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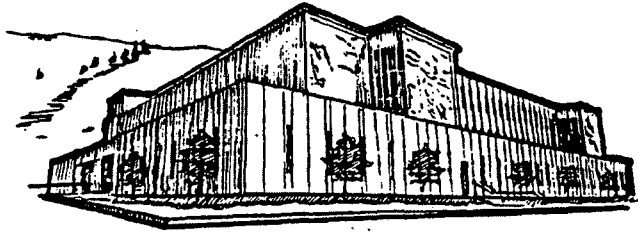
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University of
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Splitting and Mood Congruent Recall
of Previously Self-Referenced Trait Adjectives:
Is There a Relationship?

By

Elizabeth Bell

B.A., West Virginia University, 1987

Presented in partial fulfillment of the requirements
for the degree of
Master of Arts
University of Montana
1991

Approved by:

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June 8, 1992

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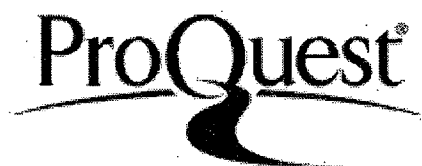


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Bell, Elizabeth, M.A. December 1991

Psychology

Splitting and Mood Congruent Recall of Previously Self-Referenced Trait Adjectives: Is There a Relationship? (pp. 155)

Director: Charles K. Allen *CKA*

The present study was undertaken as a first attempt to examine the relationship between the phenomenon of mood congruent recall and the defense mechanism of splitting. Because of the difficulties inherent in using an actual clinical population, an analog paradigm was utilized. In a pre-screening, subjects filled out the Millon Clinical Multiaxial Inventory-II Borderline Scale (MCMI-II BPD Scale), and two scales designed to measure the splitting defense (the Image Distorting Defense subscale of the Defense Style Questionnaire, and the Splitting Scale), and a median split procedure was used to classify subjects as high or low scorers. All subjects received a mood induction and then rated whether 54 trait adjectives (chosen from the top and bottom thirds of Anderson's likableness norms) applied to them or not. After a distractor task and another mood induction, incidental recall for these adjectives was tested. Both self-referencing congruency and recall congruency of the high and low scorers of both sexes was compared, utilizing four factor analyses of variance, with three between subjects factors (mood condition, personality, and sex) and one within subjects factor (congruent and non-congruent adjectives). The dependent measure for the first analysis was the number of adjectives self-referenced. For the second analysis it was the number of adjectives recalled. It was hypothesized that lower scorers would show self-referencing and recall congruency in positive moods only but that higher scorers would show congruency in both positive and negative moods. The experimental hypotheses were not supported. Instead, subjects generally demonstrated a positive bias in both self-referencing and recall, regardless of mood condition. However, higher scorers on the Splitting Scale and females who were higher scorers on the MCMI-II BPD Scale demonstrated significantly less positive bias than did other subjects, again regardless of mood. Possible reasons for and implications of this finding are discussed.

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Chapter One

INTRODUCTION

Can the "splitting" of individuals with borderline personality disorder be explained as being the result of the effects of mood states on memory and cognition? Or to put it another way, can the splitting defense be operationalized as mood congruent memory? This study was designed as a first attempt to answer this question.

Borderline Personality Disorder

The central feature of borderline personality disorder is a pervasive instability of mood, self-image and interpersonal relationships (American Psychiatric Association [APA], 1987).

A marked and persistent identity disturbance is almost invariably present. This is often pervasive, and is manifested by uncertainty about several life issues, such as self-image, sexual orientation, long-term goals or career choice, types of friends or lovers to have, or which values to adopt. The person often experiences this instability of self-image as chronic feelings of emptiness or boredom.

Interpersonal relationships are usually unstable and intense, and may be characterized by alteration of the extremes of overidealization and devaluation. These people have difficulty tolerating being alone, and will make frantic efforts to avoid real or imagined abandonment.

Affective instability is common. This may be evidenced by marked shifts from baseline mood to depression, irritability, or anxiety, usually lasting a few hours or, only rarely, more than a few days. In addition, these people often have

inappropriately intense anger or lack of control over their anger, with frequent displays of temper or recurrent physical fights. They tend to be impulsive, particularly in activities that are potentially self-damaging, such as spending sprees, psychoactive substance abuse, reckless driving, casual sex, shoplifting, and binge eating.

