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TITLE OF THESIS: EXPLORING THE APPLICABILITY OF THE COGNITIVE
PARADIGM TO THE PERSONALITY CHARACTERISTIC
TO PERFECTIONISM

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DEGREE AWARDED: Master of Arts

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Abstract

The personality characteristic of perfectionism has been proposed as a central feature of depression, anxiety, and the eating disorders. A sample of 62 female university students was used to explore whether the cognitive paradigm could be applied to perfectionism. The modified Stroop color-naming task was used to determine whether subjects with elevated scores on self-report perfectionism measures also had longer response latencies for perfectionistic stimulus words. Results indicated that response latencies for perfectionistic stimulus words were not related to scores on self-report measures of perfectionism. The present study also did not replicate previous findings that highly anxious or depressed students have longer response latencies for anxious and depressive stimulus words, respectively. Methodological differences from previous studies which may have been responsible for the failure to find a relationship are discussed.

Analysis of self-report measures indicated that perfectionism (as measured by the Neurotic Perfectionism Questionnaire; Mitzman et al., 1994) is strongly related to depression (as measured by the Beck Depression Inventory; Beck, 1978), anxiety (as measured by the State-Trait Anxiety Inventory; Spielberger, 1985), and eating disordered symptomatology (as measured by the Eating Disorder Inventory-2; Garner, 1991). Future research should focus on the role of perfectionism and the value of the concept of perfectionism in understanding such psychopathology.

Introduction

Perfectionism refers to an overly demanding and pervasive need for flawlessness. Individuals who are highly perfectionistic set unrealistically high standards for themselves, strive to reach unattainable goals, and evaluate their self-worth almost entirely on their productivity and achievements (Barrow & Moore, 1983; Broday, 1989; Burns, 1980; Frost, Marten, Lahart, & Rosenblate, 1990; Pacht, 1984; Pirot, 1986; Slade, Newton, Butler, & Murphy, 1991; Sorotzkin, 1985). High levels of perfectionism have been linked to psychological distress and have been identified as a vulnerability factor for psychopathology. Specifically, high levels of perfectionism have been related to depression, anxiety, low self-esteem, procrastination, poor interpersonal relationships, and eating disorders (Burns, 1980; Frost et al., 1990; Garner, Rockert, Olmstead, Johnson, & Coscina, 1985; Hamachek, 1978; Hewitt & Flett, 1991a; 1991b; 1993; Mitzman, Slade, & Dewey, 1994; Saddler & Sacks, 1993).

Cognitive theorists have proposed that structural cognitive mechanisms (schemata) underlie psychopathology (Beck, 1967; Beck, Emery, & Greenberg, 1986) and information-processing methodologies are increasingly being used to study the role of these cognitive mechanisms in psychopathology (e.g., Martin, Williams, & Clark, 1991). The purpose of the present study was to use the modified Stroop color-naming task to explore the applicability of the cognitive paradigm to the personality characteristic of perfectionism.

Perfectionism

Perfectionism refers to a pervasive drive for impeccable performance, often without regard for the importance or priority placed on the project at hand. Individuals who are highly perfectionistic set excessively high standards for performance, experience excessive concern and fear about making

mistakes or failing, overemphasize precision, order, and organization, and base their self-esteem solely on performance. They also feel a strong need to gain approval, tend to be overly critical in evaluating their own behavior, and place considerable value on parental expectations and evaluations (Barrow & Moore, 1983; Burns, 1980; Frost et al., 1990; Hewitt & Flett, 1993; Mitzman et al., 1994; Pacht, 1984; Pirot, 1986; Slade et al., 1991; Sorotzkin, 1985).

Whereas a healthy striving for excellence directed at valued tasks has often been described as "normal perfectionism", higher levels of perfectionism (i.e., unhealthy or neurotic perfectionism) have been implicated in various psychopathologies (Burns, 1980; Hamachek, 1978; Mitzman et al., 1994; Pacht, 1984). High levels of perfectionism have been described as a vulnerability or risk factor for developing psychopathology since striving for such unattainable standards often leads to dissatisfaction, disappointment, and psychological distress (Beck, 1976; Burns, 1980; Frost et al., 1990; Hamachek, 1978; Hewitt & Flett, 1993; Hewitt & Genest, 1990; Mitzman et al., 1994; Pacht, 1984; Pirot, 1986). Frost et al. (1990) found that individuals who reported highly perfectionistic values and behaviors also reported more depressive symptomatology. Hewitt & Flett (1991a; 1991b) found correlations between perfectionism and depression, both in a clinical population as well as in a college population. They also found relationships between perfectionism, maladaptive personality styles, and general psychological distress.

Perfectionism has generally been viewed as a personality trait (Hamachek, 1978; Pirot, 1986) and has been measured with self-report questionnaires. These questionnaires assess the characteristic values, attitudes, and behaviors associated with perfectionism. For example, an early questionnaire, the Burns' Perfectionism Scale (1980), attempted to measure the dysfunctional attitudes specific to perfectionism. Burns (1980) described perfectionism as a unidimensional concept involving personal

standard setting and concern over mistakes. Two of the more recent questionnaires are the Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1989; Hewitt, Flett, Turnbull-Donovan & Mikail, 1991) and the Neurotic Perfectionism Questionnaire (NPQ; Mitzman et al., 1994). Hewitt and Flett (1989; 1991a; 1991b; Hewitt et al., 1991) described perfectionism as a multidimensional concept, involving both personal and social components. The MPS asks subjects to rate on a 7-point scale (1=*strongly disagree* to 7=*strongly agree*) statements reflecting 3 dimensions of perfectionism: self-oriented perfectionism (an intrapersonal dimension that is typified by setting unrealistic standards for oneself); other-oriented perfectionism (an interpersonal dimension that is characterized by holding unrealistic expectations for others); and socially prescribed perfectionism (feeling that other individuals or society expect perfection from oneself). The NPQ was developed to assess the aspects of perfectionism thought to be specifically associated with the eating disorders. The NPQ asks subjects to rate on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*) statements which tap into the construct of "neurotic perfectionism", defined as the unhealthy pursuit of unattainable goals. The NPQ was developed and validated in England with both normal and eating disordered subjects. The NPQ has not yet been validated with a Canadian population.

Perfectionism subscales are also included in a number of inventories, including the Eating Disorder Inventory-2 (EDI-2; Garner, 1991), the Irrational Beliefs Test (IBT; Jones, 1969), and the Setting Conditions for Anorexia Nervosa Scale (SCANS; Slade & Dewey, 1986). The Perfectionism subscale of the EDI-2 emphasizes personal standard setting and parental expectations. The Perfectionism and Self-Expectations subscales of the IBT are most heavily weighted on personal standard setting. The Perfectionism subscale of the SCANS also emphasizes personal standard setting as well as parental expectations.

Each self-report measure of perfectionism differs in its definition of perfectionism, resulting in different aspects of perfectionism being measured. Additionally, many of the researchers who have looked at perfectionism have not distinguished between what could be termed "normal" and "neurotic" perfectionism. That is, normally high achieving individuals are not always discriminated from individuals who are highly perfectionistic.

Perfectionism and Eating Disorders

Perfectionism has been identified as a predisposing factor in the development of both anorexia nervosa and bulimia nervosa (Garner, 1991; Garner & Garfinkel, 1985; Hsu, 1990; Mitzman et al., 1994; Riebel, 1985; Slade, 1982; Slade & Dewey, 1986; Slade, Dewey, Kiemle, & Newton, 1990). Bruch (1978) was one of the first theorists to identify the eating disordered patient as an overachiever. Garner (1991) also identified perfectionism as one of a multitude of possible predisposing factors in the development of an eating disorder. Both anorexic and bulimic individuals have been found to have elevated scores on self-report measures of perfectionism and to demonstrate characteristic perfectionistic behaviors (Bruch, 1978; Garner, 1991; Mitzman et al., 1994).

Slade has developed a functional-analytic theory regarding the emergence and maintenance of the eating disorders, and has identified the crucial role of what he describes as "neurotic perfectionism" as a predisposing factor for the development of these disorders. With his colleagues, he has developed questionnaires to measure these predisposing factors (Mitzman et al., 1994; Slade, 1982; Slade & Dewey, 1986; Slade et al., 1990). Slade's original theory postulated that "perfectionistic tendencies" and "general dissatisfaction" act as predisposing factors (or what they term "setting conditions") for the development of eating disorders. These setting conditions predispose individuals toward the need for complete control over some aspect of their lives. Since

complete control over external situations and individuals is not possible, such persons will be predisposed toward bodily control, and thus typically employ weight loss strategies.

Slade and Dewey (1986) initially developed the Setting Conditions for Anorexia Nervosa Scale (SCANS) to tap into these dimensions of general dissatisfaction and perfectionistic tendencies. This questionnaire, although developed independently, shares similar item content with the EDI-2 (Garner, 1991). More recently, Mitzman et al. (1994) developed the Neurotic Perfectionism Questionnaire (NPQ) to specifically assess the dimension of neurotic or dissatisfied perfectionism that Slade had proposed as a combination of general dissatisfaction and perfectionism. The concept of neurotic perfectionism reflects the excessively high standards, extreme fear of failure, and overall sense of inferiority and dissatisfaction experienced by a highly perfectionistic individual. The NPQ has been used to discriminate between eating disorder and control groups, and has been recommended as a diagnostic tool to identify individuals who are at high-risk of developing an eating disorder by virtue of their perfectionistic tendencies.

Perfectionism and Depression

Perfectionism has been identified as a contributing factor in the development and/or maintenance of depression. Beck's cognitive theory of depression (Beck, 1967; 1976) proposes rigid, perfectionistic thinking as characteristic of the depressed individual. Hewitt and Flett (1991a; 1991b; 1993) have confirmed a relationship between perfectionism and both subclinical and clinical depressive symptoms.

Perfectionism and depression may in fact represent interrelated concepts, as evidenced by the overlap in item-content between self-report measures of perfectionism and depression. For example, a factor analytic study found that 25 of the items on the Dysfunctional Attitude Scale (DAS;

Weissman & Beck, 1978) can be summarized by two primary components: Performance Evaluation and Approval by Others, both of which are central themes in perfectionism (Cane, Olinger, Gotlib, & Kuiper, 1986). Similarly, item content of the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980) and the Beck Depression Inventory (BDI; Beck, 1978) also overlap with item content of existing perfectionism measures.

Research investigating this association has found strong relationships between perfectionism and depressive symptomatology (Frost et al., 1990; Hewitt & Flett, 1991a; 1991b; 1993). Perfectionism may be a central feature of the phenomena of both clinical and subclinical depression.

Perfectionism and Anxiety

Perfectionism has also been linked to anxiety, although the relationship is not as strong as that between perfectionism and depression. Flett, Hewitt, and Dyck (1989) found an association between self-oriented perfectionistic attitudes and trait anxiety in college students. This relationship is also evidenced by some item content overlap between self-report measures of perfectionism and anxiety such as the State Trait Anxiety Inventory (STAI; Spielberger, 1985). For example, the STAI features items such as concern about failing and dissatisfaction with current achievements. Additionally, clinical reports of anxiety disorder patients often reveal a common thread of perfectionistic attitudes. For example, a typical feature of individuals suffering from both panic disorder and social phobia is unrealistic self-expectations (Ballenger, 1990).

Cognitive Psychology Paradigm

The basic premise of cognitive clinical psychology is that a primary determinant of mental health is the way in which one perceives oneself and the world. That is, how one thinks about oneself and one's environment determines emotional or affective response and therefore emotional well-

being. This cognitive paradigm has been used to conceptualize depression, anxiety disorders, obsessive-compulsive disorder, post-traumatic stress disorder, and schizophrenia (Beck, 1967; 1976, Beck et al., 1986). Two levels of cognitive processes have been proposed by cognitive theorists: cognitive products and cognitive structures. Cognitive products (cognitions, thoughts) are available to one's awareness and fluctuate over time. Cognitive structures (cognitive schemata) comprise a deeper level, which are not available to one's immediate awareness, and are more stable and enduring (Beck, 1976; Guidano & Liotti, 1983; Ingram & Kendall, 1986; Kovacs & Beck, 1978; Mahoney, 1982). Schemata are developed early in life through life experiences and are modified and reinforced by lifelong learning experiences. Schemata, which operate at a non-conscious automatic level, function to organize thought process and structure the way in which both internal and external (e.g., environmental) information is processed. Schemata also influence the development of other attitudes, beliefs, and values. The nature of an individual's schemata can determine one's vulnerability to psychological distress as schemata are activated by experiences or stressors that are relevant to one's attitudes and beliefs (Beck, 1967; 1976; Kovacs & Beck, 1978). In terms of the role of schemata in information-processing, Rumelhart (1980) describes a schema theory as embodying a "prototype theory of meaning...[where]...meanings are encoded in terms of the typical or normal situations or events that instantiate that concept" (p. 34).

