At the present time several questions remain unexplored concerning the cognitive

diathesis-stress hypothesis and more specifically, the construct validity of Beck's proposed

personality vulnerabilities of sociotropy and autonomy. First, empirical studies concerning

the cognitive diathesis-stress hypothesis and Beck's notion of cognitive personality

vulnerability have not examined adequately the content-specificity hypothesis because they

have not attempted to match the depressive content of stimuli to the self-schema content

proposed for sociotropy and autonomy. If sociotropy and autonomy represent self-

schemas associated with dysphoria or depression, then Beck's cognitive model predicts

that these cognitive personality structures will direct the information processing system.

Thus, sociotropic individuals should show a selective attentional, encoding and recall bias

for socially relevant stimuli, whereas autonomous or independent persons should show

enhanced processing of independent and achievement-related stimuli. The studies

described in the following chapters will address this neglected issue by using sociotropic and autonomous content stimuli which are considered relevant for the sociotropic and independent individuals' personal concerns.

Second, a number of researchers have cited problems with using self-report measures to assess self-schema content and structure (Coyne, 1992; Segal, 1988). The present studies will examine the effects of schema-congruent stimuli in sociotropic and independent individuals using two different information processing tasks, thereby avoiding the limitations of retrospective self-report measures. Study 1 will examine self-schema information processing effects on memory using the self-referent encoding task and Study 2 will examine self-schema information processing effects on attention using the modified color naming Stroop task. Both research paradigms have not yet been used to determine the effects of stimulus materials relevant to sociotropy and autonomy. Do these hypothesized cognitive vulnerabilities actually influence self-referent encoding and attentional information processing?

Third, although diathesis-stress models acknowledge the importance of coping styles and event appraisals in mediating the influence of life events and personality on depression, very few researchers have incorporated these variables into their studies. The present studies will address this issue by investigating the relationship between coping and event appraisals and sociotropy and independence in depressed mood.

Fourth, Segal and Ingram (1994) have questioned whether priming manipulations are necessary in order to activate underlying cognitive vulnerability structures for depression. However, no published studies have used priming manipulations with

sociotropy and autonomy. Thus, Study 2 will investigate whether the attentional

information processing effects of sociotropy and autonomy are present only when

individuals are in a sad mood or whether they exert their effects independent of mood (i.e.,

does mood play a passive or active role in attentional processing).

Fifth, most information processing studies that have examined cognitive

vulnerability effects have not been able to tease apart automatic versus conscious

information processing effects. Study 2 will use the modified color naming Stroop task to

examine whether automatic and effortful levels of processing are associated with

cognitive-personality dimensions.

Finally, considerable criticism has been levied against the Autonomy Total Score of

the Sociotropy-Autonomy Scale (e.g., Clark et al., 1995). Both Study 1 and Study 2 will

address this criticism by using the Revised Sociotropy-Autonomy Scale and the more

specific personality construct of independence rather than the more heterogeneous

autonomy construct.

In summary, the main contribution of the present studies will be to test Beck's

cognitive theory by investigating the structure and content of the cognitive personality

constructs of sociotropy and autonomy using memory and attention information

processing paradigms. Evidence for these constructs would lend support to the cognitive

diathesis-stress hypothesis. In addition, the effects of coping, stressful events, and event

appraisals will be examined with respect to the personality variables.

1.4 Thesis Research Design and Hypotheses

The proposed dissertation research consisted of two studies. The purpose of

Study 1 was to investigate the self-schema content of individuals with either a high sociotropic personality mode, a high independent personality mode, or a low sociotropy and a low independence personality mode (i.e., controls) in a self-referent encoding task experiment. This study also examined the relationship between life events, coping, and information processing to determine whether performance on the self-referent encoding task is related more to current stressors than to personality. Negative recall on the self-referent encoding task was expected to be correlated with more recent negative life events and more difficulty with coping. Study 1 also served to select a number of empirically derived highly sociotropic schema-relevant and highly independent schema-relevant trait adjectives for use in Study 2.

Study 2 attempted to examine whether information processing biases are primarily a function of depressed mood state or a more enduring personality trait reflecting vulnerability to depression. This question was tested by examining the type of processing exhibited by individuals who scored high on the sociotropy scale of the Revised Sociotropy-Autonomy Scale, high on the independence scale of the Revised Sociotropy-Autonomy Scale, or low on both the sociotropy scale and independence scale of the Revised Sociotropy-Autonomy Scale (controls) under neutral and sad mood conditions. The level of specificity of the information processing bias was also examined by determining whether this bias was restricted to a narrow set of personal concerns or was more broadly related to a wider range of negative material. Finally, this study investigated both automatic and effortful aspects of the hypothesized attentional bias in sociotropy and autonomy.

To test the hypotheses proposed for this research, a complex mixed multivariate design was necessary with a number of between and within-group factors. In an attempt to ensure that the research design involved no more than two or three between-group factors, it was decided to restrict the sample selection to women only. The inclusion of both men and women could have led to five-way interactions which are practically impossible to interpret. Also, research specifically targeting depression in women is needed given that a consistent finding in the depression literature is that more women than men are depressed (Nolen-Hoeksema, 1990). In addition, differential outcomes for gender have been found in a variety of experiments such as personality and life event congruence to predict depression (e.g., Smith et al., 1988), and the greater genetic influence of personality on life events for women (Saudino, Pedersen, Lichtenstein, McClearn, & Plomin, 1997). Higher levels of depressive symptomatology is also likely in women with high Dysfunctional Attitude Scale scores and low social support but not among women with high Dysfunctional Attitude Scale scores and high social support or women with low Dysfunctional Attitude Scale scores. This relationship was not predictive of high depressive symptomatogy in males (Barnett & Gotlib, 1990). Given that women tend to meet criteria for mood change more often than men in mood induction studies and tend to respond differently than men in information processing studies (e.g., Barnett & Gotlib, 1988b; Clark & Teasdale, 1985), the proposed studies were restricted to women only.

1.4.1 Hypotheses for Study 1

The first study investigated the self-schematic content of female university students

who were high on sociotropy, high on independence, or low on sociotropy and on

independence using a self-referent encoding task. It was hypothesized that the self-

schematic content of women high on sociotropy would be dominated by interpersonal

concerns whereas the self-schematic content of women high on independence would be

dominated by concerns of independence and achievement. The self-schematic content of

women in the control group (low sociotropy and low independence) was hypothesized to

show no personality congruent bias.

Hypothesis 1(a). A greater number of words endorsed as self-relevant will be congruent with personality type. Therefore, high sociotropic individuals will endorse as self-relevant more sociotropic trait adjectives and high independent participants will endorse more independence trait adjectives.

Hypothesis 1(b). A greater number of words endorsed as desirable will be congruent with personality type. Therefore, high sociotropic individuals will endorse as desirable more sociotropic trait adjectives and high independent participants will endorse more independence trait adjectives.

Hypothesis 1(c). A greater number of words will be recalled that are congruent with personality type (sociotropic/independent). Therefore, high sociotropic individuals will recall more sociotropic trait adjectives and high independent individuals will recall more independent trait adjectives.

The Beck Depression Inventory was completed by all participants. Beck

Depression Inventory scores were used to determine if dysphoria is associated with an

enhanced processing of negative trait adjectives as indicated by trait adjective endorsement

rates and recall.

Hypothesis 2(a). As depression level increases, a greater number of negative valenced words relative to positive valenced words will be endorsed as self-descriptive.

Hypothesis 2(b). As depression level increases, a greater number of negative valenced words relative to positive valenced words will be recalled.

Hypothesis 3(a). With increasing depression severity, high sociotropic participants will endorse significantly more negative versus positive interpersonal trait adjectives as self-descriptive and high independent participants will endorse significantly more negative versus positive independence trait adjectives as self-descriptive.

Hypothesis 3(b). As depression level increases, high sociotropic individuals will recall significantly more negative versus positive interpersonal trait adjectives and high independent participants will recall significantly more negative versus positive independent trait adjectives.

A mixed design was used to test these hypotheses with two between groups factors: Group (sociotropy, independence, control) and Depression Level (independent continuous variable) and two within-subject factors: Content (sociotropic versus independent word content) and Valence (negative versus positive). The dependent measures for the self referent encoding task were the total rating scores for the trait adjectives endorsed as desirable or self-relevant, and the percentage of sociotropic, independent, and neutral trait adjectives recalled over the total number of trait adjectives recalled on the incidental free-recall task.

It was predicted that Sociotropic and Independent individuals will report different coping strategies as assessed by the Coping Inventory for Stressful Situations. A MANOVA was performed with Group (sociotropy, independence and controls) as the between-groups factor, Depression Level as the continuous variable, and scores on the three Coping Inventory for Stressful Situations subscales (i.e., emotion-focused, task-oriented, and avoidance coping) as the dependent measures.

Hypothesis 4(a). Sociotropic individuals will report more emotion-focused coping and independent participants will report more task-oriented and avoidance coping on a self-report measure of coping - the Coping Inventory for Stressful Situations.

According to Beck's model, high sociotropic individuals are more sensitive to perceived loss/threat in the interpersonal realm and high independent individuals are more sensitive to loss/threat in the achievement realm. If this is correct, this study should find that depression level can be predicted by an interaction between personality, number of personality congruent negative life events and coping (Clark et al., 1993).

Hypothesis 4(b). For sociotropic individuals, it is hypothesized that an interaction between the number of interpersonal negative life events and emotion-focused coping will predict depression level. For independent individuals, the interaction between the number of achievement-related negative life events and avoidance coping will predict depression level.

Three separate hierarchical multiple regression analyses were conducted comparing the personality groups (i.e., sociotropy, independence, and controls) to one another. Variables were entered in the following sequence: Step 1, group contrasts; Step 2, main effects of sociotropic and autonomous life events; Step 3, main effects of emotion-focused coping and avoidance coping; Step 4, two-way interactions of group comparison and life events; Step 5, two-way interactions of group comparisons and coping; Step 6, two-way interactions of life events and coping; Step 7, three-way interactions of the hypothesized group comparisons by life events by coping; and Step 8, other nonhypothesized three-way interactions. The various main effects and interactions were entered on separate steps to assess the unique contribution of the three-way interactions to the prediction of depression level.

When the hypothesized interactions on Step 7 were significant, hierarchical

multiple regressions were run on the sociotropic and independent groups separately. For

sociotropic individuals, scores on the Coping Inventory for Stressful Situations emotion-

focused subscale and the number of negative interpersonal events on the Life Events

Inventory were used as the independent or predictor variables. They were entered into the

regression analysis as an interaction term (i.e., number of negative interpersonal events x

emotion-focused coping) to predict depression level. For independent individuals, scores

on the Coping Inventory for Stressful Situations avoidance coping subscale and the

number of achievement-related negative life events on the Life Events Inventory were

used as the independent or predictor variables. They were entered into the regression

analysis as an interaction term to predict depression level. In both regression analyses,

Beck Depression Inventory scores served as the dependent variable.

> Hypothesis 4(c). Sociotropic individuals will have more negative appraisal patterns
> for interpersonal than for achievement-related negative life events and independent
> individuals will have more negative appraisal patterns for achievement-related
> versus interpersonal negative life events.

A mixed MANOVA design was used with one between-groups variable, Group

(Sociotropy, Independence and Control), Depression Level as a continuous variable, and

one within groups variable, Type of Most Distressing Life Event (Interpersonal versus

Achievement). The dependent variables were the appraisal rating scores for the most

distressing interpersonal and achievement-related life experience endorsed on the Life

Event Inventory. All 11 appraisal rating scores for each type of event were used unless

principal components analysis permits a collapse of the ratings into a smaller number of

more meaningful appraisal dimensions. The relationship between recall bias, number of

life events, life event appraisals, and coping style also was examined using Pearson

correlations.

1.4.2 Hypotheses For Study 2

Study 2 utilized a variant of the Stroop colour naming task to address the

following conceptual questions concerning the nature of the self-schema in sociotropy and

autonomy. First, this experiment addressed whether attentional processing biases are

directed toward stimuli that are personally relevant. This was accomplished by using

emotionally valenced stimuli which are related to and unrelated to sociotropic and

independent concerns as assessed in Study 1. Beck's theory predicts that the attentional or

encoding bias will be present only for highly schematic individuals (i.e., high sociotropic or

high independent groups).

> Hypothesis 1(a). High sociotropic individuals will show significantly greater
> interference effects from sociotropic words than high independent individuals or
> controls. This effect will be evident as disproportionately longer latencies when
> attempting to name the ink colour of sociotropic words.

> Hypothesis 1(b). High independent individuals will show significantly greater
> interference effects from independent relevant material than high sociotropic
> individuals or controls. This effect will be evident as disproportionately longer
> latencies when attempting to name the ink colour of such words.

Second, this study examined the role of mood by testing participants in either a

depressed or neutral mood condition. The temporal stability of the processing bias was

evaluated by examining whether it is an enduring characteristic and thus a vulnerability

factor or whether it is a by-product of one's current mood state. This study also

investigated whether sad mood acts as a necessary prime of vulnerable schemas in high

sociotropic and high independent individuals.

> Hypothesis 2(a). If sad mood acts as a prime, then highly sociotropic individuals
> in the sad mood condition will show significantly longer colour naming latencies to
> negative sociotropic words than sociotropic individuals in the neutral mood
> condition.

> Hypothesis 2(b). If sad mood acts as a prime, then highly independent individuals
> in the sad mood condition will show significantly longer colour naming latencies to
> negative autonomous words than independent individuals in the neutral mood
> condition.

Finally, this study examined whether the proposed encoding bias occurs

automatically and/or in conscious, effortful processing modalities by examining whether

Hypothesis 2(a) and 2(b) is evident when words are presented in a masked or unmasked

condition. This last research question was exploratory and no specific hypothesis was

offered. That is, Beck's model makes no predictions about whether the self-schema

orientation of sociotropic and independent individuals will be evident in automatic and/or

controlled processing.

Significant improvements over past studies include using a variant of the Stroop

task which employs a backward masking procedure on half of the experimental trials to

ensure that stimulus materials are presented outside of awareness. The adequacy of this

masking manipulation was tested in this study and has previously been validated

(MacLeod & Rutherford, 1991). Trait adjectives identified in the preliminary study as

highly relevant/irrelevant and negative/positive/neutral to sociotropic and independent

individuals were used as stimuli so that personality schema content and structure could be

investigated.

The experimental hypotheses were evaluated on the basis of the colour naming latency data. For each participant, median colour naming latencies were calculated for each experimental condition. These data were subjected to a repeated measures MANOVA with two between-groups factors and three within-group factors (see Appendix A for a diagram of the experimental design). The between-groups factors were Mood (sad versus neutral) and Group (Sociotropy, Independence, and Control). The three within-group factors were Exposure Mode (masked versus unmasked), Specificity (sociotropic versus non-sociotropic word content), and Valence (negative, positive, and neutral word). Hypothesis 1 predicts that sociotropic relevant words will elicit selective processing in high Sociotropic individuals but not in Independent individuals or Controls, and that autonomous relevant words will elicit selective processing in high Independent individuals but not in high Sociotropic individuals or Controls. A positive outcome should lead to a two-way interaction involving Group x Specificity.

Hypothesis 2 predicts that the above interaction will not be further modified by the Mood factor. If this effect must be primed by sad mood, then a three-way interaction is expected: Group x Specificity x Mood. If such effects are differentially modified by conscious awareness or by automatic processing, then a four-way interaction is expected: Group x Specificity x Mood x Exposure Mode.

After the Modified Stroop Task, each participant also completed the Life Event Inventory-Student Version to assess for the presence of negative sociotropic and autonomous life experiences and their appraisals of these events. This permitted an examination of the relationship between negative life experiences, personality, and the

various information processing variables assessed by the Modified Stroop Task.

Correlations between the magnitude of the Stroop interference effect and the number of

achievement and interpersonal life events and appraisal ratings from the Life Event

Inventory-Student Version were examined.

> Hypothesis 3. Greater interference effects on the Modified Stroop will be
> correlated with more negative appraisals and an increased number of personality
> congruent life events.

The Beck Anxiety Inventory was administered also to determine the presence of

anxiety. This permitted an examination of the relationship between anxiety levels,

personality, and the various information processing variables assessed by the Modified

Stroop task. No specific hypotheses were generated regarding these relationships, but

rather information regarding the respective relationships of anxiety level and depression

level on Stroop interference could be examined.

CHAPTER II

STUDY 1: METHOD

2.1 Participants

Participants for Study 1 were selected on the basis of their scores on the Revised

Sociotropy-Autonomy Scale which was completed during a screening study conducted

three months prior to the present study. This initial sample consisted of 476 Introductory

Psychology students at the University of New Brunswick, Canada. Because only women

were of interest for the present study, the size of the participant pool was reduced to 298.

Fifteen women failed to complete the Revised Sociotropy-Autonomy Scale further

reducing the participant pool to 283. Table 1 presents the means and standard deviations

for the Revised Sociotropy-Autonomy Scale Sociotropy Total Scale and Independence

Total Scale for the female screening pool. The following three groups of women were

invited to volunteer for the present study: (1) a Sociotropic group consisting of women

scoring high on sociotropy and low on independence; (2) an Independent group consisting

of women scoring high on independence and low on sociotropy; and (3) a Control group

of women scoring low on sociotropy and low on independence. Classification of high and

low sociotropic individuals was made by converting the Revised Sociotropy-Autonomy

Scale Sociotropy and Independence Total Scales scores to z scores. Women with z scores

greater than zero on Sociotropy and less than zero on Independence were classified as

high sociotropic individuals and those with z scores greater than zero on Independence

and less than zero on Sociotropy were classified as high independent individuals. Women

with z scores less than zero on Sociotropy and on Independence were selected to form the

Table 1. <u>Revised Sociotropy-Autonomy Scale Sociotropy and Independence Means and Standard Deviations from Screening Study for Female Undergraduate Students</u>

	<u>M</u>	<u>SD</u>
Sociotropy	68.00	14.96
Independence	42.40	7.63

<u>N</u> = 283

control group (see Hammen et al., 1989b for a similar procedure).

Out of this sample of 283 women, 77 participants met the criteria for the high sociotropic group, 54 participants met the criteria for the high independent group, and 80 women met the criteria for the control group. Seventy-two women were not included because their scores fell on the mean and were mixed high or mixed low. An attempt was made to contact participants until 40 participants were obtained for each group or until the subject pool was exhausted. Seventy-five of the 77 participants who were eligible for inclusion in the Sociotropic group indicated that they were willing to be contacted for another study. An attempt was made to contact 58 out of the 75 by telephone. Eleven participants were unable to be reached, three were not willing to participate and four agreed to participate but failed to show up for the study. This left a final sample of 40 women who participated in the Sociotropic group of the study.

Thirty-eight out of the 54 potential participants in the Independence group had

agreed to be contacted for another study. An attempt was made to contact all 38

participants. Two were unable to be reached resulting in a final Independence sample of

36.

Fifty-four of the potential 80 women in the Control group had agreed to be

contacted for another study. An attempt was made to contact 51 of these participants.

Seven were unable to be reached or had left university, two were not willing to

participate, and two agreed to participate but failed to show up for the study. This

resulted in a final Control sample of 40. The average age of participants in the study was

19.3 years old ($\underline{SD}$ = 3.4; range = 17 to 41 years old). Table 2 presents the means and

standard deviations on screening Revised Sociotropy-Autonomy Scale Sociotropy and

Independence Total scores for the Sociotropic, Independent, and Control groups formed

for Study 1.

Table 2. Sociotropic, Independent, and Control Groups Sample Sizes, Means, and
Standard Deviations on Screening SAS Sociotropy and Independence Total Scores

Group	n	SAS Sociotropy		SAS Independence	
		M	SD	M	SD
Sociotropic	39	78.69	10.22	38.44	3.61
Independent	36	50.00	9.87	50.69	5.35
Control	39	56.13	9.09	36.82	4.48

Note: Two participants with outlying data were excluded from all analyses reducing $\underline{N}$ =
116 to $\underline{N}$ = 114 (see Results).

A one-way ANOVA on the screening Revised Sociotropy-Autonomy Scale Sociotropy Total score revealed a significant main effect for Group, $F_{(2, 113)} = 91.73$, $p < .001$. Further examination with post-hoc Multiple Range Tests using the Tukey-HSD test showed that all three groups were significantly different from each other on the screening Revised Sociotropy-Autonomy Scale Sociotropy Total score with the Sociotropic group obtaining a significantly higher mean score than the Independent group ($p < .05$) or the Control group ($p < .05$). The Control group also had a significantly higher mean score than the women in the Independent group ($p < .05$). A one-way ANOVA on the screening Revised Sociotropy-Autonomy Scale Independence Total score also revealed a significant main effect for Group, $F_{(2, 113)} = 104.48$, $p < .001$. Post-hoc comparisons with the Tukey-HSD test revealed that Independent individuals had significantly greater screening Revised Sociotropy-Autonomy Scale Independence Total scores than Sociotropic individuals and Control individuals, ($p < .05$). Therefore, the results of the ANOVAs confirm that the groups were significantly different on the classification variables (i.e., screening Revised Sociotropy-Autonomy Scale Sociotropic and Independence Total score).

2.2 Procedure

All participants were asked to complete the questionnaire with 1 to 7 participants tested at a time. Each participant signed a consent form prior to participating in the study (See Appendix B). Participants then rated a list of 72 trait adjectives deemed indicative of sociotropic or independent traits. In addition, each word was classified as negative, positive or neutral in terms of their self-descriptiveness or self-relevance. These adjectives

were selected from Blackburn's list (Blackburn, 1993, personal communication) and were

presented to participants in the same randomized order. Blackburn's list is presented in

Appendix C and the self-relevance questionnaire is presented in Appendix D. When this

task was completed, trait-rating forms were collected and participants immediately

underwent an incidental recall task of the previously presented trait adjectives (i.e., recall

as many of the words presented in any order). This recall task was followed by

presentation of the original list of trait adjectives which students rated in terms of

desirability (see Appendix E). Participants then were administered the Revised

Sociotropy-Autonomy Scale, the Revised Beck Depression Inventory, the Coping

Inventory for Stressful Situations, and the Life Experiences Inventory - Student Version.

The order of the questionnaires was randomized for each group (i.e., Sociotropy,

Independent, Control). The questionnaires were administered after the self-referent

encoding task in order to prevent priming by the questionnaire items. Upon completion of

the study, all participants were awarded one participation point towards their Introductory

Psychology course. Each participant was also given a debriefing sheet (Appendix F).

2.2.1 Revised Sociotropy-Autonomy Scale

The Revised Sociotropy-Autonomy Scale (Clark & Beck, 1991; Clark et al.,

1995) was developed to assess the personality constructs of sociotropy and autonomy

(See Appendix G). It is a 59-item self-report scale that was derived from an item pool

that consisted of the original 60-item Sociotropy-Autonomy Scale (Beck, Epstein,

Harrison, & Emery, 1983) as well as 33 new autonomy items written to provide a more

comprehensive assessment of this personality construct. Clark and Beck (1991) reported

preliminary psychometric data on this revised version of the SAS. Item and factor analyses on the 93 Sociotropy-Autonomy Scale item pool revealed that three orthogonal factors could be reliably extracted (Sociotropy, Solitude, independence), resulting in the three subscales which make up the 59-item scale. The sociotropic subscale items (n=29) tap concern about disapproval, attachment/separation, and pleasing others. The two autonomy subscales are Solitude (n=13 items), and Independence (n=17 items). The Solitude subscale items assess preference for solitude and insensitivity to others. The Independence subscale items assess individualistic achievement, assertiveness, and independence of thought and action. Participants rate to the closest percentage (0, 25, 50, 75, or 100) the amount of time each statement is applicable to them.

Clark et al. (1995) reported that the 59-item Revised Sociotropy-Autonomy Scale reliably reflected the three personality constructs of Sociotropy, Solitude, and Independence by using principal components analysis in successive samples of undergraduate students. They also reported good internal consistencies for the Sociotropy, Solitude, and Independence subscales in an undergraduate sample with coefficient alphas of .87, .67, and .75, respectively. Clark et al. (1993) also found internal consistency coefficients for Sociotropy, Solitude, and Independence to be within acceptable limits (.89, .74, and .75; respectively). The Sociotropy Total Score was obtained by summing over the 29 sociotropy items (which were assigned values 0 to 4 corresponding to 0 to 100%, respectively) for a maximum score of 116. The Independent Total score was obtained by summing over 17 of the 30 autonomous items pertaining to independence for a maximum score of 68.

Psychometric analysis of the two autonomy subscales (Solitude and Independence) revealed that the new scales had better construct validity than the original Autonomy Total Scale (Clark et al., 1995). The Solitude subscale was specifically related to the Depressive Experiences Questionnaire-Self-Criticalness Scale (Blatt, D'Afflitti, & Quinlan, 1976) with $r = .41$ and $r = .39$ for women and men, respectively. The Independence subscale was specifically related to the Depressive Experiences Questionnaire-Self-Efficacy scale ($r = .45$ and $r = .49$ for women and men, respectively). Since the Depressive Experiences Questionnaire scales of Self-Criticalness and Self-Efficacy are related to issues of self-definition or autonomy (Blatt & Zuroff, 1992), the significant positive correlations between these scales and the revised autonomy scale supports the latter's concurrent validity. Solitude also correlated with the Beck Depression Inventory ($r = .31$ and $r = .29$ for women and men, respectively) unlike the original autonomy measure (e.g., Barnett & Gotlib, 1988c; Pilon, 1987; Robins, 1985). Similar to previous findings, Sociotropy was positively correlated with the Depressive Experiences Questionnaire Dependency scale ($r = .22$ and $r = .45$ for women and men, respectively).

Sociotropy correlated highly with Robins et al. (1994) Personal Style Inventory Sociotropy scale ($r = .76$ and $r = .73$ for women and men, respectively) and moderately with the Beck Depression Inventory ($r = .20$ and $r = .34$ for women and men, respectively). Independence correlated with the Personal Style Inventory Autonomy scale in men ($r = .29$) but not in women ($r = .12$). Independence did not correlate with Beck Depression Inventory ($r = .00$ and $r = .03$ for women and men, respectively). In fact, it has been suggested that this construct may be related more to well-being and good

psychological adjustment than depression (Clark et al., 1995).

It was decided that the Revised Sociotropy-Autonomy Scales would be used in Study 1 and 2 because of adequate psychometric properties and research interest in this scale. Clark et al. (1995) recommended using the Autonomy subscales of Solitude and Independence separately because the total Autonomy scale appears to be a heterogeneous construct. Therefore, the present studies focus on Sociotropy and on only one subscale of Autonomy; Independence.

2.2.2 Dependent Measures

2.2.2.1 Revised Beck Depression Inventory. The Revised Beck Depression Inventory (Beck & Steer, 1987) is a 21-item self-report inventory that has been shown to be a valid measure of depression severity in university student and psychiatric populations (Bumberry, Oliver, & McClure, 1978). It tends to emphasize the cognitive-affective symptoms of depression. Total scores can range from 0 to 63. Scores of 0-9 are considered to be within the normal range, 10-18 the mild range, 19-25 the moderate range, and 26 and more the severe range. Beck, Steer, and Garbin (1988) reported high internal consistency for the Beck Depression Inventory (alpha coefficient of .87) and one week test-retest reliability coefficients exceed .60. The alpha coefficient for the Beck Depression Inventory in the present sample was .80, which is slightly lower than the level reported. Also, the Beck Depression Inventory has good concurrent validity correlating highly with other measures of depression, such as the Zung (Zung, 1965), the Minnesota Multiphasic Personality Inventory-Depression Scale, and the Hamilton Rating Scale of Depression (Hamilton, 1960).

2.2.2.2 Life Experiences Inventory- Student Version. The Life Experiences

Inventory- Student Version is an 89-item life events checklist made up of items pertaining

to work, school, physical health/sexuality, love and marriage, family, finances, friendships,

and crime/legal matters (see Appendix H). This inventory was developed by Clark et al.

(1993) and emphasizes both major and minor negative life events that are typically

experienced by college students. Items were drawn from previous life event inventories

(PERI- Dohrenwend, Krasnoff, Askensay, & Dohrenwend, 1978; LEI- Sarason, Johnson,

& Siegal, 1978) and from studies investigating life experiences of students (Compas,

Davis & Forsythe, 1985; Linden, 1984; Newcomb, Huba, & Bentler, 1981). Events that

were unanimously categorised by three separate raters as primarily negative autonomous

stressors comprised the 50 Category A items of the scale and those categorised as

primarily negative interpersonal stressors made up the 39 Category B items.

To complete the scale, participants circle the number next to each life event they

have experienced over the past 6 months. They then review the events circled in Category

A (i.e., negative achievement-related events) and decide on which one of the events they

endorsed was most significant or important to them. Individuals then complete 11 five-

point rating scales that tap various event appraisal dimensions. Appraisal ratings are based

on the most important distressing life experience for each of the two categories. These

include: (1) how likely the event would lead to other negative things happening to them,

(2) how much the event taxed or exceeded their coping ability, (3) how upsetting the

event was to them, (4) the extent to which the event made them feel down on themselves,

(5) the extent to which the event made them feel incompetent, (6) how much control they

had over the event's effects, (7) the extent to which the event negatively affected the way others relate to them, (8) the extent to which the event had a negative impact on their feelings of independence and freedom, (9) how much they felt personally responsible for causing the event to happen, (10) how negative an impact the event had on them, and (11) the extent to which the event made them feel alone or separated from others.

The same procedure was then repeated for the most significant event in Category B (i.e., interpersonal-related events). Scores consist of the total number of events participants endorse in each of the two domain specific categories (i.e., total number of negative interpersonal stressors and total number of negative autonomous stressors). Raw scores on each rating scale are used with a total of eleven appraisal rating scores for both interpersonal and achievement-related events. These may be treated as individual scores or exploratory analysis may result in combining ratings should they be overlapping or highly correlated. A principal components analysis was performed to determine if it was possible to collapse over several rating dimensions to obtain a smaller number of meaningful factors.

There is some evidence to suggest that the Life Events Inventory is a valid measure of negative life events. In an earlier version of the Life Events Inventory, correlational analyses revealed a moderate level of temporal stability over a three month period (r = .49 and r = .52 for negative interpersonal and achievement-related events, respectively; Clark et al., 1993). Some construct validity for the earlier version of the Life Events Inventory also exists. Clark and Oates (1995) found that the Sociotropy-Autonomy Scale rather than the 53-item Hassles Scale (Delongis, Folkman, & Lazarus,

1988) interacted with the Sociotropy-Autonomy Scale to predict depression. They found

a significant interaction between Life Events Inventory negative achievement events and

the Sociotropy-Autonomy Scale Solitude scale predicted depression whereas no

Sociotropy-Autonomy Scale Sociotropy by Life Events Inventory negative interpersonal

event interaction was found. Similarly, no personality by event interaction was found

using the Hassles subscales. This study suggests that major life events, such as measured

by the Life Event Inventory, rather than minor life events such as measured by the Hassles

scale should be assessed in diathesis-stress studies of depression.

    2.2.2.3 Coping Inventory for Stressful Situations. The Coping Inventory for

Stressful Situations (Endler & Parker, 1990) is a 48-item inventory measuring three basic

coping styles or strategies people use when encountering stressful situations: task oriented

coping (16-items), emotion oriented coping (16-items), and avoidance oriented coping

(16-items). Task-oriented coping refers to strategies used to solve a problem,

reconceptualize it, or minimize its effects. Emotion-focused coping is person-oriented and

refers to strategies that may include emotional responses, self-preoccupation and

fantasizing reactions. Two further subscales can be derived from the Avoidance oriented

coping scale: Distraction (8-items) and Social Diversion (5-items). Participants rate on a

5-point scale (from "Not at All" to "Very Much") how much they engage in each type of

activity when encountering a stressful situation (see Appendix I).

    Alpha reliability coefficients for the Coping Inventory for Stressful Situations Task

(.90), Emotion (.88), and Avoidance (.83) scales, and the Distraction (.79) and Social

Avoidance (.70) subscales are within an acceptable range, at least for a female

undergraduate sample (Endler & Parker, 1990). The above scales and subscales also demonstrated stable six week test-retest reliability (.72, .71, .60, .59, and .60 respectively). Separate factor structures were found to be virtually identical in samples of psychiatric inpatients, adolescents, college students, and adults. Endler and Parker (1990) also found adequate construct validity of the Coping Inventory for Stressful Situations based on an undergraduate student population. The Coping Inventory for Stressful Situations Emotion Oriented Coping Scale was related to general psychopathology and psychological distress on the Basic Personality Inventory (Jackson, 1989) and to elevated dysphoria as measured by the Beck Depression Inventory.

2.2.3 Selection of Self-Referent Encoding Task Trait Words

The initial pool of trait words consisted of a list of negative, neutral, and positive autonomous and sociotropic words developed by Blackburn (personal communication, 1993; See Appendix C). These words are consistent with theoretical accounts of depressed sociotropic versus independence schema content. The trait words were matched for word frequency and length, and were also evaluated by Dr. Aaron T. Beck for how well they accurately represented the full range of his personality constructs of sociotropy and autonomy.