Recurrent suicidal threats, gestures, or behavior and other self-mutilating behavior (e.g., wrist scratching) are common in the more severe forms of this disorder. This behavior may serve to manipulate others, may be a result of intense anger, or may counteract feelings of numbness and depersonalization that arise during periods of extreme stress.

Some conceptualize this disorder as a level of personality organization rather than as a specific personality disorder. (p. 346)

Other Axis I or Axis II disorders are often present, and individuals with this disorder often have histories which include many different previous diagnoses. Their most salient feature is often the intensity and changeability of their affective states (Millon, 1981). Common complications are Major Depression, Dysthymia, Psychoactive Substance Abuse, and Brief Reactive Psychosis (APA, 1987). This disorder is more often diagnosed in females than in males, and premature death from suicide is a real risk (APA, 1987). This disorder differs from cyclothymia in that while the borderline and the cyclothymic both manifest affective instability, the borderline does not manifest hypomanic episodes and the cyclothymic does. In some cases, however, both diagnoses may be warranted (DSM-III-R).

Borderline personality disorder only made its way into the official diagnostic nomenclature in 1980, with the publication of DSM-III (Millon, 1981). Prior to that time the term was often used casually by clinicians to indicate that a patient was on the border, often between neurosis and psychosis (Millon, 1981). It was the work of diverse psychoanalytic theorists who focused mainly on intrapsychic features of the disorder that was primarily responsible for the delineation, development and popularization of the concept (Millon, 1981). As the concept developed, however, others focused on the relationship between borderline and both affective and psychotic disorders. Integrating the two traditions, Spitzer (1979), delineated two subgroups of borderline disorders, the schizotypal borderline and the unstable borderline, which evolved into the DSM-III Schizotypal and Borderline Personality Disorders. According to Millon (1981), the name Borderline Personality Disorder was chosen for the unstable borderline basically to appease the psychoanalytic theorists who had contributed so much to the development of the concept, although others felt that a name such as cycloid, unstable, ambivalent, erratic, impulsive, or labile personality would have been more descriptive.

Borderline Personality Disorder is conceptualized quite differently by different theorists. Some, such as Millon

(1981) and many psychoanalytic theorists (e.g. Kernberg, 1975), see personality functioning as occupying a continuum between healthy and psychotic. To these theorists, Borderline personality is not conceptualized as a discrete homogenous syndrome but as a level of pathology or personality organization. But this is not the only area of disagreement. Some attribute the etiology of this disorder to environmental influences, others see it as resulting from inherent predispositions, and still others see it as resulting from the interaction of the two. Most psychodynamic theorists view this disorder as resulting from the failure of the patient to negotiate a specific developmental stage, but theorists such as Millon (1981) view it as resulting from the cumulative effects of the patient's whole life experience. Various subgroups of patients with this disorder are identified by theorists, either on the basis of hypothesized relationships with other disorders, or on the basis of developmental differences, or some combination of both.

Theorists such as Davis and Akiskal (1986) and Klein (1977) take a biogenic tack. They point to the heterogeneity within the borderline syndrome. Basing their work on family studies showing an increased risk of alcoholism, bipolar depression and borderline personality disorder in first degree relatives of patients with

borderline personality disorder, different pharmacological responses in subgroups of patients, and neurochemical abnormalities in primates whose early attachment bonds were disturbed, they suggest that borderline personality disorder is actually a group of different syndromes with similar behavioral manifestations.

Millon's (1981) theory integrates the biological findings with social learning theory. As noted previously, he views personality traits as lying on a continuum of adaptiveness. In his view, borderline personality disorder is one of three severe personality disorders, along with paranoid and schizotypal personality disorders, which represent deteriorated but stable more dysfunctional versions of less pathological personality disorders. Millon describes four subtypes of the borderline personality pattern; the borderline/dependent, the borderline/compulsive, the borderline/histrionic, and the borderline/passive-aggressive. He sees the same etiological factors at work in the lives of these patients as in their less severe variations. He states:

The primary difference between them are the intensity, frequency, timing, and persistence of a host of potentially pathogenic features. Those who function at the borderline level may begin with less adequate constitutional equipment or be subjected to a series of more adverse early experiences. (1981, p. 364)

Most psychodynamic theorists view borderline personality

as a level of intrapsychic structural organization rather than as a specific personality disorder (Meissner, 1978).