Beck's (1967) cognitive theory of depression was the most influential development in the history of the cognitive paradigm. Beck proposed that a negative or depressogenic cognitive schema is responsible for the development of depression. This negative schema is exhibited in the "cognitive triad" of negative thoughts about self, the world, and the future. This means that depressed individuals selectively attend to negative information about themselves, their world, and the future,

and ignore or discount positive information. This characteristic bias in attention or information-processing occurs when the depressogenic schemata becomes activated by stressful life events. When this depressogenic schema becomes active in a depressed state, information is processed in a negatively biased manner so that the content of the thoughts of depressed individuals are characterized by themes of loss, defeat, and deprivation. Beck et al. (1986) also describes anxiety from a cognitive perspective. Anxious individuals are thought to have "danger" schemata such that they selectively attend to or process threatening material that is relevant to their concerns.

Information-processing methodologies have also been an important development for the cognitive paradigm. The basic assumption of the information-processing approach is that human functioning may be conceptualized in terms of how external and internal information are processed and utilized (Ingram & Kendall, 1986). The strength of this perspective is its emphasis on an experimental methodology which has been explicitly developed to study cognition (e.g., Cooper, Anastasiades, & Fairburn, 1992; Mattia, Heimberg, & Hope, 1993). A variety of information-processing tasks have been developed to measure different aspects of cognition such as attention, memory, and perception. These tasks vary with respect to the level of cognitive processing that they measure: automatic or controlled. Controlled processes refer to cognitive processes which demand attentional capacity and over which the individual may exert some control. Automatic processes, on the other hand, occur without conscious awareness, do not interfere with ongoing attentional activities, and are not under the control of the individual (Ingram & Hollon, 1986; Ingram & Reed, 1986; Juola, 1986; Schneider & Shiffrin, 1977; Turk & Salovey, 1986).

There are numerous advantages to using a methodology that accesses automatic cognitive processes because such tasks do not allow modification by conscious strategies. For example, the

self-presentational bias that plagues self-report and controlled process tasks does not affect the automatic process tasks. Methodologies that access automatic cognitive processes are thought to directly tap into the structural foundation (schemata) of thoughts and behavior (Segal, 1988).

Stroop Color-Naming Task

The Stroop color-naming task was originally developed for the investigation of attention (Stroop, 1935). The original task required the subject to identify the color of ink that color names were printed in. For example, the subject would be shown a card which featured the word blue written in blue ink. Another card would feature the word blue written in red ink. The subject's task was to correctly identify the color of the ink. Results typically indicated that subjects took longer to name the ink color when the word described another color. This longer response latency supported the hypothesis that cognitive interference took place when the color name differed from the color of the ink. That is, the automatic encoding of the color name resulted in competition between its name and the name of the ink's color and this constituted the cognitive interference (Juola, 1986).

The original Stroop color-naming task has been modified in order to examine cognitive interference in clinical groups diagnosed with various psychopathologies. Subjects are presented with disorder-relevant stimulus words and asked to name the color in which each word is written, while trying to ignore the meaning of the word itself. The content of the cognitive self-schema can be inferred by identifying the stimulus words which produce cognitive interference (i.e., longer response latencies). The earliest work in this area focused upon anxiety disorders and depression, in accordance with Beck's cognitive theory of emotional disorders (Beck, 1967; 1976; Beck et al., 1986). Beck theorized that these schemata reflected traits rather than transient mood states, and so could be activated simply by the presentation of a emotionally salient word that was of relevance to

the individual's attitudes and beliefs. The modified Stroop task is a nontransparent measure of the self-schema which negates the influence of current mood state and self-presentational bias (Segal, 1988; Segal & Swallow, 1994). The general hypothesis underlying the modified Stroop methodology is that individuals from certain clinical groups should exhibit cognitive interference to the presentation of words that are emotionally salient with relevance to their psychopathology, as compared to neutral words. Normal control groups should not exhibit this interference. Early results confirmed that cognitive interference can occur with disorder-relevant words that are currently of personal or emotional significance due to the disorder (McKenna, 1986).

Research using the modified Stroop color-naming task has found the predicted cognitive interference in a variety of psychopathologies, such as generalized anxiety disorder states (Martin et al., 1991; Mathews & Klug, 1993; Mathews & MacLeod, 1985), agoraphobia (Hayward, Ahmad, & Wardle, 1994), social phobia (Hope, Rapee, Heimberg, & Dombeck, 1990; Mattia et al., 1993), post-traumatic stress disorder (Kaspi, McNally, & Amir, 1995; Thrasher, Dalglish, & Yule, 1994), obsessive-compulsive disorder (Lavy, van Oppen, & van den Hout, 1994), panic disorder (McNally et al., 1994; McNally, Riemann, Louro, Lukach, & Kim, 1992), depression (Gotlib & Cane, 1987; Gotlib & McCann, 1984; Segal, Hood, Shaw, & Higgins, 1988; Segal & Vella, 1990; Williams & Nulty, 1986), and eating disorders (Cooper et al., 1992). Although less consistent, research has also found the predicted cognitive interference with normal subjects high in trait anxiety (Fox, 1993; Mogg, Kentish, & Bradley, 1993).

Results of studies using the modified Stroop color-naming task have been interpreted as support for the theory that distinct organizing cognitive structures (schemata) are active in various psychopathologies. For example, Gotlib and McCann (1984), using a modified Stroop task,

compared depressed and non-depressed college students and found that the depressed subjects had longer response latencies for negative, depressive words as opposed to neutral and manic-content words, while the non-depressed group showed no differences across any of the word conditions. MacLeod et al. (1986) found that anxious patients has longer response latencies for threat-related words as compared to normals. Hayward et al. (1994) compared agoraphobic and control subjects on the Stroop task and also found that agoraphobics had longer response latencies for threat words than control subjects. Lavy et al. (1994) found that obsessive-compulsive subjects had longer response latencies for negative obsessive-compulsive related words than normals. Kaspi et al. (1995) found that post-traumatic-stress-disorder subjects had longer response latencies for combat words, but not for neutral, positive, or other negative words. Hope et al. (1990) found that social phobic subjects had longer response latencies for social threat words.

Although a conclusive explanation is lacking to describe what cognitive interference on the modified Stroop task represents, a variety of theories have been proposed. Gotlib and McCann (1984) proposed that with depressed subjects, cognitive interference represents construct accessibility. That is, when presented with words that are of personal relevance, preexisting cognitive structures (depressogenic schemata) are accessed to assist in processing the incoming information. Longer response latencies on the modified Stroop task thus reflect the time taken to access these schemata. With respect to anxious subjects, cognitive interference on the modified Stroop task has been proposed to represent attentional bias (Martin et al., 1991; Mathews & MacLeod, 1985). Attentional bias refers to the idea that anxious patients selectively attend to potentially threatening stimuli. Longer response latencies on the modified Stroop task would thus reflect the enhanced or elaborated processing of threatening words which are of relevance to the individual's disorder.

Regardless of the theoretical framework by which cognitive interference is interpreted, three possibilities have been suggested for how cognitive interference is produced (Martin et al., 1991; Mathews & Klug, 1993; Mathews & MacLeod, 1985): 1) stimulus words are of relevance to the individual's concerns (concern-related hypothesis); 2) stimulus words are of relevance to the individual's concerns and are also highly emotional or threatening (threat-related hypothesis); or 3) stimulus words are not of relevance to the individual's concerns but are simply threatening or highly emotional (emotionality hypothesis).

The concern-related hypothesis proposes that individuals selectively attend to stimulus words which are of relevance to their concerns, regardless of the threat-value or emotionality of the stimuli. According to this hypothesis, cognitive interference should occur when subjects are presented with stimulus words which are of personal relevance to their specific concerns, regardless of whether the words are threatening or are highly emotional (Mathews & Klug, 1993). The threat-related hypothesis proposes that individuals selectively attend to threatening stimuli which are of relevance to the content of their cognitive schema. According to this hypothesis, cognitive interference should occur when subjects are presented with stimulus words which combine threat or emotionality with concepts which are of personal relevance to their specific concerns (Mathews & MacLeod, 1985). The emotionality hypothesis proposes that anxious individuals attend to emotional material in general, regardless of its relevance to their concerns. Therefore, cognitive interference should occur when subjects are presented with stimulus words which are strongly emotional, regardless of the personal relevance of the words (Martin et al., 1991).

Although the exact mechanism of cognitive interference on the modified Stroop task has not yet been conclusively determined, results from the use of this task provide valuable information about

the content of the cognitive self-schema.

Purpose of Present Study

It has been reported that there is an increasing prevalence of both clinical and subclinical levels of anxiety and depression in university populations (Hewitt & Flett, 1990; 1991a; 1991b; 1993). As well, both clinical and subclinical eating disorders have been found to be prevalent in university populations (Harper-Giuffre & MacKenzie, 1992). High levels of perfectionism have been implicated in all of these disorders (Burns, 1980; Davis et al., 1992; Frost et al., 1990; Garner et al., 1985; Hamachek, 1978; Hewitt & Flett, 1993; Mitzman et al., 1994; Slade et al., 1991).

Historically, perfectionism has been studied by accessing cognitive products using self-report questionnaires. While this methodology has contributed much to what is known about perfectionism, there is a shortcoming in its focus on cognitive products, which can be edited and modified by the subject. Segal (1988) identified the strength of self-report measures as providing a description of a self-schema. However, Segal also concluded that self-report measures often cannot provide information regarding the functional and structural relationships among elements of a schema. A prime goal in better understanding psychopathology, from a cognitive perspective, is to access the more central constructs involved in cognition (i.e., schemata) using information-processing methodologies.

The purpose of the present study was to explore the applicability of the cognitive paradigm to the personality characteristic of perfectionism. The modified Stroop color-naming task was used to determine whether persons with elevated scores on self-report perfectionism measures also have longer response latencies to perfectionistic stimulus words.

Several sets of words were included in the study. In addition to perfectionistic and neutral

stimulus words, sets of depressive and anxious stimulus words were also included. Self-report measures of anxiety (State-Trait Anxiety Inventory) and depression (Beck Depression Inventory) were also completed by the subjects to permit replication of previous studies with anxious and depressed students.

Subjects also rated the extent to which each of the perfectionistic, anxious, or depressive stimulus words described them or were important to them. This permitted identification of which words were part of the conscious self-concept of persons scoring high on self-report measures of perfectionism.

Two additional purposes of the present study were: 1) to examine the relationship among self-report measures of perfectionism, depression, anxiety, and eating disordered symptomatology; and 2) to explore which perfectionistic stimulus words were most closely related to the self-report measures of perfectionism.

Method

Subjects

Participants were 62 female undergraduate students who volunteered to participate in exchange for class credit. Subjects received one percentage point toward their final mark in their undergraduate Psychology course.

Questionnaires

The Neurotic Perfectionism Questionnaire (NPQ; Mitzman et al., 1994) is a 42-item questionnaire that attempts to tap into the construct of "neurotic perfectionism", defined as the unhealthy pursuit of unattainable goals. Subjects rate perfectionistic statements on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*). The NPQ yields a total score ranging from 42 to 210

with higher scores representing a more neurotic perfectionistic attitude. The NPQ utilizes a cut-off score of 144 to distinguish between "normal" and "neurotic" perfectionists. The NPQ is attached as Appendix A.

The Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1989; Hewitt et al., 1991) is a 45-item questionnaire which asks subjects to rate on a 7-point scale (1=*strongly disagree* to 7=*strongly agree*) statements reflecting 3 dimensions of perfectionism: self-oriented perfectionism (an intrapersonal dimension that is typified by setting unrealistic standards for oneself); other-oriented perfectionism (an interpersonal dimension that is characterized by holding unrealistic expectations for others); and socially prescribed perfectionism (feeling that other individuals or society expect perfection from oneself). The MPS yields three subscale scores, each with a minimum score of 15 and a maximum score of 105. Higher scores indicate more perfectionistic beliefs. The MPS is attached as Appendix B.