Participants in the present study rated the valence of the trait words by responding to the written statement " How desirable is this word?" The trait words were rated on a 9 point scale with -4 being extremely undesirable, 0 being neither desirable or undesirable and +4 being extremely desirable. Total scores for positive sociotropic, negative sociotropic, positive autonomous and negative autonomous trait words were obtained by

summing over the 12 trait words in each of these categories to obtain a maximum score of +48 (extremely desirable) and a minimum score of - 48 (extremely undesirable). They also assessed the trait words for relevance by rating " How much does this word describe you?" on a 5-point Likert scale (1 = "not at all like me"; 5 = "very much like me"). Self-relevance Total scores for positive sociotropic, negative sociotropic, positive autonomous and negative autonomous trait words were obtained by summing over the 12 trait words in each of these categories to obtain a maximum score of 48.

The relevance ratings of the highly sociotropic and the highly independent groups were used to develop a list of words judged to be of high sociotropic concern (negative, neutral, and positive) and a list of words judged to be of high independent concern (negative, neutral, and positive). Trait words were rank ordered by degree of relevance for high sociotropic individuals and high independent individuals to make up the different lists of words used in Study 2. The top eight negative words most relevant for highly sociotropic individuals and their corresponding positive, and neutral words matched for length and frequency were used in the Modified Stroop Task in Study 2. The top eight negative words ranked most relevant for highly independent individuals and their corresponding positive and neutral words were also used in the Modified Stroop Task of Study 2. Any word appearing in more than one category was excluded because of poor specificity. Participants' ratings of the trait words were cross-validated with Blackburn's classification of positive, negative, and neutral sociotropic and autonomous trait words. An equal number of positive, negative, and neutral words were selected that were

autonomous and sociotropic in orientation.

2.2.4 Trait-Rating and Incidental Recall Task

Each participant was presented with a booklet containing 72 trait words. Written

instructions at the top of the page asked participants to indicate how well each item

described them on a 5-point Likert rating scale (1 = "not at all like me"; 5 = "very much

like me"). Half of the items were sociotropic trait words relevant to the interpersonal

domain (i.e., desirable, popular, warm, cruel, alone, and unwanted); the other half were

independence-related trait words (i.e., intelligent, smart, creative, weak, stupid, and

failure). An equal number of negative, neutral, and positive trait words were presented in

a randomized order. Participants were discouraged from going back to study previously

answered items by being instructed not to do so. Immediately after the participants

completed the entire booklet it was collected and each person was given a sheet of paper

with written instructions to recall as many of the target words as possible, in any order.

Participants had not been told previously that they would be asked to recall the trait words

(i.e., recall was incidental). Participants were given five minutes to recall the trait words.

Two dependent measures were derived from the trait-rating and incidental recall task:

degree of self-reference and the number of trait words recalled in each trait category.

In summary, the self-referent encoding task consisted of Blackburn's (1991) list of

72 positive, neutral and negative sociotropic and independent trait words. Each word was

rated for desirability and self-relevance. In addition, after completing the self-referent

encoding task, participants were asked to recall as many trait words as possible in a free-

recall format. The number of positive and negative sociotropic and independent as well as

neutral words recalled were counted to yield five dependent variables.

CHAPTER III

STUDY 1: RESULTS

3.1 Data Conditioning

All data were analysed using SPSS for Windows, version 6.1.3. Prior to the main

analysis, all variables were examined with various programs for accuracy of data entry,

missing values, and fit between their distributions and the assumptions of multivariate

analysis. Cases with missing values on more than 20% of the items for any scale were

excluded from analyses using that particular scale. Data conditioning was carried out

separately for the Sociotropic, Independent, and Control groups. Pairwise linearity was

checked using within-group scatterplots and found to be satisfactory.

One case in the Sociotropic group was found to be a univariate outlier on the

desirability ratings for the different types of trait adjectives. This individual's positive

responses to negative sociotropic and independent trait adjectives and negative responses

to positive sociotropic and independent trait adjectives suggests some misunderstanding of

the instructions in completing the ratings or a random response pattern. Thus, this person

was deleted from all self-referent encoding task analyses. One case in the control group

was deleted for the same reason. Both of these cases were also multivariate outliers using

Mahalanobis distance with $p < .001$. When these cases were eliminated, no remaining

univariate or multivariate outliers were identified. One hundred and fourteen women

provided data for Study 1: 39 cases remained in the Sociotropic group, 36 cases were in

the Independent group, and 39 cases were in the Control group.

In all analyses, unless otherwise specified, multivariate analysis of variance

(MANOVA) was used with sequential adjustment for nonorthogonality. Evaluation of the

assumptions of normality, homogeneity of variance-covariance matrices, linearity, and

multicollinearity were all satisfactory. Univariate F-tests were used to evaluate

significance.

3.2 Validation of the SAS-R Group Selection Assignment

To determine whether the groups remained significantly different on the selection

criteria over time, one-way ANOVAs were performed on the Revised Sociotropy-

Autonomy Scale Sociotropy and Independence Total scores completed by participants in

Study 1 approximately 12 weeks after completing the screening Revised Sociotropy-

Autonomy Scale. See Table 3 for group means and standard deviations for Study 1

Revised Sociotropy-Autonomy Scale Sociotropy and Independence Total scores. A one-

way ANOVA on Study 1 Revised Sociotropy-Autonomy Scale Sociotropy Total scores

revealed a significant Group main effect, $F(2, 113) = 43.37$, $p < .001$. Post-hoc Tukey-

HSD tests found that all three groups were significantly different from each other on

Study 1 Revised Sociotropy-Autonomy Scale Sociotropy Total score with the Sociotropic

group obtaining higher scores on this criterion variable than the Independent group ($p <$

.05) or the Control group ($p < .05$). One-way ANOVA for Independence scores by

Group was also significant, $F(2, 113) = 38.41$, $p < .001$. Post-hoc Tukey-HSD

comparisons revealed that the Independent group was significantly higher than the

Sociotropic group and the Control group on Study one Revised Sociotropy-Autonomy

Scale Independence scores ($p < .05$). Therefore, the ANOVAs confirm that the groups

remained significantly different on the classification variables, i.e., Revised

Table 3. Sociotropic, Independent, and Control Groups Sample Sizes, Means, and Standard Deviations on Study 1 Revised Sociotropy and Independence Total Scores

		SAS Sociotropy		SAS Independence	
Group	n	M	SD	M	SD
Sociotropic	39	77.56	12.46	39.82	5.68
Independent	36	51.53	12.81	49.19	6.69
Controls	39	58.95	12.38	37.08	6.34

Note: $N = 114$. SAS = Revised Sociotropy-Autonomy Scale

Sociotropy-Autonomy Scale Study one Sociotropic and Independence Total score.

Inspection of participants' scores on the Revised Sociotropy-Autonomy Scale completed in Study 1 revealed that 82% of the sociotropic individuals remained within the selection criteria for classifying individuals as highly sociotropic, 85% of independent individuals again met selection criteria for the independent group, and 66% of individuals in the control group again met criteria for the control group. Twenty-eight percent of the sociotropic individuals ended up in the same range as the control group and none of these individuals ended up in the same range as the independent group. Nine percent of the independent group ended up in the same range as the control group and six percent of this group ended up in the same range as the sociotropic group. Twenty-six percent of the control individuals moved to the same range as the sociotropic individuals and 8% moved to the same range as the independent individuals. Thus there was a tendency for the low scoring Control group to show an upward drift in their Sociotropy Total Scores, in

particular, upon retesting with the Revised Sociotropy-Autonomy Scale.

Within-group correlations for the total sample on the Revised Sociotropy-Autonomy Scale Sociotropy and Independence Total test-retest scores are presented in Table 4. The high correlations between Time 1 (screening) and Time 2 (Study one) Revised Sociotropy-Autonomy Scale Sociotropy and Independence Total Scores suggest that these measures are temporally stable. The low negative correlations between Sociotropy and Independence in both administrations suggest that these scales are measuring different constructs, though it is interesting that Revised Sociotropy-Autonomy Scale Sociotropy and Independence were uncorrelated at the second administration of the Revised Sociotropy-Autonomy Scale, but moderately negatively correlated at the first administration of the Revised Sociotropy-Autonomy Scale. This finding is similar to correlations reported in the published studies where sometimes sociotropy and autonomy scales are truly orthogonal, as predicted by Beck (1983), and sometimes a low to moderate correlation is found between the two scales.

3.3 Relevance of Trait Adjectives

3.3.1 Relevance Ratings of Sociotropic and Independent Trait Adjectives

Hypothesis 1(a). A greater number of words endorsed as self-relevant will be congruent with personality type. Therefore, high sociotropic individuals will endorse as self-relevant more sociotropic trait adjectives and high independent participants will endorse more independence trait adjectives.

Hypothesis 2(a). As depression level increases, a greater number of negative valenced words relative to positive valenced words will be endorsed as self-descriptive.

Table 4. Screening and Study 1 SAS Sociotropy and Independence Total Score Correlations

	SAS-SOC1	SAS-SOC2	SAS-IND1	SAS-IND2
SAS-SOC1	----	.83**	-.35**	-.25*
SAS-SOC2		----	-.29*	-.16
SAS-IND1			----	.77**
SAS-IND2				----

Note. N = 114. SAS-SOC1 = screening Revised Sociotropy-Autonomy Scale Sociotropy Total Score. SAS-SOC2 = Study 1 Revised Sociotropy-Autonomy Scale Sociotropy Total Score. SAS-IND1 = screening Revised Sociotropy-Autonomy Scale Independence Total Score. SAS-IND2 = Study 1 Revised Sociotropy-Autonomy Scale Independence Total Score.
* p < .01. **p < .001.

Hypothesis 3(a). With increasing depression severity, high sociotropic participants will endorse significantly more negative versus positive interpersonal trait adjectives as self-descriptive and high independent participants will endorse significantly more negative versus positive independence trait adjectives as self-descriptive.

A 3 x 2 x 2 repeated measures multivariate analysis of variance (MANOVA) with

Depression as a continuous independent variable was performed on the relevance ratings

of positive and negative sociotropic and autonomous trait adjective words. Group

(Sociotropic, Independent, and Control) served as the between-subjects factor and

Content (sociotropic versus autonomous trait adjectives) and Valence (positive versus

negative trait adjectives) were the within-subjects factors. Two participants in the

Sociotropic group and three participants in the Independent group had missing data

further reducing the sample size for this analysis to n = 109. Table 5 presents the group

means and standard deviations for the total relevance scores on the 12 positive and

negative sociotropic, autonomous, and neutral words.

The four-way interaction (Hypothesis 3(a): Depression x Group x Content x

Valence) approached significance, F (2, 103) = 2.68, p < .07, and therefore was not

examined further. However, the MANOVA revealed a significant three-way interaction

for Group x Content x Valence, F (2, 103) = 4.59, p < .01. All other three-way

interactions were nonsignificant.

Significant two-way interactions also were found for Content x Valence, F (1,

103) = 15.62, p <.001; Depression x Valence, F (1, 103) = 24.81, p < .001; and

Depression x Content, F (1, 103) = 4.32, p < .04. Significant main effects of Valence, F

(1, 103) = 896.55, p < .001, and Content, F(1, 103) = 17.83, p < .001, also were found

with positive words rated as more relevant than negative words and sociotropic words

rated as more relevant than autonomous words. The main effect of Depression

approached significance, F (1, 103) = 3.62, p <.06. No differences were found between

Groups when relevance ratings were averaged over Content, Valence, and Depression.

Hypothesis 1(a) concerning a personality congruent relevance endorsement bias of

trait adjectives was supported by the three-way interaction of Group x Content x Valence.

Post-hoc comparisons were performed to better understand the nature of this interaction.

First, an analysis for each group revealed that the Content x Valence interaction was

significant for the Sociotropic Group, F (1, 103) = 10.23, p < .002; and the Control

Group, F (1, 103) = 14.95, p < .001 but not for the Independent Group, F (1, 103) = 0.17,

Table 5. Group Means and Standard Deviations for Relevance Ratings of Positive and
Negative Sociotropic and Autonomous Traits and Neutral Words

	M	SD
Sociotropic Group (n=37)		
Negative Sociotropic	19.89	7.15
Positive Sociotropic	42.00	4.93
Negative Autonomous	19.68	4.29
Positive Autonomous	37.97	6.03
Neutral	25.92	6.89
Independent Group (n=33)		
Negative Sociotropic	19.03	6.65
Positive Sociotropic	40.88	6.41
Negative Autonomous	18.21	6.09
Positive Autonomous	40.58	7.33
Neutral	25.68	8.36
Control Group (n=39)		
Negative Sociotropic	17.15	3.68
Positive Sociotropic	40.33	5.63
Negative Autonomous	18.74	4.41
Positive Autonomous	37.43	6.21
Neutral	22.17	6.67

ns.

Group simple main effects were conducted between relevance ratings within the

four different types of trait adjectives. Within-group analysis revealed that the sociotropic

participants had significantly higher relevance ratings for positive sociotropic than positive autonomous words, F (1, 103) = 22.93, $p < .001$; negative sociotropic words, F (1, 103) = 275.35, $p < .001$; or negative autonomous words F (1, 103) = 381.93, $p < .001$. However, post-hoc analysis revealed that relevancy ratings of positive sociotropic words did not differ by Group, F (2, 105) = 1.10, $p > .34$, ns. More specifically, individuals in the Sociotropic group did not have higher relevancy ratings on positive sociotropic words than individuals in the Independent group, F (1, 108) = 0.84, $p > .36$, or the Control group, F (1, 108) = 1.35, $p > .25$ (see Figure 1). Group comparisons on relevancy ratings for negative sociotropic words revealed that the Sociotropic group had significantly higher ratings than the Control group, F (1, 107) = 3.99, $p < .05$. The Independent group also had significantly higher relevancy ratings for positive autonomous words than the Sociotropic group, F (1, 111) = 3.67, $p < .06$ and the Control group F (1, 111) = 5.26, $p < .05$. All other group comparisons on positive and negative sociotropic and autonomous words were nonsignificant.

As can be seen in Figure 2, Control participants rated positive sociotropic words as more relevant than positive autonomous words, F (1, 103) = 12.51, $p < .001$, and they rated negative autonomous words as more relevant than negative sociotropic words, $F(1, 103) = 7.69$, $p < .01$.

Post-hoc analysis of the Content x Valence interaction revealed that overall, positive sociotropic words (M = 26.36, SD = 12.66) were rated as more relevant than positive autonomous words (M = 19.81, SD = 10.34), F (1, 108) = 18.34, $p < .001$. The
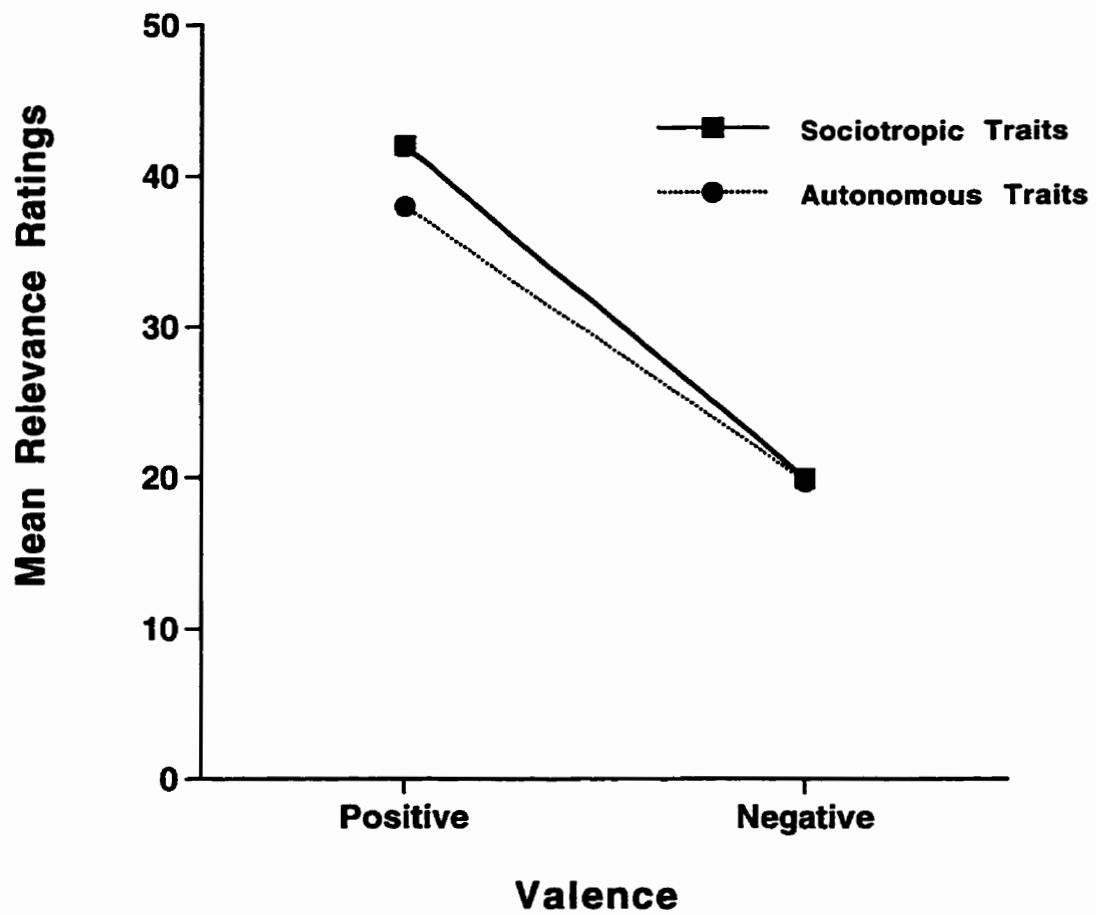
Figure 1. A plot of the Content x Valence interaction on the trait relevance ratings for the Sociotropic group.
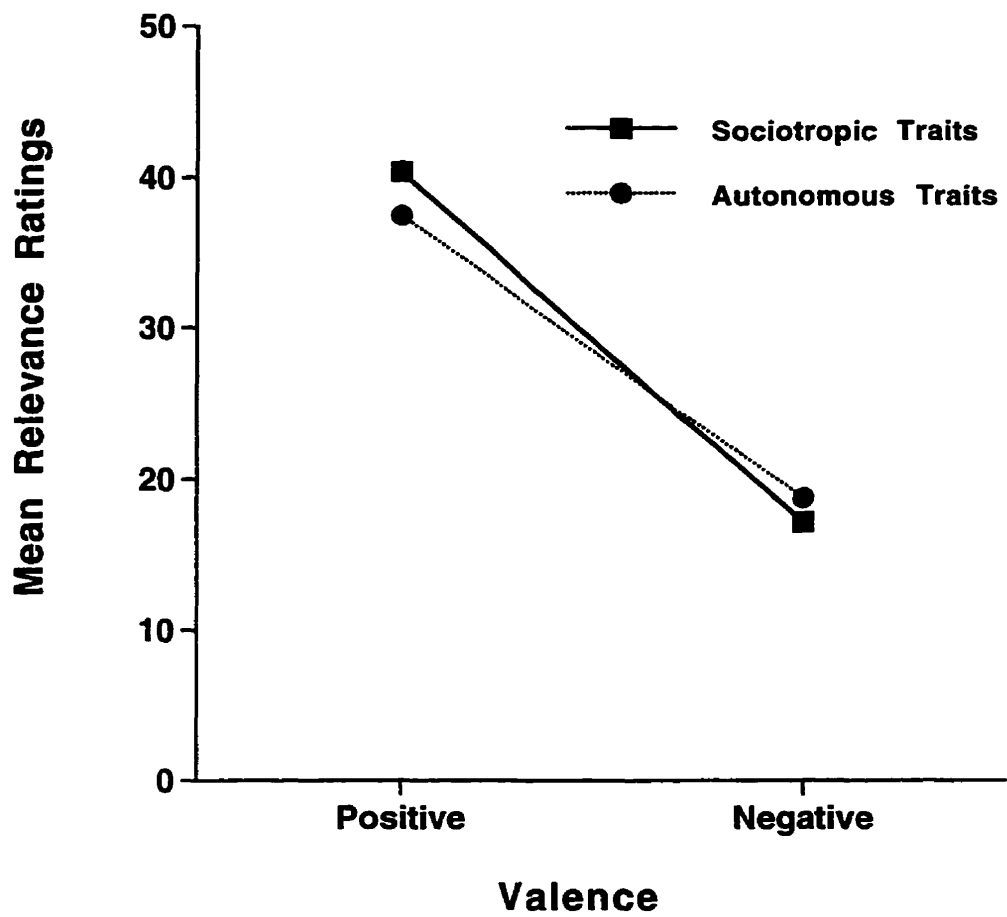
Figure 2. A plot of the Content x Valence interaction on the trait relevance ratings for the Control group.

Depression x Valence interaction supports Hypothesis 2(a) and can be better understood

by examining the correlations between Depression and negative words, and Depression

and positive words. As depression level increased, a higher relevance rating was obtained

for negative words (r = .47, p < .001) and a lower relevance rating was obtained for

positive words (r = -.22, p < .02). The Group x Content interaction (i.e., Hypothesis 1(a))

approached significance, F (2, 103) = 2.78, p < .07, with sociotropic individuals showing a

trend to rate sociotropic content words as more relevant than autonomous content words.

These results offer support to Hypothesis 1(a) for the Sociotropic group but not

for the Independent group. Sociotropic participants showed the predicted rating bias for

sociotropic trait adjectives whereas the Independent group did not show a content specific

bias. These participants were equally likely to endorse positive sociotropic or autonomous

trait adjectives as self-relevant suggesting a more mixed cognitive orientation. The

Control group also appears to have a more mixed presentation with a relevance rating bias

for positive sociotropic content and for negative autonomous content. However,

comparisons across groups offer some support for a content specific bias for both the

Sociotropic and Independent groups. Sociotropic individuals rated negative sociotropic

words as more relevant than did Control participants. Independent individuals rated

positive autonomous words as more relevant than Sociotropic individuals or Controls.

Although the Independent individuals had higher scores on autonomy ratings than the

Sociotropic individuals, the two vulnerability groups obtained equivalent scores on

sociotropic words. Therefore, across group comparisons reveal important content specific

differences in relevancy ratings that partially support sociotropy and autonomy personality

constructs.

Hypothesis 2(a) was supported with higher relevance ratings for negative relative to positive words as depression level increased. However, depression level failed to significantly modify the three-way interaction of Group x Content x Valence and therefore, Hypothesis 3(a) which predicted specific negative content differences in relavency ratings with increasing level of depression was not supported.

A MANOVA with one between-subject factor, Group (Sociotropic, Independent, and Control) and Depression Level as a continuous independent variable was performed on the total relevance ratings of neutral trait adjectives. The Depression x Group interaction was nonsignificant, F (2, 77) = 1.82, ns. Therefore, depression level did not affect high sociotropic or high independent individuals' relevance ratings of neutral words. The main effect for Depression and Group were also nonsignificant, F (1, 77) = 0.11, ns and F(2, 77) = 1.82, ns; respectively. Therefore, no response bias was found between groups in how they rated relevance of neutral words.

3.4 Desirability of Trait Adjectives

3.4.1 Desirability Ratings of Sociotropic and Independent Trait Adjectives

Hypothesis 1(b). A greater number of words endorsed as desirable will be congruent with personality type. Therefore, high sociotropic individuals will endorse as desirable more sociotropic trait adjectives and high independent participants will endorse more independence trait adjectives.

A 3 x 2 x 2 repeated measures MANOVA with Depression as a continuous independent variable was performed on the desirability ratings of positive and negative sociotropic and autonomous trait adjective words. Group (Sociotropic, Independent, and

Control) served as the between-subjects factor and Content (sociotropic versus autonomous trait adjectives) and Valence (positive versus negative trait adjectives) were the within-subjects factors. Two participants in the Sociotropic group had missing data reducing the sample size to 112. Table 6 presents the group means and standard deviations for the total desirability scores of the 12 positive and negative sociotropic and autonomous words and the neutral words.

The four-way interaction for Depression x Group x Content x Valence was nonsignificant. The MANOVA showed significant three-way interactions for Group x Content x Valence, F (2, 106) = 3.58, p < .03 and Depression x Group x Valence, F (2, 106) = 4.71, p < .01. All other three-way interactions were nonsignificant. Significant two-way interactions were found between Content x Valence, F (1, 106) = 8.27, p < .01 and Group x Valence, F (2, 106) = 7.36, p < .001. All other two-way interactions were nonsignificant. A significant main effect of Valence also emerged, F (1, 106) = 2871.38, p < .001 with positive words rated as more desirable than negative words. Main effects of Content, Depression, and Group were not significant.

Post-hoc examination of the Depression x Group x Valence interaction was analysed by examining correlations between Depression and the positive and negative words for each group separately. The only significant correlations between Depression and positive or negative words was found for negative words in the Independent group. As depression level increased, more negative words were endorsed as desirable by the Independent group (r = .41, p < .01).

Hypothesis 1(b) which predicts a higher desirability rating for words that are

Table 6. Group Means and Standard Deviations for Desirability Ratings of Positive and Negative Sociotropic and Autonomous Traits and Neutral Words

	M	SD
Sociotropic Group (n=37)		
Negative Sociotropic	-36.95	6.86
Positive Socioptropic	32.41	5.71
Negative Autonomous	-35.08	8.14
Positive Autonomous	32.21	6.60
Neutral	21.54	7.21
Independent Group (n=36)		
Negative Sociotropic	-31.19	11.67
Positive Sociotropic	29.00	8.38
Negative Autonomous	-31.97	11.95
Positive Autonomous	28.44	10.35
Neutral	21.66	12.61
Control Group (n=39)		
Negative Sociotropic	-32.77	9.44
Positive Sociotropic	28.87	7.31
Negative Autonomous	-29.44	7.79
Positive Autonomous	26.15	7.00
Neutral	15.00	9.97

congruent with personality type was partially supported by the three-way interaction of

Group x Content x Valence. The nature of this interaction was further examined by

performing a number of post-hoc comparisons. First, an analysis for each group revealed

that the Content x Valence interaction was significant for the Control group, $F (1, 106) = 14.31$, $p < .001$, but not for the Sociotropic group, $F (1, 106) = 1.56$, ns or the Independent group, $F (1, 106) = 0.02$, ns. Simple main effects were conducted between desirability ratings for the four types of trait adjectives to determine whether the above differences were statistically significant. Analysis revealed that Control participants rated positive sociotropic words as more desirable than positive independent words, $F (1, 103) = 7.06$, $p < .01$ and they rated negative sociotropic trait adjectives as less desirable than negative independent trait adjectives, $F (1, 103) = 7.29$, $p < .01$ (see Figure 3).

Post-hoc group comparisons to tease apart the significant 3-way interaction on desirability ratings of positive sociotropic words approached significance, $F (2, 108) = 2.95$, $p < .06$. More specifically, the Sociotropic group had higher desirability ratings for positive sociotropic words than the Independent group, $F (1, 109) = 4.77$, $p < .05$, and the Control group, $F (1, 109) = 5.18$, $p < .05$. Group differences on negative sociotropic words also were significant, $F (2, 107) = 4.42$, $p < .01$, with the Sociotropic group having lower desirability ratings for these traits than the Independent group, $F (1, 108) = 7.06$, $p < .01$, or the Control group, $F (1, 108) = 3.79$, $p < .05$. Significant group differences were also present for ratings of positive autonomous words, $F (2, 108) = 5.27$, $p < .05$, with higher desirability ratings by the Sociotropic group compared to the Independent group approaching significance, $F (1, 109) = 3.60$, $p < .06$. The Sociotropic group also had higher desirability ratings for positive autonomous trait adjectives than the Control group, $F (1, 109) = 9.73$, $p < .01$. Post-hoc group comparisons on negative autonomous words were also significant, $F (2, 106) = 4.24$, $p < .05$, with the Sociotropic group having lower
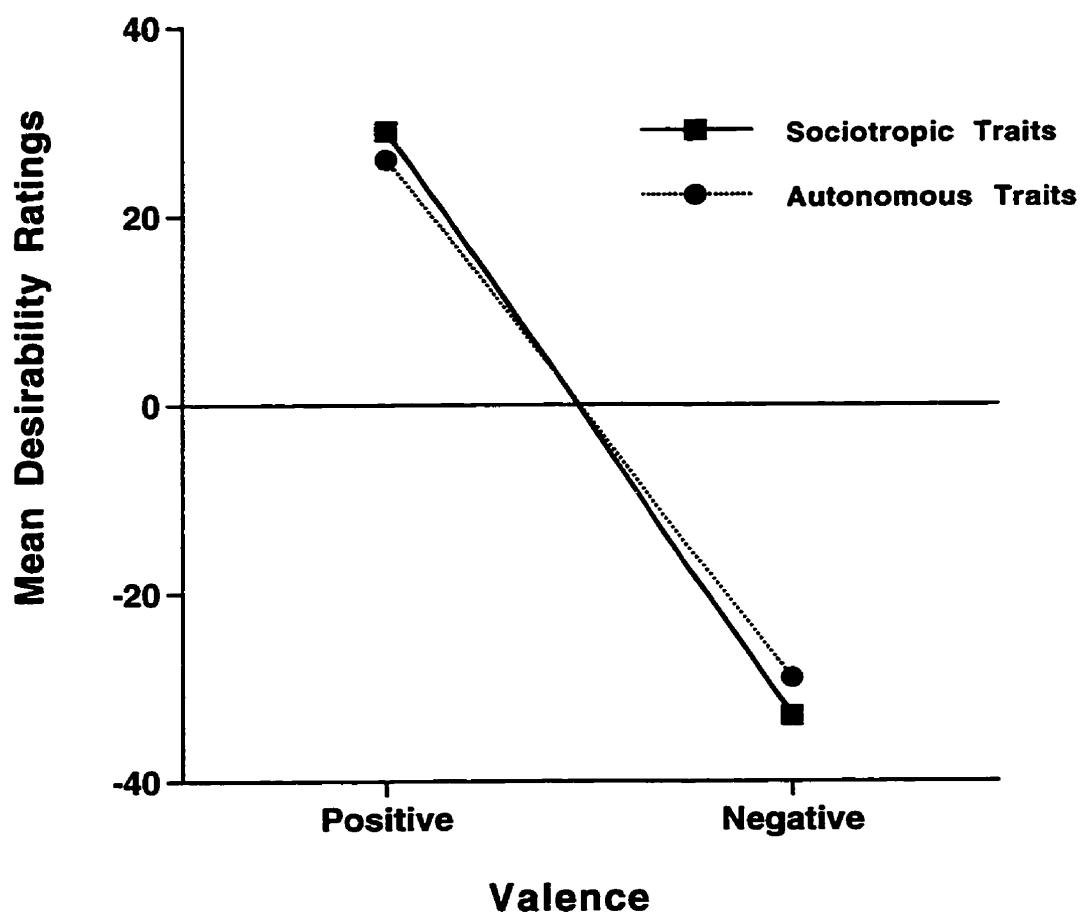
Figure 3. A plot of the Content x Valence interaction on the trait desirability ratings for the Control group.

desirability ratings for these words than the Control group, F (1, 107) = 7.12, p < .01.

Post-hoc examination of the Content x Valence interaction found that positive sociotropic words were rated as more desirable than positive autonomous words and negative sociotropic words were rated as less desirable than negative autonomous words. The Group x Valence interaction revealed that the Sociotopic group had higher desirability ratings for positive words and lower desirability ratings for negative words than the other groups.

As with relevance ratings, the Control group appears to have a more mixed presentation with a desirability rating bias for positive sociotropic content and for negative autonomous content. However, the Independent group failed to show a content specific bias in their desirability ratings. Hypothesis 1(c) was partially supported. Comparisons across groups revealed that the Sociotropic group did have higher desirability ratings for positive and negative sociotropic words than the Independent or Control groups and lower ratings of desirability for negative autonomous words than the Control group. All of these findings are consistent with a response bias for sociotropic content words in the Sociotropic group. However, this group also had higher desirability ratings for positive autonomous words than the Independent or Control groups which is inconsistent with a specific response bias for sociotropic words.

A multivariate analysis of variance (MANOVA) with one between-subjects factor, Group (sociotropic, independent, and control) and Depression as a continuous independent variable was performed on the total desirability ratings of neutral trait adjectives. The main effects of Depression and Group were not significant, F (1, 86) =

0.19, ns and F (2, 86) = 0.89, ns; respectively, nor was the interaction of Group x

Depression, F (2, 86) = 0.03, ns. Therefore, no significant group differences on neutral

word ratings were found. We can conclude from this that there was no response bias

between the groups in how participants rated the desirability of neutral trait adjectives.

3.5 Percentage Recall of Trait Adjectives

3.5.1 Percentage Recall of Sociotropic and Independent Trait Adjectives

Hypothesis 1(c). A greater number of words will be recalled that are congruent
with personality type (sociotropic/independent). Therefore, high sociotropic
individuals will recall more sociotropic trait adjectives and high independent
individuals will recall more independent trait adjectives.

Hypothesis 2(b). As depression level increases, a greater number of negative
valenced words versus positive valenced words will be recalled.