In this view, the borderline is seen as having some traits more usually associated with neurosis and some traits more usually associated with psychosis and as therefore not fitting into either classification. While psychotics are thought to manifest identity diffusion, primitive defense mechanisms, and loss of reality contact and neurotics are thought to manifest none of these symptoms, borderlines are thought to manifest identity diffusion and primitive defenses but not a loss of reality contact (Settlage, 1977).

Neurosis is viewed as resulting from Oedipal conflicts, and both psychosis and borderline personality organization are viewed as resulting from pre-oedipal conflicts. Psychotics are viewed as not having successfully negotiated the very earliest stage of development, in which the self and the mother are differentiated as separate objects, and borderlines are seen as having difficulty in a later stage in which object constancy develops. It is the borderline's development of and reliance on the splitting defense and other subsidiary defenses that results in the lack of behavioral and internal integration that is observed in individuals with this disorder.

Splitting

The concept of splitting is central to the modern psychodynamic conceptualizations of borderline personality disorder and is thought to be of both etiological and diagnostic importance. However, as Pruyser (1975) and Marmor and Horowitz (1986) point out, there is a great deal of confusion regarding the term splitting, and it is used in very different ways by different theorists.

Kernberg (1975), whose work was of central importance in the development of the borderline concept, defines splitting as:

an essential defensive operation of the borderline personality organization which underlies all others that follow. It has to be stressed that I am using the term splitting in a restricted and limited sense, referring only to the active process of keeping apart introjections and identifications of opposite quality. (p. 75)

In an earlier publication (1966), Kernberg states "what is split is not only affect states of the ego but also object images and self images" (p. 245). In developing his theory, Kernberg drew on the work of Mahler (1968, 1971), who posited that pathological splitting resulted from difficulties in negotiating the rapprochement subphase of the separation-individuation stage of development. According to Mahler, some children may "split the object world, more permanently than is optimal, into 'good' and

'bad'. By means of this splitting, the 'good' object is defended against the derivatives of the aggressive drive" (1971, p. 413). As Lichtenberg and Slap (1973) note, "Both Mahler and Kernberg suggest that the earliest infantile experiences give rise to an organization of two sets of memory traces" (p. 777). These exist as "memory islands which contain imprints of 'pleasurable-good' or 'painful-bad' stimuli" (Mahler, 1968, p. 44). As a child matures, he or she becomes able to integrate these separate images and to perceive objects as wholes, except when these objects are the target of intense ambivalence. When object constancy is achieved, the child can substitute for the absent mother "a reliable internal image that remains relatively stable irrespective of the state of instinctual need or inner discomfort" (Mahler, Pine, & Bergman, 1975, p. 110). This implies the "unifying of the 'good' and 'bad' object into one whole representation (p. 110). Lichtenberg and Slap (1973) liken the two stages (pre and post object constancy) to the difference between a B movie and an A movie, "in the former the characters are all clearly good or evil, they are one dimensional; the characters in an A movie are more complicated, they have depth, they suffer from internal conflicts, and their characters have good and bad aspects." Mahler (1971) suggests that the development of pathological splitting may be the result of inadequate mothering, while Kernberg (1975) stresses innate constitutional factors, even

suggesting that there may be a biologically based lack of integrative ability.

Pruyser (1975), questioning the defensive nature of splitting, says of Kernberg's work:

His case material and that of others concerned with borderline conditions give justification for describing the patients' attitudes, transference reactions, emotional expressions, motor behaviors, and dealings with other people as appearing, at times, split and their intentions as splitting. But here these words are used in the phenomenological sense describing behaviors being disjointed, fiercely contrasting with each other, staccato in their sudden flip-flops, and utterly lacking in that suavity, elegance, mutual softening, nice blending, or commonsensical give-and-take that we all see as the goal of desirable integration. The question is: Why should we invent a special intrapsychic act of splitting to account for these phenomena as if some internal chopper were at work to produce them? (p. 43)

Volkan (1976), however, who's conceptualization agrees with that Kernberg (1975), Mahler (1971), and Lichtenberg and Slap (1973), cites as evidence for the defensive nature of splitting clinical examples in which patients are flooded with intense primitive anxiety when their therapist encourages them to integrate split representations.