The Beck Depression Inventory (BDI; Beck, 1978) is a widely used measure of severity of depressive symptoms. Subjects respond to a group of statements by endorsing the statement that best described themselves during the preceding week. This 21-item inventory yields a total score ranging from 0 to 63. Higher scores indicate greater severity of depressive symptoms. Beck recommends a cutoff of 10 or above as indicating mild levels of depressive symptoms, and 20 or above as indicating moderate levels of depressive symptoms. The BDI is attached as Appendix C.

The State-Trait Anxiety Inventory (STAI; Spielberger, 1985) is a measure of both state anxiety and trait anxiety. For the purposes of this study, only trait anxiety was measured. Trait anxiety refers to a relatively stable proneness to anxiety. The trait portion of the inventory consists of 20 descriptive statements. Subjects describe how they generally feel by indicating the frequency

with which each of the statements applies to them (1 = *almost never*, 2 = *sometimes*, 3 = *often*, 4 = *almost always*). The trait portion of the STAI (STAI-T) yields a total score ranging from 20 to 80, with higher scores indicating a greater degree of trait anxiety. The STAI-T is attached as Appendix D.

The Eating Disorder Inventory-2 (EDI-2; Garner, 1991) assesses both eating disordered symptomatology as well as attitudes and behaviors associated with eating disorders. For the purposes of the present study, only the Perfectionism subscale and the Drive For Thinness Subscale were administered. Each subscale yields an individual score. The Perfectionism subscale yields a score ranging from 0 to 18. The Drive For Thinness subscale yields a score ranging from 0 to 21. For both subscales, higher scores indicate a greater endorsement of attitudes associated with eating disorders. The Drive For Thinness subscale reflects a primary component of eating disordered symptomatology, and was included in the present study in order to replicate previous findings of a relationship between perfectionism and eating disordered symptomatology. These EDI-2 subscales are attached as Appendix E.

Subjects also rated 40 of the stimulus words used in the modified Stroop color-naming task (the perfectionistic, depressive, and anxious words) according to the extent to which each word described them or was important to them (1 = *not at all*, 2 = *a little*, 3 = *somewhat*, 4 = *quite a lot*, 5 = *very much*). This task is attached as Appendix F.

Modified Stroop Color-Naming Task

The words that were used in the Stroop color-naming task featured anxious, depressive, perfectionistic, and neutral content. To obtain the perfectionistic words, literature on perfectionism as well as existing self-report measures of perfectionism (NPQ, MPS, Burns' Perfectionism Scale)

were examined. Based upon these sources, a list of 122 perfectionism-related words was compiled (Appendix G). The words on this list were rated by two judges who excluded words which were less central to the concept of perfectionism. In this way, the list was reduced to 20 words which covered a wide range of perfectionism concepts, including both positive (e.g., hardworking) and negative (e.g., self-critical) aspects. Twenty neutral stimulus words and ten practice stimulus words were selected from previous research using the Stroop task (e.g., MacLeod & Mathews, 1991). Twenty nonwords (e.g., XXXXX) were selected as control stimuli (filler words). Ten anxious and ten depressive stimulus words were adapted from words used in previous Stroop research (e.g., MacLeod & Mathews, 1991) as well as from self-report measures of anxiety (STAI) and depression (BDI). These stimulus words were chosen to reflect the content of the cognitive schema of subclinical levels of anxiety and depression, respectively. In selecting the anxious and depressed words, care was taken to exclude those words which also had a perfectionistic meaning. For example, "failure" was not used as a depressive word, while "downhearted" was used. A final list of 20 perfectionistic, 10 anxious, 10 depressive, 20 neutral, and 10 practice words, as well as 20 control nonwords were used in the present study. These words are presented in Table 1.

A computerized version of the modified Stroop color-naming task was used. A MacIntosh 2/ci computer with a 13 inch screen was used. Subjects were seated approximately 2 feet from the computer screen. Individual stimulus words were presented in uppercase letters in the center of the computer screen. Each word remained on the screen until the subject verbally named its color. Color naming response latencies for each individual stimulus word presentation were recorded in milliseconds using the computer as a voice key. The computer was programmed to take 22 sound samples each millisecond. These were digitized and compared in intensity to a preset threshold.

Table 1

Stimulus Words Used in the Modified Stroop Color-Naming Task

Perfectionistic Stimulus Words (n=20)	Anxious Stimulus Words (n=10)	Depressive Stimulus Words (n=10)	Neutral Words (n=20)	Practice Words (n=10)	Control Nonwords (n=20)
self-critical	agitated	worthless	jacket	bookcase	XXXXXXXX
perfect	nervous	hopeless	month	furniture	XXXXXX
determined	anxious	miserable	signal	tree	XXXXX
disapproval	panicky	empty	pocket	emblem	XXX
outstanding	alarmed	downhearted	context	puppet	XXXXXXXX
insecure	fearful	sad	fork	five	XXXXXX
superior	worried	burdened	collector	three	XXXX
organized	tense	dismal	mineral	eleven	XXX
approval	distressed	lonely	number	twenty	XXXXXXXX
obsessive	apprehensive	glum	square	four	XXXXXX
unrealistic			maintained		XXXX
scrutinized			chin		XXX
inadequate			occasional		XXXXXXXX
failure			adhesive		XXXXXX
ideal			functional		XXXX
rejection			metric		XXX
succeed			leaning		XXXXXXXX
self-control			button		XXXXXX
dissatisfied			porch		XXXX
persevering			rock		XXX

If over half of the 22 samples were above the threshold, a sound was defined as having occurred during that millisecond. Using this digital sampling procedure, samples were taken every millisecond until a verbal response was detected, at which time sampling would cease and a response latency would be recorded.

Procedure

Subjects were tested individually. They were told the purpose of the study and asked to sign a consent form to indicate their willingness to participate. The consent form is attached as Appendix H. Subjects then completed the battery of questionnaires: NPQ; MPS; BDI; STAI-T; EDI2-P; EDI2-DT; and the self-rating task.

Subjects were told that they would be participating in a computerized color-naming task where they would be asked to verbally name the color of individual stimulus words presented on the computer screen. They were first shown a screen with the 5 colors (blue, red, green, yellow, brown) in order to familiarize them with the colors to be named. Standard instructions were then given, wherein they were told to verbally name as quickly as possible the color in which each stimulus word was printed, and simultaneously push a button on the computer keyboard to confirm their response. They were instructed not to correct any mistakes they made, but to simply proceed to the next presentation. Subjects were given 10 presentations of the practice stimulus words to familiarize them with the task. Once they had completed the practice session, any questions they had were answered, and then the color-naming task began.

Stimulus words were presented in a different random order for five presentations. Each stimulus word ($n=90$) appeared in each of the five presentations, for a total of 450 stimulus word presentations per subject. The time taken to color name each word was recorded by the computer.

The order of presentation was identical for each subject.

Errors were recorded by the experimenter, with 4 situations constituting an error: 1) subject's response did not exceed the threshold for recognition by the computer; 2) subject responded by saying the wrong color; 3) subject responded by saying the stimulus word rather than the color; and 4) all other errors (e.g., talking to the experimenter during the presentation, omitting the verbal response, repeating the color several times in the event that the stimulus word did not immediately leave the screen). Following completion of the Stroop color-naming task, subjects were individually debriefed and given both a written and verbal explanation of the purpose of the study. At that time, any questions that the subject had were also answered. The written explanation of the purpose of the study is attached as Appendix I.

Data Analysis

The response latency data were modified in two ways. First, very low scores (below 200 milliseconds) were coded as errors and deleted. Such low scores were most likely anticipation errors. Second, scores above two seconds were truncated to 2000 milliseconds in order to reduce their effects as potential outliers.

Response latencies were only analyzed for those presentations where the response was correct. Mean error rates for each category of stimulus words averaged approximately 13 %, with the majority of the errors (approximately 89%) attributable to the subjects not responding loudly enough to be recorded by the computer. A detailed breakdown of error rates according to type of error is presented in Table 2. In general, the response latencies were averaged over five presentations with the exception of presentations that were coded as errors. In that case, response latencies were averaged over the number of correct responses.

Table 2

Error Rates (in Percentages) According to Type of Error

	Perfectionistic Words	Depressive Words	Anxious Words	Neutral Words	Control Nonwords
Type 1	89.93	87.35	90.77	87.31	90.86
Type 2	3.72	6.49	4.39	6.13	2.53
Type 3	.26	.71	0	.37	0
Type 4	6.09	5.44	4.85	6.18	6.61

Type 1 = Subject's response did not exceed threshold for recognition.

Type 2 = Subject responded by saying the wrong color.

Type 3 = Subject responded by saying the word rather than the color.

Type 4 = All other errors.

In order to control for individual differences in response latency, the raw response latencies were converted into response latency interference indices which were defined as the difference between the mean latency of each category of stimulus words and the mean latency of the neutral stimulus words. To calculate response latency interference indices, mean response latencies were first determined by computing an overall average of response latencies for each category of stimulus words. The response latency interference index for each category of stimulus words was then calculated by subtracting the mean response latency of the neutral stimulus words from the mean response latency for each of the other categories of stimulus words.

Table Legend

The following abbreviations and significance asterisks will be used for all of the tables:

NPQ = Neurotic Perfectionism Questionnaire

MPSOO = Multidimensional Perfectionism Scale - Other Oriented Subscale

MPSSO = Multidimensional Perfectionism Scale - Self Oriented Subscale

MPSSP = Multidimensional Perfectionism Scale - Socially Prescribed Subscale

BDI = Beck Depression Inventory

STAI-T = State Trait Anxiety Inventory (Trait portion)

EDI2-P = Eating Disorder Inventory-2 - Perfectionism Subscale

EDI2-DT = Eating Disorder Inventory-2 - Drive For Thinness Subscale

* $p < .05$, ** $p < .005$, *** $p < .001$

Results

Means, standard deviations, and ranges for each self-report measure are presented in Table

3. Mitzman et al. (1994) defined neurotic perfectionism as a score of 144 or greater on the Neurotic Perfectionism Questionnaire. The mean for the present sample did not approach this, and only three

Table 3

Descriptive Statistics for Perfectionism, Depression, Anxiety, and Eating Disorder Symptomatology
Self-Report Measures

	Mean	Standard Deviation	Minimum	Maximum
NPQ	105.05	22.98	55	153
MPSOO	49.63	10.39	21	70
MPSSO	59.07	14.40	24	102
MPSSP	46.94	14.11	20	89
BDI	9.39	6.47	0	25
STAI-T	39.21	11.01	21	62
EDI2-P	4.47	4.12	0	18
EDI2-DT	5.03	6.42	0	19

subjects scored in the neurotic perfectionist range. Scores on the three subscales of the Multidimensional Perfectionism Scale were slightly lower than those reported by Hewitt and Flett (1991b; Study 1), whose sample included both male and female subjects (Other-Oriented subscale mean = 53.38, SD = 12.55; Self-Oriented subscale mean = 65.27, SD = 14.01; Socially Prescribed subscale mean = 48.17, SD = 12.88). The mean score for the Beck Depression Inventory fell at the high end of the normal range (scores of 0 to 9). Approximately 57% of subjects scored within the normal range, 32% scored within the mild to moderate range (10 to 18), and 11% scored within the moderate to severe range (19 to 29). No subjects in the present study scored in the extremely severe range. The mean score for the trait portion of the State Trait Anxiety Inventory was comparable to the norms for female college students (mean = 40.40) reported by Spielberger (1983).

The mean score for the Perfectionism subscale of the Eating Disorder Inventory-2 fell at approximately the 50th percentile of scores reported in Garner's (1991) normative data for a sample of nonpatient female college students. The mean score for the Drive for Thinness subscale of the Eating Disorder Inventory-2 fell at approximately the 64th percentile of scores reported in Garner's (1991) normative data for a sample of nonpatient female college students.