Hypothesis 3(b). As depression level increases , high sociotropic individuals will
recall significantly more negative versus positive interpersonal trait adjectives and
high independent participants will recall significantly more negative versus positive
independence trait adjectives.

A 3 x 2 x 2 repeated measures multivariate analysis of variance (MANOVA) with

Depression as a continuous independent variable was performed on the percentage recall

of positive and negative sociotropic and autonomous trait adjective words. Group

(Sociotropic, Independent, and Control) served as the between-subjects factor and

Content (sociotropic versus autonomous trait adjectives) and Valence (positive versus

negative trait adjectives) were the within-subjects factors. Table 7 presents the group

means and standard deviations for percentage recall of positive and negative sociotropic

and autonomous words and the neutral words.

Table 7. Group Means and Standard Deviations for Percentage Recall of Positive and Negative Sociotropic and Autonomous Traits and Neutral Words

	Percentage Recall	
	M	SD
Sociotropic Group (n=39)		
Negative Sociotropic	13.62	11.49
Positive Socioptropic	30.32	14.36
Negative Autonomous	15.01	10.12
Positive Autonomous	18.50	11.46
Neutral	22.55	13.51
Independent Group (n=36)		
Negative Sociotropic	15.28	9.52
Positive Sociotropic	24.35	11.09
Negative Autonomous	14.82	10.88
Positive Autonomous	19.87	8.81
Neutral	25.66	11.95
Control Group (n=39)		
Negative Sociotropic	18.41	10.79
Positive Sociotropic	24.25	11.09
Negative Autonomous	14.96	8.50
Positive Autonomous	21.06	10.57
Neutral	21.31	13.29

The MANOVA resulted in a significant four-way interaction for Depression x Group x Content x Valence, F (2, 108) = 4.21, p < .05 as well as a significant three-way interaction of Group x Content x Valence, F (2, 108) = 3.79, p <.05. All other three-way interactions were nonsignificant. The only significant two-way interaction was for Content x Valence, F(1, 108) = 6.25, p < .02. There was a significant main effect of Content, F (1, 108) = 14.0, p < .001, and of Valence F (1, 108) = 41.53, p < .001 indicating better recall of sociotropic versus independent and of positive versus negative trait words, respectively. Total percentage of words recalled did not significantly differ by Group, F (2, 108) = 1.10, ns or Depression Level, F (1, 108) = 0.01, ns.

The four-way interaction of Depression x Group x Content x Valence was further explored by post-hoc correlations between depression and recall of positive and negative sociotropic and autonomous words separately for each of the three groups. Correlations revealed that for the Sociotropic group, higher depression level was negatively correlated with recall of negative autonomous words (r = -.43, p < .01) and positively correlated with recall of positive autonomous word, (r = .37, p < .05). Level of Depression was not significantly correlated with recall of either positive or negative sociotropic traits.

In addition, depression was not significantly correlated with trait recall in the Independent or Control groups, and the Depression x Valence interaction was not significant, F(1, 108) = 0.92, ns. Therefore, Hypothesis 2(b) which predicted that a greater number of negative versus positive words would be recalled as depression level increased was not supported.

As stated in Hypothesis 1(c), it was predicted that Sociotropic individuals would

recall more sociotropic content trait adjectives and Independent individuals would recall more independent content trait adjectives. This hypothesis concerning personality congruent recall bias of trait adjectives was supported by the significant three-way interaction of Group x Content x Valence. Post-hoc comparisons by group showed that the Content x Valence interaction was significant for the Sociotropic group, F (1, 108) = 11.47, p < .001, but was not significant for the Independent group, F (1, 108) = 0.98, ns, or the Control group, F (1, 108) = 0.00, ns.

Simple main effects were conducted between recall percentages for the four different types of trait adjectives. This analysis revealed that the Sociotropic participants did recall significantly more positive sociotropic words than positive autonomous words, F (1, 108) = 20.44, p < .001; negative sociotropic words, F (1, 108) = 29.11, p < .001; or negative autonomous words, F (1, 108) = 30.42, p < .001., whereas their recall of negative sociotropic words and negative autonomous words was similar (see Figure 4).

In addition, post-hoc analyses revealed that Group differences on percentage recall of positive sociotropic trait adjectives approached significance, F (2, 108) = 2.89, p < .06, and was not modified by Depression level. The Sociotropic participants had significantly greater recall of positive sociotropic words than Independent participants, F (1, 109) = 4.44, p < .05, and Control participants, F (1, 109) = 4.64, p < .05. Group differences on percent recall of negative sociotropic words were also found with the Sociotropic group recalling significantly fewer negative sociotropic words than the Control group F (1, 109) = 3.94, p < .05. Percentage recall of positive autonomous words did not differ significantly by Group, F (2, 108) = 0.80, p > .45, ns, but percentage recall of these words
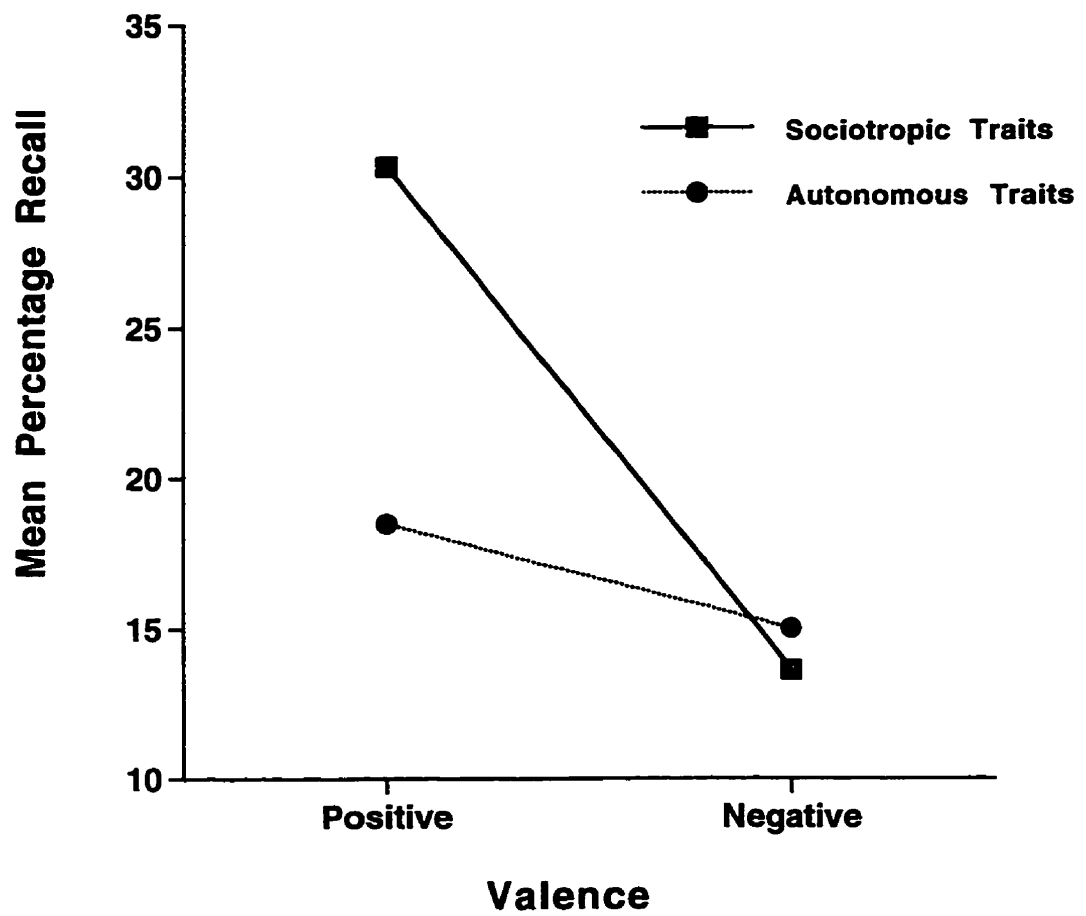
Figure 4. A plot of the Valence x Content interaction on the trait percentage recall for the

Sociotropic group.

by the Sociotropic versus the Independent group was modified by level of Depression, F

(1, 109) = 7.30, p < .01. Specifically, the Sociotropic group recalled more positive

autonomous words as depression level increased whereas the Independent group showed

no such association between these variables. Percentage recall of negative autonomous

words did not differ significantly by Group, $\underline{F}$ (2, 108) = 0.17, $\underline{p}$ > .85, $\underline{ns}$, or by level of

Depression (Group x Depression, $\underline{F}$ (2, 108) = 2.07, $\underline{p}$ > .13, $\underline{ns}$).

In sum, Hypothesis 1(c) was supported for the Sociotropic group but not for the

Independent group. That is, the Sociotropic participants showed the predicted recall bias

for positive but not negative interpersonal trait adjectives whereas the Independent group

did not recall more independent trait adjectives. These participants were equally likely to

recall positive sociotropic or autonomous trait words suggesting a more mixed cognitive

orientation to this personality construct. In addition, when comparisons of recall

differences were made between groups, the Sociotropic group had greater recall of

positive sociotropic words than the Independent or Control groups and fewer negative

sociotropic words were recalled compared to the Control group. Hypothesis 2(a) which

predicted that a greater number of negative versus positive words would be recalled as

depression level increased was not supported. Nor was Hypothesis 3(b) which predicted

that this effect would occur for schema congruent words.

A multivariate analysis of variance (MANOVA) with one between-subject factor,

Group (Sociotropic, Independent, and Control) and Depression as a continuous

independent variable was performed on the percent recall of neutral trait adjectives. No

significant main effects or interaction was found. The Sociotropic, Independent, and

Control groups did not differ in their recall of neutral trait adjectives. Level of Depression

also had no impact on recall of neutral trait adjectives.

3.6 Personality and Coping Strategies

Hypothesis 4(a). Sociotropic participants will report more emotion-focused coping
and independent participants will report more task-oriented and avoidance coping
on a self-report measure of coping-the Coping Inventory for Stressful Situations.

A multivariate analysis of variance (MANOVA) with Depression as a continuous

independent variable and Group (Sociotropic, Independent, and Control) as the between-

subjects factor was preformed to test Hypothesis 4(a). The dependent measures were the

scores on the three subscales of the Coping Inventory for Stressful Situations (i.e.,

emotion-focused coping (emo), task-oriented coping (task) and avoidance coping

(avoid)). A test of homogeneity of variance/covariance matricies performed through

SPSS MANOVA was nonsignificant for Box's M, F (12, 58914) = 1.676, ns. Therefore,

no violation of normality was apparent. Table 8 presents the group cell means and

standard deviations for emotion-focused, task-oriented, and avoidance coping strategies.

The pooled within cells correlation matrix with standard deviations on the diagonal

is presented in Table 9. Using Wilk's criterion, the combined dependent variables (CISS

subscales) were significantly related to Group, F (6, 214) = 3.32, p < .01 and Depression,

F (6, 106) = 22.74, p < .001, but not to their interaction, F (6, 212) = 0.40, p > .88, ns.

Univariate F-tests on each subscale showed that only task-oriented coping varied

by Group, F (2, 108) = 6.17, p < .01, even when depression level was covaried out. A

post-hoc one-way ANOVA with task-oriented coping as the dependent variable and group

Table 8. Group Means and Standard Deviations on the Coping Inventory for Stressful Situations Subscales

Groups	Coping Style					
	Emotion Focused		Task-Oriented		Avoidance	
	M	SD	M	SD	M	SD
Sociotropic	48.89	9.50	55.54	8.89	50.67	8.84
Independent	41.89	10.83	61.42	10.12	46.94	12.01
Controls	44.97	8.43	53.85	6.90	50.41	8.00

Table 9. Coping Inventory for Stressful Situations Subscales and Depression Score Correlations

	EMO	TASK	AVOID	BDITOT
EMO	10.83	-.21*	.18	.55**
TASK		10.12	.12	-.33**
AVOID			12.01	.14
BDITOT				5.15

Note. Standard deviations are on the diagonal.
*p < .05, **p < .001.

as the independent variable revealed that Independent individuals were significantly higher

than Sociotropic individuals and Control participants (Tukey HSD test, p < .05).

Therefore, Hypothesis 4(a) was only partially supported. Independent individuals

endorsed a more task-oriented coping style than Sociotropic individuals or Control

individuals, but Sociotropic individuals failed to endorse a more emotion-focused coping

strategy than the other groups.

Regardless of personality type, emotion-focused coping was positively correlated

with depression level ($r = .55$, $p < .001$) whereas task-oriented coping showed a smaller

and negative correlation with depression level ($r = -.33$, $p < .001$). Avoidance coping was

not significantly correlated with depression.

3.7 Depression and Congruency in Personality, Life Events, and Coping Style

Hypothesis 4(b). For sociotropic individuals, it was hypothesized that an
interaction between the number of negative interpersonal negative life events and
emotion-focused coping would predict depression level. For independent
individuals, the interaction between the number of achievement-related negative
life events and avoidance coping would predict depression level.

Hierarchical regression analyses were conducted to test Hypothesis 4(b). All

variables were centered to minimize multicollinearity. Because the pattern of relationships

among predictors for the different personality types were of interest, three separate

regression analyses were conducted comparing the Sociotropic group to the Independent

group, the Sociotropic group to the Control group, and the Independent group to the

Control group. Contrast coding was used to recode the group variable. The dependent

variable was the total score on the BDI. The order of entry was as follows: Step 1, the

main effect for the Group contrast; step 2, the main effects for number of negative

interpersonal life events and the number of negative autonomous life events; step 3, the

main effects for emotion-focused and avoidance-oriented coping; step 4, the two-way

interaction terms for group contrast x negative life events; step 5, the two-way interaction

terms for group contrast x coping; step 6, the two-way interaction terms for negative life

events x coping; step 7, the hypothesized three-way interaction for group contrast x life-

events x coping; and step 8, all other three-way interactions.

If a significant three-way interaction was found on step 7, groups were examined

separately. For sociotropic individuals, the number of negative interpersonal life events by

emotion-focused coping was expected to be predictive of depression whereas for

independent individuals, the number of negative autonomous life events by avoidance

oriented coping was expected to predict depression scores. Separate regressions were run

for these predictions as well as for non-congruent negative life-event by coping style

interactions to provide a stronger test of the hypotheses. The results would show whether

congruence in personality, life events, and coping is a stronger predictor of depression

level than are non-congruent interactions. Interpretation of individual predictors at each

step was based on the magnitude of the squared semipartial correlation (sr^2) which

represents the unique variance accounted for by that variable when the contribution of all

other independent variable predictors is removed (Tabachnick & Fidell, 1989, p. 151).

Table 10 presents the group means and standard deviations on the number of Life Event

Inventory-Student Version interpersonal and autonomous life events. Table 11 presents

correlations between the Beck Depression Inventory, Coping Inventory for Stressful

Situations subscales, and the number of Life Event Inventory-Student Version

interpersonal and autonomous life events separately for each group.

Table 10. Group Means and Standard Deviations on the Number of Life Event Inventory-Student Version Interpersonal and Autonomous Life Events

| Groups | Life Events | | | |
| | Interpersonal | | Autonomous | |
	__M__	__SD__	__M__	__SD__
Sociotropic	4.46	2.68	7.41	4.08
Independent	3.61	2.42	5.89	4.41
Control	3.69	2.09	7.28	3.36

Note. n = 39 for the Sociotropic group and the Control groups; n = 36 for the Independent group.

Table 11. Correlations Between BDI, CISS Subscales, and Number of LEI-SV Interpersonal and Autonomous Life Events by Group

Groups	BDI	TASK	EMO	AVOID	LEIAUT
Sociotropic (n = 39)					
BDI	---				
TASK	-.41**	---			
EMO	.49***	-.31*	---		
AVOID	.03	-.01	-.01	---	
LEIAUT	.50***	-.18	.42**	-.24	---
LEISOC	.38*	.05	.13	.08	.52***

(continued on next page)

Table 11. Correlations Between BDI, CISS Subscales, and Number of LEI-SV
Interpersonal and Autonomous Life Events by Group (continued)

Groups	BDI	TASK	EMO	AVOID	LEIAUT
Independent (n = 36)					
BDI	---				
TASK	-.12	---			
EMO	.55***	-.03	---		
AVOID	.17	.26	.20	---	
LEIAUT	.56***	.10	.47**	.28	---
LEISOC	.41**	.11	.40*	.21	.72***
Control (n = 39)					
BDI	---				
TASK	-.38**	---			
EMO	.55***	-.15*	---		
AVOID	.11	.34*	.23	---	
LEIAUT	.34*	-.17	.01	-.13	---
LEISOC	.39*	-.21	.13	-.17	.43**

Note. BDI = Beck Depression Inventory, CISS = Coping Inventory for Stressful
Situations, LEI-SV = Life Events Inventory-Student Version, Task = task-oriented
coping, Avoid = avoidance coping, LEIAUT = negative autonomous life event, LEISOC
= negative sociotropic life event.
* p < .05. ** p < .01. *** p < .001.

3.7.1 Comparison of Sociotropic and Independent Groups

A hierarchical multiple regression analysis was performed comparing the

Sociotropic and Independent groups on depression. This analysis resulted in a significant

overall R^2 =.70, F (17, 96) = 5.52, p < .001 and accounted for 49% of the variance in

Beck Depression Inventory scores. Predictor sets that contributed a significant amount of

the unique variance in depression were the Sociotropic versus Independent group contrast

(step 1; 6%), life events entered on step 2 (22.5%), and coping entered on step 3 (14%).

No other predictor sets contributed significantly. The significant group contrast

suggested that being sociotropic relative to being independent is associated with higher

self-reported levels of depression. Overall, both the number of negative autonomous life

events, $\underline{F}$ (1, 96) = 4.00, $\underline{p}$ < .05 and, emotion-focused coping, $\underline{F}$ (1, 96) = 13.23, $\underline{p}$ <

.001, were significant individual predictors of depression level. The three-way interaction

between personality, life events, and coping was nonsignificant, and as a result Hypothesis

4(b) was not supported.

3.7.2 Comparison of the Sociotropic and Control Group

A hierarchical multiple regression analysis was performed comparing the

Sociotropic participants to the Control participants on depression. The analysis resulted in

a significant overall $\underline{R^2}$ = .70, F (17, 96) = 5.36, $\underline{p}$ < .001) accounting for 49% of the

variance in Beck Depression Inventory scores. The predictor sets that contributed a

significant amount of unique variance in Beck Depression Inventory scores were life

events entered on step 2 (25.4%) and coping entered on step 3 (15.7%). No other

predictor sets contributed unique significance in depression scores. Significant individual

predictors included the number of negative autonomous life events, F (1, 96) = 4.34, p <

.05, and emotion-focused coping, F (1, 96) = 14.32, p < .001. Again, the three-way

interaction between personality, life events, and coping entered on step 7 was not

significant. These results do not offer support for specific differences between Sociotropic

individuals and Control individuals in their coping style and life events to predict

depression.

3.7.3 Comparison of the Independent and Control Group

A hierarchical multiple regression analysis was performed comparing the Independent group and the Control group on depression. The analysis resulted in a significant overall $\underline{R}^2 = .70$, F (17, 96) = 5.39, $\underline{p} < .001$) accounting for 49% of the variance in depression level. Predictor sets that contributed a significant amount of unique variance in BDI scores included life events entered on step 2 (25.2%) and coping entered on step 3 (16.6%). No other predictor sets contributed unique significance in depression scores. Significant individual predictors included emotion-focused coping , F (1, 96) = 14.23, p < .001, while the number of negative autonomous life events approached significance, F (1, 96) = 3.51, p < .06. Again, the three-way interaction between personality, life events, and coping entered on step 7 was not significant. These results do not offer support for specific differences between Independents individuals and Control individuals in their coping style and life events to predict depression.

Overall, no empirical support was found for the hypothesis that life events and coping styles would distinguish individual levels of depression by group and therefore, separate analysis of each group was not performed. However, being highly sociotropic and not highly independent predicted a higher level of depression. Additionally, the above analyses indicated that, regardless of group membership, emotion-focused coping and number of negative autonomous life events are important variables in predicting self-reported depressive symptom levels in women who are undergraduate students.

3.8 Appraisal Ratings

Principal Components Analyses (PCA) with varimax rotation were performed to determine if the 11 appraisal ratings on the most distressing life events could be collapsed into a smaller number of meaningful appraisal dimensions. The appraisal ratings for the most distressing sociotropic life event and the appraisal ratings for the most distressing autonomous life event were examined in separate analyses. In both cases, the correlation matrix showed a reasonable number of correlation coefficients between appraisal ratings which were greater than 0.3 suggesting that a PCA was feasible. Both the Bartlett Test of Sphericity and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy indicated that the relationships between the variables to be used in each analysis were strong enough to warrant factor analysis.

The PCA for sociotropic life events appraisals revealed three components with eigenvalues greater than 1.0 accounting for 66.9% of the variance. However, both the Scree Plot and the Parallel Analysis Routine (PAR) (Cota, Longman, Holden, Fekken, & Xinaris, 1993; Holden, Longman, Cota, & Fekken, 1989) suggested that a two component solution was most appropriate for the data. As a result, two components were extracted, accounting for 57.1% of the explained variance (see Table 12 for the item loadings, eigenvalues, and percentage of variance accounted for by each component). The component loadings suggested that simple structure was achieved as only one complex item (LEIB03) loaded over .47 or more on both components.

The principal components extraction for autonomous life event appraisal ratings resulted in two components with eigenvalues greater than 1.0 accounting for 57.7% of the

Table 12. Component Loadings, Communalities, and Percent Variance For PCA Extraction (Varimax Rotation) for the Sociotropic Event Appraisal Ratings

Item	Component 1	Component 2	Communalities (h^2)
LEIB01	.62	-.03	.39
LEIB02	.63	-.29	.48
LEIB03	.63	-.47	.62
LEIB04	.81	.18	.68
LEIB05	.81	.02	.66
LEIB06	-.10	.86	.76
LEIB07	.57	.09	.34
LEIB08	.61	.10	.38
LEIB09	.17	.85	.76
LEIB10	.81	-.28	.73
LEIB11	.69	-.14	.49
% Variance Explained	40.4	16.7	
Eigenvalue	4.45	1.84	

Note. LEIB01 to LEIB11 are the eleven appraisal ratings for the most upsetting sociotropic negative life event.

variance in appraisal ratings (see Table 13 for item loadings, eigenvalues, and the

prercentage of variance accounted for by each component). The Scree Plot and the

Parallel Analysis Routine (PAR) (Cota et al., 1993; Holden et al., 1989) also indicated that

a two component solution was most appropriate for the data. Therefore, two components

Table 13. Component Loadings, Communalities, Percent Variance For PCA Extraction (Varimax Rotation) for the Autonomous Event Appraisal Ratings

Item	Component 1	Component 2	Communalities (h^2)
LEIB0	.44	.20	.23
LEIB02	.77	.08	.59
LEIB03	.77	.21	.63
LEIB04	.56	.65	.75
LEIB05	.55	.58	.64
LEIB06	-.19	.75	.59
LEIB07	.66	-.09	.45
LEIB08	.68	-.26	.53
LEIB09	.01	.87	.75
LEIB10	.66	.38	.58
LEIB11	.77	-.02	.60
% Variance Explained	39.5	18.3	
Eigenvalue	4.34	2.01	

Note. LEIA01 to LEIA11 are the 11 appraisal ratings for the most upsetting negative autonomous life event.

were extracted accounting for 57.7% of the variance. Component loadings showed that

three complex items were above .38 on both components (items 4, 5, and 10). The same

items that contribute to components 1 and 2 for the most distressing autonomous life

event are the same items that contribute to the most distressing sociotropic life event.

Table 14 displays the items that make up the two components. Component 1

loaded highly on items 1, 2, 3, 4, 5, 7, 8, 10, and 11.   Items in Component 1 are

dominated by questions related to ratings on the scope, impact, and intensity of negative

life events and will be labelled "negative consequences". Component 2 loaded highly on

only two items, 6 and 9. With so few items, Component 2 is rather unstable and any

interpretation must be tentative. Items on Component 2 deal with personal control over

causing the negative event or its consequences and will be labelled "responsibility".

Cohen (1990) recommended that unit weightings rather than beta weights be used

to construct the linear composites when one is interested in making predictions that will

generalize to future samples. Because beta weights often have large standard errors, unit

weights are better predictors. In this method, positive predictors are assigned a unit

weight of +1, negative predictors are assigned a unit weight of -1, and poorly related

predictors are discarded. This technique also makes it possible to view components 1 and

2 conceptually as comparable for autonomous events and sociotropic events which

permits the desired comparisons of appraisal ratings between them. Using this technique,

then, the Negative Consequences and Responsibility scales were constructed.

3.9 Congruency Between Personality, Negative

Appraisal Patterns, and Type of Life Event

Hypothesis 4(c). Sociotropic individuals will have more negative appraisal patterns
for interpersonal than for achievement-related negative life events and independent
individuals will have more negative appraisal patterns for achievement-related
versus interpersonal negative life events.

To test Hypothesis 4(c), a repeated measures MANOVA was performed with one

between-groups variable (Group (Sociotropy, Independent or Controls)), Depression as a

Table 14. Appraisal Items Comprising the Negative Consequences and Responsibility Scales

Negative Consequences Scale	Responsibility Scale
* feel worse about self	* control over consequences
* feel incompetent	* feel personally responsible for causes
* negative impact	
* feel alone from others	
* tax your coping ability	
* upsetting	
* lead to other negative things	
* negative effect on feelings of independence	
* negative effect on how others relate to you	

continuous independent variable, and two within-groups variables (Type of Life Event (Interpersonal versus Achievement) and Type of Appraisal Scale (Negative Consequences and Responsibility)). The four dependent variables were scores on the two appraisal scales (Negative Consequences and Responsibility) averaged over the appraisal items for the most distressing interpersonal and achievement event. Three participants had missing data in the Sociotropic group, five participants had missing data in the Independent group, and three participants had missing data in the Control group reducing the sample size for this analysis to $n = 103$.

Table 15 presents the group means and standard deviations for the Negative Consequences and Responsibility appraisal rating scales separately for the most distressing interpersonal life event and the most distressing autonomous life event. The MANOVA

Table 15. Group Means and Standard Deviations for the Negative Consequences and Responsibility Appraisal Scales on the Most Distressing Negative Sociotropic and Autonomous Life Event

	Negative Consequences		Responsibility	
	M	**SD**	**M**	**SD**
Sociotropic Group (n = 36)				
Autonomous Life Event Appraisals	15.08	7.11	4.20	2.52
Sociotropic Life Event Appraisals	16.11	8.06	2.89	2.52
Independent Group (n = 31)				
Autonomous Life Event Appraisals	11.48	6.65	3.78	2.52
Sociotropic Life Event Appraisals	10.94	6.26	2.19	2.79
Controls (n = 37)				
Autonomous Life Event Appraisals	12.08	5.85	3.49	2.34
Sociotropic Life Event Appraisals	11.81	6.45	3.11	2.23

resulted in a significant main effect for Depression, F (1, 96) = 40.30, $p < .001$, with higher negative appraisal scale scores reported as participants' depression level increased. A significant Type of Negative Life Event main effect also was present, F (1, 96) = 9.71, $p < .01$, with higher appraisal ratings obtained for the autonomous life event than the interpersonal life event. The only significant two-way interaction was found for Type of Appraisal Scale x Type of Life Event, F (1, 96) = 10.66, $p < .01$. The post-hoc analysis revealed that appraisal ratings for the interpersonal life event versus the autonomous life event were not significantly different on the Negative Consequences Scale, F (1, 93) =

0.04, $p > .85$, ns. However, appraisal ratings for the autonomous life event were significantly higher than appraisal ratings for the interpersonal life event on the Responsibility Scale. Participants believed they had more control over autonomous life events and were more personally responsible for these events than for negative interpersonal events. The Group main effect, Type of Appraisal Scale main effect, and the Group x Depression interaction were not significant.

Because the three-way interaction between Group x Type of Life Event x Depression was not significant, Hypothesis 4(c) was not supported. Sociotropic students did not have more negative appraisals for interpersonal negative life events than for achievement-related negative life events, and Independent individuals did not have more negative appraisals for achievement-related negative life events.

3.10 Relationship Between Trait Recall and Number of Negative Life Events, Life Event Appraisal Scales, and Coping Style

Pearson correlations were calculated between percentage recall of positive and negative sociotropic and autonomous trait adjectives and the number of negative sociotropic and autonomous life events, the life event appraisal scales, and the coping subscales by group (see Table 16). Since so few correlations were significant and are likely chance findings (i.e., Type 1 error), they were not interpreted. There was little relationship between self-referent encoding task and life event measures.

Table 16. Correlations Between Trait Recall and Number of Life Events, Life Event
Appraisal Scales, and Coping Style

Group	Trait Recall			
	NEG-SOC	POS-SOC	NEG-AUT	POS-AUT
Sociotropic (n = 39)				
EMO	.16	.03	-.26	.02
TASK	-.03	-.13	-.15	.05
AVOID	-.21	.17	.07	.29
LEIAUT	-.14	-.05	-.07	.13
LEISOC	-.13	.05	-.27	.31*
SOC-NC	.17	-.26	-.16	.24
SOC-RES	.08	.06	-.17	-.14
AUT-NC	.15	-.04	-.16	.02
AUT-RES	-.22	.11	-.03	.20
Independent (n = 36)				
EMO	.12	.17	-.15	-.01
TASK	.07	-.19	-.03	-.02
AVOID	-.03	-.19	-.03	-.17
LEIAUT	.19	-.09	-.24	-.09
LEISOC	.35*	-.19	-.23	-.12
SOC-NC	.15	.01	-.25	.14
SOC-RES	-.09	.02	-.13	-.30
AUT-NC	.01	.20	-.36*	.30
AUT-RES	-.07	.14	.04	-.23

Table 16. Correlations Between Trait Recall and Number of Life Events. Life Event Appraisal Scales, and Coping Style (continued)

Group	Trait Recall			
	NEG-SOC	POS-SOC	NEG-AUT	POS-AUT
Control (n = 39)				
EMO	-.06	-.21	.20	.08
TASK	-.26	.04	-.03	.24
AVOID	-.17	.01	.01	.36*
LEIAUT	-.08	.07	-.20	.06
LEISOC	-.15	.18	.06	-.15
SOC-NC	.06	-.01	.06	-.16
SOC-RES	.01	-.06	.03	.16
AUT-NC	.21	-.22	.08	-.18
AUT-RES	-.04	-.11	.10	.03

Note. NEG-SOC = % recall of negative sociotropic traits. POS-SOC = % recall of positive sociotropic traits. NEG-AUT = % recall of negative autonomous traits. POS-AUT = % recall of positive autonomous traits. EMO = emotion-focussed coping. TASK = task-oriented coping. AVOID = avoidance coping. LEIAUT = # of negative autonomous life events. LEISOC = # of negative sociotropic life events. SOC-NC = Negative Consequences appraisal scale for sociotropic life event. SOC-RES = Responsibility appraisal scale for sociotropic life event. AUT-NC = Negative Consequences appraisal scale for autonomous life event. AUT-RES = Responsibility appraisal scale for autonomous life event.
* $p < .05$.

CHAPTER IV

STUDY 1: DISCUSSION

The results of Study 1 provided support for the content specificity of self-relevance ratings and encoding bias as reflected in the recall of Sociotropic individuals. Limited support was found for content specificity in Independent individuals, and Control participants showed a mixed cognitive orientation in their schema content.

4.1 Relevancy and Desirability Judgements of Trait Adjectives

4.1.1 Relevancy Judgements

The results showed that Sociotropic individuals were biased in their evaluations of trait self-relevance/self-descriptiveness. These individuals judged positive sociotropic words to be significantly more relevant than negative sociotropic words or positive and negative autonomous trait words. Independent individuals failed to show a self-referent bias in their judgements of trait self-descriptiveness, showing instead the same degree of specificity in their evaluations of self-relevance for positive and negative sociotropic and autonomous trait adjectives. Control individuals showed a more mixed cognitive schema orientation endorsing more positive sociotropic and more negative autonomous trait adjectives as self-descriptive.

Support for schema content specificity in judgements of self-relevance was also evident when judgements of trait adjective self-relevance were compared across groups. The Sociotropic group had significantly higher relevancy ratings for negative but not positive sociotropic trait adjectives than the Control group. The Independent group also had significantly higher self-relevance ratings for positive autonomous words than the

Sociotropic or Control groups. This finding provides some support for self-referent content of the autonomy personality construct. Therefore, partial support is provided for Hypothesis 1(a) that a greater number of words endorsed as self-relevant will be congruent with personality type. These findings of schema congruent self-relevance offer some validation of the sociotropy construct and less validation of the autonomy construct. These results offer some support for the presence of Beck's cognitive vulnerability structure for sociotropic individuals and less support for the presence of a cognitive vulnerability structure for autonomous individuals. Either the autonomy structure does not exist, or the present study has failed to adequately assess it.

Depression level interacted with word valence in the predicted direction (i.e., individuals with higher depression scores endorsed more negative versus positive traits as self-descriptive). Therefore, Hypothesis 2(a) which predicted that more negative than positive trait adjectives would be endorsed as self-descriptive by participants with higher levels of depression was supported. This finding is consistent with Ross et al.'s study (1986) also using a college sample and with results from clinical studies (Bradley & Mathews, 1983; Clifford & Hemsley, 1987; Derry & Kuiper, 1981; Dobson & Shaw, 1987; Greenberg & Alloy, 1989; Greenberg & Beck, 1989; Roth & Rehm, 1980). Increasing depression severity did not affect self-descriptive ratings of neutral words indicating that the biasing effect of depression is restricted to negative valence stimuli.

Hypothesis 3(a), which predicted that with increasing depression severity, groups would show selective endorsement of schema congruent negative trait adjectives, was not supported. Sociotropic individuals with higher levels of dysphoria failed to show schema

congruent ratings on negative sociotropic words. It is possible that Sociotropic

individuals in the present study did not have high enough levels of depression to

demonstrate this specificity effect. Research attention to trait relevance ratings in

sociotropic and autonomous individuals is just beginning. A future research direction

would be to examine trait relevance ratings in clinically depressed samples of sociotropic

and autonomous individuals to see if there is a threshold level of depression severity which

must be reached before negative mood state will have a negative biasing effect on self-

referent judgements.

Overall, the results of Study 1 provide more support for self-referent content

specificity evaluations of relevance in Sociotropic individuals than in Independent

individuals. Sociotropic individuals rated positive sociotropic trait adjectives as more self-

descriptive than other trait adjectives and they rated negative sociotropic trait adjectives as

more self-descriptive than Independent or Control groups. Independent participants also

rated positive autonomous trait adjectives as more self-descriptive than the Sociotropic or

Control groups.

4.1.2 Desirability Judgements

Ratings of desirability assess an individual's perception of the socially constructed

favourablility of the personality trait words. The ratings differ conceptually from

relevance ratings in that they reflect response bias or social desirability whereas relevance

ratings represent self-evaluations or the degree that traits describe one's self. This study

found some evidence of a response bias in desirability ratings for the Control group. As

with ratings of self-relevance, the Control group appears to have a more general, response

bias with significantly higher desirability ratings for positive sociotropic and negative autonomous trait adjectives.

Comparisons across groups revealed that the Sociotropic group had higher desirability ratings for positive sociotropic trait adjectives than the Independent or Control groups, and more negative desirability ratings for negative sociotropic trait adjectives than the other groups. These findings are consistent with a response bias for schema congruent content and offer partial support to Hypothesis 1(b), that higher desirability ratings will be endorsed for traits that are congruent with one's personality type. However, the Sociotropic group also judged negative autonomous words to be less desirable than Control participants and had higher desirability ratings for positive autonomous trait adjectives than the Independent or Control groups suggesting a more general positive response bias in Sociotropic individuals. This finding is inconsistent with Hypothesis 1(b) and with findings of self-relevance reported above. Perhaps self-relevance/self-descriptiveness judgements tap into more specific personal judgements of the self whereas desirability judgements are more based on social consensus. This would explain the match between the content of trait adjectives and the personality constructs of sociotropy and independence found for self-relevance ratings but not for desirability ratings. One may speculate that the general positive response bias found in Sociotropic individuals' desirability ratings reflect this group's intention to conform to social expectations or social pressures of desirability.

No differences between groups were found for desirability judgements of neutral trait adjectives. However, depression (Beck Depression Inventory scores) was associated

with desirability ratings on sociotropic and autonomous words. As depression level increased, more negative sociotropic and autonomous words were endorsed as desirable by the Independent group, but they did not change their desirability ratings of positive or neutral words. Perhaps this group is less influenced by socially accepted norms (i.e., that positively oriented traits are more desirable) and so when they become dysphoric, they shift their desirability ratings to become more consistent with mood-congruent negativity.

Although this is the first known study to have examined self-relevance judgements of trait adjectives for sociotropy and independence, a limitation of trait adjectives ratings is that like other self-report measures they involve a conscious, evaluative process which is open to problems of demand characteristics and response bias. To overcome these criticisms, the findings based on recall of trait adjectives are considered.

4.2 Self-Referent Encoding Memory Recall

Hypothesis 2(b), which predicted that a greater number of negative versus positive trait adjectives would be recalled as depression level increased was not supported. Overall, this study found that significantly more positive then negative words were recalled. Some studies have found that enhanced processing of depressive information is restricted to cases in which the individual is actually depressed (see Hammen et al., 1986; Slife et al., 1984). In fact, clinically depressed patients demonstrate better memory for negative versus positive or neutral information whereas nondepressed persons typically recall a greater proportion of positive than negative stimuli. Mildly depressed individuals have been found to recall positive and negative stimuli equally (Derry & Kuiper, 1981), suggesting that they no longer have the positive bias that characterizes nondepressed

persons (Matt et al., 1992). This also is consistent with Ingram et al.'s (1994) study. Using an incidental recall task, these researchers found that subclinically depressed students recalled more state-depression information but not more trait-depression adjectives as was used in this study. Gilboa et al. (1997) also found that nondepressed students showed a biased recall of positive trait adjectives.

The results of the present study are consistent with findings that enhanced recall of negative information in depression is less likely in individuals with dysphoria than in individuals with more severe depression. Because students were selected regardless of their level of depression, most participants were within the nondepressed range. In fact, no participant scored in the severely depressed range. Use of a sample of women with a clinical level of depression may have supported the hypothesis of greater negative recall with higher depression levels.

This is the first known study to examine self-referent incidental recall of negative trait adjectives using Beck's personality constructs of sociotropy and autonomy (independence). Based on percent recall of trait adjectives using an incidental recall task, support for self-referent encoding bias was evident for Sociotropic individuals but not for Independent or Control individuals. Sociotropic participants recalled significantly more positive sociotropic words than negative sociotropic, or positive and negative autonomous words. The Independent and Control participants did not evidence a self-referent encoding bias in their recall of trait adjectives. These groups were equally likely to recall positive sociotropic and autonomous words suggesting a more mixed cognitive orientation to their personality construct. When comparisons in recall of self-referent encoding were

made between groups, the Sociotropic individuals recalled a greater percentage of positive

sociotropic content words than the Independent or Control groups and fewer negative

sociotropic words than the Control group. Therefore, Hypothesis 1(c), which predicted

that a greater number of words would be recalled that are congruent with personality type,

was supported for the Sociotropic group only.

Higher depression scores in the Sociotropic group resulted in fewer negative

autonomous words recalled and more positive autonomous words being remembered.

This finding does not support hypothesis 3(b) which predicted selective recall for negative

schema congruent words with increasing levels of depression. However, it does suggest

that as Sociotropic individuals report increased levels of depression, their self-referent

encoding bias is less likely to incorporate negative autonomous material which is

consistent with a schema congruent bias in Sociotropic individuals.

Although this is the first study to examine self-referent encoding with Sociotropic

and Independent personalities, Moore and Blackburn (1993) investigated recall of

autobiographical memory in 20 sociotropic and autonomous unipolor depressed patients.

Their finding of selective recall bias in Sociotropic individuals for sociotropic material is

consistent with the present findings of a trait adjective recall bias. Moore and Blackburn

(1993) also failed to find a memory bias for autonomous patients, a finding consistent with

the present study. In conclusion, schema congruent recall bias appears to be present for

sociotropy but not for independence.

4.3 Personality and Coping Strategies

Hypothesis 4(a), which predicted congruence between coping strategies and

personality, was only partially supported. As predicted, Independent individuals endorsed a more task-oriented coping style than Sociotropic individuals or Control participants, but Sociotropic individuals failed to endorse a more emotion-focused coping strategy than the other groups. In fact, emotion-focused coping was highly correlated with depression regardless of group suggesting that this strategy is more likely to be used when one is depressed. This finding is consistent with previous research (e.g., Endler & Parker, 1988) and with Barnett and Gotlib's (1988a) review of the personality and coping research. Conversely, a task-oriented style is negatively related to depression, suggesting that this coping style may buffer against depression. If this is the case, Independent individuals may be less likely to become depressed by virtue of their greater use of task-oriented coping strategies. However, the cross-sectional design of the present study does not allow one to determine whether emotion-focused coping is a causal factor in depression or a concommitent symptom of the depressed state. All that can be concluded is that there is a link between coping style and self-reported depression. This finding is consistent with the existing literature which suggests an important mediating role of coping between life events and depression (Coyne & Downey, 1991; Folkman et al., 1986; Neitzel & Harris, 1990; Reynolds & Gilbert, 1991).

4.4 Depression and Congruence in Personality, Life Events, and Coping Style

It was hypothesized (see Hypothesis 4(b)) that a match in sociotropic versus autonomous life events and coping style could uniquely predict depression in schema congruent individuals. That is, the interaction between the number of negative interpersonal events and emotion-focused coping was expected to predict depression level

in the Sociotropic group whereas the number of negative autonomous life events and task-oriented coping was expected to predict depression level in Independent individuals. Based on the nonsignificant Group x Life Event x Coping interaction in the hierarchical regression analyses, no support for this hypothesis was found. Being highly sociotropic versus highly independent was predictive of depression. However, regardless of group, it was found that emotion-focused coping and number of negative autonomous life events offered unique prediction of depression level in university women. It may be that negative autonomous events are more "depressogenic" in this student sample because students are in a highly evaluative environment with a strong emphasis on achievement. This possible reason for the greater effect of negative achievement effects on mood state in students has been suggested in the literature (eg., Robins, 1990).

4.5 Congruency Between Personality, Type of Life Event, and Negative Appraisals

Hypothesis 4(c) which predicted that Sociotropic individuals would have more negative ratings on the life event appraisals for interpersonal negative life events than for achievement-related negative life events and that Independent individuals would have more negative appraisals for achievement-type negative life events versus interpersonal negative life events was not supported. Higher negative appraisal scale scores were associated with higher levels of depression in all participants. The Responsibility Scale appraisal ratings for the autonomous life event were significantly higher than these ratings were for the the sociotropic life event. Perhaps because of the achievement or production orientation of the autonomous life events, for example, failing an exam, participants perceived that they had more personal responsibility for their occurrence and outcome

than for the interpersonal life event, such as a death in the family. However, it is apparent that the selective information processing of interpersonal trait words found for sociotropic individuals did not generalize to a biased appraisal of negative interpersonal events. This finding does not support Beck's model which predicts that sociotropy and autonomy are associated with selective appraisal of negative personality-congruent events. It may be that the lack of group differences in appraisal was due to the use of an inadequate life event measure. More supportive results might be seen if individuals were generating appraisal ratings on a single traumatic or very severe negative life event (e.g., disaster, divorce, unemployment). Also, the present study may be subject to a "floor effect." Participants evaluated their life experiences as being in the slight to moderate range on most appraisal dimensions.

4.6 Trait Recall, Life Events, and Life Event Appraisals

Little relationship between trait recall and life event appraisals was found in this university student population. This was probably due to the relatively low impact that life events had on the students as indicated by their appraisal ratings. An examination of the relationships between experimental (e.g., self-referent encoding task) and self-report (e.g., Life Event Inventory-Student Version) measures in individuals who are experiencing a major life stressor may further our understanding of the sociotropy and autonomy schema constructs.

An important limitation of the present study is the manner in which coping and negative life events were assessed. The questions concerning life events and coping were not central to this study and only correlational results were obtained. A more rigorous

test of the stability of personality constructs and their interaction with life events would

incorporate a prospective design in which life events would be assessed over time. In

addition, this nondepressed student sample has limited generalizability to depressed

individuals and may have resulted in a floor effect with respect to the hypothesis predicting

links between life events, coping, and depression. Participants had experienced few

significant negative life events and therefore not enough negativity to appreciably lower

their mood state. Despite these limitations, this study highlights the importance of the

relationships between emotion-focused coping and autonomous life events and individuals'

depression level. That these variables do not interact with the sociotropy and autonomy

personality constructs may suggest that these variables are not related or that they only

present themselves in more clinically depressed individuals.

A major contribution of Study 1 is the finding of a schema content specificity

effect for self-relevance ratings in Sociotropic individuals and more limited evidence for

schema congruence in Independent individuals as reflected in the latter group's higher self-

relevance ratings for positive autonomous trait words relative to the Sociotropic and

Control groups. A schema-specific recall bias was also found in the Sociotropic group

but not in the Independent or Control groups. The present study also addressed questions

with respect to self-relevance and encoding bias as reflected in an incidental recall task.

We will now turn to Study 2 which examines the information processing bias in attention

by using the modified Stroop color naming task. The role of mood as a priming event on

attentional information processing will also be explored as well as the role of brief versus

longer stimulus presentation intervals on attentional biases in Sociotropic, Independent,

and Control individuals. Stimuli based on ratings obtained in Study 1 will be used in

Study 2 to provide empirically validated stimulus material.

CHAPTER V

STUDY 2: METHOD

5.1 Participants

The screening pool used in Study 1 was used in Study 2 (see Study 1 for

descriptive information about the screening sample). Participants were selected from this

previous screening of the UNB Introductory Psychology subject pool on the basis of their

scores on the Revised Sociotropy-Autonomy Scale. The same criteria used in Study 1

were used to classify women into the Sociotropic, Independent, and Control groups.

Some of the participants from the original screening study who participated in Study 1

were not willing to participate in another study. This reduced the potential number of

participants that had been willing to be contacted for a study after the screening study

from 75 to 69 for the Sociotropic group, from 38 to 37 for the Independent group, and

from 54 to 51 for the Control group.

Of the potential 69 participants for the Sociotropic group; 14 were not willing to

participate, 6 agreed to participate but did not attend the testing session, 5 could not be

contacted, and 4 were not contacted, leaving a final sample of 40 individuals. Of the 37

possible Independent participants, 7 did not wish to participate and 1 could not be

contacted, for a final sample size of 29. Fifty-one individuals met criteria for the Control

group. However, 5 did not wish to participate, 3 could not be contacted, 1 agreed to

participate but did not attend, and 2 were not contacted, resulting in a further reduced

sample size of 40 women. The average age of participants in Study 2 was 19.6 years old

(SD = 3.90; range = 17 to 41 years old). Participants who completed both Study 1 and

Study 2 made up 79% of the Study 2 sample (i.e., 67 participants since only 85 of the 109

participants met screening criteria and were retained for Study 2 analyses). The other

21% of Study 2 participants were comprised of women in the screening pool who had not

been contacted for Study 1 because a sufficient number of participants had already been

obtained or consisted of women from the participant pool who had agreed to participate in

Study 1 but did not attend. Table 17 presents the means and standard deviations on

screening Revised Sociotropy-Autonomy Scale Sociotropy and Independence Total scores

completed before Study 1 separately by group.

Table 17. Sociotropic, Independent, and Control Groups' Sample Sizes, Means, and Standard Deviations on Screening Revised Sociotropy-Autonomy Scale Sociotropy and Independence Total Scores

		Sociotropy		Independence	
Group	n	M	SD	M	SD
Sociotropic	31	79.19	11.18	37.84	5.15
Independent	21	48.24	10.36	51.71	6.26
Controls	33	56.58	9.66	35.88	4.48

Note: One participant with outlying data was excluded from all analyses reducing N = 86 to N = 85 (N is based on participants who met screening criteria, see Results).

A one-way ANOVA on screening Revised Sociotropy-Autonomy Scale

Sociotropy Total score revealed a significant main effect for Group, $F(2, 84)$ = 64.88, p <

.001. Further examination with post-hoc Tukey-HSD test comparisons showed that all

three groups were significantly different from each other on this measure at p < .05 with

the Sociotropic group obtaining significantly higher scores than the Independent group or

the Control group and the Control group obtaining significantly higher scores than the Independent group. A one-way ANOVA on the screening Revised Sociotropy-Autonomy Scale Independence Total score also revealed a significant main effect for Group, $F(2, 84)$ = 65.79, $p < .001$. Post-hoc comparisons with the Tukey- HSD test revealed that Independent individuals had significantly higher scores than the Sociotropic individuals and Control participants, ($p < .05$) and the Sociotropic participants and Control participants were not different from each other. Therefore, the ANOVAs confirm that the groups were significantly different on the classification variables (i.e., Revised Sociotropy-Autonomy Scale screening Sociotropic and Independence Total scores).

Students' scores on the Beck Depression Inventory were used to ensure that only nondepressed students were invited to participate in the study. The Cronbach alpha for the Study 2 sample was .87 which is a level of reliability comparable to the literature. See Study 1 for information on the Beck Depression Inventory and the Revised Sociotropy-Autonomy Scale.

5.2 Procedure

One hundred and nine female university students enrolled in Introductory Psychology participated in Study 2 approximately six months after the screening study and three months after Study 1. All participants were tested individually. Block randomization was used to assign Sociotropic individuals, Independent individuals, and Control participants to either a neutral or sad mood condition until there were 20 participants in each of the six groups or until the subject pool was exhausted. Participants completed a visual analogue mood scale prior to the mood induction, immediately

following the mood induction, and again after the modified Stroop color naming task. In

addition, all participants completed questionnaires after participating in the Stroop task.

See Figure 5 for a flow chart of the temporal sequence of tasks completed by participants

in Study 2. All participants signed a consent form prior to their participation (see

Appendix J), and after completing the study, each participant received one grade point

toward their Psychology course as well as debriefing/educational information about the

study (See Appendix K).

5.2.1 Questionnaire Measures

5.2.1.1 Beck Anxiety Inventory. The Beck Anxiety Inventory is a 21-item self-

report inventory which measures the severity of anxiety in psychiatric populations (Beck,

Epstein, Brown & Steer, 1988) and has been used in studies of university students (e.g.,

Solomon & Haaga, 1994). The Beck Anxiety Inventory has high internal consistency

(alpha coefficient = .92) and test-retest reliability over one week (r = .75). This Inventory

had an alpha coeffient of .87 in the present sample which is also high. The Beck Anxiety

Inventory was found to discriminate anxious diagnostic groups from nonanxious groups

and has high discriminant validity with anxiety symptoms (Fydrich, Dowdall, &

Chambless, 1992). In addition, the Beck Anxiety Inventory correlates moderately with the

revised Hamilton Anxiety Rating Scale (r = .51) but weakly with the revised Hamilton

Depression Rating Scale (r = .25).

5.2.2 Mood Manipulation Instructions

Before being presented with the Modified Stroop Task, participants were read the

following statement by the experimenter:
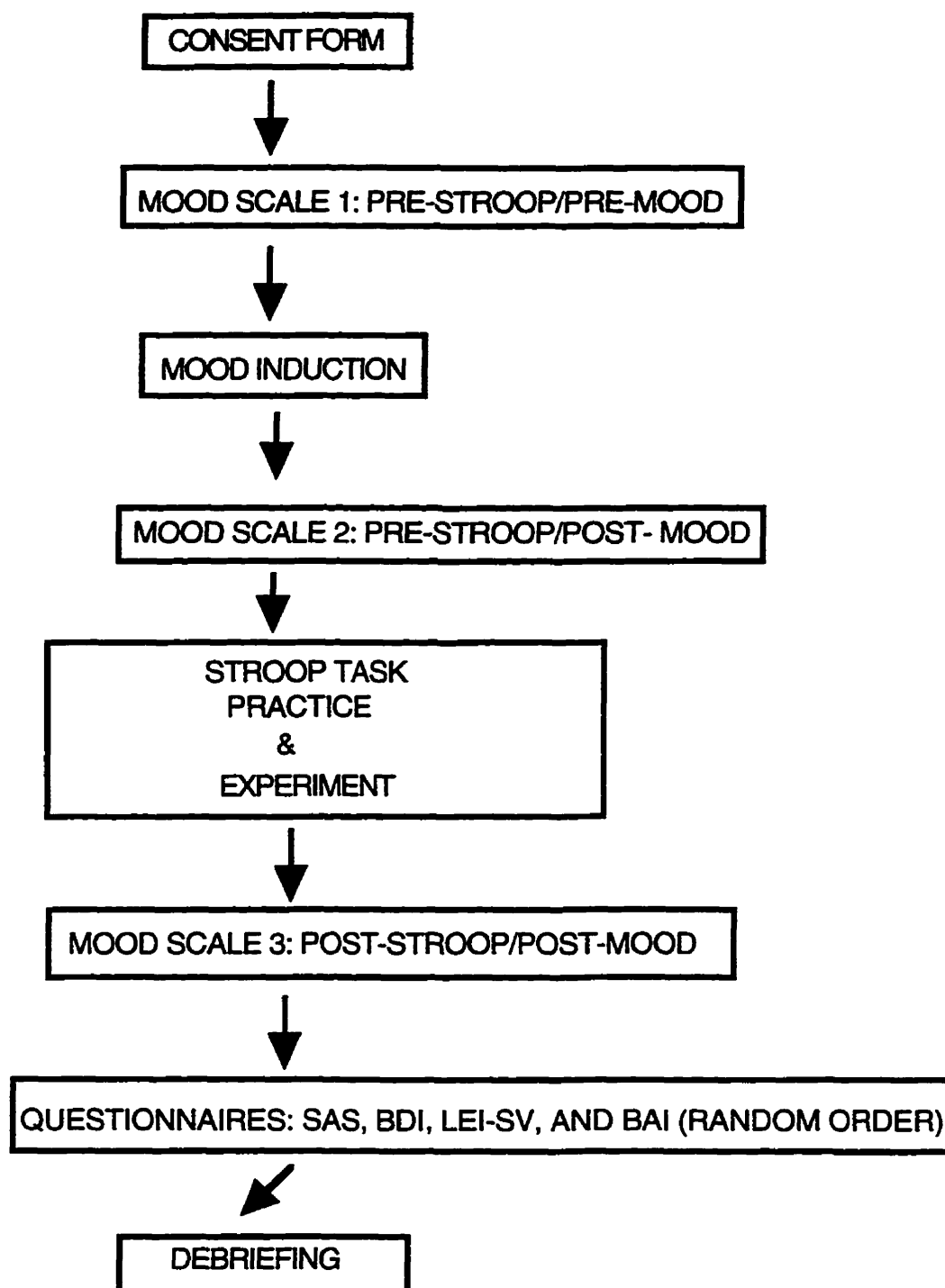
Figure 5. A flow chart of the temporal sequence of Study 2 experimental session.

" I am going to ask you to listen to some mood-suggestive music and use this music as a background to your own efforts to get into a depressed/neutral (depending if they were in the depressed or neural mood induction condition) mood. The music alone may not induce a depressed/neutral mood state and you should use any other means you find effective to get into this depressed/neutral mood."

The music chosen for the mood inductions was that used by the Oxford depression researchers (e.g., Clark & Teasdale, 1985; Clark, Teasdale, Broadbent, & Martin, 1983; Teasdale & Spencer, 1984). This mood induction procedure has been shown to produce highly intense and specific sad or dysphoric mood states. It also has a greater than 75% success rate and requires less than 10 minutes of exposure to lead to a significant mood shift (Martin, 1990). "Russia under the Mongolian Yoke" by Prokofiev recorded at half-speed was used for the depression induction. The music for the neutral mood induction was " Pocket Calculator" by Kraftwerk. Mood change was measured by having participants rate their mood before and after the mood manipulation (see Appendices L and M, respectively) and after the Stroop task (see Appendix N). A visual analogue scale (VAS) 100mm long with 0 mm labelled "Not at all sad" and 100mm labelled "Extremely sad" was used. Participants who failed to rate their mood as 10mm or higher on the sad VAS after the depressed mood induction were excluded from the main analyses. Participants who rated their mood higher on the sad VAS after the neutral mood induction were also excluded. This criterion is more stringent than most studies using mood induction (Martin, 1990), but it is required to obtain a clear mood manipulation effect. Testing continued until there were 20 participants in each group or the subject pool was exhausted.

5.3 Modified Stroop Task

5.3.1 Stimulus Items

5.3.1.1 Empirical selection of stimuli for Study 2. Selection of words to be used in the modified Stroop task in Study 2 were based on Study 1 participants' relevancy ratings. All words used were cross-validated with Blackburn's list to ensure that selected words were considered highly sociotropic or autonomous by Study 1 participants as well as by Blackburn (1993, personal communication). Total mean relevancy rating scores were rank ordered for Sociotropic individuals and Independent individuals. The Sociotropic group relevancy means were examined to select trait adjectives that were most important to Sociotropic individuals. The eight negative sociotropic trait adjectives with the highest relevancy means and their corresponding positive and neutral trait adjectives matched for frequency and length were retained for the Study 2 Stroop task.

The Independent group relevancy means were examined to select trait adjectives that were most important to high independent individuals. The eight negative autonomous trait adjectives with the highest relevancy means on negative autonomous words were considered. Two of these words ("stagnate" which was ranked sixth and "inadequate" which was ranked eighth) were discarded because their corresponding positive words were not autonomous. The next two highest ranked negative autonomous trait adjectives that had corresponding positive autonomous words were selected to produce the set of 8 stimuli used in Study 2. Therefore, the stimuli used in this study consisted of six classes of words, resulting from combinations of the following two factors: (a) negative, positive, and neutral words and (b) sociotropic versus autonomous content. A total of 48 words

was presented with 8 words in each category (negative sociotropic, positive sociotropic, neutral sociotropic, negative autonomous, positive autonomous, neutral autonomous).

Items used for the awareness check trials (to assess the adequacy of the masking procedure in preventing conscious awareness) included all of the stimulus words above as well as nonword letter strings. Each nonword letter string was created by randomly rearranging the letters from each of the words. See Table 18 for a complete list of stimulus words used in the color naming and awareness check trials of Study 2 along with their mean relevancy ratings by Study 1 participants.

5.3.2 Stimulus Presentation

Stimuli were presented using a 486DX IBM compatible microcomputer with 8 Meg Ram, ISA/AT Bus, and VGA (Award) video. A high resolution Zenith flat screen colour monitor, model 1492, that was capable of presenting letters 1 cm high was used. The video monitor had an EGA driver, EGAHI mode, 640 x 350 resolution, 16 colors and 2 pages. Colour naming response latencies were detected by a voice activated relay that was built specifically for this study. Output voltage from the microphone was amplified and, after being rectified, was applied to a data acquisition board, PC-Labcard model PCL-711. This unit was connected to the computer and to the response box. A response box with two buttons, the right button labelled "word" and the left button labelled "nonword" were connected to the computer for the awareness checks.

The computer software was designed to control stimulus presentation on both color naming trials and awareness check trials and to record participants' color naming latencies and lexical decisions. Each participant encountered 384 experimental trials with

Table 18. Set of Trait Words Selected for Study 2 and their Mean Relevancy Ratings in Order of Highest Ranking

Sociotropic Words					
Negative		Positive			Neutral
Word	Mean	Word	S/A *	Mean	Word
FICKLE	2.11	FRIEND	S	3.86	FILTER
LONELY	2.00	LEADER	A	3.56	LIQUID
EXCLUDED	1.88	ENERGETIC	A	3.86	ENCOUNTER
ALONE	1.85	ALERT	A	3.94	ANKLE
ALIENATED	1.68	AFFECTION	S	4.13	APPLIANCE
ISOLATION	1.68	IMPORTANT	A	3.67	IMMEDIATE
SPURN	1.55	SMILE	S	3.95	SALAD
BETRAY	1.50	BEAUTY	S	2.03	BRANCH
Autonomous Words					
Negative		Positive			Neutral
Word	Mean	Word	S/A*	Mean	Word
LIMITED	2.12	LOYALLY	S	4.03	LEAFAGE
CAGED	1.94	CHARM	S	3.30	CABLE
COWARDLY	1.80	CHERISH	S	3.36	CIVILIAN
FOOL	1.74	FOND	S	3.54	FARM
INEFFICIENT	1.69	INTERESTING	A	3.56	INTRODUCING
BEATEN	1.44	BRAINY	A	2.69	BORDER
FAILURE	1.42	FREEDOM	A	4.03	FEDERAL
STUPID	1.33	STRONG	A	3.81	SCRIBE

Note. Negative sociotropic words are based on ratings by the Sociotropic group and negative autonomous words are based on ratings by the Independent group.
* S = sociotropic word and A = autonomous word
Neutral words used in the practice trials: ADDRESS, DECLARE, SPECTRUM, AND UMBRELLA

each of the 48 stimulus words appearing 4 times in the masked exposure and 4 times in the unmasked exposure. On each of these four occasions in each exposure condition words were presented in one of the following four colours: red, green, yellow, or blue. The order in which experimental conditions were presented was fully randomized.

Each trial began with a presentation of a row of white asterisks in the center of the screen to serve as a fixation cue. After 500 milliseconds, these asterisks were replaced by a stimulus word presented in one of the four designated colours. In the unmasked exposure condition, the coloured word remained on the screen until the participant emitted a verbal response at which time the screen blanked. In the masked exposure condition, the stimulus word was replaced after 20 milliseconds by a pattern mask presented in the same colour. This mask remained on the screen until a verbal response was made at which time the screen blanked. The patterned mask was configured to present inverted and rotated letter fragments which was equivalent in length to the word being masked. Following each experimental trial, the screen remained blank for 1000 milliseconds before the next trial. The software recorded the colour naming latency on each trial, operationally defined as the interval between stimulus word presentation and the detection of a vocal response. See Appendix O for a diagram of the experimental trials.

Awareness check trials followed every block of 24 colour naming trials. They began after the warning "Word Decision Trials" appeared on the screen. Each awareness check trial began only after the participant said "Go" into the voice key microphone to ensure that she was maximally prepared. After a block of six awareness check presentations, there was a three-second warning that colour naming trials would resume.

The presentation mode used on the awareness check trials was identical to that used on the colour naming trials except that stimulus items included both words and nonwords. See Appendix P for a diagram of the awareness check trials.

For the awareness check, the computer programme recorded participants' decisions regarding the lexical status of each stimulus indicated by pressing either the word or nonword button on the response box. Over the experimental session, each participant encountered 16 blocks of 6 awareness check presentations for a total of 96 presentations. Each item (48 words and 48 nonwords) in the "awareness check stimulus set" was presented only once on one of the 96 trials and the order in which words and nonwords were presented was randomized. Each participant was given three rest periods spaced at equal intervals throughout the test session. These rest periods lasted approximately two to three minutes with participants resuming the task when they were ready. A pilot study was also conducted prior to Study 2 to ensure that the backward mask prevented conscious awareness. Ten volunteers were tested on the awareness check stimulus set for random lexical decision making.

5.3.3 Stroop Task Instructions

Participants began the Modified Stroop Task immediately after the mood manipulation and completion of the second VASs. Participants were seated one meter from the screen with a voice key microphone extended to within six inches from their mouth. Participants were read the following instructions by the experimenter:

" Now I would like to direct your attention to this computer screen and apparatus. Please count aloud into this microphone as I calibrate it. Please give me your last name. Please give me your first name. What colors do you see here? Start from the upper left

corner. Tell me what colors these words are presented in (four different words are presented). Now, in this part of the experiment, you will be presented with two types of tasks. One type of task, the color naming, will require you to name the color of words and the other type of task, word decision making, will require you to make a decision regarding whether or not you have seen a word. There will also be three rest periods spaced in between sets of these tasks. In the color naming task, you will be presented with several trials. Each trial will begin with a row of white asterisks. These asterisks will be replaced by a stimulus presentation in one of four colors: red, green, blue, or yellow. The stimulus presentation may remain a word or it may be just a flash and quickly change into a meaningless pattern. I want you to name the colour of the stimulus presentation following the asterisks as quickly as possible. Don't worry about what these words mean. Identify the color by speaking clearly into this microphone. Try not to make any other sounds into the microphone such as clearing your throat or talking to me during the experiment.

The other type of trials are the word decision trials. You will again be presented with several trials. In these trials, all letter strings would be presented briefly and then covered by a random pattern. On some trials, the letter strings will be a legitimate English word whereas on other trials, it will be a random arrangement or scrambled sequence of letters or a nonword. In either case, the word or nonword will appear for a very brief period of time before it is covered by the random pattern. You are to use these response buttons -- WORD or --NON-WORD to indicate whether the letter string was a word or not. Make a response to every trial even if you are guessing. Each of these trials will begin with a row of asterisks and there will be several sets of both types of trials. You are to say "Go" into the microphone when you are ready for the letter string to appear. Let's try a practice session to make sure you understand".

Prior to the main test programme, participants were given a brief practice session

using 48 color naming trials of four neutral valenced stimuli not included in the main test

session, and 16 awareness check trials with the same 4 neutral words (See Table 16 for a

list of these neutral words). Any questions regarding the task were clarified before the

Stroop experiment was performed.

CHAPTER VI

STUDY 2 : RESULTS

6.1 Data Conditioning

Prior to the analyses, all variables were examined for accuracy of data entry,

missing values, and fit between their distributions and the assumptions of multivariate

analyses. Cases with missing values (or for whom a computed variable was based on less

than 80% of the scale items) were excluded from the analysis. The variables were

examined separately for Sociotropic neutral mood, Sociotropic sad mood, Independent

neutral mood, Independent sad mood, Control neutral mood and Control sad mood

groups. Pairwise linearity was checked using within-group scatterplots and found to be

satisfactory.

One case in the Neutral Mood Independent group was found to be a univariate

outlier on all measures of median latency. This participant's response latencies were

almost twice as slow as all of the other participants. When this person's data were

discarded, no other univariate or multivariate outliers were present. These analyses were

repeated on the final sample of 85 participants who successfully underwent the mood

induction (see below). Therefore, the main analyses were conducted on 85 participants.