Response Latencies

Proportion of correct responses, response latency interference indices, and mean response latencies for the five categories of stimulus words are presented in Table 4. Analysis of variance revealed significant differences among mean response latencies for the five categories of words, $F(4, 244) = 69.43, p < .001$. Post hoc comparisons using paired t-tests with Bonferroni correction showed that the mean response latencies for each of the stimulus word groups (i.e., neutral, anxious, depressive, and perfectionistic) were significantly greater than the mean response latency for the control stimulus nonwords [To obtain a familywise $p = .05$, the significance level for each of the ten

Table 4

Mean Proportion Correct, Mean Response Latencies, and Response Latency Interference Indices for Perfectionistic, Depressive, Anxious, and Neutral Stimulus Words & Control Stimulus Nonwords

Word Type	Mean Proportion Correct (Standard Deviation)	Mean Response Latency (Standard Deviation)	Response Latency Interference Index (Standard Deviation)
NEUTRAL	.87 (.115)	766.12 (120.56)	n/a
CONTROL	.87 (.111)	713.11 (106.97)	n/a
PERFECTIONISTIC	.88 (.109)	772.10 (124.54)	5.98 (25.04)
DEPRESSIVE	.86 (.117)	785.72 (134.37)	19.60 (37.46)
ANXIOUS	.87 (.111)	771.89 (128.08)	5.77 (31.93)

comparisons was $p < .005$]. Additionally, the mean response latency for the depressive stimulus words was also significantly greater than the mean response latency for the neutral stimulus words. Analysis of variance revealed no significant difference among the five categories in proportion of correct responses, $F(4, 244) = 1.71, p = .148$.

Table 5 contains the correlations among all of the self-report measures and the response latency interference indices for each category of stimulus words. Correlations of primary interest are those between the response latency interference index for perfectionistic stimulus words and the self-report measures of perfectionism (NPQ, MPS, EDI2-P); the response latency interference index for depressive stimulus words and the self-report measure of depression (BDI); and the response latency interference index for anxious words and the self-report measure of anxiety (STAI-T). These correlations are presented in bolded, larger font in Table 5. None of the correlations of primary interest were significant. Additional correlations are included (using smaller font) in Table 5 for completeness. Only one correlation reached significance at the .05 level, but because it would not be significant with appropriate correction for familywise Type I error, it will not be considered further.

In order to explore possible reasons for the failure to find a relationship between response latency interference indices and corresponding self-report measures, further analyses were conducted using only data from subjects who scored at the high and low ends of the self-report measures. Subjects scoring in approximately the top and bottom third of scores on the Neurotic Perfectionism Questionnaire, Beck Depression Inventory, and the trait portion of the State Trait Anxiety Inventory were compared on their corresponding response latency interference indices. For the NPQ, subjects scoring within the top third (scores of 120 and above) and bottom third (scores of 94 and below) showed no significant difference on the response latency interference index for perfectionistic stimulus

Table 5

Correlations Among Self-Report Measures and Response Latency Interference Indices for Each Category of Stimulus Words

	PERFECTIONISTIC STIMULUS WORDS	DEPRESSIVE STIMULUS WORDS	ANXIOUS STIMULUS WORDS
NPQ	.17	-.05	.17
MPSOO	-.05	.28 *	.12
MPSSO	-.12	-.01	-.06
MPSSP	.10	-.06	.16
BDI	.04	-.00	.08
STAI-T	.07	-.03	.05
EDI2-P	-.11	-.02	.09
EDI2-DT	.14	.10	.14

words (High NPQ mean = 12.91, SD = 24.98, Low NPQ mean = 5.82, SD = 27.49), $t(41) = -0.89$. For the BDI, subjects scoring within the top third (scores of 11 and above) and bottom third (scores of 5 and below) showed no significant difference on the response latency interference index for depressive stimulus words (High BDI mean = 17.77, SD = 48.49, Low BDI mean = 19.77, SD = 28.45), $t(45) = 0.17$. For the STAI-T, subjects scoring within the top third (scores of 43 and above) and bottom third (scores of 31 and below) showed no significant difference on the response latency interference index for anxious stimulus words (High STAI mean = 6.76, SD = 32.39, Low STAI mean = 4.64, SD = 32.42), $t(44) = -0.22$. Therefore, analyses of extreme groups confirms the lack of relationship between response latency interference indices and corresponding self-report measures.

Word by Word Analysis

One purpose of the present study was to determine whether response latencies for specific perfectionistic stimulus words were related to the corresponding self-report measures. For each stimulus word, a response latency interference index was calculated by subtracting the mean response latency for the neutral words from the mean response latencies for each of the stimulus words. Correlations were then calculated between the response latency interference index for each word and the corresponding self-report measures. These correlations are presented in Tables 6, 7, and 8 together with the mean response latency interference index for each word. Because of the number of analyses and because no familywise control for Type I error was used, the findings should be interpreted with caution.

It is clear from the general absence of significant correlations in Tables 6, 7, and 8 that none of the response latency interference indices for the individual stimulus words were strongly related to the corresponding self-report measures.

Table 6

Response Latency Interference Index for Each Perfectionistic Stimulus Word and Correlations With the Perfectionism Self-Report Measures

Stimulus Word	Response Latency Interference Index (Standard Deviation)		Correlations			
			NPQ	MPSOO	MPSSO	MPSSP
Self-critical	56.53	(91.63)	.11	.01	-.01	.09
Perfect	-29.74	(84.14)	.09	-.04	.04	.08
Determined	-28.39	(66.60)	.07	-.06	-.16	-.07
Disapproval	9.08	(69.13)	-.18	-.18	-.01	-.03
Outstanding	10.84	(78.91)	.15	-.17	.02	.09
Insecure	9.01	(97.66)	.15	-.01	-.23	-.10
Superior	39.06	(93.68)	-.15	-.14	-.14	-.14
Organized	-30.41	(68.14)	.07	.02	-.11	-.06
Approval	-6.23	(69.11)	.00	-.13	-.03	-.04
Obsessive	25.98	(83.67)	.05	.11	.09	.14
Unrealistic	36.00	(68.20)	.12	-.09	-.21	-.07
Scrutinized	28.79	(68.17)	.11	.12	.12	.21
Inadequate	12.66	(59.18)	-.31*	.17	-.09	-.15
Failure	-26.97	(67.38)	.18	.20	.27*	.18
Ideal	-21.41	(81.74)	-.08	-.21	-.05	-.04
Rejection	32.11	(93.19)	-.00	.05	-.06	.02
Succeed	-21.28	(77.15)	.09	-.10	-.04	.15
Self-control	35.42	(83.90)	.22	.16	.12	.31*
Dissatisfied	-15.78	(61.94)	.22	.06	-.03	.06
Persevering	4.39	(66.01)	-.21	-.03	-.02	.15

Table 7

Response Latency Interference Index for Each Depressive Stimulus Word and Correlations With the Beck Depression Inventory

	Response Latency Interference Index (Standard Deviation)		Correlations
			BDI
Worthless	-15.86	(60.78)	.01
Hopeless	9.08	(92.53)	.17
Miserable	-1.20	(84.18)	.19
Empty	-3.31	(67.32)	-.05
Downhearted	89.87	(95.14)	.09
Sad	60.80	(91.65)	-.07
Burdened	27.24	(69.05)	-.02
Dismal	-2.34	(64.30)	-.21
Lonely	26.61	(83.61)	-.02
Glum	5.13	(71.01)	-.22

Table 8

Response Latency Interference Index for Each Anxious Stimulus Word and Correlations with the Trait Portion of the State Trait Anxiety Inventory

	Response Latency Interference Index (Standard Deviation)		Correlations
			STAI
Agitated	33.53	(88.41)	.03
Nervous	-4.79	(82.46)	-.13
Anxious	-27.70	(72.28)	.01
Panicky	54.90	(88.77)	-.21
Alarmed	10.00	(77.80)	.17
Fearful	-9.68	(78.61)	.09
Worried	21.34	(80.85)	.07
Tense	5.05	(78.71)	.02
Distressed	-.700	(72.92)	.24
Apprehensive	-24.23	(64.22)	-.06

Relationship Between Percentage of Correct Responses and Self-Report Measures

Table 9 contains the correlations among the mean proportion of correct responses for each category of stimulus words and each self-report measure. The purpose of this analysis was to explore whether subjects who had elevated scores on the perfectionism self-report measures were more accurate (i.e., had lower error rates on the modified Stroop task) than subjects who had low scores on the perfectionism measures. This would provide an indication of the possibility that perfectionistic subjects ignored the instructions to respond as quickly as possible to the modified Stroop task, and instead focused their attention on responding accurately (i.e., more perfectly). Two of the correlations in this analysis were significant, but neither reached the Bonferroni corrected significance level ($.05/24 = .002$) and neither was theoretically meaningful.

Relationship Among Self-Ratings of Stimulus Words and Self-Report Measures

Each subject rated (on a 5-point scale) the degree to which each of the perfectionistic, anxious, and depressive stimulus words described them or was important to them. As a way of both validating and exploring the construct of perfectionism, correlations were calculated among the self-ratings for each stimulus word and the self-report measures. These correlations are presented in Tables 10, 11, and 12. The main finding from these tables is a lack of specificity. The majority of the words from each of the three categories (perfectionistic, anxious, and depressive) were strongly correlated with the NPQ, BDI, and STAI. Moreover, examining the size of the correlation did not provide a validation for the groupings. In many cases, the words in one category showed a higher correlation with self-report measures from a different category.

For the perfectionistic stimulus words, some words were positively correlated and some negatively correlated with the NPQ. As well, some of the words were not significantly correlated with the NPQ. The negatively-toned perfectionistic stimulus words (e.g., self-critical, disapproval,

Table 9

Correlations Between Self-Report Measures and Proportion of Correct Responses for Each Category of Stimulus Words

	PERFECTIONISTIC STIMULUS WORDS	DEPRESSIVE STIMULUS WORDS	ANXIOUS STIMULUS WORDS
NPQ	ns	ns	ns
MPSOO	ns	ns	ns
MPSSO	ns	.35*	ns
MPSSP	ns	ns	ns
BDI	ns	ns	ns
STAI-T	ns	ns	ns
EDI2-P	ns	.30*	ns
EDI2-DT	ns	ns	ns

Table 10

Correlations Among Self-Ratings of Perfectionistic Stimulus Words and the Self-Report Measures

	NPQ	MPSOO	MPSSO	MPSSP	BDI	STAI	EDI2 P	EDI2 DT
Self-critical	.60***	ns	ns	.32*	.58***	.53***	.36**	.39**
Perfect	ns	ns	ns	ns	ns	ns	ns	ns
Determined	-.27*	ns	.35*	ns	-.29*	-.39**	ns	ns
Disapproval	.47***	ns	ns	.27*	.41**	.51***	ns	ns
Outstanding	-.32*	ns	ns	ns	-.30*	-.43***	ns	-.36**
Insecure	.62***	ns	ns	.37**	.56***	.70***	ns	.45***
Superior	ns	ns	ns	ns	ns	ns	ns	ns
Organized	ns	.28*	.35**	ns	ns	ns	ns	ns
Approval	.28*	ns	ns	.29*	.37**	.30*	ns	ns
Obsessive	.49***	ns	ns	.25*	.44***	.51***	ns	.36**
Unrealistic	.38**	ns	ns	ns	.41**	.47***	ns	ns
Scrutinized	.56***	ns	ns	.32*	.49***	.52***	ns	.34*
Inadequate	.60***	ns	ns	.25*	.76***	.70***	ns	.34*
Failure	.42**	ns	ns	.32*	.58***	.52***	.31*	ns
Ideal	-.35*	ns	ns	ns	-.38**	-.56***	ns	-.27*
Rejection	.49***	ns	ns	ns	.55***	.62***	ns	.31*
Succeed	-.54***	ns	ns	ns	-.35*	-.43**	ns	-.28*
Self-control	-.34*	ns	ns	ns	ns	-.46***	ns	ns
Dissatisfied	.67***	ns	ns	.30*	.68***	.69***	.32*	.39**
Persevering	ns	ns	ns	ns	-.29*	ns	ns	-.28*

Table 11

Correlations Among the Self-Ratings of the Depressive Stimulus Words and the Self-Report Measures

	NPQ	MPSOO	MPSSO	MPSSP	BDI	STAI	EDI2 P	EDI2 DT
Worthless	.50***	ns	ns	.32*	.59***	.60***	ns	ns
Hopeless	.56***	ns	ns	ns	.67***	.70***	ns	ns
Miserable	.57***	ns	ns	.39**	.65***	.62***	.31*	.34*
Empty	.68***	ns	ns	.25*	.64***	.69***	ns	ns
Down- hearted	.57***	ns	ns	ns	.53***	.61***	ns	ns
Sad	.58***	ns	ns	ns	.63***	.66***	ns	ns
Burdened	.38**	ns	ns	.36**	.46***	.43***	ns	.37**
Dismal	.53***	ns	ns	ns	.67***	.61***	ns	.31*
Lonely	.66***	ns	ns	.41**	.60***	.69***	.38**	ns
Glum	.57***	ns	ns	ns	.48***	.56***	ns	ns

Table 12

Correlations Among the Self-Ratings of the Anxious Stimulus Words and the Self-Report Measures

	NPQ	MPSOO	MPSSO	MPSSP	BDI	STAI	EDI2 P	EDI2 DT
Agitated	.52***	ns	ns	ns	.57***	.51***	ns	.31*
Nervous	.33*	ns	ns	.29*	.41**	.42**	.28*	.25*
Anxious	.40**	ns	ns	ns	.38**	.47***	ns	ns
Panicky	.51***	.26*	ns	.27*	.61***	.65***	.33*	.26*
Alarmed	.47***	.35*	ns	.33*	.57***	.53***	.32*	ns
Fearful	.56***	ns	ns	ns	.59***	.68***	ns	ns
Worried	.56***	ns	ns	ns	.64***	.69***	ns	.44***
Tense	.47***	ns	ns	.35*	.62***	.57***	ns	ns
Distressed	.58***	ns	ns	.33*	.74***	.70***	ns	.34*
Apprehensive	.26*	ns	ns	ns	.40**	ns	ns	ns

failure) were positively correlated with the NPQ, whereas the positively-toned perfectionistic stimulus words (e.g., outstanding, ideal, succeed, self-control) were negatively correlated. The perfectionistic stimulus words that were not significantly correlated with the NPQ (i.e., perfect, determined, superior, organized, approval, persevering) were also positive in tone.

The negatively-toned perfectionistic stimulus words were not significantly correlated with the Other-Oriented and Self-Oriented subscales of the MPS, but some (i.e., self-critical, insecure, scrutinize, failure, and dissatisfied) were positively correlated with the Socially Prescribed subscale. The positively-toned perfectionistic stimulus words were not correlated with any of the MPS subscales, with the exception of the stimulus word “organized” which was positively correlated with the Self-Oriented subscale of the MPS.

The majority of the perfectionistic stimulus words were not related to the Perfectionism subscale of the EDI-2, with only the words “self-critical”, “insecure”, “failure”, and “dissatisfied” being correlated. However, nine of the perfectionistic stimulus words were significantly correlated with the Drive for Thinness subscale of the EDI-2, in basically the same pattern as with the NPQ (i.e., positively toned words were negatively correlated and negatively toned words were positively correlated).

This analysis revealed that while the majority of the perfectionistic stimulus words used in the present study were related to the concept of perfectionism, at least four were not. In addition, the same perfectionistic stimulus words that were related to the NPQ were also at least equally strongly related to the BDI and STAI-T. Therefore, the specificity of these three word categories is questionable.

Reanalysis with Redefined Word Categories

Three new response latency interference indices were calculated for perfectionistic stimulus

words based on the findings in Table 9. These new indices were based on those perfectionistic words whose self-ratings were: 1) positively correlated with the NPQ (12 words); 2) negatively correlated with the NPQ (4 words); and 3) not correlated with the NPQ (4 words). Reanalysis of correlations among these new response latency interference indices and the self-report measures revealed no significant correlations. These results are presented in Table 13.

Correlations Among Self-Report Measures

Table 14 contains the correlations among all of the self-report measures used in the present study. With the exception of the Other-Oriented and Self-Oriented subscales of the MPS, all of the self-report measures were highly interrelated. The Other-Oriented subscale of the MPS was correlated only with the other subscales of the MPS, while the Self-Oriented subscale of the MPS was also significantly positively correlated with the Perfectionism and Drive for Thinness subscales of the EDI-2. These findings show the same pattern of strong interrelationships as revealed by the correlations with the self-ratings of the stimulus words.

Table 13

Mean Response Latency Interference Indices, and Correlations With Self-Report Measures for Each Redefined Category of Perfectionistic Stimulus Words

	PERFECTIONISTIC STIMULUS WORDS					
	Negatively-toned (Positively Correlated) (n=12)		Positively-toned (Negatively Correlated) (n=4)		Positively-toned (Not correlated) (n=4)	
Response Latency Interference Index	16.74	(30.97)	-4.78	(29.82)	-4.176	(39.18)
NPQ	.14		.07		-.10	
MPSOO	.10		-.19		-.11	
MPSSO	-.08		-.12		-.14	
MPSSP	.07		.09		-.02	
BDI	.04		.03		-.14	
STAI-T	.14		-.02		-.17	
EDI2-P	-.11		-.07		-.10	
EDI2-DT	.06		.17		.03	

Table 14

Correlations Among the Self-Report Measures

	NPQ	MPSOO	MPSSO	MPSSP	BDI	STAI	EDI2 P	EDI2 DT
NPQ								
MPSOO	.21							
MPSSO	.18	.38**						
MPSSP	.58***	.42**	.52***					
BDI	.75***	.19	.09	.39**				
STAI-T	.83***	.25	.13	.48***	.81***			
EDI2-P	.46***	.24	.67***	.72***	.36**	.36**		
EDI2-DT	.48***	.12	.27*	.39**	.47***	.47***	.41***	

Discussion

The purpose of the present study was to explore whether the cognitive paradigm can be applied to the personality characteristic of perfectionism. The modified Stroop color-naming task was used to determine whether persons with elevated scores on self-report measures of perfectionism have longer response latencies to perfectionistic stimulus words. Although there were significant differences among the mean response latencies for the five categories of stimulus words, these differences were not related to scores on the self-report measures. Subjects with elevated scores on the NPQ and MPS did not have longer response latencies for perfectionistic stimulus words on the modified Stroop task. Additional analyses also failed to reveal a relationship: 1) analysis of extreme groups (i.e., scores from the top and bottom third on self-report measures); and 2) analysis of response latencies to individual perfectionistic stimulus words.

There are two possible reasons for the failure to find a relationship between scores on the self-report perfectionism measures and response latencies to perfectionistic stimulus words. One possibility is that either the modified Stroop task or the cognitive paradigm in general is not applicable to the personality characteristic of perfectionism. However, this study also failed to replicate previous findings that subjects with elevated scores on self-report measures of anxiety and depression have longer response latencies to anxious and depressive stimulus words. Therefore, it is possible that there were some methodological differences in the present study which may have been responsible for the failure to find the expected relationship. Before focusing on the first possibility, it is necessary to consider these methodological issues.

One methodological issue concerns the nature of the sample (female university students) used in the present study. Although a few studies have found that normal subjects with elevated scores on self-report measures of anxiety have longer response latencies for anxious stimulus words on the

modified Stroop task, the most consistent findings have been that subjects diagnosed with anxiety disorders (i.e., generalized anxiety disorder, panic disorder, social phobia) have longer response latencies to anxious stimulus words that are of specific relevance to their disorder (Hope et al., 1990; Mathews & Klug, 1993; Mathews & MacLeod, 1985; Mattia et al., 1993; McNally et al., 1994; McNally et al., 1992). Research with nonclinical samples has produced inconsistent results. Fox (1993) found that normal subjects classified as "high trait-anxious" (scoring above 46 on the STAI-T) exhibited longer response latencies than "low trait-anxious" (scoring below 46 on the STAI-T) to the anxious stimulus words (physical and social threat words) which had been used in previous research with clinical samples. However, Martin et al. (1991) found no significant differences in response latencies for anxious words among high, medium, and low anxious groups of normal subjects. The self-reported levels of trait anxiety in Martin et al.'s (1991) study were matched with the levels reported in the studies by Fox (1993) and Mathews and MacLeod (1985). While the effects of anxiety on the modified Stroop task are strongest for clinical samples, it has also been demonstrated with nonclinical samples. Therefore, the use of a normal sample is not, in and of itself, responsible for the failure of the present study to support the hypothesis.

Another methodological difference from previous studies was the way in which the stimulus words were presented. In the present study, a computerized version of the modified Stroop task was used, and the individual stimulus words were randomly presented. The total sample of stimulus words was presented five times, each time in a different order. Response latencies were measured for each individual stimulus word. In contrast, previous studies have varied in terms of the total number of presentations of stimulus words, ranging from one to eight presentations of each stimulus word. Previous studies have also generally used a blocked format in which either a line of stimulus words of the same type or the entire set of one type of stimulus words (e.g., all the neutral words)

were presented on one index card or on the computer screen at once. Response latency was generally measured for the entire line or set of words, and presented as an overall response latency for each category of stimulus words, rather than for each individual stimulus word. Subjects in these studies were thus typically presented with all of the neutral words at once, then all of the physical threat words, then all of the depressive words, and so on. The possibility exists that the way in which the stimulus words were presented in these studies could have resulted in a priming effect, such that the subject's anxiety level increased as they progressed through a series of words relevant to their concerns, resulting in longer response latencies.

If a priming effect is responsible for the cognitive interference that has been found in previous studies, then random presentations of stimulus words should not result in such interference. This possibility should be tested in future studies by directly comparing response latencies to blocked and random presentations of Stroop stimulus words.

A related issue concerning the presentation of stimulus words was the rate of errors in the present study (i.e., approximately 13 %) as compared to previous studies which have reported very low error rates (e.g., 1.3% in Gotlib & McCann, 1984). This high error rate could be attributable to a number of methodological differences from previous studies. In the present study, stimulus words automatically left the computer screen upon recognition by the computer of the subject's verbal response. The threshold for response recognition was set to reduce the possibility that outside noise would be recognized as a verbal response. The majority of errors in the present study were in fact attributable to the failure of subjects to respond loudly enough to be recognized by the computer. Additionally the pace of stimulus word presentations was set by the subject in the present study, whereas in previous studies there was a fairly constant time interval between stimulus word presentations, either preset by the experimenter or because the timing apparatus had to be manually

reset (e.g., McNally et al., 1994; McNally et al., 1992). This finding suggests that the specific mode of computerized presentation of stimulus words and/or the method of recording response latencies resulted in higher error rates than previous studies. The reasons for this higher error rate should be explored in future research.

An additional methodological issue concerning error rates is that previous studies have generally not recorded or excluded errors (e.g., Martin et al., 1991; Mathews & MacLeod, 1985), whereas in the present study errors were excluded. Similarly, the definition and treatment of outliers has also varied. The effect on the data of these variations in the treatment of errors and outliers should be explored in future research.

A third methodological difference from previous studies is the nature of the stimulus words used. Researchers studying both clinical and nonclinical groups of anxious subjects have chosen anxious stimulus words which represent physical and social threats of particular relevance to an anxiety disorder. The anxious stimulus words have generally been chosen based upon their relevance to the content of the cognitive schema of an individual with panic disorder or generalized anxiety disorder. For example, physical threat words such as "fatal", "disease", and "hospital", and social threat words such as "pathetic", "stupid", and "boring" are representative of the anxious stimulus words used in these studies. The words were of relevance to a specific clinical disorder, while also being of fairly high threat value or emotionality in general. In contrast, the anxious stimulus words used in the present study were chosen on the basis of their relevance to nonclinical anxiety in normal subjects. Words such as "mutilate" and "choking" were excluded, whereas words such as "tense" and "panicky" were included as they more accurately reflected the content of the cognitive schema of nonclinical anxiety. The words chosen were thus less emotionally charged or threatening.

It is possible that the negative emotionality of the stimulus words in previous studies produced

the cognitive interference on the modified Stroop task. In the present study, the choice of stimulus words to reflect subclinical levels of anxiety may have reduced the level of emotionality of the words. Although the anxious stimulus words may have accurately reflected the content of the cognitive schema of a normal sample of high-trait anxious students, the emotionality or threat value of the stimulus words may not have been strong enough to produce cognitive interference.