In all analyses, unless otherwise specified, MANOVA was used with the sequential

adjustment for nonorthogonality. Results of evaluation of assumptions of normality,

homogeneity of variance-covariance matrices, linearity, and multicollinearity were

satisfactory.

6.2 Validity Checks

Three sets of analyses were conducted for validity checks. First, ANOVAs were performed to determine whether participants remained in the Sociotropic, Independent, and Control groups based on Study 2 Revised Sociotropy-Autonomy Scale scores. Second, the efficacy of the mood manipulation was established by comparing group mood ratings before and after the mood manipulation and after the Stroop task using ANCOVAs. And finally, the efficacy of the backward masking procedure as a method of preventing conscious awareness was determined by examining the pattern of lexical decisions made within the awareness check trials. On each awareness check trial, there was an equal probability that a word or nonword would be presented. Therefore, the proportion of correct responses expected by chance was 0.5. The significance of the difference between the observed proportion of accurate responses and the proportion expected by chance was tested using a t-test for all 6 cells and for the entire sample.

6.2.1 Verification of the Revised Sociotropy-Autonomy Scale Selection Criteria

A total of eighty-six women participated in Study 2. When one outlying case was removed (see below), eighty-five participants remained in the analysis. To determine whether the three groups remained significantly different on the selection criteria for Study 2, one-way ANOVAs were performed on the Study 2 administration of the Revised Sociotropy-Autonomy Scale Sociotropy and Independence Total scores. See Table 19 for the group means and standard deviations. A one-way ANOVA on the Study 2 Sociotropy Total scores revealed a significant Group main effect, F (2, 84) = 37.58, p <.001. Post-hoc Tukey-HSD test comparisons found that all three groups were significantly different

Table 19. Sociotropic, Independent, and Control Groups' Sample Sizes, Means, and Standard Deviations on Study 2 Revised Sociotropy-Autonomy Scale Sociotropy and Independence Total Scores

| Group | n | SAS Sociotropy | | SAS Independence | |
		M	SD	M	SD
Sociotropic	31	74.09	13.54	37.48	7.61
Independent	21	44.09	13.46	49.05	7.97
Controls	33	59.24	10.20	36.00	6.25

Note: N = 85. SAS = Revised Sociotropy-Autonomy Scale.

from each other with the Sociotropic group obtaining higher scores on this variable than the Independent group ($p < .05$) or the Control group ($p < .05$). The Control group obtained higher scores than the Independent group ($p < .05$). A one-way ANOVA on the Independence variable by Group was also significant, F (2, 84) = 23.49, $p < .001$. Post-hoc Tukey-HSD test comparisons revealed that the Independent group had significantly higher scores than the Sociotropic group and the Control group on Independence scores ($p < .05$) and that the Sociotropic group and Control group did not differ with respect to their Independence scores. Therefore, the ANOVAs confirmed that the groups remained significantly different on the classification variables.

Participants' scores on the Revised Sociotropy-Autonomy Scale completed in Study 2 revealed that 77% (n = 31) of Sociotropic individuals again met selection criteria for classification as Sociotropic, 75% (n = 30) of independent individuals again met selection criteria for the Independent group, and 63% (n = 26) of individuals in the

Control group again met criteria for inclusion in the Control group. Within-group

correlations of participants' scores on the Revised Sociotropy-Autonomy Scale

Sociotropy and Independence Total scales for the screening study, Study 1, and Study 2

are presented in Table 20 for the total sample. Correlations between screening and Study

2 (approximately a 6 month test-retest interval) are consistent with screening and Study 1

correlations (approximately a 3 month test-retest interval). Correlations between Study 1

and Study 2 Revised Sociotropy-Autonomy Scale Sociotropy and Independence scores

were r = .89 and r = .67, respectively, which suggests good temporal stability.

6.2.2 Efficacy of the Mood Manipulation

6.2.2.1 Verification of mood induction. Participants who failed to show an

increase of at least 10mm on the sad VAS after the depressed mood induction were

excluded from the analysis. Participants who had higher ratings of sadness on the sad

VAS after the neutral mood induction were also excluded from the analysis. Out of the 54

women who had undergone the sad mood induction, 10 failed to rate their mood 10mm or

higher on sadness immediately after the mood induction. Five of these women were from

the Sociotropic group, two were from the Independent group, and three were from the

Control group. A total of 44 participants met criteria for successful sad mood induction

(n = 15 for Sociotropic group, n = 12 for Independent group, and n = 17 for Control

group) and were retained for analysis.

Out of the 55 women who had undergone the neutral mood induction, 13

participants had higher ratings on sadness after the induction than before the induction and

so were excluded from the analysis. Four of these women were from the Sociotropic

Table 20. Screening, Study 1, and Study 2 Revised Sociotropy-Autonomy Scale Sociotropy and Independence Total Score Correlations

| | SOCIOTROPY | | | INDEPENDENCE | | |
	SOC1 SCREEN	SOC2 STUDY1	SOC3 STUDY2	IND1 SCREEN	IND2 STUDY1	IND3 STUDY2
SOC1 SCREEN	-------	.82***	.83***	-.06	-.23*	-.22*
SOC2 STUDY1		-------	.89***	-.28**	-.16	-.16
SOC3 STUDY2			--------	-.39***	-.25**	-.29**
IND1 SCREEN				--------	.75***	.78***
IND2 STUDY1					--------	.67***
IND3 STUDY2						--------

Note. $N = 85$. SOC1 SCREEN = screening Revised Sociotropy-Autonomy Scale Sociotropy Total Score. IND1 SCREEN = screening Revised Sociotropy-Autonomy Scale Independence Total Score. SOC2 STUDY1 = Study 1 Revised Sociotropy-Autonomy Scale Sociotropy Total Score. IND2 STUDY1 = Study 1 Revised Sociotropy-Autonomy Scale Independence Total Score. SOC3 STUDY2 = Study 2 Revised Sociotropy-Autonomy Scale Sociotropy Total Score. IND3 STUDY2 = Study 2 Revised Sociotropy-Autonomy Scale Independence Total Score.
* $p < .05$. ** $p < .01$. *** $p < .001$.

group, five were from Independent group, and four were from the Control group. A total

of 42 participants remained in the neutral condition ($n = 16$ for the Sociotropic group, $n =$

10 for the Independent group, and $n = 16$ for the Control group). Together, 86

participants underwent successful mood induction and were retained for the main analysis.

An ANOVA was performed to determine if the groups or mood conditions

differed with respect to participants who responded to the mood induction versus participants who did not. The proportion of participants responding to the mood induction was computed and used as the dependent variable. Participants who did not meet the mood induction criteria were assigned a value of "0" and those who did meet the mood induction criteria were assigned a value of "1". The analysis resulted in no significant main effects for Group, F (2, 103) = .25, p > .78, ns, or Mood condition, F (1, 103) = .41, p > .53, ns. The Group x Mood condition interaction was also nonsignificant, F (2, 103) = .71, p > .50, ns. Therefore, group membership or type of mood induction did not differentially affect the proportion of participants in each group who were responsive to the mood induction. See Table 21 for group means and standard deviations of pre- and post-induction and post-Stroop VAS's for the five moods (happy, sad, angry, relaxed, and anxious) separately.

6.2.2.2 Mood ratings before the mood induction. Participants' ratings of mood (happy, sad, angry, relaxed, and anxious) were examined for group differences prior to the mood manipulation. A MANOVA was performed with the five VAS's as the dependent measures and two between groups factors: Group (Sociotropy, Independent, and Control) and Mood (sad and neutral). Using Wilk's criterion, the combined VAS ratings were not significantly affected by Group, Mood or Group x Mood interactions.

6.2.2.3 Comparisons of mood ratings before and after the mood induction. After the mood manipulation, participants were reassessed on the VASs. Comparisons of mood changes after the mood induction are the most crucial comparisons for determining the effectiveness of the mood manipulation. A repeated measures MANOVA was performed

Table 21. Group Means and Standard Deviations For Pre- and Post-Induction and Post-Stroop VAS Mood Ratings

A. Happy VAS

GROUP	MOOD INDUCTION	PRE-MOOD INDUCTION		POST-MOOD INDUCTION		POST-STROOP INDUCTION	
		M	SD	M	SD	M	SD
SOC	NEUTRAL	6.74	1.59	6.36	1.58	6.04	1.96
	SAD	6.75	2.15	3.95	1.56	5.79	2.08
IND	NEUTRAL	5.64	2.37	6.56	1.65	6.69	1.67
	SAD	6.78	1.69	4.39	2.36	5.85	1.96
CONTROL	NEUTRAL	6.71	2.01	7.47	1.58	6.86	1.91
	SAD	6.97	1.46	4.16	1.89	4.92	1.88

B. Sad VAS

GROUP	MOOD INDUCTION	PRE-MOOD INDUCTION		POST-MOOD INDUCTION		POST-STROOP INDUCTION	
		M	SD	M	SD	M	SD
SOC	NEUTRAL	2.23	2.00	1.70	1.83	2.27	2.39
	SAD	2.36	1.95	6.23	1.10	3.44	2.06
IND	NEUTRAL	3.23	2.70	2.33	2.12	2.07	1.97
	SAD	0.92	1.50	4.94	2.70	1.99	1.47
CONTROL	NEUTRAL	2.39	2.46	1.02	0.61	1.10	0.94
	SAD	1.34	1.19	5.22	2.43	2.94	2.08

Table 21. Group Means and Standard Deviations For Pre- and Post-Induction and Post-Stroop VAS Mood Ratings (continued)

C. Angry VAS

GROUP	MOOD INDUCTION	PRE-MOOD INDUCTION		POST-MOOD INDUCTION		POST-STROOP INDUCTION	
		M	SD	M	SD	M	SD
SOC	NEUTRAL	1.08	1.71	1.05	1.61	1.19	1.44
	SAD	2.01	1.77	4.89	2.51	2.83	1.96
IND	NEUTRAL	2.47	2.84	1.32	2.02	1.31	1.78
	SAD	0.48	0.54	2.31	1.75	0.86	0.76
CONTROL	NEUTRAL	1.27	1.46	0.75	0.76	0.67	0.82
	SAD	1.12	1.22	3.36	2.72	1.88	1.95

D. Relaxation VAS

GROUP	MOOD INDUCTION	PRE-MOOD INDUCTION		POST-MOOD INDUCTION		POST-STROOP INDUCTION	
		M	SD	M	SD	M	SD
SOC	NEUTRAL	6.86	1.53	7.91	1.50	6.01	2.25
	SAD	6.78	2.04	4.51	1.68	4.37	2.58
IND	NEUTRAL	6.93	2.06	7.93	1.58	6.91	2.22
	SAD	6.13	1.92	5.55	1.89	4.75	2.51
CONTROL	NEUTRAL	6.42	1.59	7.93	1.68	5.79	3.05
	SAD	6.51	1.73	4.54	2.01	3.51	2.40

Table 21. Group Means and Standard Deviations For Pre- and Post-Induction and Post-Stroop VAS Mood Ratings (continued)

E. Anxious VAS

GROUP	MOOD INDUCTION	PRE-MOOD INDUCTION		POST-MOOD INDUCTION		POST-STROOP INDUCTION	
		M	SD	M	SD	M	SD
SOC	NEUTRAL	2.58	2.36	1.75	1.86	3.32	2.50
	SAD	3.20	2.60	5.71	1.85	5.14	2.18
IND	NEUTRAL	2.57	2.33	1.89	1.63	3.19	2.11
	SAD	2.26	2.08	3.78	2.31	4.00	2.54
CONTROL	NEUTRAL	2.68	2.51	1.65	2.01	3.50	3.00
	SAD	2.84	2.65	4.53	2.39	4.67	2.74

Note. M are in cm. SOC = Sociotropic group, IND = Independent group.

with the five VAS's as the dependent variables and two between groups factors (Group and Mood) and one within group factor, Trial (pre-mood induction and post-mood induction). Using Wilk's criterion, the overall MANOVA resulted in a significant Mood main effect, $F (5, 73) = 6.65$, $p < .001$, a significant Trial main effect, $F (5, 73) = 12.03$, $p < .001$, and a significant Mood x Trial interaction, $F (5, 73) = 26.91$, $p < .001$. No other main effects or interactions were significant.

Univariate F tests for the VAS *happy* mood rating revealed a significant Trial main effect, $F (1, 77) = 48.75$, $p < .001$, with lower overall ratings of happiness after the

mood induction than before ($\underline{M}$ = 6.69, $\underline{SD}$ = 1.83; $\underline{M}$ = 5.44, $\underline{SD}$ = 2.22, for pre- and post-mood induction, respectively). A Mood main effect was also present, $\underline{F}$ (1, 77) = 10.00, $\underline{p}$ < .002, with individuals in the sad condition having lower VAS happy ratings ($\underline{M}$ = 5.49, $\underline{SD}$ = 1.84) than individuals in the neutral condition ($\underline{M}$ = 6.60, $\underline{SD}$ = 1.78). The Mood x Trial interaction was also significant, $\underline{F}$ (1, 77) = 75.90, $\underline{p}$ < .001, with no significant change in neutral condition participants' VAS happy ratings pre- and post-mood induction but a significant decrease in VAS happy ratings for the participants in the sad conditions pre- and post-mood induction, $\underline{F}$ (1, 78) = 117.94, $\underline{p}$ < .001($\underline{M}$ = 4.15, $\underline{SD}$ = 1.93; $\underline{M}$ = 6.83, $\underline{SD}$ = 1.76, for pre- and post-mood induction, respectively). No other main effects or interactions were significant.

The ANOVA comparing pre- and post-induction VAS *sad* ratings revealed a significant main effect for Trial, $\underline{F}$ (1, 77) = 53.82, $\underline{p}$ < .001, with higher ratings of sadness after the mood manipulation ($\underline{M}$ = 3.60, $\underline{SD}$ = 2.77) than before the mood manipulation ($\underline{M}$ = 2.00, $\underline{SD}$ = 2.03). A significant main effect of Mood was also present, $\underline{F}$ (1, 77) = 15.94, $\underline{p}$ < .001, with higher ratings of sadness obtained in the sad mood induction condition ($\underline{M}$ = 3.52, $\underline{SD}$ = 1.81) than the neutral mood induction condition ($\underline{M}$ = 2.12, $\underline{SD}$ = 1.95). A significant Mood x Trial interaction was also present, $\underline{F}$ (1, 77) = 123.91, $\underline{p}$ < .001, with no significant change in sad ratings for the neutral induction condition but a significant change in sad ratings for the sad induction condition, $\underline{F}$ (1, 78) = 155.02, $\underline{p}$ < .001 ($\underline{M}$= 1.54, $\underline{SD}$ = 1.55; $\underline{M}$ = 5.49, $\underline{SD}$ = 2.08, for pre- and post-mood induction, respectively).

The Univariate F tests comparing VAS *angry* ratings pre- and post- mood

induction revealed a significant main effect of Trial, F (1, 77) = 17.67, p < .001, with

higher anger ratings after the mood induction (M = 2.30, SD = 2.46) than before (M =

1.32, SD = 1.69). A significant main effect of Mood was also present, F (1, 77) = 13.38,

p < .001, with higher anger ratings for the sad mood induction condition (M = 2.36, SD =

1.76) than the neutral mood induction condition (M = 1.30, SD = 1.73). The Mood x

Trial interaction was also significant, F (1, 77) = 37.24, p < .001, with no difference in the

neutral groups' ratings of anger pre- and post-mood induction, but significantly higher

anger ratings evident for the sad group after the mood induction, F (1, 78) = 50.39, p <

.001 (M = 1.19, SD = 1.20; M = 3.52, SD = 2.33, for the pre- and post-mood induction,

respectively). A significant interaction of Group x Mood was also present, F (2, 77) =

5.54, p < .01, with a difference between groups in the neutral condition only, F (2, 78) =

3.28, p < .05. Independent individuals in the neutral condition had higher anger ratings

over the two trials (M = 1.90, SD = 2.43) than the Sociotropic (M = 1.65, SD = 1.66) or

Control groups (M = 1.01, SD = 1.11). No other main effects or interactions were

significant.

The ANOVA comparing VAS *relax* ratings pre- and post-mood induction revealed

a significant Mood main effect, F (1, 77) = 27.70, p < .001, with higher relaxation ratings

for the neutral group (M = 7.38, SD = 1.68) than for the sad group (M = 5.71, SD =

1.90). The Mood x Trial interaction was also significant, F (1, 77) = 43.42, p < .001, with

neutral conditions reporting more relaxation after the mood manipulation than before, F

(1, 78) = 11.10, p < .001 (M = 6.80, SD = 1.76; M = 7.91, SD = 1.57, for pre- and post-

mood induction, respectively). The sad conditions reported less relaxation after the mood

induction than before, $F(1, 78) = 25.12$, $p < .001$ ($M = 6.48$, $SD = 1.89$; $M = 4.94$, $SD = 1.91$, for pre- and post- mood induction, respectively). No other main effects or interactions were significant.

The ANOVA comparing VAS *anxious* ratings pre- and post- mood manipulation revealed a significant main effect for Trial, $F(1, 77) = 3.96$, $p < .05$, with higher anxiety ratings after the induction ($M = 3.24$, $SD = 2.55$) than before the induction ($M = 2.71$, $SD = 2.40$). A significant main effect for Mood was also present, $F(1, 77) = 15.68$, $p < .001$, with higher ratings of anxiety in the sad condition ($M = 3.68$, $SD = 2.34$) than in the neutral condition ($M = 2.15$, $SD = 2.12$). The Mood x Trial interaction was also significant, $F(1, 77) = 27.43$, $p < .001$. Post-hoc analysis revealed a significant Neutral mood induction condition by Trial effect, $F(1, 78) = 4.31$, $p < .05$, with higher anxiety ratings in the neutral mood induction condition before the mood induction ($M = 2.61$, $SD = 2.40$) than after the mood induction ($M = 1.70$, $SD = 1.83$). The Sad mood induction condition x Trial interaction was also significant, $F(1, 78) = 23.91$, $p < .001$, with higher anxiety ratings after the sad mood induction ($M = 2.77$, $SD = 2.44$; $M = 4.59$, $SD = 2.24$, for pre- and post-mood induction, respectively). No other main effects or interactions were significant.

Overall, individuals in the sad mood condition had lower VAS ratings of happiness and higher VAS sadness ratings after the sad mood induction than individuals in the neutral condition. After the mood manipulation, participants in the sad mood condition also had higher ratings of anger and anxiety and lower ratings of relaxation when compared to the neutral groups. Therefore, it appears that the mood induction was

successful, though fairly broad mood changes were evident. That is, sadness was not the only mood state affected by the induction. Participants in the sad induction also felt more anxious and angry, but less relaxed after the sadness induction. Also, all three experimental groups (Sociotropic, Independent, and Control) were equally responsive to the mood manipulation.

6.2.2.4 Comparisons of mood ratings before mood induction and after the Stroop task. After the Stroop task, participants were reassessed on the mood VAS's. A repeated measures MANOVA was performed with the five VAS's as the dependent variables, two between-groups factors (Group and Mood), and one within-group factor (Trial (pre-mood induction and post Stroop task)). This analysis permitted comparisons of mood ratings before the mood induction and after the Stroop task to determine if the induced mood remained throughout completion of the Stroop task. Using Wilk's criterion, the overall MANOVA resulted in a significant Mood main effect, F (5, 74) = 2.33, p < .05, a significant Trial main effect, F (5, 74) = 5.88, p < .001, and a significant Mood x Trial interaction, F (5, 74) = 5.56, p < .001. No other main effects or interactions were significant.

The Univariate F test comparing VAS *happy* ratings pre-mood induction and post Stroop task revealed a significant Trial main effect, F (1, 78) = 10.96, p < .001, with lower overall ratings of happiness after the Stroop task (M = 5.97, SD = 1.97) than before the mood induction (M = 6.69, SD = 1.83). The Mood x Trial interaction was also significant, F (1, 78) = 10.80, p < .01, with no difference in the neutral mood induction condition between pre-mood induction and post Stroop task, but significantly lower

ratings of happiness for the sad mood induction condition after the Stroop ($\underline{M}$ = 5.52, $\underline{SD}$ = 1.97) than before the mood induction ($\underline{M}$ = 6.83, $\underline{SD}$ = 1.76), $\underline{F}$ (1, 79) = 21.40, $\underline{p}$ < .001. No other main effects or interactions were significant.

The ANOVA on VAS *sad* ratings revealed a significant Mood x Trial interaction only, $\underline{F}$ (1, 78) = 21.03, $\underline{p}$ < .001. Post-hoc analysis revealed a significant neutral mood induction condition by trial interaction, $\underline{F}$ (1, 79) = 4.30, $\underline{p}$ < .05, with higher sad ratings before the mood induction ($\underline{M}$ = 2.57, $\underline{SD}$ = 2.38) than after the Stroop task ($\underline{M}$ = 1.79, $\underline{SD}$ = 1.77). Post-hoc analysis of the sad mood induction condition x Trial interaction was also significant, $\underline{F}$ (1, 79) = 16.41, $\underline{p}$ < .001, with higher VAS sad ratings after the Stroop task ($\underline{M}$ = 2.79, $\underline{SD}$ = 1.87) than before the mood induction ($\underline{M}$ = 1.54, $\underline{SD}$ = 1.55).

The ANOVA on VAS *angry* ratings revealed a significant Mood x Trial interaction, $\underline{F}$ (1, 78) = 16.33, $\underline{p}$ < .01 and a significant Group x Mood interaction, $\underline{F}$ (2, 78) = 5.70, $\underline{p}$ < .01. Post-hoc analysis revealed that the neutral mood induction condition by trial interaction was not significant, but the sad mood induction condition by trial interaction was significant, $\underline{F}$ (1, 79) = 5.95, $\underline{p}$ < .05. Individuals in the sad mood induction condition had higher anger ratings after the Stroop task ($\underline{M}$ = 1.86, $\underline{SD}$ = 1.56) than before the mood induction ($\underline{M}$ = 1.19, $\underline{SD}$ = 1.20). Post-hoc analysis for the Group x Mood interaction also revealed a significant neutral mood induction x Group interaction, $\underline{F}$ (2, 79) = 4.56, $\underline{p}$ < .01, with the Independent group having higher anger ratings than the Sociotropic or Control groups. No other main effects or interactions were significant.

The ANOVA on VAS *relaxation* ratings revealed a significant Trial main effect, $\underline{F}$ (1, 78) = 20.86, $\underline{p}$ < .001, with lower ratings of relaxation after the Stroop task ($\underline{M}$ = 5.15,

$\underline{SD}$ = 2.73) than before the mood induction ($\underline{M}$ = 6.63, $\underline{SD}$ = 1.77). There was also a

significant main effect of Mood, $\underline{F}$ (1,78) = 10.14, $\underline{p}$ < 001. Overall, the sad mood

condition had lower relaxation ratings ($\underline{M}$ = 5.34, $\underline{SD}$ = 2.19) than the neutral mood

condition ($\underline{M}$ = 6.56, $\underline{SD}$ = 2.15). These main effects were qualified by a significant Mood

x Trial interaction, $\underline{F}$ (1, 78) = 7.53, $\underline{p}$ < .01. Post-hoc analysis revealed that the neutral

mood induction condition x Trial interaction was not significant. However, a significant

sad mood induction condition x Trial interaction was present, $\underline{F}$ (1, 79) = 26.60, $\underline{p}$ < .001,

with individuals in the sad mood condition having lower relaxation ratings ($\underline{M}$ = 4.21, $\underline{SD}$

= 2.50) after the Stroop task than before the mood induction ($\underline{M}$ = 6.48, $\underline{SD}$ = 1.89). No

other main effects or interactions were significant.

The ANOVA on the VAS *anxious* ratings revealed a significant Trial main effect,

$\underline{F}$ (1, 78) = 16.33, $\underline{p}$ < .001, with higher ratings of relaxation after the Stroop task ($\underline{M}$ =

4.03, $\underline{SD}$ = 2.59) than before the mood induction ($\underline{M}$ = 2.71, $\underline{SD}$ = 2.40). No other main

effects or interactions were significant. In summary, these mood comparisons indicated

that the negative mood state that was successfully induced by the sad musical mood

condition persisted throughout the experimental period. Thus it can be concluded that a

negative mood state was maintained while individuals participated in the modified Stroop

color naming task.

6.2.2.5 Comparison of mood ratings post-mood induction and after the Stroop

task. VAS ratings were also compared post-mood induction and post Stroop task to

determine if there was any change or decline in VAS mood ratings during this time period.

A repeated measures MANOVA was performed with the five VAS's as the dependent

measures, two between-groups factors (Group and Mood) and one within-group factor, Trial (post-induction and post Stroop task). Using Wilk's criterion, the overall MANOVA resulted in a significant Mood main effect, $F_{(5, 74)} = 14.34$, $p < .001$, a significant Trial main effect, $F_{(5, 74)} = 12.32$, $p < .001$, and a significant Mood x Trial interaction, $F_{(5, 74)} = 10.98$, $p < .001$. All other main effects and interactions were not significant.

The Univariate F tests comparing VAS *happy* ratings post-mood induction and post Stroop task revealed a significant Trial effect, $F_{(1, 78)} = 7.98$, $p < .01$, with higher happiness ratings after the Stroop task ($M = 6.01$, $SD = 1.91$) than after the mood induction ($M = 5.49$, $SD = 1.76$). There was also a significant main effect of Mood, $F_{(1, 78)} = 27.18$, $p < .001$, with higher happy ratings in the neutral mood induction condition ($M = 6.67$, $SD = 1.71$) than in the sad mood induction condition ($M = 4.83$, $SD = 1.96$). The Mood x Trial interaction was also significant, $F_{(1, 78)} = 21.82$, $p < .001$ showing that there was no difference in group VAS happy ratings post mood induction and post Stroop task for the neutral mood induction condition, while higher VAS happy ratings were reported in the sad mood induction condition post Stroop than immediately after the mood induction, $F_{(1, 79)} = 28.02$, $p < .001$, indicating some decay in sad mood. No other main effects or interactions were significant.

The Univariate F tests comparing post mood induction and post Stroop VAS *sad* ratings revealed a significant main effect for Trial, $F_{(1, 78)} = 33.65$, $p < .001$, with higher ratings of sadness obtained post-mood induction ($M = 3.56$, $SD = 1.80$) than post Stroop task ($M = 2.29$, $SD = 1.83$). The main effect of Mood was also significant, $F_{(1, 78)} =$

51.38, $p < .001$. VAS sad ratings were higher in the sad mood induction condition ($\underline{M}$ = 4.13, $\underline{SD}$ = 1.99) than in the neutral mood induction condition ($\underline{M}$ = 1.73, $\underline{SD}$ = 1.65). These main effects were qualified by a significant Mood x Trial interaction, $\underline{F}$ (1, 78) = 41.52, $p < .001$. Although VAS sad ratings did not change significantly from post-mood induction to post Stroop task for the neutral mood condition, VAS sad ratings were significantly lower after the Stroop task ($\underline{M}$ = 2.79, $\underline{SD}$ = 1.90) than immediately after the mood induction ($\underline{M}$ = 5.46, $\underline{SD}$ = 2.08) for the sad mood condition, $\underline{F}$ (1, 79) = 76.80, $p < .001$. No other main effects or interactions were significant.

Comparison of post-mood induction and post Stroop task VAS *anger* ratings revealed a significant Trial main effect, $\underline{F}$ (1, 78) = 15.60, $p < .001$, with lower VAS anger ratings after the Stroop task ($\underline{M}$ = 1.46, $\underline{SD}$ = 1.46) than after the mood induction ($\underline{M}$ = 2.27, $\underline{SD}$ = 1.90). There was also a significant main effect for Mood with higher VAS anger ratings in the sad mood condition ($\underline{M}$ = 2.70, $\underline{SD}$ = 1.95) than in the neutral mood condition ($\underline{M}$ = 1.03, $\underline{SD}$ = 1.40), $\underline{F}$ (1, 78) = 30.58, $p < .001$. These main effects were qualified by a Mood x Trial interaction, $\underline{F}$ (1, 78) = 15.89, $p < .001$ which showed that there was no significant difference over Trials for the neutral mood induction condition, but anger ratings were higher post-mood induction ($\underline{M}$ = 3.52, $\underline{SD}$ = 2.33) than after the Stroop task ($\underline{M}$ = 1.88, $\underline{SD}$ = 1.57) in the sad mood induction condition, $\underline{F}$ (1, 79) = 31.76, $p < .001$. There was also a significant Group x Mood interaction, $\underline{F}$ (2, 78) = 4.24, $p < .05$, with both the Sociotropic and Control groups having higher VAS anger ratings in the sad mood induction condition than the neutral mood induction condition. In contrast, the VAS anger ratings for the Independent group remained relatively unchanged. No

other main effects or interactions were significant.

The Univariate F tests on VAS *relaxation* ratings revealed a significant Trial main effect, F (1, 78) = 17.86, p < .001, with lower relaxation ratings after the Stroop task (M = 5.30, SD = 2.51) than after the mood induction (M = 6.42, SD = 1.73). The Mood main effect was also significant, F (1, 78) = 45.50, p < .001, with higher VAS relaxation ratings in the neutral mood induction condition (M = 7.15, SD = 2.06) than in the sad mood induction condition (M = 4.57, SD = 2.18). These main effects were qualified by a Mood x Trial interaction, F (1, 78) = 4.15, p < .05, which showed a significant change in VAS relaxation ratings between post-mood induction (M = 7.97, SD = 1.59) and post Stroop task (M = 6.32, SD = 2.53) for the neutral mood induction condition, F (1, 79) = 19.09, p < .001, but not for the sad mood induction condition. No other main effects or interactions were significant.

The Univariate F tests on VAS *anxious* ratings revealed a significant Trial main effect, F (1, 78) = 7.57, p < .01, with higher VAS anxious ratings after the Stroop task (M = 3.90, SD = 2.51) than after the mood induction (M = 3.17, SD = 2.00). The Mood main effect was also significant, F (1, 78) = 26.13, p < .001, with higher VAS anxious ratings for the sad mood induction condition (M = 4.61, SD = 2.33) than for the neutral mood induction condition (M = 2.46, SD = 2.19). These main effects were qualified by a Mood x Trial interaction, F (1, 78) = 11.30, p < .001, with a significant increase in VAS anxious ratings between post-mood induction (M = 1.66, SD = 1.82) and post Stroop Task (M = 3.26, SD = 2.54) for the neutral mood condition, F (1, 79) = 18.65, p < .001, but not for the sad mood induction condition. No other main effects or interactions were

significant. Overall, these analyses indicated that there was some decay in negative mood from the moment the induction procedure ceased until the termination of the Stroop task. It is possible, then, that negative mood was not as intense during the Stroop task as it was immediately following induction of the mood state. However, the previous comparisons between pre-induced VASs and post-Stroop ratings indicate that a negative mood was maintained although it likely was not as intense as was anticipated.

6.2.3 Awareness Check on the Masking Procedure

The validity of the backward masking procedure, intended as a method of preventing conscious awareness, was examined by analysing the pattern of lexical decisions made during the awareness check trials. All participants reported that they were unable to perceive the stimuli presented under the masked exposure condition. On awareness check trials, there is an equal probability on each trial that a word or a nonword will be presented. Therefore, the percentage of correct responses expected by chance would be 50%. The mean percentage of accurate responses made on this lexical task was 67%. This difference was significantly different than that expected by chance, $t(84) = 16.43 > t^* = 2.66$ at $p < .001$. However, the sample was also significantly different from the expected percentage correct rate of 100%, which is what one would expect if individuals were fully aware of the stimuli, $t(84) = -31.38 > t^* = 2.66$ at $p < .001$.

Separate analyses of the percentage of words and nonwords correctly identified indicated that both types of stimuli were significantly different from chance, $t(84) = 8.90$, $p < .001$ and $t(84) = 8.14$, $p < .001$, respectively. The percentage of words and nonwords correctly identified were also significantly different than that expected if individuals were

fully aware of word or nonword stimuli, $t(84) = -13.54$, $p < .001$ and $t(84) = -19.81$, $p < .001$, respectively. More words versus nonwords were correctly identified, $t(85) = 2.37$, $p < .02$.

A 3 x 2 ANOVA with Group (Sociotropic, Independent, and Controls) and Mood (sad versus neutral) as between group variables was performed on percentage of words and nonwords correctly identified in the awareness check trials. In both cases, no significant interactions or main effects were found suggesting that participants in each group performed with the same level of awareness. In summary, a complete lack of awareness cannot be assumed in the masked condition because a higher than chance level of stimulus recognition was present. Thus, the masked condition will be referred to as "short exposure" and the unmasked condition will be referred to as "long exposure" conditions.

6.2.4 Beck Anxiety Inventory

The Beck Anxiety Inventory was completed after the mood induction. A 3 x 2 between groups ANOVA with Group (Sociotropic, Independent, and Controls) and Mood (sad versus neutral) as independent variables and anxiety score as the dependent variable showed no significant interactions or main effects of group. However, a significant main effect of Mood was found, $F(1,84) = 6.60$, $p < .01$. Participants in the sad mood induction condition ($M = 14.1$) had significantly higher anxiety scores than participants in the neutral mood condition ($M = 9.5$).