The depressive stimulus words were also chosen to reflect moderate levels of depression, and words which described the content of suicidal or severely depressed subjects were excluded. This was done to make the stimulus words more accurately reflect the content of the cognitive schema of subclinically depressed students. Again, the present results may have been due to these stimulus words not possessing a sufficiently strong emotional tone.

The perfectionistic stimulus words were also chosen based solely upon their relevance to perfectionism, that is, words which should reflect the content of the cognitive schema of a highly perfectionistic individual. Again, it is possible that the emotionality of the stimulus words was not strong enough to produce cognitive interference. In fact, it may be that there are no perfectionism-relevant words which possess a sufficiently strong emotional tone or threat-value to produce cognitive interference.

A further issue concerning the perfectionistic stimulus words is the manner in which they were selected. The twenty perfectionistic words used in the present study were chosen based upon the agreement of two judges (including the author) that the word reflected the concept of perfectionism. It is possible that this selection process was not optimal and may have resulted in experimenter bias. An alternative method which would reduce the possibility of experimenter bias would be to generate a large number of perfectionistic words and empirically validate them by administering the list to a large group of subjects who would rate them according to how adequately they reflect the concept

of perfectionism. Such a procedure would result in a word list possessing good psychometric qualities, which would rule out problems with the word list as a possible explanation in the event of negative results.

Applicability of the Cognitive Paradigm

Although a conclusive explanation is lacking regarding what cognitive interference on the modified Stroop task represents, a variety of theories have been proposed (e.g., construct accessibility, attentional bias). Regardless of the theoretical framework by which cognitive interference is interpreted, three possibilities exist as to how cognitive interference is produced: 1) concern-related hypothesis; 2) threat-related hypothesis; and 3) emotionality hypothesis (Martin et al., 1991; Mathews & Klug, 1993; Mathews & MacLeod, 1985).

It is important to consider the results of the present study in the context of these three hypotheses. The emotionality hypothesis was not directly tested, as highly emotional words were not included in this study. The present results do not support the concern-related hypothesis, as cognitive interference was not produced by stimulus words which reflected the content of the cognitive schema of perfectionism. The most plausible explanation for the failure to find a relationship between self-report measures of perfectionism and response latencies for perfectionistic stimulus words is that despite their relevance to the content of the cognitive schema of perfectionism, the stimulus words used were not sufficiently emotional or threatening to produce cognitive interference. The threat-related hypothesis thus seems to be most appropriate given the results of the present study. For a personality characteristic such as perfectionism, there may be no words which are both relevant to the content of the cognitive schema of perfectionism and which possess a sufficiently strong emotional tone or threat-value to produce cognitive interference.

Psychometric Aspects of Perfectionism

An additional purpose of the present study was to compare two self-report measures of perfectionism and to examine the relationship between these measures and self-report measures of depressive, anxious, and eating disordered symptomatology. The Neurotic Perfectionism Questionnaire was found to be highly correlated with only the Socially Prescribed subscale of the Multidimensional Perfectionism Scale, and was not correlated with either the Self-Oriented or Other-Oriented subscales. This may be attributable to the different emphasis of each questionnaire, with the NPQ assessing "neurotic perfectionism" and the MPS assessing the social, intrapersonal, and interpersonal dimensions of perfectionism. These results suggest that the feeling that important others demand perfection of oneself (which characterizes socially prescribed perfectionism as described by Hewitt and Flett) is closely related to the concept of neurotic perfectionism. The NPQ was also found to be strongly related to the Perfectionism subscale of the EDI-2.

For the MPS, each of the subscales was correlated with the other subscales. However, the Other-Oriented subscale was not related to any of the other self-report measures, while the Socially Prescribed subscale was related to the two subscales of the EDI-2, and the Self-Oriented subscale was related to the Perfectionism subscale of the EDI-2. The association among the Perfectionism subscale of the EDI-2 and the Self-Oriented and Socially Prescribed subscales of the MPS may reflect common item content, as the Perfectionism subscale of the EDI2-P is composed of statements that reflect both personal standard setting and high parental expectations.

The NPQ is described by Mitzman et al. (1994) as a measure of neurotic perfectionism that specifically acts as a risk factor for the development of anorexia nervosa. Elevated scores on the NPQ should therefore be associated with elevated scores on the Perfectionism and Drive for Thinness subscales of the EDI-2. The NPQ was highly correlated with both of these subscales.

The relationships among the self-report measures of perfectionism, anxiety, and depression were also investigated. The NPQ was highly correlated with both the BDI and the STAI-T. Previous studies (Flett et al., 1989; Hewitt & Flett, 1991a; 1991b; 1993) using the MPS have found significant relationships among the Self-Oriented and Socially Prescribed subscales and measures of depression and anxiety. The present study provided partial replication of these findings, as only the Socially Prescribed subscale of the MPS was significantly correlated with the BDI and STAI-T.

In order to validate the choice of stimulus words for the present study, subjects also rated the extent to which each of the perfectionistic, anxious, and depressive stimulus words described them (for adjectives) or was important to them (for nouns). This permitted identification of which words formed part of the conscious self-concept of persons scoring high on self-report perfectionism measures. Self-ratings of perfectionistic stimulus words were significantly correlated with the self-report perfectionism measures. That is, subjects who rated perfectionistic stimulus words as very much like them or very important to them also had elevated scores on the perfectionism self-report measures, especially the NPQ. The strong relationship between the self-rating of perfectionistic stimulus words and the perfectionism self-report measures provides evidence that the perfectionistic stimulus words accurately reflected the content of the cognitive schema of individuals of highly perfectionistic individuals. However, the self-ratings of the perfectionistic stimulus words were also strongly correlated with the BDI and the STAI-T, which calls into question the specificity of these stimulus words to perfectionism.

Analysis of the nature of the self-ratings of stimulus words revealed that perfectionistic stimulus words whose self-ratings were positively correlated with the NPQ were negatively toned. That is, they were reflective of negative aspects of perfectionism (self-critical, insecure, obsessive, inadequate, failure, etc.). In contrast, the positively-toned perfectionistic stimulus words were either

negatively correlated with the NPQ (outstanding, ideal, succeed, and self-control) or not correlated with the NPQ (perfect, determined, superior, organized, and persevering). This pattern of correlations suggests that the NPQ is measuring the negative or neurotic aspects of perfectionism and not tapping into a healthy drive to succeed. This finding is consistent with the intent of the authors of the NPQ (Mitzman et al., 1994). However, the perfectionistic stimulus words show the same relationship with the BDI and STAI-T. That is, the negatively-toned perfectionistic stimulus words were positively correlated with both the BDI and the STAI-T, while the positively-toned ones were either negatively correlated or not correlated. These perfectionistic stimulus words thus seem to reflect a construct that is also a component of subclinical levels of anxiety and depression.

The lack of specificity of the self-report measures and stimulus words used in the present study is an issue which requires consideration. While it has been proposed that anxiety and depression self-report measures are tapping into overlapping psychopathological states (e.g., Dobson, 1985), the strong relationships found among the NPQ, BDI, and STAI-T seem to suggest that the content of the NPQ is not specific to perfectionism or even to eating disorders. Rather, it appears that the three inventories are tapping into a general aspect of psychopathology such as neuroticism. Previous studies have found that perfectionism is a core feature of clinical and normals samples of anxious and depressed individuals. For example, Hewitt and Flett (1991a; 1991b) found significant correlations among all three dimensions of the MPS and anxiety and depression in a clinical sample. The strongest relationship were found between socially prescribed perfectionism and depression, and between self-oriented perfectionism and anxiety. Saddler and Sacks (1993) found the same pattern of results with a university student sample. Minarik and Ahrens (1996) also found that scores on a self-report measure of perfectionism were strongly related to scores on self-report measures of anxiety, depression, and eating disordered symptomatology. The present study replicated these

findings in a normal sample of female university students. Perfectionism thus appears to be a central component of depression, anxiety, and eating disordered symptomatology, both in clinical and subclinical populations.

Directions for Future Research

A number of methodological issues raised by the failure to detect a relationship between perfectionism self-report measures and response latencies to perfectionistic stimulus words suggest directions for future research. First, future studies should directly compare the hypotheses regarding the mechanism of cognitive interference (concern-related, threat-related, and emotionality hypotheses) by comparing response latencies to stimulus words which reflect each hypothesis. Also, a comparison of response latencies to stimulus words with varying degrees of emotionality or threat should be examined. Future studies should directly compare blocked and random presentations of stimulus words, and computerized and card formats. Also, future studies should clarify methodological issues concerning errors, outliers, and response recognition threshold levels. The characteristics of the sample used should also be explored to determine whether normal student samples are appropriate for such research. The use of other cognitive tasks (e.g., self-referent encoding) in addition to the modified Stroop task should also be pursued.

The strong relationships among the self-report measures of perfectionism, depression, anxiety, and eating disordered attitudes and behaviors suggest that perfectionism is a central feature of these syndromes in this normal sample of female university students. Future research should determine the usefulness of perfectionism in understanding such psychopathology. Specifically, does the concept of perfectionism further our understanding of depression, anxiety, and the eating disorders? Future research should focus on the role of perfectionism in these psychopathologies to determine whether perfectionism is a causal, contributory, or mediating factor in the development and maintenance of

these disorders. Additionally, future research should focus on identifying the dimensions of perfectionism which are specific to each of these psychopathologies.

Summary & Conclusions

The results of the present study did not support the applicability of the cognitive paradigm to the personality characteristic of perfectionism. Elevations on self-report measures of perfectionism, anxiety, and depression were not related to response latencies for corresponding stimulus words on the modified Stroop color-naming task. The threat-related hypothesis may have accounted for the failure to find a relationship between self-report measures of perfectionism and response latencies to perfectionistic stimulus words. That is, the key element in producing cognitive interference on the modified Stroop task may be the emotional content or threat-value of stimulus words which are of relevance to an individual's specific concerns. For a personality characteristic such as perfectionism, there may be no relevant words which possess a sufficiently strong emotional tone to produce cognitive interference.

A variety of methodological issues were raised by the present study, such as choice of stimulus words, mode of presentation, and characteristics of the sample used. These issues should be addressed in future studies.

Strong relationships were found among the self-report measures of perfectionism, depression, anxiety, and eating disordered symptomatology. These results suggest that perfectionism is a core feature of these psychopathologies. Future research should focus on determining the role of perfectionism in these psychopathologies, and identifying the clinical relevance of perfectionism. If perfectionism is in fact a central feature of depression, anxiety, and the eating disorders, then therapy for such disorders should target these perfectionistic attitudes and behaviors.

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APPENDIX A: Neurotic Perfectionism Questionnaire

Please circle the number which applies best to each of the statements below. All statements are strictly confidential. Thank you for your help.

(1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, 5 = *strongly agree*)

- | | | | | | |
|---|---|---|---|---|---|
| 1. I tend to think in extremes, i.e. feeling "all good or all bad", "all successful or all failing". | 1 | 2 | 3 | 4 | 5 |
| 2. At times I feel empty and hollow inside. | 1 | 2 | 3 | 4 | 5 |
| 3. I am harshly critical of myself. | 1 | 2 | 3 | 4 | 5 |
| 4. I constantly compare myself with people I consider to be better than me. | 1 | 2 | 3 | 4 | 5 |
| 5. As soon as I succeed in reaching a goal, I have to set myself an even more difficult target to work toward. | 1 | 2 | 3 | 4 | 5 |
| 6. I often feel like withdrawing from people and social gatherings. | 1 | 2 | 3 | 4 | 5 |
| 7. I try to avoid the disapproval of others at all costs. | 1 | 2 | 3 | 4 | 5 |
| 8. I believe if I fail someone they will cease to respect me, or care for me. | 1 | 2 | 3 | 4 | 5 |
| 9. I have a clear idea of the kind of person I would like to be, or ought to be, but I feel that I always fall short of this. | 1 | 2 | 3 | 4 | 5 |
| 10. I am "over-sensitive" to criticism. | 1 | 2 | 3 | 4 | 5 |
| 11. I often feel anxious or confused before beginning a task. | 1 | 2 | 3 | 4 | 5 |
| 12. If I do less than my best I feel guilty and ashamed. | 1 | 2 | 3 | 4 | 5 |
| 13. When I get what I want (i.e., achieve my goal) I feel dissatisfied or disillusioned. | 1 | 2 | 3 | 4 | 5 |

(1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, 5 = *strongly agree*)

14. I sometimes feel blaming and hostile toward other people.	1	2	3	4	5
15. If one is to attempt anything, one should do it perfectly or not at all.	1	2	3	4	5
16. No matter how successful my performance, I still feel that I could/should have done better.	1	2	3	4	5
17. I feel I have to be perfect in order to gain approval.	1	2	3	4	5
18. In order to feel O.K. about myself, I have to be what others expect me to be.	1	2	3	4	5
19. Unless I am constantly working toward achieving a goal, I feel dissatisfied.	1	2	3	4	5
20. I often feel lonely/isolated.	1	2	3	4	5
21. I find it difficult to obtain excitement/pleasure from life.	1	2	3	4	5
22. At times my anger toward other people seems so intense, it feels destructive and unsafe.	1	2	3	4	5
23. I measure myself by other people's standards.	1	2	3	4	5
24. I feel O.K. if I lapse or make mistakes.	1	2	3	4	5
25. As a child, however well I did, it felt as if it were never enough to please others.	1	2	3	4	5
26. Sometimes I feel as though I don't really know "who I am".	1	2	3	4	5
27. I constantly monitor my performance/behavior.	1	2	3	4	5
28. I am always punishing myself.	1	2	3	4	5

(1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, 5 = *strongly agree*)

29. When I most need to be close to a person, I often find myself deliberately trying to reject or push them away.	1	2	3	4	5
30. It feels as if my best is never good enough.	1	2	3	4	5
31. It often feels as if people make impossible/excessive demands of me.	1	2	3	4	5
32. At times my emotions get so confused, I can't make any sense of them.	1	2	3	4	5
33. No matter how well I do, I never feel satisfied with my performance.	1	2	3	4	5
34. I often experience feelings of self-contempt or worthlessness.	1	2	3	4	5
35. On occasions I feel if people could "see through me" they would expose me for the fraud that I sometimes feel I am.	1	2	3	4	5
36. I am usually good at making decisions.	1	2	3	4	5
37. If I do badly in something, I feel like a total failure.	1	2	3	4	5
38. As a child I couldn't understand what others expected or required of me.	1	2	3	4	5
39. I feel guilty a lot of the time.	1	2	3	4	5
40. Important others (i.e., mother, father) seemed to love me more for HOW WELL I DID rather than for WHO I was.	1	2	3	4	5
41. I often feel ashamed.	1	2	3	4	5
42. I set impossibly high standards for myself.	1	2	3	4	5

APPENDIX B: Multidimensional Perfectionism Scale

Listed below are a number of statements concerning personal characteristics and traits. Read each item and decide whether you agree or disagree and to what extent. If you *strongly agree*, circle 7; if you *strongly disagree*, circle 1; if you feel somewhere in between, circle any one of the numbers between 1 and 7. If you feel neutral or undecided the midpoint is 4.

	Disagree			Agree			
1. When I am working on something, I cannot relax until it is perfect.	1	2	3	4	5	6	7
2. I am not likely to criticize someone for giving up too easily.	1	2	3	4	5	6	7
3. It is not important that the people I am close to are successful.	1	2	3	4	5	6	7
4. I seldom criticize my friends for accepting second best.	1	2	3	4	5	6	7
5. I find it difficult to meet others' expectations of me.	1	2	3	4	5	6	7
6. One of my goals is to be perfect in everything I do.	1	2	3	4	5	6	7
7. Everything that others do must be of top-notch quality.	1	2	3	4	5	6	7
8. I never aim for perfection in my work.	1	2	3	4	5	6	7
9. Those around me readily accept that I can make mistakes too.	1	2	3	4	5	6	7
10. It doesn't matter when someone close to me does not do their absolute best.	1	2	3	4	5	6	7
11. The better I do, the better I am expected to do.	1	2	3	4	5	6	7
12. I seldom feel the need to be perfect.	1	2	3	4	5	6	7

Disagree

Agree

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13. Anything I do that is less than excellent will be seen as poor work by those around me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. I strive to be as perfect as I can be. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. It is very important that I am perfect in everything I attempt. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. I have high expectations for the people who are important to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. I strive to be the best at everything I do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. The people around me expect me to succeed at everything I do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. I do not have very high standards for those around me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. I demand nothing less than perfection of myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. Others will like me even if I don't excel at everything. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. I can't be bothered with people who won't strive to better themselves. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. It makes me uneasy to see an error in my work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. I do not expect a lot from my friends. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. Success means that I must work even harder to please others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. If I ask someone to do something, I expect it to be done flawlessly. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. I cannot stand to see people close to me make mistakes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Disagree

Agree

- | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--|---|---|---|---|---|---|---|
| 28. I am perfectionistic in setting my goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. The people who matter to me should never let me down. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. Others think I am okay, even when I do not succeed. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 31. I feel that people are too demanding of me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 32. I must work up to my full potential at all times. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 33. Although they may not show it, other people get very upset with me when I slip up. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 34. I do not have to be the best at whatever I am doing. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 35. My family expects me to be perfect. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 36. I do not have very high goals for myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 37. My parents rarely expected me to excel in all aspects of my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 38. I respect people who are average. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 39. People expect nothing less than perfection from me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 40. I set very high standards for myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 41. People expect more from me than I am capable of giving. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 42. I must always be successful at school or work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 43. It does not matter to me when a close friend does not try their hardest. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Disagree

Agree

44. People around me think I am still competent even if I make a mistake.

1 2 3 4 5 6 7

45. I seldom expect others to excel at whatever they do.

1 2 3 4 5 6 7

APPENDIX C: Beck Depression Inventory

After reading each group of statements carefully, circle the number (0, 1, 2, or 3) next to the one statement in each group which **best** describes the way you have been feeling the **past week, including today**. If several statements within a group seem to apply equally well, circle each one. **Be sure to read all the statements in each group before making your choice.**

- | | | |
|----|--|---|
| 1. | I do not feel sad. | 0 |
| | I feel sad. | 1 |
| | I am sad all the time and I can't snap out of it. | 2 |
| | I am so sad or unhappy that I can't stand it. | 3 |
| 2. | I am not particularly discouraged about the future. | 0 |
| | I feel discouraged about the future. | 1 |
| | I feel I have nothing to look forward to. | 2 |
| | I feel that the future is hopeless and that things cannot improve. | 3 |
| 3. | I do not feel like a failure. | 0 |
| | I feel I have failed more than the average person. | 1 |
| | As I look back on my life, all I can see is a lot of failures. | 2 |
| | I feel I am a complete failure as a person. | 3 |
| 4. | I get as much satisfaction out of things as I used to. | 0 |
| | I don't enjoy things the way I used to. | 1 |
| | I don't get real satisfaction out of anything anymore. | 2 |
| | I am dissatisfied or bored with everything. | 3 |
| 5. | I don't feel particularly guilty. | 0 |
| | I feel guilty a good part of the time. | 1 |
| | I feel quite guilty most of the time. | 2 |
| | I feel guilty all of the time. | 3 |
| 6. | I don't feel I am being punished. | 0 |
| | I feel I may be punished. | 1 |
| | I expect to be punished. | 2 |
| | I feel I am being punished. | 3 |
| 7. | I don't feel disappointed in myself. | 0 |
| | I am disappointed in myself. | 1 |
| | I am disgusted with myself. | 2 |
| | I hate myself. | 3 |

- | | | |
|-----|--|---|
| 8. | I don't feel I am any worse than anybody else. | 0 |
| | I am critical of myself for my weaknesses or mistakes. | 1 |
| | I blame myself all the time for my faults. | 2 |
| | I blame myself for everything bad that happens. | 3 |
| 9. | I don't have any thoughts of killing myself. | 0 |
| | I have thoughts of killing myself, but I would not carry them out. | 1 |
| | I would like to kill myself. | 2 |
| | I would kill myself if I had the chance. | 3 |
| 10. | I don't cry any more than usual. | 0 |
| | I cry more now than I used to. | 1 |
| | I cry all the time now. | 2 |
| | I used to be able to cry, but now I can't cry even though I want to. | 3 |
| 11. | I am no more irritated now than I ever am. | 0 |
| | I get annoyed or irritated more easily than I used to. | 1 |
| | I feel irritated all the time now. | 2 |
| | I don't get irritated at all by the things that used to irritate me. | 3 |
| 12. | I have not lost interest in other people. | 0 |
| | I am less interested in other people than I used to be. | 1 |
| | I have lost most of my interest in other people. | 2 |
| | I have lost all of my interest in other people. | 3 |
| 13. | I make decisions about as well as I ever could. | 0 |
| | I put off making decisions more than I used to. | 1 |
| | I have greater difficulty in making decisions than before. | 2 |
| | I can't make decisions at all anymore. | 3 |
| 14. | I don't feel I look any worse than I used to. | 0 |
| | I am worried that I am looking old or unattractive. | 1 |
| | I feel that there are permanent changes in my appearance that make me look unattractive. | 2 |
| | I believe that I look ugly. | 3 |
| 15. | I can work about as well as before. | 0 |
| | It takes an extra effort to get started at doing something. | 1 |
| | I have to push myself very hard to do anything. | 2 |
| | I can't do any work at all. | 3 |

- | | | |
|-----|--|---|
| 16. | I can sleep as well as usual. | 0 |
| | I don't sleep as well as I used to. | 1 |
| | I wake up 1 - 2 hours earlier than usual
and find it hard to get back to sleep. | 2 |
| | I wake up several hours earlier than I
used to and cannot get back to sleep. | 3 |
| 17. | I don't get more tired than usual. | 0 |
| | I get tired more easily than I used to. | 1 |
| | I get tired from doing almost anything. | 2 |
| | I am too tired to do anything. | 3 |
| 18. | My appetite is no worse than usual. | 0 |
| | My appetite is not as good as it used to be. | 1 |
| | My appetite is much worse now. | 2 |
| | I have no appetite at all anymore. | 3 |
| 19. | I haven't lost much weight, if any, lately. | 0 |
| | I have lost more than 5 pounds. | 1 |
| | I have lost more than 10 pounds. | 2 |
| | I have lost more than 15 pounds. | 3 |

I am purposely trying to lose weight by eating less. Yes _____ No _____

- | | | |
|-----|---|---|
| 20. | I am no more worried about my health than usual. | 0 |
| | I am worried about physical problems such as
aches and pains; or upset stomach; or constipation. | 1 |
| | I am very worried about physical problems and
it's hard to think of much else. | 2 |
| | I am so worried about my physical problems that
I cannot think about anything else. | 3 |
| 21. | I have not noticed any recent change in my interest in sex. | 0 |
| | I am less interested in sex than I used to be. | 1 |
| | I am much less interested in sex now. | 2 |
| | I have lost interest in sex completely. | 3 |

APPENDIX D: State-Trait Anxiety Inventory (Trait Portion)

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

(1 = almost never, 2 = sometimes, 3 = often, 4 = almost always)

- | | | | | |
|---|---|---|---|---|
| 1. I feel pleasant. | 1 | 2 | 3 | 4 |
| 2. I feel nervous and restless. | 1 | 2 | 3 | 4 |
| 3. I feel satisfied with myself. | 1 | 2 | 3 | 4 |
| 4. I wish I could be as happy as others seem to be. | 1 | 2 | 3 | 4 |
| 5. I feel like a failure. | 1 | 2 | 3 | 4 |
| 6. I feel rested. | 1 | 2 | 3 | 4 |
| 7. I am "calm, cool, and collected". | 1 | 2 | 3 | 4 |
| 8. I feel that difficulties are piling up so that I cannot overcome them. | 1 | 2 | 3 | 4 |
| 9. I worry too much over something that really doesn't matter. | 1 | 2 | 3 | 4 |
| 10. I am happy. | 1 | 2 | 3 | 4 |
| 11. I have disturbing thoughts. | 1 | 2 | 3 | 4 |
| 12. I lack self-confidence. | 1 | 2 | 3 | 4 |
| 13. I feel secure. | 1 | 2 | 3 | 4 |
| 14. I make decisions easily. | 1 | 2 | 3 | 4 |
| 15. I feel inadequate. | 1 | 2 | 3 | 4 |
| 16. I am content. | 1 | 2 | 3 | 4 |

(1 = almost never, 2 = sometimes, 3 = often, 4 = almost always)

- | | | | | |
|--|---|---|---|---|
| 17. Some unimportant thought runs through my mind and bothers me. | 1 | 2 | 3 | 4 |
| 18. I take disappointments so keenly that I can't put them out of my mind. | 1 | 2 | 3 | 4 |
| 19. I am a steady person. | 1 | 2 | 3 | 4 |
| 20. I get in a state of tension or turmoil as I think over my recent concerns and interests. | 1 | 2 | 3 | 4 |

APPENDIX E: Eating Disorder Inventory-2 Perfectionism & Drive for Thinness Subscales

Read each statement below and decide whether each statement applies to you. Then circle the corresponding letter for each statement (A = *Always*, U = *Usually*, O = *Often*, S = *Sometimes*, R = *Rarely*, N = *Never*).