6.2.5 Beck Depression Inventory

A 3 X 2 between groups ANOVA with Group (Sociotropic, Independent, and

Controls) and Mood (sad versus neutral) as independent variables and depression scores as the dependent variable showed a significant Group x Mood interaction, $F_{(2, 84)}$ = 4.95, $p < .01$. The main effect for Group was also significant, $F_{(2, 84)}$ = 5.75, $p < .01$, although the main effect for Mood was not significant, $F_{(1, 84)}$ = 0.62, $p > .43$, ns. Further exploration of the significant interaction revealed no significant group differences for the neutral mood condition, $F_{(2, 40)}$ = 0.25, $p > .98$, ns. However, when examining the sad mood condition, a significant Group effect was found, $F_{(2, 43)}$ = 10.67, $p < .001$. Tukey-HSD test revealed that under the sad mood condition Sociotropic individuals had significantly higher Beck Depression Inventory scores (M = 12.9) than the Independent individuals (M = 3.4) or Control participants (M = 5.6) at $p < .05$. Therefore, the Sociotropic group appear to have been more responsive to the mood induction than the Independent group or the Control group, although this was not confirmed by their VAS ratings.

6.3 The Stroop Color Naming Task

To reduce the influence of outliers, median response latencies were calculated for each participant for each experimental condition (see MacLeod & Rutherford, 1992 for a similar procedure). This resulted in collapsing the raw values of the 384 trials to 12 median values. Each median value was calculated over 32 trials (i.e., each experimental condition comprised of 8 words presented in 4 different colors). The average median value across groups and conditions was the basis for the MANOVA.

6.3.1 Median Response Latencies

Hypothesis 1(a). Sociotropic individuals will show significantly greater interference effects from sociotropic words than Independent individuals or control participants. This effect will be evident as disproportionately longer latencies when attempting to color-name the sociotropic words.

Hypothesis 1(b). Independent individuals will show significantly greater interference effects from independent relevant words than Sociotropic individuals or control participants. This effect will be evident as disproportionately longer latencies when attempting to color-name autonomous words.

Hypothesis 2(a). If sad mood acts as a prime, then Sociotropic individuals in the sad mood condition will show significantly longer colour naming latencies to negative sociotropic words than sociotropic individuals in the neutral mood condition.

Hypothesis 2(b). If sad mood acts as a prime, then Independent individuals in the sad mood condition will show significantly longer colour naming latencies to negative autonomous words than independent individuals in the neutral mood condition.

A 3 x 2 x 2 x 3 x 2 repeated measures MANOVA was carried out with median color naming latencies as the dependent variable. Group (Sociotropic, Independent, and Controls) and Mood (neutral or sad) served as the between-subjects variables. Specificity (sociotropic versus autonomous trait adjectives), valence (positive, negative, or neutral), and exposure (brief or long color word presentation) were the within-subject factors. Table 22 presents the means and standard deviations for the median color naming latency for each experimental condition.

The analysis produced a significant main effect of Exposure, (F (1, 79) = 335.39, p < .001; with color naming latencies faster in the brief word exposure condition (M = 602 ms; SD = 64 ms) than in the long exposure condition (M = 677 ms; SD = 69 ms). There

Table 22. Mean Color Naming Latencies in Milliseconds Separately by Group, Mood, Exposure and Valence (Standard Deviations in Parentheses)

	Group					
	Sociotropic		Independent		Controls	
	MOOD INDUCTION					
Traits	Neutral	Sad	Neutral	Sad	Neutral	Sad
	Brief Exposure					
Sociotropic						
positive	591 (76)	576 (50)	622 (62)	626 (85)	580 (50)	599 (54)
negative	594 (63)	579 (63)	602 (70)	629 (96)	587 (57)	597 (34)
neutral	596 (69)	596 (60)	616 (63)	628 (91)	592 (58)	597 (46)
Autonomous						
positive	597 (68)	591 (57)	616 (59)	622 (67)	580 (66)	600 (49)
negative	602 (65)	581 (59)	613 (83)	636 (114)	589 (64)	608 (46)
neutral	601 (60)	595 (62)	613 (63)	622 (88)	585 (55)	602 (48)
	Long Exposure					
Sociotropic						
positive	667 (78)	656 (64)	697 (57)	688 (73)	662 (79)	693 (70)
negative	674 (90)	660 (77)	701 (62)	696 (71)	656 (70)	683 (65)
neutral	669 (70)	648 (66)	691 (44)	689 (63)	644 (75)	696 (65)
Autonomous						
positive	671 (81)	653 (79)	697 (64)	691 (69)	661 (72)	676 (61)
negative	687 (87)	663 (80)	702 (59)	708 (68)	651 (60)	703 (66)
neutral	664 (75)	661 (71)	706 (64)	690 (59)	653 (61)	693 (71)

Note. N = 85.

was a significant Specificity main effect, F (1, 79) = 3.89, $p < .05$, with faster color naming

latencies for sociotropic words ($\underline{M}$ = 636 ms; $\underline{SD}$ = 67 ms) than for autonomous words (M

= 640 ms; SD = 68 ms). A significant Exposure by Valence interaction was also present, $\underline{F}$

(2, 158) = 3.52, $\underline{p}$ < .05. Post-hoc analysis revealed that in the brief exposure condition,

median color naming latencies of positive, negative, and neutral words were not significantly

different, $\underline{F}$ (2, 158) = 2.07, $\underline{p}$ > .13, $\underline{ns}$. However, in the long exposure condition, the

difference between median color naming latencies of positive, negative, and neutral words

approached significance, F (2, 158) = 2.90, p < .06, with negative words taking longer to

name ($\underline{M}$ = 680 ms ; $\underline{SD}$ = 73 ms) than positive ($\underline{M}$ = 674 ms; $\underline{SD}$ = 71ms) or neutral ($\underline{M}$ =

673 ms; $\underline{SD}$ = 68 ms) words. These results suggest that with longer exposure time,

attention was drawn towards negative versus positive or neutral words, thereby causing

greater interference with color naming negative words. No other main effects or

interactions were significant. A selective attentional bias for sociotropic material for

Sociotropic individuals or for autonomous material for Independent individuals (i.e.,

Hypothesis 1(a) and 1(b)) was not present as indicated by a non-significant Group x

Specificity interaction. Mood also failed to affect differentially attentional processing of

stimuli as indicated by a non-significant Mood x Specificity interaction.

6.3.2 Interference Scores

Further analysis of median latency data was performed by calculating interference

scores for each negative and positive sociotropic and autonomous word in the brief and long

exposure condition. This was done by subtracting their respective matched neutral word

from each of these words. For example, the negative sociotropic interference score was

calculated for each participant in each exposure condition by subtracting the median

latencies for neutral sociotropic words from the median latencies for negative sociotropic words. Greater (i.e., positive) interference scores indicate that participants were relatively slower in color naming negative sociotropic words than neutral sociotropic words (an interference effect). Smaller (i.e., negative) interference scores indicate that participants were faster at color naming negative sociotropic words than neutral sociotropic words (a facilitation effect). If positive this analysis would suggest that negative sociotropic words caused an interference effect, whereas if negative it would suggest presence of a facilitation effect. Interference scores were calculated so that a single index of processing bias could be used to compare the experimental conditions (see MacLeod & Rutherford, 1992; Mogg et al., 1993).

A 3 x 2 x 2 x 2 x 2 repeated measures MANOVA was performed on the color naming latency interference scores for trait adjectives. Group (Sociotropic, Independent, and Control) and Mood (neutral and sad) were the between-subjects factors, and Specificity (sociotropic or autonomous words), Valence (positive or negative), and Exposure (brief or long presentation) were the within-subjects factors. Table 23 presents group means and standard deviations for color naming latency interference scores in each experimental condition.

A significant Group x Mood x Exposure interaction, $F (2, 79) = 3.09$, $p < .05$, was found as well as a significant main effect of Exposure, $F (1, 79) = 9.35$, $p < .01$. A general interference effect occurred ($M = 87$) in the long exposure word presentation condition, whereas a facilitation effect occurred ($M = - 103$) with the brief exposure presentation. No other main effects or interactions were significant.

Table 23. Mean Interference Color Naming Latencies in Milliseconds Separately by Group, Mood, Exposure, and Valence (Standard Deviations in Parentheses)

	GROUP					
	Sociotropic		Independent		Controls	
	MOOD INDUCTION					
Traits	Neutral	Sad	Neutral	Sad	Neutral	Sad
Brief Exposure						
Sociotropic						
positive	-5 (26)	-20 (31)	6 (29)	-1 (36)	-13 (26)	3 (41)
negative	-2 (39)	-18 (25)	-14 (39)	1 (26)	-5 (34)	0 (28)
Autonomous						
positive	-3 (21)	-4 (27)	-15 (25)	0 (31)	-5 (23)	-2 (25)
negative	2 (21)	-14 (31)	-18 (28)	14 (39)	4 (32)	6 (36)
Long Exposure						
Sociotropic						
positive	-2 (29)	8 (25)	6 (33)	-1 (31)	18 (28)	-3 (30)
negative	5 (34)	13 (33)	9 (50)	7 (33)	12 (33)	-13 (37)
Autonomous						
positive	6 (26)	-8 (30)	-9 (25)	1 (31)	9 (30)	-17 (42)
negative	22 (60)	1 (30)	-4 (46)	18 (26)	-1 (27)	10 (29)

Note. N = 85.

Since different patterns of color naming latencies were produced under the brief and longer exposure presentations, post-hoc analyses was conducted within the brief and long presentation conditions. In the brief exposure condition, a significant Group x Mood

interaction emerged, F (2, 79) = 4.00, $p < .02$. No other main effects or interactions were significant. Further examination of the interaction found that sad Sociotropic individuals had quicker color naming latencies than sad Independent individuals, F (1, 79) = 6.81, $p < .01$ and sad Control participants, F (1, 79) = 6.93, $p < .01$. The difference between sad sociotropic individuals (M = -56) and neutral Sociotropic individuals (M = -8) approached significance, F (1, 79)=3.64, $p < .06$. Post-hoc analysis did not reveal any Group x Mood interaction in the long Exposure condition. In summary, these results also failed to support Hypotheses 1(a) and 1(b); there was no evidence of selective attentional bias for schema congruent information for either the Sociotropic or Independent groups as indicated by the failure of Specificity or Valence to enter into any of the significant main effects or interaction terms.

Hypothesis 3. Greater interference effects on the Modified Stroop will be correlated with more negative appraisals and an increased number of personality congruent life events.

Separate hierarchical regression analyses were performed on each of the eight interference scores to determine if the interference scores could be explained by depression level or number of sociotropic or autonomous life events. In each case, depression (BDI Total scores) was entered on the Step 1, the number of sociotropic or autonomous life events was entered on Step 2, and their interaction was entered on Step 3. In all analyses, the overall R^2 was nonsignificant and the individual predictor sets failed to contribute significantly to the variance in interference scores.

6.3.2.1 Correlations between interference scores and number of life events, life event appraisals, depression, and anxiety. Pearson correlations were calculated between

interference scores and depression, anxiety, the number of negative sociotropic life events, number of negative autonomous life events, appraisal ratings for sociotropic and autonomous life events. Very few significant correlations were found between these measures for the entire sample and for each of the experimental groups separately. Proportions ranged from 1 to 15 significant correlations out of 208 which is less than that expected by chance. Therefore, no relationship between performance on the color naming Stroop task and number of negative life events and how these events are appraised was found.

6.3.3 Sample Reanalysis

It was possible that the minor group differences obtained on the Stroop task were due to attrition (i.e., some participants may no longer be Sociotropic or Independent). To investigate this possibility, Post-hoc analyses were performed on participants who remained in their Sociotropic, Independent, and Control personality classification during the initial screening and at the time of Study 2 (i.e., approximately six months later). When this strict criteria for group membership was used, 62 of the 85 participants were retained. The number of participants remaining in the Sociotropic, Independent and Control groups were 18, 18, and 26, respectively.

A 2 x 3 x 2 x 2 x 2 repeated measures MANOVA was performed on the median color naming interference scores for this subsample. Group (Sociotropic, Independent, and Control) and Mood (neutral and sad) served as the between-subjects factors, and Specificity (sociotropic or autonomous words), Valence (positive or negative), and Exposure (brief or long presentation) were the within-subject factors. Table 24 presents the group mean and

Table 24. Mean Interference Color Naming Latencies in Milliseconds for Reanalysed Sample (Standard Deviations in Parentheses)

	Group					
	n = 18 Sociotropic		n = 18 Independent		n = 26 Controls	
Traits	Neutral	Sad	Neutral	Sad	Neutral	Sad
	Brief Exposure					
Sociotropic						
positive	-18 (13)	-14 (28)	5 (25)	3 (34)	-13 (27)	-2 (41)
negative	-10 (42)	-14 (23)	-16 (32)	4 (26)	-7 (37)	-4 (30)
Autonomous						
positive	7 (22)	-5 (28)	-12 (28)	-2 (32)	-3 (24)	5 (22)
negative	11 (26)	-16 (32)	-9 (23)	16 (40)	5 (35)	5 (35)
	Long Exposure					
Sociotropic						
positive	-7 (29)	9 (26)	9 (37)	1 (32)	16 (30)	-2 (28)
negative	-3 (18)	8 (34)	11 (49)	8 (35)	1 (26)	-10 (40)
Autonomous						
positive	3 (31)	-15 (27)	-9 (29)	-2 (30)	11 (29)	-10 (36)
negative	18 (38)	-5 (25)	-11 (50)	18 (27)	-4 (27)	11 (28)

Note. $N = 62$.

standard deviations for the interference color naming latencies.

A significant Group x Mood x Specificity interaction was found, $F (2, 56) = 3.23$, $p < .05$ (see Figure 6). No other interactions or main effects were significant. Post-hoc examination of this interaction revealed a significant interaction of Mood by Specificity for

the Sociotropic group, F (1, 56) = 4.26, p < .04. As can be seen in Figure 6, sad

Sociotropic individuals took longer to color name sociotropic words (i.e., less facilitation)

than autonomous words. Neutral Sociotropic individuals, on the other hand, evidenced the

opposite pattern with an interference effect for noncongruent autonomous words and a

facilitation effect (faster) for sociotropic words.

Post-hoc examination of the Group x Mood interaction within Specificity also

revealed that the Group x Mood interaction was significant for the autonomous words but

not for the sociotropic words, F (2, 56) = 3.69, p< .03. Simple main effects within group,

mood, and specificity revealed that for autonomous words, sad Independent individuals had

longer color naming latencies than sad Sociotropic individuals, F (1,56) = 4.97, p < .03.

They also had longer color naming latencies than neutral Independent individuals, an effect

which approached significance, F (1, 56) = 3.66, p< .06. The neutral Sociotropic

individuals also had longer color naming latencies for noncongruent autonomous words

than the sad Sociotropic individuals, another difference which approached significance, F (1,

56) = 3.73, p < .06.

Overall, participants in the neutral mood condition had shorter color naming

latencies for personality congruent stimuli whereas participants in the sad mood condition

had longer color naming latencies of personality congruent trait adjectives. This finding

supports Hypothesis 2(a) and Hypothesis 2(b). The Sociotropic individuals in the sad mood

condition had a tendency to show longer color naming latencies to sociotropic words than

Sociotropic individuals in the neutral mood condition as evidenced by the significant Mood

x Specificity interaction for the Sociotropic group. Sad Independent individuals had longer
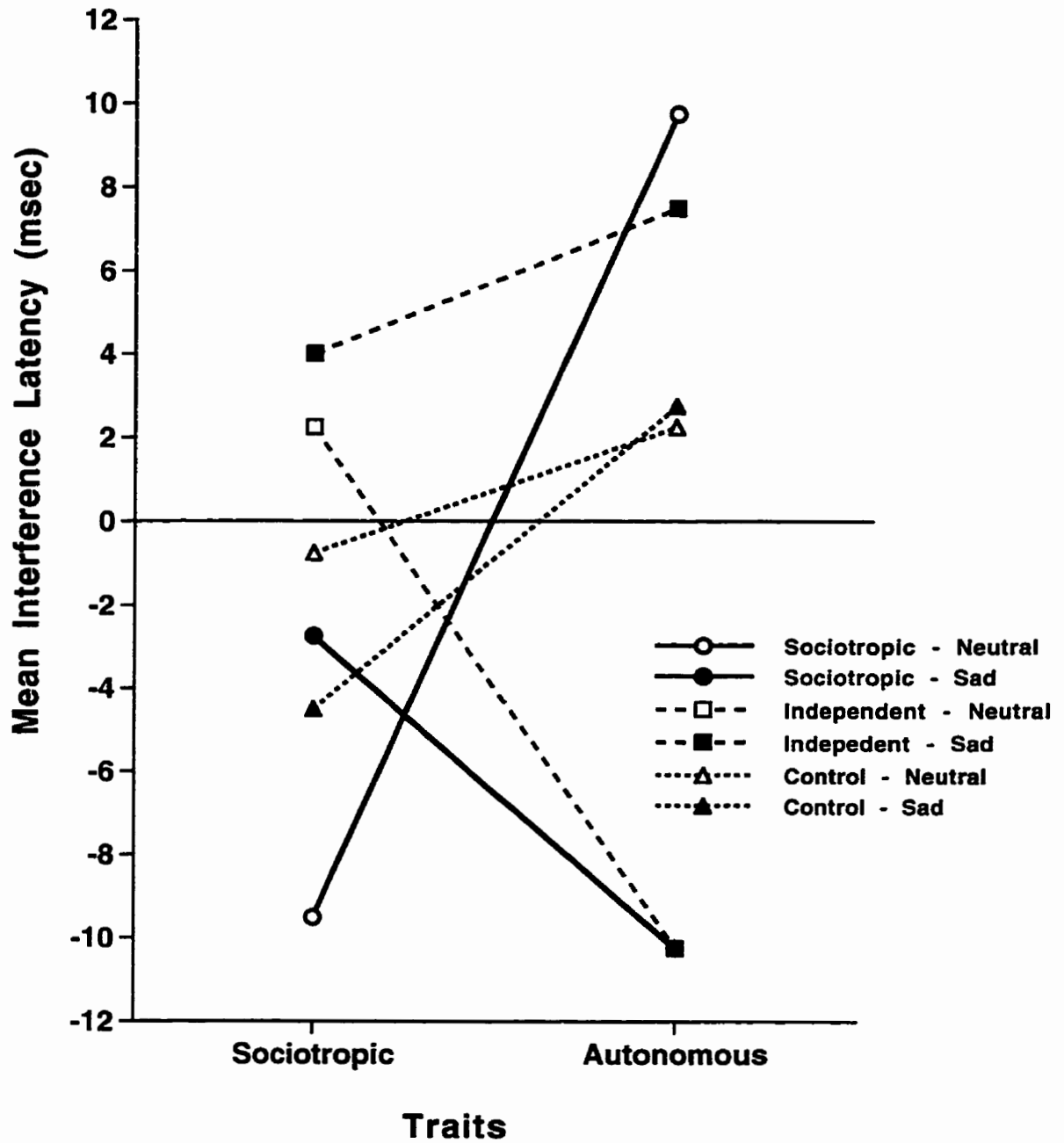
Figure 6. A graph of the interference color naming latencies for the Group x Mood x

Specificity interaction of the sample reanalysis ($\underline{n}$ = 62).

color naming latencies than neutral Independent individuals for autonomous trait adjectives. Therefore, this study found that mood was a necessary prime to elicit biased attentional processing.

6.3.3.1 Correlations between interference scores and the number of life events, life event appraisals, depression, and anxiety for the Reduced Sample.

Hypothesis 3. Greater interference effects on the Modified Stroop will be correlated with more negative appraisals and an increased number of personality congruent life events.

Pearson correlation coefficients were calculated between interference scores and depression, anxiety, the number of negative sociotropic life events, number of negative autonomous life events, and appraisal ratings for sociotropic and autonomous life events. Few significant correlations were found between the measures for the reanalysed sample and each of the experimental groups separately (the number of significant correlations ranged from 0 to 19 out of 208 which is less than what would be expected by chance). There was no evidence of a relationship between performance on the Stroop task and life events and life event appraisals on this reanalyzed sample.

CHAPTER VII

STUDY 2 : DISCUSSION

This study was designed to address several theoretical issues concerning Beck's proposed personality constructs of sociotropy and autonomy. First, sociotropic and autonomous content stimuli were used to examine selective attentional bias in these two personality types. Second, the importance of priming manipulations to activate underlying cognitive vulnerability structures for depression was evaluated. Are attentional information processing effects shown by Sociotropic and Independent individuals only present when individuals are in a sad mood or do they exert their effects independent of mood? (i.e., does mood play a passive or active role in attentional processing?). Third, this study utilized the modified Stroop color naming task, an experimental procedure which can examine both automatic and strategic levels of information processing.

The validity of the backward masking procedure, as a method of blocking conscious awareness, was examined by analysing the pattern of lexical decisions made within the awareness check trials. Although all participants verbally reported being unable to perceive the stimuli presented under the masked exposure condition, they failed to evidence chance performance (i.e., 50% correct) on the awareness check trials. The mean percentage of accurate responses made on this lexical task was 67%. However, this performance was far below that expected if the words had been presented in conscious awareness (i.e., 100%). Cheesman and Merikle (1985) make a distinction between subjective and objective awareness that has been widely adopted by researchers in the area of cognitive information processing (Williams, Watts, MacLeod & Matthews, 1997). Subjective awareness refers to

the participants' belief that they cannot identify a stimulus, whereas objective awareness refers to the ability of the participant to perform at above chance level on a forced choice judgement task. Cheesman and Merikle (1985) have shown that stimuli presented at just above objective awareness threshold (i.e., forced choice judgements are better than chance) may still be below subjective threshold, in which participants remain convinced that they are guessing at random. They found that these participants fail to adopt helpful strategies that depend on conscious knowledge about the presented stimuli.

In the present study, participants believed they were guessing on the awareness check trials with no phenomenal awareness of the words (i.e., subjective unawareness). However, a certain amount of objective awareness was present as evidenced by higher than chance responding on the awareness check trials (67%). Because a complete lack of awareness or unconscious processing cannot be assumed in the masked condition, hypotheses regarding conscious versus unconscious processing cannot be addressed in this study. However, one can assume subjective unawareness or automatic, unintentional, or involuntary processing in this masked condition. The masked condition will be referred to as the "short exposure" condition and the unmasked condition will be referred to as the "long exposure" condition. Any differences between these conditions will be interpreted more broadly in terms of automatic versus strategic processing, rather than in the more restricted terms of nonconscious and conscious information processing.

Only when a strict criterion for group membership was used (i.e., participants who scored in the elevated range on the Revised Sociotropy-Autonomy Scale subscales in the

screening and in Study 2) did schema-specific attentional biases emerge. That is, analyses based on the entire sample (excluding participants who did not respond to the mood manipulation) failed to find evidence of selective atttentional bias for personality-congruent stimuli. There was no evidence of greater interference for personality-congruent stimuli until analyses were conducted only with participants who showed temporal stability in their personality assignment. In the Sociotropic group, neutral mood resulted in greater facilitation effects of color naming personality congruent stimuli whereas sad mood resulted in less color naming facilitation of personality congruent trait words. As predicted the sad Independent group had longer color naming latencies to autonomous words than the sad Sociotropic group, and to a lesser extent, the neutral Independent group. These findings provide support for hypotheses 2(a) and 2(b) which predicted that Sociotropic individuals in the sad mood condition would show significantly longer color naming latencies to sociotropic words than Sociotropic individuals in the neutral mood condition and Independent individuals in the sad mood condition would show significantly longer color naming latencies to autonomous words than the Independent individuals in the neutral mood condition.

Power and Brewin (1990), using the Emotional Priming Task, also found support for attentional information processing bias as evidenced by longer self-description rating latencies to emotionally-related words following a priming stimulus. Consistent with the present study, MacLeod and Rutherford's (1991) investigation of automatic and controlled information processing in anxiety, using the Modified Stroop Color Naming Task, found that the precise meaning of the stimulus was important at the conscious processing level.

These researchers found that for both high and low trait anxiety participants, elevations in state anxiety were associated with faster color naming latencies for exam threat-related information only. It is suggested that selective avoidance of stress information relevant to personal concerns may represent a strategy adopted by high state anxious participants which is mediated by conscious intent. In the present study, Sociotropic participants in a neutral mood had faster color-naming latencies for schema specific material whereas Sociotropic participants in a sad mood had longer color naming latencies for schema specific material. Perhaps dysphoric individuals are more attentive to personally relevant stimuli than are nondysphoric persons. Since the biased attentional processing was specific to the participants' domain of personal concern (i.e., congruent with their self-schema) future investigations of attentional bias must consider schema congruent material. This finding indicates that the schema content that characterizes the personality constructs of sociotropy and autonomy may need to be primed by a negative mood state, or other priming stimuli.

The present findings support Riskind and Rholes (1984) and Segal and Ingram (1994) assertion that maladaptive schemas must be primed in order to achieve schema activation and selective attentional processing. Personality congruent interference effects were found only in the sad mood condition. The selective information processing bias found in this study is consistent with the recall bias found in an earlier priming study in which subjects were exposed to either a failure or success experience prior to the recall task (Ingram et al., 1983). Priming of schema using mood induction in individuals who are theoretically at risk but not currently depressed has been found to elicit biased information processing of negative cognitive content in studies examining dysfunctional attitudes

(Miranda & Persons, 1988; Miranda et al., 1990); adjective recall (Dent & Teasdale, 1988;

Dyck, 1983; Teasdale & Dent, 1987); and tracking errors in the dichotic listening task

(Ingram et al., 1984). Other studies employing a Modified Stroop Color Naming Task but

using a prime word rather than mood to activate schemas also found that congruent prime-

target comparisons led to more interference as indicated by longer latencies than did

incongruent prime-target comparisons (Gotlib & Cane, 1987; Segal et al., 1988; Segal et al.,

1995).

Although the attentional bias generalized to both positive and negative material, this

may reflect the nonclinical nature of this university sample. It would be interesting to

determine whether clinically depressed individuals show a specific bias for negative

personality congruent information as has been suggested in the cognitive-clinical literature

(e.g., Segal et al., 1988). Mogg et al. (1993), however, failed to find more color-naming

interference to negative words in a clinically depressed group. This result may reflect the

use of word stimuli that may not have been personally relevant to individuals' self-schema.

As can be seen from the present study, very different effects may be obtained with schema

or personality congruent stimuli versus schema incongruent stimuli suggesting that

attentional processing may be specific to personally relevant content domains.

Sad Sociotropic individuals had higher depression scores than sad Independent or

Control participants. This finding may suggest that Sociotropic participants are more

responsive to mood priming effects, a feature that may be linked to a greater vulnerability to

depression. However, the Sociotropic group did not obtain higher ratings on the post-

induction VASs, so it may be that the higher depression scores simply reflect a closer

association between sociotropy and depression symptoms than between independence and

depression symptoms. It is well known, for example, that Sociotropy is correlated with

depression scores whereas Independence is not (e.g., Clark et al., 1995).

The present study also supports the finding that specific attentional biases may be

mediated by priming effects. More precisely, priming with sad mood results in increased

attention to both positive and negative information relevant to the domain of personal

concern. The degree to which words are semantically related to an individual's dominant

self-schema is important in giving rise to interference on the Stroop task. It appears that

personality-congruent interference in the sad condition was present in both brief and long

exposure conditions. Thus, personality congruent attentional bias in sad mood was evident

at both the automatic and strategic levels of information processing. If the backward

masking procedure had been successful at creating objective unawareness, it may be that

differences between exposure conditions would have emerged. Clearly, the present results

suggest that research on automatic information processing of personality-congruent stimuli

is warranted.

The present results cannot be explained by a competing hypothesis that interference

is caused by greater expertise or by increased frequency of use of certain words as

attentional processing biases were evident only when in the sad rather than the neutral mood

condition. This pattern suggests that conscious strategic attentional processing may be a

function of the underlying dominant self-schema. Future investigations need to include

sociotropic and autonomous constructs in their methodological designs to advance

understanding of the selective bias which is hypothesized to play a role in the development

and maintenance of emotional disorders such as depression.

CHAPTER VIII

GENERAL DISCUSSION

The present studies offer some empirical support for Beck's postulated cognitive

vulnerability constructs of sociotropy and autonomy (or independence) in terms of their

nature, specificity, and stability in a nonclinical female university student population. Partial

support also was found for both the activation and content of the cognitive vulnerabilities of

sociotropy and autonomy using memory and attention information processing experimental

procedures.

7.1 Trait Word Ratings

The content of sociotropic and independent (autonomous) schema structures was

examined through judgements of self-relevance of trait words. Self-relevance ratings

measure conscious elaborative judgements about the perceived actual self and so constitute

a type of self-referent thinking that represents the content or orientation of core self-

schemas. Desirability ratings, on the other hand, are conscious judgements of what is

believed to be socially desirable personality traits and may more closely reflect ideal- or

socially-valued attributes rather than attributes perceived relevant for the self (i.e., response

bias).

Several studies have examined positive and negative self-relevant trait ratings in

dysphoric and clinically depresssed individuals. The findings from the present study are

consistent with the literature for dysphoric and clinical populations. As depression level

increased, more negative relative to positive trait adjectives were endorsed as self-

descriptive (Bradley & Matthews, 1983; Clifford & Hemsley, 1987; Derry & Kuiper, 1981;

Dobson & Shaw, 1987; Greenberg & Alloy, 1989; Greenberg & Beck, 1989; Ross et al.,
1986; Roth & Rehm, 1980).

The unique contribution of the present study was to examine self-relevance ratings
of trait words specific to sociotropy and independence. Studies examining schema content
for these two personality constructs are now emerging. In addition, Blackburn's trait words
were used. These adjectives were based on Beck's theory and empirically validated through
participants' ratings in the present study. Judgements of self-relevance or self-
descriptiveness suggest that a specific rather than general bias in evaluations was present.
Individuals who were sociotropic were expected to have a bias in their judgements of self-
relevance for socially related material. They tended to rate positive sociotropic traits as
more relevant than negative sociotropic traits or positive and negative autonomous trait
words. They also judged negative sociotropic traits as more self-descriptive than did the
Independent or Control participants. For Independent individuals there was no significant
difference in self-descriptive ratings of trait words but Independent individuals rated positive
autonomous trait adjectives as self-descriptive significantly more than the other groups.
Control participants evidenced a more general thematic orientation in their self-schemas.
These results offer validation of Beck's (1983) sociotropy construct, but only partial
support for his autonomy construct. Beck hypothesized that two personality dimensions,
sociotropy and autonomy, are vulnerability factors in depression. These personality traits
are viewed as "superordinate schemas." The present study offers some support for the
existence of a sociotropy personality construct and suggests that the content of self-schemas
in Sociotropic individuals is specific to socially relevant material as Beck's theory would

predict. Limited support, however, was offered for Beck's view that autonomy or independence represents a heightened concern for mastery, achievement, and independence from others. It is unclear whether this reflects an inadequate test of this construct or whether it suggests a problem for Beck's proposed autonomy construct.

Judgements of desirability were used to assess a possible response bias in the form of social desirability ratings for personality trait words. In this study, Sociotropic individuals rated both positive and negative sociotropic words as well as positive autonomous traits more desirable than the other groups. Independent and Control participants failed to show specific biases in their judgements of desirability. The higher social desirability ratings of the Sociotropic group do not mean that the specific endorsement of socially-oriented trait adjectives as self-descriptive is due to a response bias. The response bias of the Sociotropic group was nonspecific and related to all types of trait adjectives except the negative autonomous trait words. Rather the higher social desirability ratings probably reflect a greater concern with social approval and acceptance that characterizes a highly sociotropic personality orientation.

An important limitation of using trait adjective ratings is that consciously mediated judgements may be influenced by extraneous factors such as demand characteristics, and possibility response style bias (Segal, 1988; Power, 1990). Cognitive experimental paradigms are less influenced by these factors and so we now turn our attention to one such paradigm, self-referent incidental recall.

7.2 Self-Referent Memory Recall

It is generally agreed that the self-referent encoding task measures self-schema

content rather than response bias (e.g., Martin & Clark, 1986a; 1986b). Beck's information processing model hypothesizes that depressed people should have more negative self-referent information accessible and should therefore encode negative information more deeply as is reflected by superior recall of depressive trait stimulus information. In addition, Sociotropic individuals should encode sociotropic information more deeply and therefore evidence better recall of this information on an incidental recall task. Conversely, Independent individuals should demonstrate a selective encoding and recall bias for autonomous trait adjectives and Control participants should evidence no recall specificity bias.

To date, research using the self-referent encoding task has examined positive and negative valence and state versus trait words in dysphoric and clinically depressed individuals. Results from the present study are consistent with previous studies which have reported that a positive bias characterizes nondepressed persons (Gilboa et al., 1997; Ingram et al., 1994; Matt et al., 1992). Use of a clinically depressed sample may have shown a greater tendency to recall negative trait words.