- | | | | | | | |
|---|---|---|---|---|---|---|
| 1. I feel extremely guilty after overeating. | A | U | O | S | R | N |
| 2. I exaggerate or magnify the importance of weight. | A | U | O | S | R | N |
| 3. As a child, I tried very hard to avoid disappointing my parents. | A | U | O | S | R | N |
| 4. I have extremely high goals. | A | U | O | S | R | N |
| 5. My parents have expected excellence of me. | A | U | O | S | R | N |
| 6. If I gain a pound, I worry that I will keep gaining. | A | U | O | S | R | N |
| 7. Only outstanding performance is good enough in my family. | A | U | O | S | R | N |
| 8. I think about dieting. | A | U | O | S | R | N |
| 9. I think about sweets and carbohydrates without feeling nervous. | A | U | O | S | R | N |
| 10. I am terrified of gaining weight. | A | U | O | S | R | N |
| 11. I feel that I must do things perfectly or not do them at all. | A | U | O | S | R | N |
| 12. I hate being less than best at things. | A | U | O | S | R | N |
| 13. I am preoccupied with the desire to be thinner. | A | U | O | S | R | N |

APPENDIX F: Self-Rating Task

Below you will find a list of words. Please rate each word according to how much it describes you or is important to you (1 = *not at all*, 2 = *a little*, 3 = *somewhat*, 4 = *quite a lot*, 5 = *very much*).

1. self-critical	1	2	3	4	5
2. apprehensive	1	2	3	4	5
3. superior	1	2	3	4	5
4. burdened	1	2	3	4	5
5. organized	1	2	3	4	5
6. empty	1	2	3	4	5
7. hopeless	1	2	3	4	5
8. inadequate	1	2	3	4	5
9. succeed	1	2	3	4	5
10. dissatisfied	1	2	3	4	5
11. panicky	1	2	3	4	5
12. persevering	1	2	3	4	5
13. worthless	1	2	3	4	5
14. dismal	1	2	3	4	5
15. self-control	1	2	3	4	5
16. agitated	1	2	3	4	5
17. failure	1	2	3	4	5
18. anxious	1	2	3	4	5
19. lonely	1	2	3	4	5

1 = not at all, 2 = a little, 3 = somewhat, 4 = quite a lot, 5 = very much

20. distressed	1	2	3	4	5
21. miserable	1	2	3	4	5
22. glum	1	2	3	4	5
23. ideal	1	2	3	4	5
24. rejection	1	2	3	4	5
25. fearful	1	2	3	4	5
26. worried	1	2	3	4	5
27. approval	1	2	3	4	5
28. obsessive	1	2	3	4	5
29. alarmed	1	2	3	4	5
30. unrealistic	1	2	3	4	5
31. scrutinized	1	2	3	4	5
32. perfect	1	2	3	4	5
33. sad	1	2	3	4	5
34. downhearted	1	2	3	4	5
35. determined	1	2	3	4	5
36. nervous	1	2	3	4	5
37. tense	1	2	3	4	5
38. disapproval	1	2	3	4	5
39. outstanding	1	2	3	4	5
40. insecure	1	2	3	4	5

APPENDIX G: Perfectionism-Related Words

1. absolute
2. acceptance
3. accomplishment
4. accurate
5. achievement
6. achieve
7. active
8. admired
9. admirable
10. admiration
11. ambitious
12. appraisal
13. approval
14. attainment
15. committed
16. commitment
17. comparison
18. competent
19. competitive
20. complete
21. compulsive
22. correct
23. critical
24. dedicated
25. defeat
26. defective
27. deficiency
28. demanding
29. dependable
30. determined
31. diligent
32. disapproval
33. dissatisfied
34. effective
35. effort
36. efficient
37. elite
38. endurance
39. evaluate
40. evaluation
41. exact

42. excel
43. excellence
44. excessive
45. expectations
46. exquisite
47. extremes
48. fail
49. failure
50. faulty
51. flawed
52. flawless
53. faultless
54. fulfilment
55. goals
56. hardworking
57. ideal
58. ideals
59. impeccable
60. imperfect
61. impossible
62. importance
63. important
64. inadequate
65. inferior
66. insecure
67. mastery
68. mistakes
69. moralistic
70. motivated
71. neat
72. obsessed
73. obsessive
74. orderly
75. organized
76. outstanding
77. perfect
78. perfection
79. performance
80. persevering
81. persistent
82. potential
83. precise
84. precision
85. prepared
86. pressure

87. productivity
88. productive
89. quality
90. realize
91. rejected
92. relentless
93. respect
94. rigorous
95. rules
96. scrutinize
97. self-control
98. self-critical
99. self-deprecation
100. self-evaluation
101. shortcoming
102. standards
103. stress
104. strict
105. stringent
106. striving
107. strive
108. success
109. successful
110. succeed
111. superb
112. superior
113. superlative
114. supreme
115. tidy
116. unacceptable
117. uncertainty
118. unreachable
119. unrealistic
120. unsatisfied
121. values
122. wonderful

APPENDIX H: Consent Form

CONSENT FORM

This is a study of personality factors and information-processing. You will be asked to complete a series of questionnaires regarding yourself and also to participate in a computerized task requiring you to name colors presented on the computer screen.

My signature on this sheet indicates that I agree to participate in a study by Barb Backs, and it also indicates that I understand the following:

1. I am a volunteer and can withdraw at any time from the study.
2. There is no risk of physical or psychological harm.
3. The data I provide will be confidential.
4. I will receive a summary of the project, upon request, following the completion of the project.

I have received explanations about the nature of the study, its purpose, and procedures.

Signature of Participant

Date

APPENDIX I: Debriefing

TAKE HOME SHEET: PERSONALITY CHARACTERISTICS
AND INFORMATION-PROCESSING

The basic premise of cognitive clinical psychology is that emotional well-being is primarily determined by the way that one thinks about oneself and the world. This cognitive perspective has been used to describe depression and anxiety disorders. Research in this area has found that depressed individuals selectively attend to negative information about self, the world, and the future, and ignore or discount positive information. Anxious individuals selectively attend to or process threatening material.

The modified Stroop color-naming task is an information-processing paradigm that accesses the cognitive structures that regulate incoming information. Research using the modified Stroop color-naming task has found that depressed individuals exhibit longer response latencies (i.e. take longer to name the color of ink) when presented with negative or depressive-content words and individuals with anxiety disorders exhibit longer response latencies for threatening words. Such results have been interpreted as support for the theory that distinct organizing cognitive structures may be active in various psychopathologies.

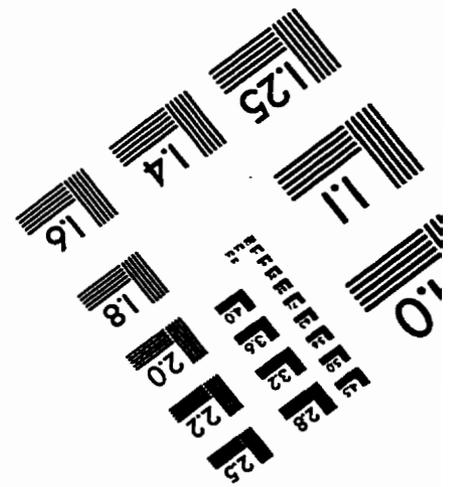
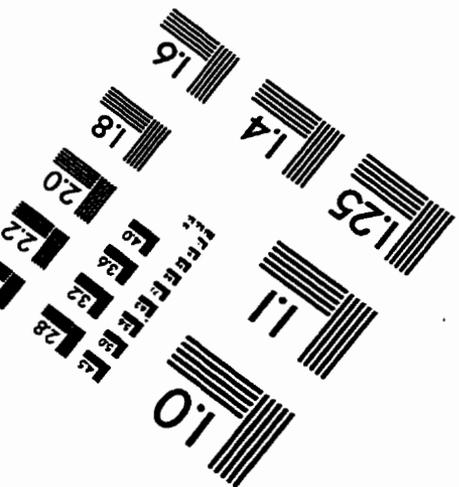
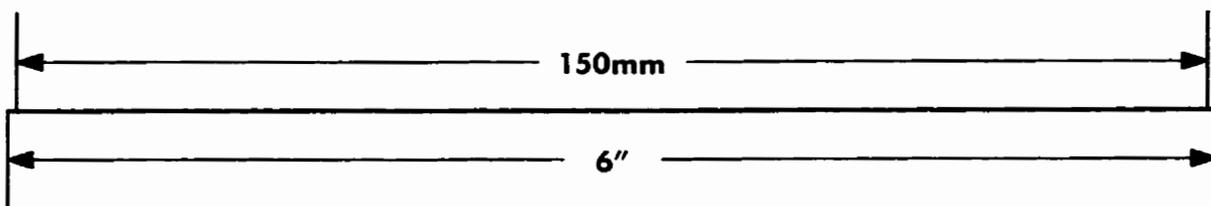
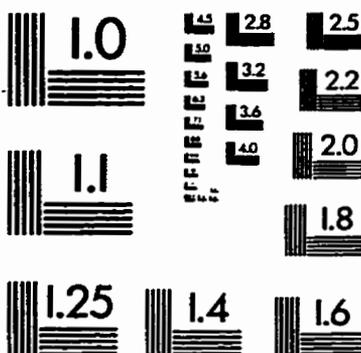
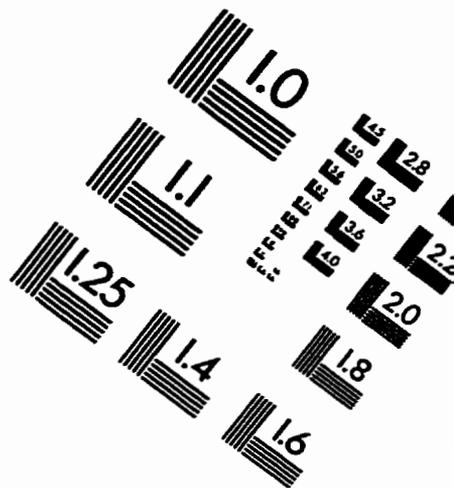
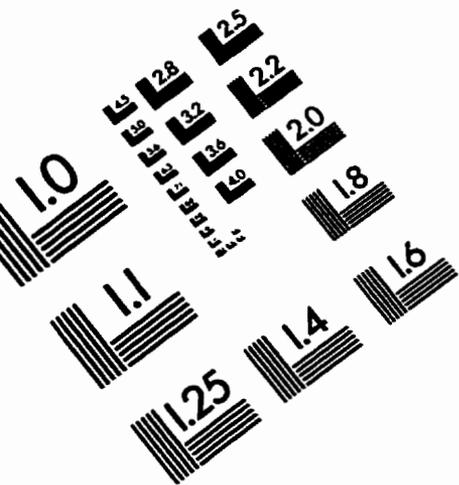
The purpose of the present study is to explore the applicability of this cognitive perspective to the study of personality characteristics such as perfectionism. The Stroop color-naming task will be used to determine whether persons with elevated scores on various self-report personality measures also exhibit longer response latencies to related words.

If Your Involvement in this Study Has Raised Issues for You That You Would Like to Discuss with Someone, Or If You Just Need Someone to Talk To, the Following Organizations Can Help.

Lakehead University Career and Counselling Centre	343-8739 343-8582
Telecare (Crisis and Caring Line) - 24 hours	623-3660
Lakehead University Peer Support Line	343-8255

IF YOU HAVE ANY QUESTIONS ABOUT THIS STUDY, PLEASE CONTACT BARB BACKS @ 343-8476 OR DR. JOHN JAMIESON @ 343-8441.

IMAGE EVALUATION TEST TARGET (QA-3)



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