To the author's knowledge, no published research has examined the schema content of Sociotropic, Independent, and Control individuals using the self-referent encoding task. Incidental recall offered support for a self-referent encoding bias for Sociotropic individuals but not for Independent individuals or Control individuals. Sociotropic individuals recalled more positive information relevant to their domain of personal concern than other types of trait adjectives. That is, they recalled more socially positive trait words than the other personality groups and less socially negative material than the Control group. Therefore,

the self-referent encoding bias in Sociotropic individuals is specific to their domain of personal concern whereas in Independent and Control individuals it is not. Therefore, this study provides support for Beck's hypothesized schema content for sociotropy but not autonomy (independence). The self-referent encoding task also provides construct validity for the Revised Sociotropy-Autonomy Scale Sociotropy scale but not the Independence scale. The current findings suggest that incidental recall bias may be a viable methodological instrument to assess sociotropic and autonomous personalities. However criticisms have been raised with the self-referent encoding task. The experimental procedure cannot identify whether the cognitive bias is due to selective encoding, selective retrieval, or some combination of the two. Segal (1988) has argued that the self-referent encoding task may reflect differential response strategies rather than unbiased accessibility to particular types of self-schemas. For example, the Sociotropic group may simply be more willing to report interpersonal trait words rather than have heightened accessibility to these stimuli. One also can question the ecological validity of the self-referent encoding task. Can we assume that participants' ratings and recall of a predetermined set of single personality trait words adequately taps into individuals' core understanding of themselves? In this sense, questionnaire measures of personality, life events, and coping responses may be more useful in assessing complex meaning dimensions of the self and one's personal world.

7.3 Schemas, Life Events, Life Event Appraisals, and Coping

The cognitive diathesis model proposes that sociotropic individuals are more likely to become depressed if events are perceived as a loss of social acceptance or personal attractiveness. Conversely, autonomous individuals are more likely to develop depression if

events are perceived to involve loss or limitation of independence, control, or

accomplishment (Beck, 1987; Clark & Beck, 1989). Support for the cognitive-diathesis

hypothesis has been found in a number of studies that have demonstrated that congruency

between sociotropy and social life events is associated with higher levels of depression (eg.,

Clark et al., 1992; see Nietzel & Harris, 1990 for review of this literature). However,

inconsistent results have been obtained between autonomy and negative autonomous events

in the prediction of depression (Robins, 1990-Study 2; Smith et al., 1988).

The results of the present study failed to support the diathesis-stress hypothesis even

when coping and life event appraisals were also considered. An important limitation of the

present study was the use of a cross-sectional design. Cross-sectional designs have been

criticized because they cannot test the causal status of the personality-event interaction in

the onset of depression, nor can they determine whether the relations between measures may

be due to response bias (Robins, 1990). In addition, use of a non-depressed student sample

may not have permitted examinations of relationships seen if subjects had been more

depressed or had experienced more negative life events.

Although no support for the cognitive-diathesis hypothesis was found in the present

study, several important relationships between Beck's cognitive personality constructs of

sociotropy and independence and life events, life event appraisals, and coping style were

found. Independent individuals were more likely to use a task-oriented coping style. This

coping strategy was negatively related to depression scores on the Beck Depression

Inventory suggesting that this type of coping may buffer one against depression. Emotion-

focused coping and number of negative autonomous life events offered unique prediction of

depression level in university women. Being highly sociotropic versus highly independent was also predictive of depression. Emotion-focused coping has been found to be correlated with depression in other studies (eg., Endler & Parker, 1988). The finding that a higher frequency of negative autonomous events was uniquely associated with self-reported depression as well as event appraisals of personal responsibility suggests that for university women achievement-related issues may have had greater impact on their mood state than interpersonal issues. Further examination of relationships between experimental measures (e.g., self-referent encoding task and the modified Stroop task) and self-report measure (e.g., Life Event Inventory-Student Version, Coping Inventory for Stressful Situations) may increase our understanding of the cognitive basis of sociotropy and autonomy.

7.4 Attentional Bias in Sociotropy and Independence

The modified Stroop task can assess selective attention to emotionally congruent information at both the automatic and strategic levels of information processing. However, an important limitation of the present study was the failure to get a clear outcome for conscious versus nonconscious processing; that is, whether the word meaning is necessary before attention shifts are initiated (i.e., conscious processing) or whether such attentional shifts occur through a nonconscious "preattentive" process. Although the modified Stroop task was programmed to present stimuli for 20 ms on the masked trials (as recommended by MacLeod & Rutherford, 1992), the awareness check trials revealed that objective unawareness was not achieved. Based on advice from MacLeod (personal communication, 1997), the computer programmer re-tested the masked exposure time via attachment of a light diode and an oscilloscope. This test revealed that although the computer was

programmed to deliver the stimuli for 20 ms, variables such as code execution time resulted in the actual exposure time being 50 ms. Therefore, the stimulus exposure duration on the masked trials was actually much longer than intended, accounting for the better than chance performance on the awareness check trials. The 50ms exposure time used in this study is consistent with that used in Matthews, Ridgeway, and Williamson (1996) who examined attentional processing in depression using the visual dot probe task. This study also revealed above chance performance on an awareness check task (i.e., 58%) and so they also obtained subjective but not objective unawareness during their brief exposure condition. The 50 ms presentations were brief enough to ensure subjective unawareness. It can be assumed that the 50 ms condition assesses unintended, involuntary processing, which are prime characteristics of automatic information processing (Beck & Clark, 1997; Hartlage, Alloy, Vazquez, & Dykman, 1993; McNally, 1995). Thus, the brief exposure assessed automatic but not nonconscious attentional processing.

The present study failed to find an attentional bias in dysphoric students for negative content words. Although color naming in the Stroop task has been found to be slower for depressed content words for depressed individuals in some studies (e.g., Gotlib & Cane, 1987; Klieger & Cordner, 1990), other studies have failed to find attentional bias in dysphoric students (e.g., Hill & Knowles, 1991). In fact, such effects may not occur under all conditions, requiring priming by self-referent material related to the color word (e.g., Gotlib & Cane, 1987; Segal et al., 1995).

Study 2 provides evidence for automatic and controlled attentional biases in the processing of schema congruent information. However, these effects were present only

when strict selection criteria were utilized (i.e., when participants in Study 2 obtained the same personality classification in Study 2 as in the initial screening) and when participants were primed with a sad mood induction. Under these circumstances participants demonstrated an attentional processing bias for information relevant to their domain of personal concern as reflected in longer color naming latencies on the Modified Stroop Color Naming Task. Sad sociotropic individuals showed less facilitation to sociotropic words and sad independent individuals to autonomous words. This finding stresses the importance of using a priming manipulation to access schemas and may explain discrepancies in the literature (Segal & Ingram, 1994). Since this attentional bias is selective, it suggests that the bias is simply not the result of mood state but rather reflects a more enduring vulnerability factor. These results also offer important validation for the content and structure of Beck's proposed cognitive vulnerabilities as reflected in the specific way individuals attend to personally relevant information. From the present findings, it seems clear that Beck's proposed cognitive personality vulnerabilities may be important in understanding the cognitive processes that may predispose individuals to negative emotional states.

Mogg et al.'s (1995) and Matthews et al.'s (1996) studies showed clear vigilance effects in depressed patients at the long exposure duration. In the present study, attention did not vary by participants' level of stimulus exposure, but it did vary by schema specificity. Therefore, the self-schema content of participants can affect attention to schema-congruent information processing. The current findings support Beck's hypothesis (Beck, 1987; Greenberg & Beck, 1989) that the schemas of sociotropy and autonomy may guide the screening and encoding of stimuli. Failure to find meaningful differences in attentional

processing during the brief and long exposure intervals implies that both automatic and strategic processes are involved in the selective attention to personality-congruent information in highly Sociotropic and Independent individuals. However, studies that successfully present stimuli below threshold of awareness are needed to tease apart the relative contribution of nonconscious and conscious information processing.

Theorists have explained selective attention in the anxiety literature by contending that stimuli that are selectively attended to are more threatening to one's self-schema. However, Matthews et al. (1996) argues that most words depressed individuals find socially threatening also have a negative personal connotation. If these individuals ruminate a great deal about their own personal inadequacies, then they may selectively attend to words that match their ruminations rather than to words that are perceived as socially threatening. Therefore, negative aspects of oneself guide the attentional processing in depressed individuals (Matthews et al., 1996). This explanation is consistent with the present findings. In this female university sample, the participants' self-schema guided conscious attention to trait stimuli. Since the type of attentional bias found appears to be strategic rather than automatic, controlled ruminations rather than automatic perceptual vigilance may be more important in explaining information processing of trait stimuli. Perhaps later stages of information processing like ruminations and elaborating on the event and its interpretations may be more important indicators of cognitive biases in both nondepressed and depressed individuals.

In light of the present findings, several questions relevant to the causal or contributory aspect of Beck's cognitive model of depression will now be addressed. First,

how specific or general is the self-referent processing bias in individuals who possess the cognitive personality construct of sociotropy or autonomy? Results from the present research suggest that a specific rather than general bias in evaluations of self-relevance may be present. Sociotropic individuals have a self-referent bias for socially-related material. More limited support was also offered for a specific self-referent bias in independent or autonomous individuals. Incidental recall offered support for a self-referent encoding bias in Sociotropic individuals that is specific to their domain of personal concern whereas no such result was found for Independent and Control individuals.

Second, is the processing bias a personality vulnerability factor or a symptom factor of depression? When strict selection criteria were used in Study 2, the sad mood condition resulted in less facilitation or interference effects on the modified Stroop Color Naming Task for information relevant to participants' domain of personal concern. Since this attentional processing bias needed to be primed by sad mood and was specific to schema-content information, an enduring personality vulnerability factor that is latent until activated is suggested rather than a symptom factor of depression.

Finally, at what level of the information processing system is the bias apparent? The present studies suggest that attentional bias to personality congruent information by highly sociotropic and highly independent or autonomous individuals is present at both the automatic and controlled processing levels. No comments could be made regarding biasing effects at the nonconscious processing level since this processing level could not be examined.

7.5 Strengths and Limitations

7.5.1 Strengths

The above studies offer several important methodological improvements over other investigations to date. First, the present studies used the less biased experimental cognitive information processing paradigms rather than self-report questionnaires to investigate cognitive personality vulnerability. Although experimental studies may lack ecological validity, they can be designed to provide less ambiguous interpretations than can be made in real-life situations. For example, the use of mood induction procedures allowed for a clearer understanding of the role of trait versus mood state variables in attentional information processsing on the modified Stroop task.

Second, these studies make important contributions to our understanding of sociotropic and independent cognitive personality vulnerabilities in Beck's cognitive model because empirically validated and schema content specific stimuli were used to more accurately and precisely test Beck's hypotheses. Finally, these studies attempted to examine the roles of coping and life event appraisals with respect to Beck's cognitive diathesis-stress hypothesis and the relationship between these variables and the cognitive experimental data from the SRET and the modified Stroop task. It appears that schemas underlying the specific personality constructs of sociotropy and autonomy or independence may influence the extent to which certain types of material that are congruent with personality are processed. This is one of the first studies, then, to provide evidence of a cognitive bias to the personality vulnerabilities of sociotropy and autonomy.

7.5.2 Limitations

The present research also has several important limitations. First, results are only applicable to nonclinical female university students and therefore cannot be generalized to males or to clinical populations. The failure to find more positive results in these studies with respect to negative content and levels of depression may be due to the nonclinical nature of this student sample. Both self-referent recall and attentional information processing studies suggest that depression severity affects type of information processing. For example, SRET studies suggest the predominance of negative self-schemas may only be found among those with more severe levels of depression (Clark & Beck, 1989; Derry & Kuiper, 1982; Greenberg & Alloy, 1989) whereas dysphoric individuals have been found to recall positive and negative stimuli equally thereby demonstrating an evenhandedness in their memory recall (Matt et al., 1992). On the other hand, nondepressed persons are characterized by a recall bias for positively valenced material.

Second, the large overlap of participants in the two studies may also limit the generalizability of the findings. Ideally, two separate samples should have been used if a larger screening pool had been available. This would have permitted a more stringent test of the validity of empirically determined personality-congruent trait words because different samples would then be responding to the stimuli in the self-referent encoding task and Stoop color naming tasks. Unfortunately, the participants tested on the Stroop task in Study 2 were largely comprised of the same participants that rated these words as self-descriptive in Study 1.

Third, larger sample sizes may have increased statistical power thereby providing a

fairer test of the experimental hypotheses. However, the ability to generate larger sample

sizes was constrained by the stringent criteria needed for the study. Fourth, the present

studies utilized a cross-sectional design with respect to the diathesis-stress question. A

prospective research design is necessary to assess the temporal causal aspects of the

diathesis-stress hypothesis. Finally, selection of extreme groups of subjects allowed for

greater statistical power but it is possible that continuous sociotropy scores and

independence scores would have produced different results. It has been suggested that

these personality constructs are likely to be continuously distributed, especially in a non-

depressed population, and therefore it has been argued that personality constructs like

sociotropy and autonomy should be analysed as continuous rather than discontinuous

variables (Coyne & Whiffen, 1995; Haaga et al., 1991).

7.6 Directions For Future Research

The present studies were based on undergraduate female subjects and this limits the

generalizability of the findings to this specific population. However, schema content in

personality is probably best studied in non-depressed individuals because the presence of

depression would affect information processing thereby making it difficult to tease apart

cause and effect relationships. Although it is important to understand the structure and

content of non-depressed individuals' schemas as was attempted in these studies, it is also

essential that research focus on determining the extent to which selective information

processing biases are the result of personality or individual differences (i.e., trait-related

phenomenon) and to what extent cognitive processing is a concommitant of clinical

disorders like depression (i.e., a state-related phenomena). This issue, of course, reflects

one of the most crucial questions for the cognitive model; is selective information processing a marker of vulnerability to depression states, or is it simply a symptom feature of clinical states?

In addition, an important direction for future research would be to see if the schema specificity found in these studies is also present in males and in a broader sample of individuals with diverse levels of psychopathology. Would the specificity regarding independence be present in a male sample? Are there important processing differences between nonclinical and clinically depressed individuals? Are the schema specific effects found in these studies even more pronounced in a clinically depressed sample? Does the cognitive presentation of clinically depressed individuals reflect negative content more strongly than was evident in this nonclinical sample?

These studies offer partial validation of Beck's concept of the sociotropic and autonomous personality vulnerabilities. A promising line for future research would be inclusion of these distinct personality vulnerabilities in future research designs that can effectively assess both automatic and strategic information processing. Also, it would be interesting to investigate other conscious information processes such as rumination and elaboration. Although the present studies did not examine diathesis-stress directly, they suggest that a greater understanding may be obtained by using Beck's sociotropy and autonomy constructs in a prospective research design using experimental information processing paradigms borrowed from the cognitive sciences.

Segal and Ingram (1994) suggested that consideration of priming is central to interpreting the information processing literature. Findings of attentional processing biases

in the sad priming mood condition offers support to the active role sad mood can play in schema activation and selective attentional processing. Perhaps sad mood serves to activate self-schemas which make one more attentive to schema specific content. Therefore, priming of schemas must be considered an essential manipulation to ensure activation of latent depressogenic schemas in nondepressed vulnerable samples. If activation of latent maladaptive schemas is not activated by a priming manipulation, then cognitive vulnerability cannot be investigated. The cognitive model asserts that maladaptive schemas will remain latent and so not affect information processing unless first activated by a priming stimulus like a matching life event or negative mood state.

These studies also support Ingram and Kendall's (1986) assertion that the information processing paradigm from cognitive experimental psychology is a promising way to investigate Beck's model. Future research can use these techniques to explore other questions about Beck's model that have only been examined via self-report questionnaires.

7.7 Clinical Implications and Directions

These studies provide validation for Beck's hypothesized cognitive-personality vulnerabilities and therefore, suggest that schema relevance may be important to consider in depression onset. Individuals may encode, recall, and consciously attend to selective information about the self that is congruent with one's dominant personality concerns. The present studies suggest that self-referent content is important in sociotropy but not in autonomy. How this sociotropic self-referent schema content is activated and then dominates the information processing system in depression is an important facet of the cognitive theory of depression. These studies indicate that sociotropic self-referent content

is present and may affect controlled strategic evaluative processing. The priming effects suggest a link to mood state, though the evidence for independence is less certain. Also, the Sociotropy-Autonomy Scale-Revised may be limited as a measure of sociotropic and autonomous schema-based personality though it is difficult to argue at this point that trait adjective self-ratings, for example, would provide a better means of personality assessment. Cognitive experimental methodologies, such as the SRET and the modified Stroop task, may provide an alternative approach to the assessment of the sociotropy and autonomy schema-based personalities. These experimental methodologies also have been used in clinical outcome studies and have shown that negative information processing bias returns to normal once the depression remits (e.g., Gotlib & Cane, 1987).

The present studies suggest that personality can shape how individuals process information about the self. According to the cognitive model, certain personality dimensions may predict vulnerability to depression, response to treatment, course and outcome. The present studies indicate that personality constructs do affect information processing as predicted by the cognitive model. Although these studies are not directly relevant to demonstrating cognitive vulnerability to depression, they do provide evidence for an important intermediary concept- that personality vulnerabilities affect information processing.

These findings also suggest that investigations into the different symptom presentation and treatment response of these personality vulnerabilities may lead to more specifically tailored cognitive therapy approaches dictated by a more precise understanding of the personal relevance of these personality types. For example, if being highly

sociotropic is linked to a biased processing of interpersonal stimuli, then clinicians should directly deal with this propensity in their cognitive therapy sessions. This would mean educating clients that they are selectively overvaluing the interpersonal in their perception and interpretation of relationship issues. Corrective steps could then be taken by the clinician to readdress this interpersonal information processing bias.

In addition, the interaction of life events and coping with these personality types also have clinical implications. For example, if task-oriented coping acts as a buffer to depression, does this strategy break down in independent individuals who develop depression? Should we teach this coping strategy to all depressed individuals? Implications for these clinical issues may be offered by further investigations into the information processing of sociotropic and autonomous vulnerability schemas. At the very least, the findings from this thesis indicate the that personality dimensions of sociotropy, and to a lesser extent, independence, have a basis in cognitive representation that can influence the type of information that is attended to and recalled. This finding may have important implications for our understanding and treatment of clinical disorders like depression which are greatly influenced by our personality configuration.

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Appendix A.   Experimental Design for Study 2 (n = 85).

Between-Subjects Variables:

		Group		
		Sociotropic	Independents	Controls
Mood Induction	Neutral	n = 16	n = 9	n = 16
	Sad	n = 15	n = 12	n = 17

Within-Subject Variables: All subjects received all levels of Exposure, Valence, and Traits.

Exposure Condition	Valence	Trait Adjectives	
		Sociotropic Content	Autonomous Content
Brief			
	Positive		
	Negative		
	Neutral		
Long			
	Positive		
	Negative		
	Neutral		

Appendix B. Consent Form For Study 1.

Title of Study: The Nature of Emotional Information Processing in Sociotropic and Independent Individuals - Study 1

Principal Researcher: Rama Gupta Rogers, UNB Psychology Department

You will be given a list of adjectives and asked to rate how much they describe you and how desirable they are to you. You will then be asked to complete a number of self-report instruments that will ask you questions dealing with your personality, your mood, your coping style and recent life experiences. There are no right or wrong answers. These questions are asking for your own personal opinions of who you are and how you currently feel. The whole study will take approximately one hour to complete.

You will receive one participation point for taking part in this study. As previously explained to you, your participation is completely voluntary. You are free to leave at any time without losing your participation point. Also, you may choose not to answer any questions if you so desire. Your identity will be kept confidential, and your responses will only be used for the purposes of this research project.

Most of the questions in this study ask for personal opinions about yourself. It is possible that while completing the questionnaires, you might gain a greater awareness of yourself or issues and emotions about yourself might be raised that you have not yet completely explored. If you are distressed by any questions or statements contained in the measures used in this study, I will be available to talk to you or you can contact my supervisor, Dr. David Clark (Keirstead Hall, Room 108).

If you are willing to participate in this study, please sign your name following this consent statement.

I hereby acknowledge that after reading the above information, I am willing to participate in this study. I understand that I am free to withdraw from the study at any time and, if I choose to do so, I realize that I will still receive one participation point. I also realize that my responses will remain confidential and used solely for the purposes of this research.

----------------------------------   --------------------------------
Signature of Student   Date

Appendix C. List of Trait Adjectives (Blackburn, 1993).

	Positive		Negative		Neutral
1.	Affable	S	Abandon	S	Address
2.	Affection	S	Alienated	S	Appliance
3.	Alert	A	Alone	S	Ankle
4.	Beauty	S	Betray	S	Branch
5.	Brainy	A	Beaten	A	Border
6.	Charm	S	Caged	A	Cable
7.	Cherish	S	Cowardly	A	Civilian
8.	Devoted	S	Demoted	A	Declare
9.	Dominant	A	Deserted	S	Describe
10.	Energetic	A	Excluded	S	Encounter
11.	Fond	S	Fool	A	Farm
12.	Freedom	A	Failure	A	Federal
13.	Friend	S	Fickle	S	Filter
14.	Important	A	Isolation	S	Immediate
15.	Intelligent	A	Incompetent	A	Incantation
16.	Interesting	A	Inefficient	A	Introducing
17.	Intimately	S	Inadequate	A	Interwoven
18.	Leader	A	Lonely	S	Liquid
19.	Loyally	S	Limited	A	Leafage
20.	Smile	S	Spurn	S	Salad
21.	Sociable	S	Stagnate	A	Spectrum
22.	Strong	A	Stupid	A	Scribe
23.	Unbeaten	A	Unwanted	S	Umbrella
24.	Unfailing	A	Unlovable	S	Upholster

12 A, 12 S   12 A, 12 S

Appendix D. Self-Relevance Questionnaire

INSTRUCTIONS: Please indicate how much each of the words below describes you by using the scale to the right of the words. Circle the one answer that best represents how much each word describes you. Respond to all the words in the order they are presented and raise your hand as soon as you have completed this task.

		Not at all	A Little	Somewhat	A Lot	Very Much
1	SCRIBE	1	2	3	4	5
2	BRAINY	1	2	3	4	5
3	BEATEN	1	2	3	4	5
4	AFFABLE	1	2	3	4	5
5	DEMOTED	1	2	3	4	5
6	CABLE	1	2	3	4	5
7	UNLOVABLE	1	2	3	4	5
8	CHERISH	1	2	3	4	5
9	BRANCH	1	2	3	4	5
10	ALERT	1	2	3	4	5
11	APPLIANCE	1	2	3	4	5
12	ENERGETIC	1	2	3	4	5
13	DOMINANT	1	2	3	4	5
14	INTERWOVEN	1	2	3	4	5
15	BETRAY	1	2	3	4	5
16	FAILURE	1	2	3	4	5
17	LONELY	1	2	3	4	5
18	UNFAILING	1	2	3	4	5
19	SOCIABLE	1	2	3	4	5

		Not at all	A Little	Somewhat	A Lot	Very Much
20	FOND	1	2	3	4	5
21	ALONE	1	2	3	4	5
22	STRONG	1	2	3	4	5
23	LIQUID	1	2	3	4	5
24	EXCLUDED	1	2	3	4	5
25	INADEQUATE	1	2	3	4	5
26	INTRODUCING	1	2	3	4	5
27	DECLARE	1	2	3	4	5
28	IMMEDIATE	1	2	3	4	5
29	SALAD	1	2	3	4	5
30	LOYALLY	1	2	3	4	5
31	INCANTATION	1	2	3	4	5
32	BORDER	1	2	3	4	5
33	LEADER	1	2	3	4	5
34	SPECTRUM	1	2	3	4	5
35	LEAFAGE	1	2	3	4	5
36	CAGED	1	2	3	4	5
37	BEAUTY	1	2	3	4	5
38	ABANDON	1	2	3	4	5
39	DESCRIBE	1	2	3	4	5
40	SMILE	1	2	3	4	5
41	UPHOLSTER	1	2	3	4	5
42	DESERTED	1	2	3	4	5
43	ALIENATED	1	2	3	4	5
44	ENCOUNTER	1	2	3	4	5

		Not at all	A Little	Somewhat	A Lot	Very Much
45	FRIEND	1	2	3	4	5
46	FEDERAL	1	2	3	4	5
47	INEFFICIENT	1	2	3	4	5
48	FICKLE	1	2	3	4	5
49	IMPORTANT	1	2	3	4	5
50	CHARM	1	2	3	4	5
51	STAGNATE	1	2	3	4	5
52	INTIMATELY	1	2	3	4	5
53	FREEDOM	1	2	3	4	5
54	STUPID	1	2	3	4	5
55	INTERESTING	1	2	3	4	5
56	FILTER	1	2	3	4	5
57	UMBRELLA	1	2	3	4	5
58	INTELLIGENT	1	2	3	4	5
59	FOOL	1	2	3	4	5
60	COWARDLY	1	2	3	4	5
61	DEVOTED	1	2	3	4	5
62	LIMITED	1	2	3	4	5
63	CIVILIAN	1	2	3	4	5
64	AFFECTION	1	2	3	4	5
65	INCOMPETENT	1	2	3	4	5
66	UNBEATEN	1	2	3	4	5
67	FARM	1	2	3	4	5
68	SPURN	1	2	3	4	5
69	UNWANTED	1	2	3	4	5

		Not at all	A Little	Somewhat	A Lot	Very Much
70	ANKLE	1	2	3	4	5
71	ISOLATION	1	2	3	4	5
72	ADDRESS	1	2	3	4	5

Please raise your hand and the examiner will collect your questionnaire and hand you the next one.

Appendix E. Desirability Questionnaire.

INSTRUCTIONS: Please indicate how desirable each of the words below are to you by using the scale to the right of the items. Circle the one answer that best answers how desirable the word is to you.

		EXTREMELY UNDESIRABLE	VERY UNDESIRABLE	MODERATELY UNDESIRABLE	SLIGHTLY UNDESIRABLE	NOT UNDESIRABLE OR DESIRABLE	SLIGHTLY DESIRABLE	MODERATELY DESIRABLE	VERY DESIRABLE	EXTREMELY DESIRABLE
1	SCRIBE	-4	-3	-2	-1	0	1	2	3	4
2	BRAINY	-4	-3	-2	-1	0	1	2	3	4
3	BEATEN	-4	-3	-2	-1	0	1	2	3	4
4	AFFABLE	-4	-3	-2	-1	0	1	2	3	4
5	DEMOTED	-4	-3	-2	-1	0	1	2	3	4
6	CABLE	-4	-3	-2	-1	0	1	2	3	4
7	UNLOVABLE	-4	-3	-2	-1	0	1	2	3	4
8	CHERISH	-4	-3	-2	-1	0	1	2	3	4
9	BRANCH	-4	-3	-2	-1	0	1	2	3	4
10	ALERT	-4	-3	-2	-1	0	1	2	3	4
11	APPLIANCE	-4	-3	-2	-1	0	1	2	3	4
12	ENERGETIC	-4	-3	-2	-1	0	1	2	3	4
13	DOMINANT	-4	-3	-2	-1	0	1	2	3	4
14	INTERWOVEN	-4	-3	-2	-1	0	1	2	3	4
15	BETRAY	-4	-3	-2	-1	0	1	2	3	4
16	FAILURE	-4	-3	-2	-1	0	1	2	3	4
17	LONELY	-4	-3	-2	-1	0	1	2	3	4
18	UNFAILING	-4	-3	-2	-1	0	1	2	3	4
19	SOCIABLE	-4	-3	-2	-1	0	1	2	3	4
20	FOND	-4	-3	-2	-1	0	1	2	3	4

		EXTREMLY UNDESIRABLE	VERY UNDESIRABLE	MODERATELY UNDESIRABLE	SLIGHTLY UNDESIRABLE	NOT UNDESIRABLE OR DESIRABLE	SLIGHTLY DESIRABLE	MODERATEY DESIRABLE	VERY DESIRABLE	EXTREMLY DESIRABLE
21	ALONE	-4	-3	-2	-1	0	1	2	3	4
22	STRONG	-4	-3	-2	-1	0	1	2	3	4
23	LIQUID	-4	-3	-2	-1	0	1	2	3	4
24	EXCLUDED	-4	-3	-2	-1	0	1	2	3	4
25	INADEQUATE	-4	-3	-2	-1	0	1	2	3	4
26	INTRODUCING	-4	-3	-2	-1	0	1	2	3	4
27	DECLARE	-4	-3	-2	-1	0	1	2	3	4
28	IMMEDIATE	-4	-3	-2	-1	0	1	2	3	4
29	SALAD	-4	-3	-2	-1	0	1	2	3	4
30	LOYALLY	-4	-3	-2	-1	0	1	2	3	4
31	INCANTATION	-4	-3	-2	-1	0	1	2	3	4
32	BORDER	-4	-3	-2	-1	0	1	2	3	4
33	LEADER	-4	-3	-2	-1	0	1	2	3	4
34	SPECTRUM	-4	-3	-2	-1	0	1	2	3	4
35	LEAFAGE	-4	-3	-2	-1	0	1	2	3	4
36	CAGED	-4	-3	-2	-1	0	1	2	3	4
37	BEAUTY	-4	-3	-2	-1	0	1	2	3	4
38	ABANDON	-4	-3	-2	-1	0	1	2	3	4
39	DESCRIBE	-4	-3	-2	-1	0	1	2	3	4
40	SMILE	-4	-3	-2	-1	0	1	2	3	4
41	UPHOLSTER	-4	-3	-2	-1	0	1	2	3	4
42	DESERTED	-4	-3	-2	-1	0	1	2	3	4
43	ALIENATED	-4	-3	-2	-1	0	1	2	3	4

		EXTREMELY UNDESIRABLE	VERY UNDESIRABLE	MODERATELY UNDESIRABLE	SLIGHTLY UNDESIRABLE	NOT UNDESIRABLE OR DESIRABLE	SLIGHTLY DESIRABLE	MODERATELY DESIRABLE	VERY DESIRABLE	EXTREMELY DESIRABLE
44	ENCOUNTER	-4	-3	-2	-1	0	1	2	3	4
45	FRIEND	-4	-3	-2	-1	0	1	2	3	4
46	FEDERAL	-4	-3	-2	-1	0	1	2	3	4
47	INEFFICIENT	-4	-3	-2	-1	0	1	2	3	4
48	FICKLE	-4	-3	-2	-1	0	1	2	3	4
49	IMPORTANT	-4	-3	-2	-1	0	1	2	3	4
50	CHARM	-4	-3	-2	-1	0	1	2	3	4
51	STAGNATE	-4	-3	-2	-1	0	1	2	3	4
52	INTIMATELY	-4	-3	-2	-1	0	1	2	3	4
53	FREEDOM	-4	-3	-2	-1	0	1	2	3	4
54	STUPID	-4	-3	-2	-1	0	1	2	3	4
55	INTERESTING	-4	-3	-2	-1	0	1	2	3	4
56	FILTER	-4	-3	-2	-1	0	1	2	3	4
57	UMBRELLA	-4	-3	-2	-1	0	1	2	3	4
58	INTELLIGENT	-4	-3	-2	-1	0	1	2	3	4
59	FOOL	-4	-3	-2	-1	0	1	2	3	4
60	COWARDLY	-4	-3	-2	-1	0	1	2	3	4
61	DEVOTED	-4	-3	-2	-1	0	1	2	3	4
62	LIMITED	-4	-3	-2	-1	0	1	2	3	4
63	CIVILIAN	-4	-3	-2	-1	0	1	2	3	4
64	AFFECTION	-4	-3	-2	-1	0	1	2	3	4
65	INCOMPETENT	-4	-3	-2	-1	0	1	2	3	4
66	UNBEATEN	-4	-3	-2	-1	0	1	2	3	4

		EXTREMLY UNDESIRABLE	VERY UNDESIRABLE	MODERATELY UNDESIRABLE	SLIGHTLY UNDESIRABLE	NOT UNDESIRABLE OR DESIRABLE	SLIGHTLY DESIRABLE	MODERATEY DESIRABLE	VERY DESIRABLE	EXTREMLY DESIRABLE
67	FARM	-4	-3	-2	-1	0	1	2	3	4
68	SPURN	-4	-3	-2	-1	0	1	2	3	4
69	UNWANTED	-4	-3	-2	-1	0	1	2	3	4
70	ANKLE	-4	-3	-2	-1	0	1	2	3	4
71	ISOLATION	-4	-3	-2	-1	0	1	2	3	4
72	ADDRESS	-4	-3	-2	-1	0	1	2	3	4

Appendix F. Debriefing Sheet For Study 1.

What We See Is Not Necessarily What We Remember

Why do some people differ in their emotional reactions to different life events? What factors cause some people to experience sadness or distress while others are unaffected by the same life event?

The present study was designed to investigate what types of people find what types of events more upsetting than others. This was explored by using an incidental recall task to investigate whether we selectively remember some emotional words over other emotional words. In the incidental recall task, subjects are asked to remember as many adjectives as possible (without prior warning) in a free-recall format. Do we tend to perceive and remember those words that match our attitudes and goals that we place high value on? That is, if we place a high value on our relationships with other people, will we find interpersonal rejection more upsetting than someone who does not particularly value social relationships? Recall of words may be used as an indication of memory bias. Thus, this memory bias may tell us if we selectively encode and remember material that matches our personality. In this way, our personality may actually influence how we think and what we see in our world. Studies like this one hope to assist us in understanding and therefore learning better ways of coping with life's stressors.

NOTE TO SUBJECTS: If you are distressed by any of the questions contained in the measures in this study, please feel free to contact me personally or by telephone (452-5287). Alternatively, you may contact my supervisor, Dr. David Clark, Keirstead Hall (Room 108).

If you are interested in knowing the results of the study when it is completed, please feel free to contact myself or Dr. Clark.

<u>Appendix G</u>. The Sociotropy -Autonomy Scale - Revised.

Please indicate what percentage of the time each of the statements below applies to you by using the scale to the left of the items. Choose the percentage that comes closest to how often the item describes you.

PERCENT DESCRIBES YOU

0%	25%	50%	75%	100%		
A	B	C	D	E	1	I would be uncomfortable dining in a restaurant by myself.
A	B	C	D	E	2	I get uncomfortable when I am not sure how I am expected to behave in the presence of other people.
A	B	C	D	E	3	I focus almost exclusively on the positive outcomes of my decisions.
A	B	C	D	E	4	It is important to be liked and approved of by others.
A	B	C	D	E	5	I feel more comfortable helping others than receiving help.

0%	25%	50%	75%	100%		
A	B	C	D	E	6	I am very uncomfortable when a close friend or family member decides to "pour their heart out" to me.
A	B	C	D	E	7	I am reluctant to ask for help when working on a difficult and puzzling task.
A	B	C	D	E	8	When I am with other people, I look for signs whether or not they like being with me.
A	B	C	D	E	9	When visiting people, I get fidgety when sitting around talking and would rather get up and do something.
A	B	C	D	E	10	I am more concerned that people like me than I am about making important achievements.

0%	25%	50%	75%	100%		
A	B	C	D	E	11	I am afraid of hurting other people's feelings.
A	B	C	D	E	12	People rarely come to me with their personal problems.
A	B	C	D	E	13	I sometimes unintentionally hurt the people I love the most by what I say.
A	B	C	D	E	14	I feel bad if I do not have some social plans for the weekend.
A	B	C	D	E	15	I tend to be direct with people and say what I think.
A	B	C	D	E	16	People tend to dwell too much on their personal problems.
A	B	C	D	E	17	Once I've arrived at a decision, I rarely change my mind.

0%	25%	50%	75%	100%		
A	B	C	D	E	18	Being able to share experiences with other people makes them much more enjoyable for me.
A	B	C	D	E	19	I do things that are in my best interest in order to please others.
A	B	C	D	E	20	I prefer to "work out" my personal problems by myself.
A	B	C	D	E	21	When I have a problem, I like to go off on my own and think it through rather than being influenced by others.
A	B	C	D	E	22	I find it hard to pay attention to a long conversation, even with friends.
A	B	C	D	E	23	I get lonely when I am home by myself at night.

0%	25%	50%	75%	100%		
A	B	C	D	E	24	The worse part about growing old is being left alone.
A	B	C	D	E	25	Having close bonds with other people makes me feel secure.
A	B	C	D	E	26	My close friends and family are too sensitive to what others say.
A	B	C	D	E	27	I am concerned that if people knew my faults or weaknesses they would not like me.
A	B	C	D	E	28	I set my own standards and goals for myself rather than accepting those of other people.
A	B	C	D	E	29	I worry that somebody I love will die.
A	B	C	D	E	30	If a goal is important to me I will pursue it even if it may make other people uncomfortable.

0%	25%	50%	75%	100%		
A	B	C	D	E	31	I find it difficult to say "no" to people.
A	B	C	D	E	32	I censor what I say because I am concerned that the other person may disapprove or disagree.
A	B	C	D	E	33	I am usually the last person to hear that I've hurt someone by my actions.
A	B	C	D	E	34	I often find myself thinking about friends or family.
A	B	C	D	E	35	I would rather take the personal responsibility for getting the job done than depend on someone else.
A	B	C	D	E	36	If a friend has not called for a while I get worried that he or she has forgotten me.
A	B	C	D	E	37	I spend a lot of time thinking over my decisions.

0%	25%	50%	75%	100%		
A	B	C	D	E	38	It is important to me to be free and independent
A	B	C	D	E	39	People I work with often spend too much time weighing out the "pros" and "cons" before taking action.
A	B	C	D	E	40	When I am having difficulty solving a problem, I would rather work it out for myself than have someone show me the solution.
A	B	C	D	E	41	Often I fail to consider the possible negative consequences of my actions.
A	B	C	D	E	42	When I achieve a goal I get more satisfaction from reaching the goal than from any praise I might get.
A	B	C	D	E	43	If I think I am right about something, I feel comfortable expressing myself even if others don't like it.

0%	25%	50%	75%	100%		
A	B	C	D	E	44	I am uneasy when I cannot tell whether or not someone I've met likes me.
A	B	C	D	E	45	If somebody criticizes my appearance, I feel I am not attractive to other people.
A	B	C	D	E	46	I get uncomfortable around a person who does not clearly like me.
A	B	C	D	E	47	It is more important to be active and doing things than have close relations with other people.
A	B	C	D	E	48	Sometimes I hurt family and close friends without knowing that I've done anything wrong.
A	B	C	D	E	49	I tend to fret and worry over my personal problems.

0%	25%	50%	75%	100%		
A	B	C	D	E	50	The possibility of being rejected by others for standing up for my rights would not stop me.
A	B	C	D	E	51	I need to be engaged in a challenging task in order to feel satisfied with my life.
A	B	C	D	E	52	I don't enjoy what I am doing when I don't feel that someone in my life really cares about me.
A	B	C	D	E	53	I like to be certain that there is somebody close I can contact in case something unpleasant happens to me.
A	B	C	D	E	54	It would not be much fun for me to travel to a new place all alone.
A	B	C	D	E	55	I am more apologetic to others than I need to be.
A	B	C	D	E	56	I prize being a unique individual more than being a member of a group.
A	B	C	D	E	57	If I think somebody may be upset at me, I want to apologize.
A	B	C	D	E	58	I become particularly annoyed when a task is not completed.
A	B	C	D	E	59	I find it difficult to be separated from people I love.

I.D. Number: _____   Date:_____

INSTRUCTIONS: Below you will find lists of common experiences. Please circle the number beside each life event which you have experienced in the last 12 months.

CATEGORY A EVENTS

1	Became unemployed from full-time job	14	In danger of getting "kicked out" of university
2	Work evaluation was unsatisfactory (full-time or part-time)	15	Seriously thinking about dropping out of university
3	Job demotion (full-time or part-time)	16	Denied admission to preferred university
4	Too many hassles on job (full-time/part-time)	17	Denied admission to preferred program (major)
5	Sexual harassment on job	18	Got an unjustified low mark on test
6	Lost part-time job	19	Seriously behind in school work
7	Looking for part-time job- no success	20	Taking too many courses - extra workload
8	Did not get expected job promotion (full-time/part-time)	21	Continued interruptions while studying
9	Failed a number of courses	22	Ceased full-time education
10	Doing much worse academically than expected	23	Sexual harassment at school
11	Failed an important exam	24	Major personal physical illness (hospitalization or one month off school)
12	Failed a course	25	Had surgery
13	Put on academic probation	26	Minor personal physical illness (one that requires physician's attention)

CATEGORY A EVENTS (CONTINUED)

27	Major car accident (car totalled, serious injuries)	39	Not enough money for basic necessities
28	Minor car accident	40	Loss of a personally valuable object
29	An increase in vision or hearing problems	41	Troublesome neighbours in residence or apartment
30	Forced to engage in sexual activity against your will	42	Not enough privacy
31	Family has financial problems	43	Not enough sleep due to interruptions by roommate(s) or neighbours
32	Parent changed job - less family income	44	Residence or apartment too noisy
33	Got into serious debt or suffered financial loss other than school-related	45	Physically assulted
34	Reduction in wages (full-time or part-time job)	46	Charged with a crime (felony)
35	Went on welfare	47	Involved in a physical fight
36	Borrowed more than $10,000 other than school-related	48	Driver's license was revoked
37	Financial problems concerning school (in danger of not having sufficient money to continue)	49	Minor law violations (traffic tickets, disturbing the peace, etc.)
38	Not enough money for clothing	50	Had to appear in court

CATEGORY B EVENTS

51	Spouse/boyfriend/girlfriend died	65	Death of grandparent(s)
52	Onset or worsening of serious illness in spouse/boyfriend/girlfriend	66	Onset or worsening of serious illness in parent or siblings
53	Discovered spouse/boyfriend/girlfriend was abusing alcohol or drugs	67	Family member attempted suicide
54	Got divorced or separated	68	Increased arguments with parents
55	Broke up with steady boyfriend/girlfriend	69	Increased arguments with brother(s) or sister(s)
56	Discovered your spouse/boyfriend/girlfriend was dating somebody else	70	Family member sent to prison
57	Spouse/boyfriend/girlfriend discovered you were dating someone else	71	Family member was hospitalized
58	Broke off engagement	72	Parents divorced or separated
59	Increased arguments with spouse/boyfriend/girlfriend	73	Brother or sister getting separation or divorce
60	Spouse/boyfriend/girlfriend hospitalized	74	Pet died
61	Death of a child	75	Trouble with in-laws or boyfriend/girlfriend's family
62	Onset or worsening of serious illness in your child	76	Increase in arguments between parents
63	Child was hospitalized	77	Parent(s) abusing alcohol/drugs
64	Death of parent(s) or brother/sister	78	Other family member abusing alcohol/drugs

CATEGORY B EVENTS (CONTINUED)

79   Discovery of being an adopted child

80   Have not yet developed friendships

81   Major argument(s) with
      roommate(s)

82   Major argument(s) with close
      friend(s) other than roommate(s)

83   Minor argument(s) with
      roommate(s)

84   Minor argument(s) with close
      friend(s) other than roommate(s)

85   Friends or relatives too far away

86   Broke up with close friend

87   Close friend died

88   Close friend moved away

89   Onset or worsening of serious
      physical illness in close friend

INSTRUCTIONS: Please look over the events in <u>**CATEGORY A**</u> which you circled and write down **THE MOST IMPORTANT** event in the space provided:

_____

Now, please answer the following questions by circling the <u>one answer</u> that best describes your response to this event.

		not at all	slight	moderate	very much	extreme
1	How likely is it that this experience will lead to other negative things happening to you?	A	B	C	D	E
2	To what extent did this event tax or exceed your coping ability?	A	B	C	D	E
3	How upsetting was this experience for you?	A	B	C	D	E
4	To what extent did this experience make you feel worse about yourself (i.e., feel "down" on yourself)?	A	B	C	D	E
5	To what extent did this experience make you feel incompetent?	A	B	C	D	E
6	How much control did you have over the consequences or effects of this event?	A	B	C	D	E
7	Did this experience have a negative effect on how others related to you?	A	B	C	D	E
8	Did this experience have a negative effect on your feeling of independence and freedom?	A	B	C	D	E
9	How much did you feel personally responsible for causing this event to happen?	A	B	C	D	E
10	Did the experience have a negative impact on you?	A	B	C	D	E
11	To what extent did this experience make you feel alone or separated from others?	A	B	C	D	E

INSTRUCTIONS: Please look over the events in <u>**CATEGORY B**</u> which you circled and write down **THE MOST IMPORTANT** event in the space provided:

Now, please answer the following questions by circling the <u>one answer</u> that best describes your response to this event.

		not at all	slight	moderate	very much	extreme
1	How likely is it that this experience will lead to other negative things happening to you?	A	B	C	D	E
2	To what extent did this event tax or exceed your coping ability?	A	B	C	D	E
3	How upsetting was this experience for you?	A	B	C	D	E
4	To what extent did this experience make you feel worse about yourself (i.e., feel "down" on yourself)?	A	B	C	D	E
5	To what extent did this experience make you feel incompetent?	A	B	C	D	E
6	How much control did you have over the consequences or effects of this event?	A	B	C	D	E
7	Did this experience have a negative effect on how others related to you?	A	B	C	D	E
8	Did this experience have a negative effect on your feeling of independence and freedom?	A	B	C	D	E
9	How much did you feel personally responsible for causing this event to happen?	A	B	C	D	E
10	Did the experience have a negative impact on you?	A	B	C	D	E
11	To what extent did this experience make you feel alone or separated from others?	A	B	C	D	E

Appendix I. The Coping Inventory for Stressful Situations.

General Reactions Inventory

I am very grateful to Dr. Norman Endler for providing me with a copy of this questionnaire material to use in my studies. Because this scale is copyrighted, it will not be reproduced here. For further information on the Coping Inventory for Stressful Situations, please contact Dr. Endler in the Psychology Department at York University, Ontario, Canada.

Appendix I. The Coping Inventory for Stressful Situations.

General Reactions Inventory

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<u>Appendix I</u>. The Coping Inventory for Stressful Situations.

General Reactions Inventory

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Appendix J. Consent Form For Study 2.

Title of Study: The Nature of Emotional Information Processing in Sociotropic and Independent Individuals - Study 2

Principal Researcher: Rama Gupta Rogers, UNB Psychology Department

In this study, you will be asked to try to get yourself in a particular mood with the help of music. You will then be asked to complete a task in front of a computer screen. On some trials, you will be asked to indicate the color of the word that appears on the screen and on other trials you will be asked to indicate whether the stimulus is a word or nonword. You will then be asked to complete some self-report instruments that will ask you questions dealing with your mood and recent life experiences. There are no right or wrong answers. These questions are asking for your own personal opinions of who you are and how you currently feel. The whole study will take approximately one hour to complete.

You will receive one participation point for taking part in this study. As previously explained to you, your participation is completely voluntary. You are free to leave at any time without losing your participation point. Also, you may choose not to answer any questions if you so desire. Your identity will be kept confidential, and your responses will only be used for the purposes of this research project.

Most of the questions in this study ask for personal opinions about yourself. It is possible that while completing the questionnaires, you might gain a greater awareness of yourself or issues and emotions about yourself might be raised that you have not yet completely explored. If you are distressed by any questions or statements contained in the measures used in this study, I will be available to talk to you or you can contact my supervisor, Dr. David Clark (Keirstead Hall, Room 108).

If you are willing to participate in this study, please sign your name following this consent statement.

I hereby acknowledge that after reading the above information, I am willing to participate in this study. I understand that I am free to withdraw from the study at any time and, if I choose to do so, I realize that I will still receive one participation point. I also realize that my responses will remain confidential and used solely for the purposes of this research.

---------------------------------   --------------------------
Signature of Student   Date

Appendix K. Debriefing Sheet For Study 2.

Can Our Personality and Mood Influence What We See?

Individuals often experience sadness or distress when faced with negative life experiences. However, not all individuals react the same way to the same life experiences. Some people become very distressed while others are unaffected by the same life event. The purpose of this research is to better understand why people differ so much in their reaction to similar life events.

The present study was designed to investigate whether personality type and mood influences what we see in our world and consequently, how we react to our circumstances. This was explored by using the Modified Stroop Task. In this task, you were asked to identify the color of emotional words presented on a computer screen. Would you selectively attend to those words that match your personality type and current mood state? If so, the meaning of those words would interfere with your ability to name the color of those words and it would take you longer to name their color. Individuals who highly value social relationships will be expected to selectively attend to words about relationships. Also, if sad, negative words would be attended to. This research will tell us whether our personalities and mood state together affect how we perceive the world around us.

NOTE TO SUBJECTS: If you are distressed by any of the procedures or questions contained in the measures in this study, please feel free to contact me personally or by telephone (452-5287). Alternatively, you may contact my supervisor, Dr. David Clark, Keirstead Hall (Room 108).

Appendix L. Mood Scale -- Pre-Stroop and Pre-Mood Induction.

MOOD SCALE
(Pre-Stroop 1)

Instructions:

    1. Please rate the way you feel in terms of the dimensions given below.

    2. Regard the line as representing the full range of each dimension.

    3. Rate your feelings as they are at the moment.

    4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all Happy	Extremely Happy
0	100

MOOD SCALE
(Pre-Stroop 1)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Sad   Sad

|—————————————————————————————|
0   100

MOOD SCALE
(Pre-Stroop 1)

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
  Angry   Angry

├────────────────────────────────┤

0   100

MOOD SCALE
(Pre-Stroop 1)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Relaxed   Relaxed

|——————————————————————————————|

0   100

MOOD SCALE
(Pre-Stroop 1)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

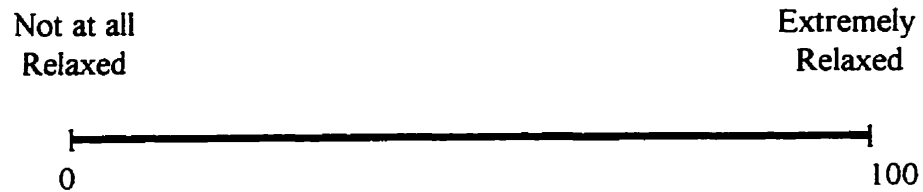4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Tense   Tense

|———————————————————————————————|

0   100

Appendix M. Mood Scale -- Pre-Stroop and Post-Mood Induction.

MOOD SCALE
(Pre-Stroop 2)

Instructions:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

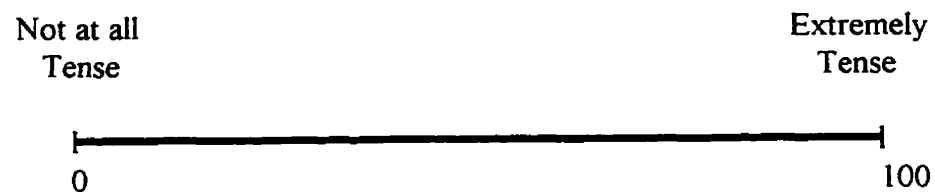4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Happy   Happy

|————————————————————————————————|
0   100

MOOD SCALE
(Pre-Stroop 2)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Sad   Sad

├──────────────────────────────────────┤
0   100

MOOD SCALE
(Pre-Stroop 2)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Angry   Angry

|———————————————————————————|
0   100

MOOD SCALE
(Pre-Stroop 2)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

4. Mark clearly and perpendicularly across each line.

I Feel:

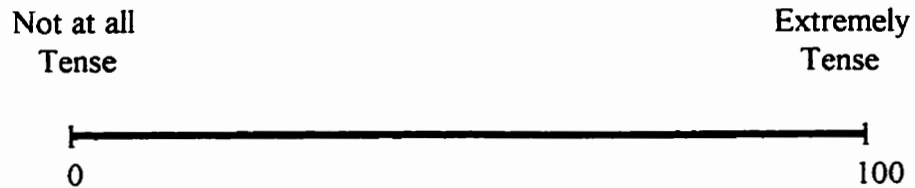Not at all   Extremely
Relaxed   Relaxed

|————————————————————————————|

0   100

MOOD SCALE
(Pre-Stroop 2)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

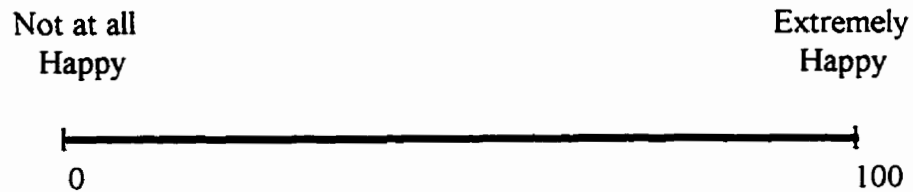4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Tense   Tense

|———————————————————————————————|

0   100

Appendix N. Mood Scale -- Post-Stroop.

MOOD SCALE
(Post-Stroop)

Instructions:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

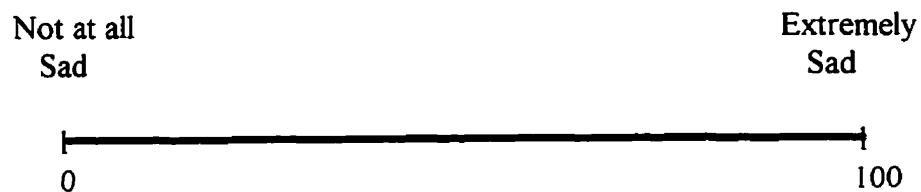4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Happy   Happy

|———————————————————————————————|

0   100

MOOD SCALE
(Post-Stroop)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

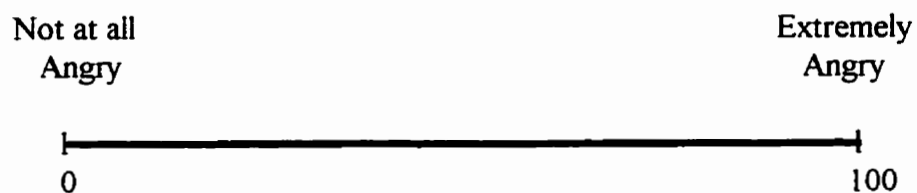4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Sad   Sad

|———————————————————————————————|

0   100

MOOD SCALE
(Post-Stroop)

    1. Please rate the way you feel in terms of the dimensions given below.

    2. Regard the line as representing the full range of each dimension.

    3. Rate your feelings as they are at the moment.

    4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all	Extremely
Angry	Angry

0	100

MOOD SCALE
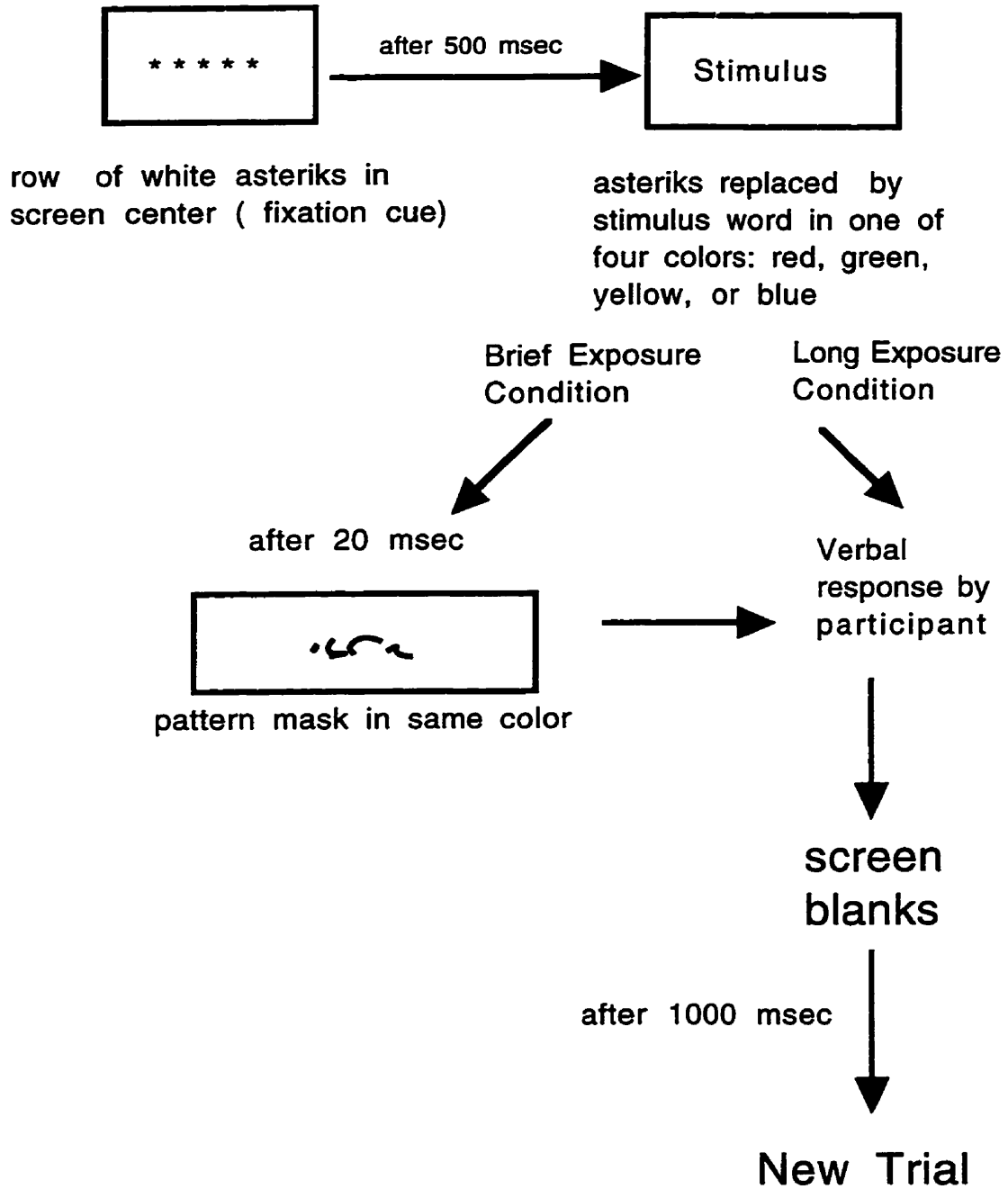## (Post-Stroop)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
Relaxed   Relaxed

|————————————————————————————|

0   100

MOOD SCALE
(Post-Stroop)

<u>Instructions</u>:

1. Please rate the way you feel in terms of the dimensions given below.

2. Regard the line as representing the full range of each dimension.

3. Rate your feelings as they are at the moment.

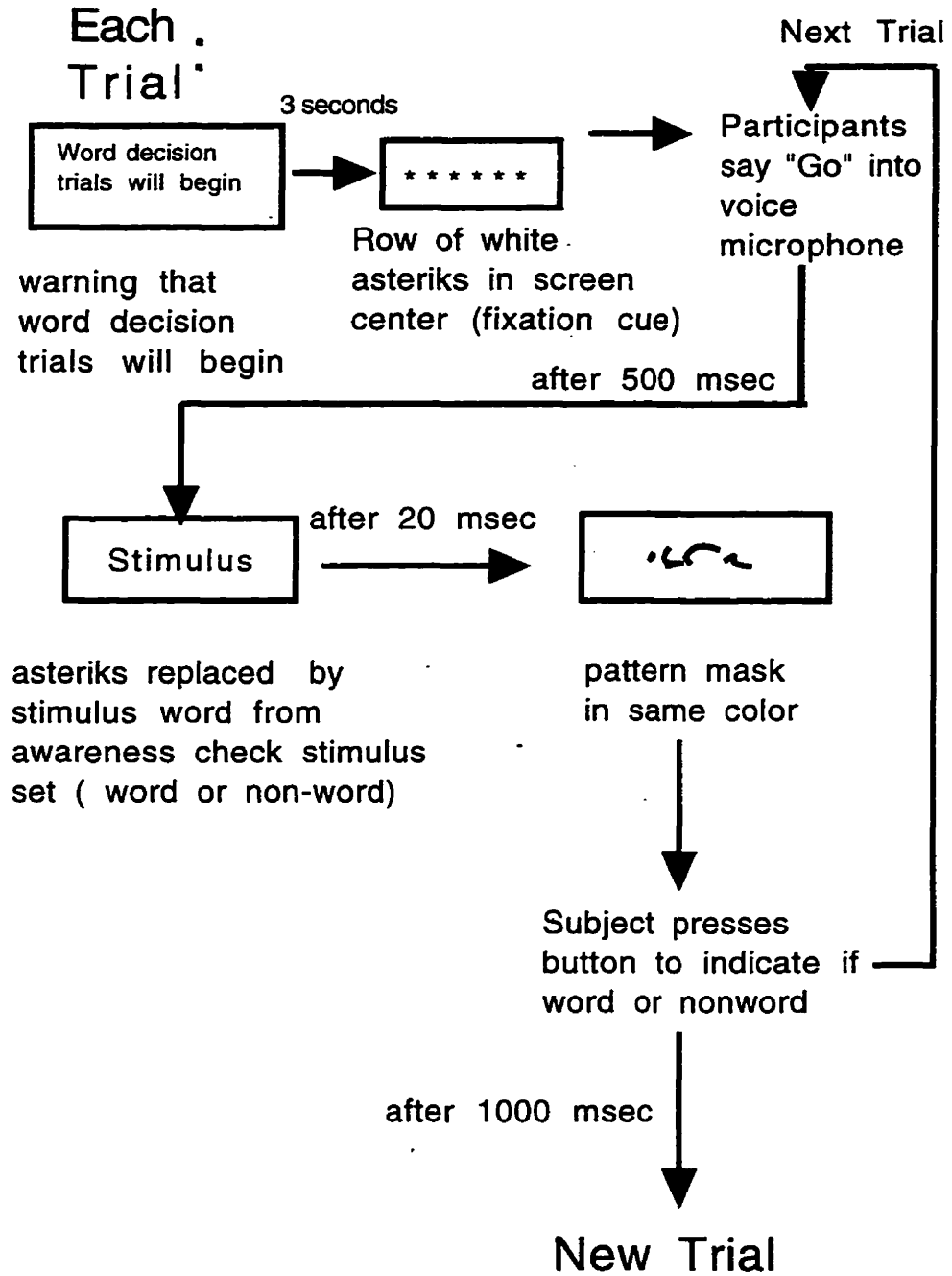4. Mark clearly and perpendicularly across each line.

I Feel:

Not at all   Extremely
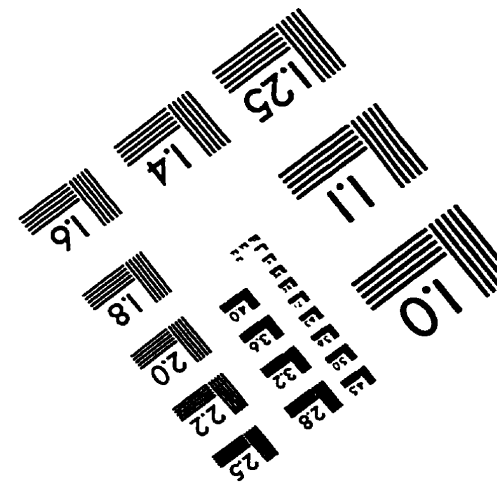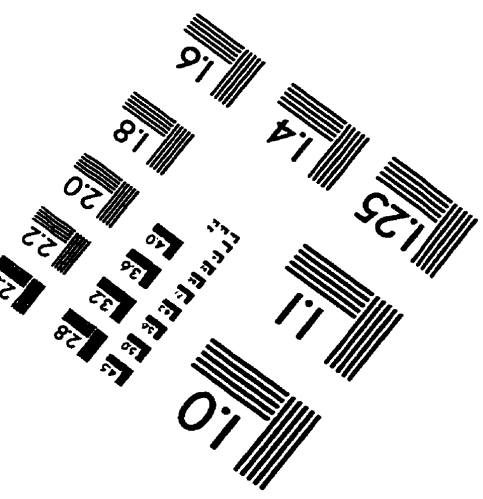Tense   Tense

|—————————————————————————————————————|

0   100
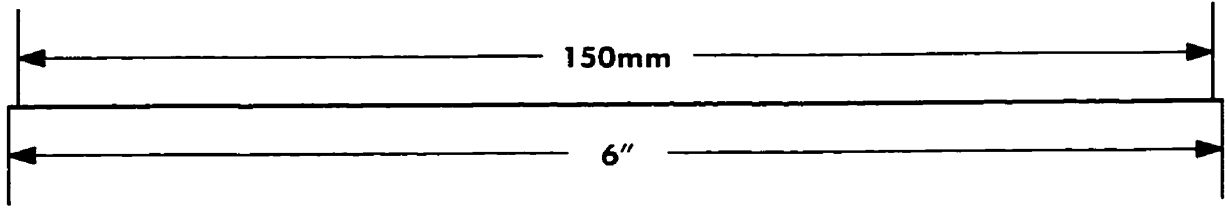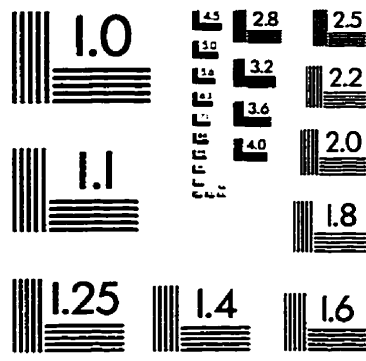
Appendix O. Flow Chart of Stroop Experimental Trial

Each
Trial

| * * * * * | → after 500 msec → | Stimulus |

row of white asteriks in
screen center (fixation cue)

asteriks replaced by
stimulus word in one of
four colors: red, green,
yellow, or blue

Brief Exposure
Condition

Long Exposure
Condition

after 20 msec

pattern mask in same color

→ Verbal
response by
participant

↓

screen
blanks

after 1000 msec ↓

New Trial

Appendix P. Flow Chart of Stroop Awareness Check Trials

Each .
Trial'

Next Trial

3 seconds

| Word decision
trials will begin |

| * * * * * * |

Participants
say "Go" into
voice
microphone

warning that
word decision
trials will begin

Row of white ·
asteriks in screen
center (fixation cue)

after 500 msec

after 20 msec

| Stimulus |

| ·ᏓᏒ |

asteriks replaced by
stimulus word from
awareness check stimulus
set (word or non-word)

pattern mask
in same color

Subject presses
button to indicate if
word or nonword

after 1000 msec

New Trial

IMAGE EVALUATION
TEST TARGET (QA-3)

150mm

6"