Dorpat (1979), from a slightly different perspective from that Pruyser, questions the need to posit a specific defense mechanism of splitting, suggesting that the behaviors that are attributed to splitting can all be accounted for by the defense mechanism of denial. He suggests that in the

phenomenon that is called splitting, what is denied is the anger toward the need-fulfilling object, which results in the extreme alternations of affect toward objects that is usually referred to as splitting. Brenner (1981) counters with the argument that while denial of some aspect of reality is definitely an aspect of splitting, it is actually an aspect of all defensive operations.

Adding to the confusion, Kohut (1981) uses the terms vertical splitting and horizontal splitting to refer to two possibly very different processes that occur in narcissistic patients' the term vertical splitting refers to grandiosity and disavowed feelings of shame and low self esteem (this may be equivalent to the splitting of borderlines), and the term horizontal splitting refers to the split between primitive narcissistic needs and somewhat realistic expectations of others.

Although Masterson's (1985) theory differs generally from that of Kernberg (1975), his conceptualization of the defense mechanism of splitting is very similar to Kernberg's and Mahler's (1971). He speaks of rewarding and withdrawing part-units, which each consist of a part-self representation, a part-object representation, and a linking affect. Like Mahler, he stresses the role of maternal libidinal non-availability in the development of the

splitting defense.

Grostein (1981) distinguishes between two types of splitting, the first being an adaptive cognitive perceptual-discriminatory process which aids in adaptation, and the latter a defense mechanism. In agreement with Kernberg (1975), he postulates that in this second form of splitting, good and bad images of the self and others are kept apart to avoid the anxiety inherent in the contamination of the good object by aspects of the bad object.

Stolorow and Lachmann (1978) distinguish between what they term pre-stage splitting and defensive splitting, the first representing arrested development and the second, like the splitting of Kernberg, representing a defense against structural conflicts. Pre-stage splitting results from the inability of an individual to achieve object constancy, while in defensive splitting the individual possesses the ability to integrate opposing images but keeps them separate for defensive purposes. Cooper and Arnow (1984) have applied Stolorow and Lachmann's conceptualization to analyses of Rorschach responses and believe that they can distinguish the two types of splitting in Rorschach protocols.

Melito (1983) approaches the concept of splitting from a

more cognitive perspective. He integrates Piagetian stages of cognitive development with psychodynamic notions of splitting and argues for the congruity of the two approaches. Central in his analysis are the Piagetian concepts of centering and decentering. Noting that the period in which object constancy and defensive splitting develop in Kernberg's and Mahler's theories coincides with the transition from the sensori-motor stage to the pre-operational stage in Piagetian thought, he posits the existence of "developmental" and "defensive splitting". Developmental splitting is stage appropriate behavior and results from the child's centration, or "concentration of attention on a single thing such that different aspects of reality are merely registered and not coordinated into an organized system of relations" (p. 521). At the beginning of the pre-operational period, the child has difficulty "decentering onto memories of other perceptions relating to the same content or situation" (p. 525). True conceptual thought does not yet exist and concepts are understood in terms of prototypes. As intuitive thought (the second stage of pre-operational thought) develops, the child becomes able to decenter his or her attention onto other images. Speaking of the differences between developmental and defensive splitting, Melito states,

If a subject is unable to integrate introjects because of cognitive immaturity (or even cognitive defect), we cannot speak of the resultant splitting as defensive since the resultant state

is without motive. We can speak of splitting as a defense if the subject has the proven cognitive capacity (as perhaps demonstrated with respect to more neutral content) to decenter percepts and images and integrate them. (p. 530)

Thus, although he expresses agreement with Kernberg's formulations, his own formulation would suggest that if, as Kernberg (1966) has suggested, individuals who utilize the splitting defense have a constitutional, physiological inability to integrate opposing representations, then their splitting cannot be considered as defensive.

Horowitz (1977) and Marmar and Horowitz (1986) also approach splitting from a somewhat cognitive perspective, integrating cognitive and psychodynamic formulations. Horowitz (1977) states, "In terms of cognitive structure, splitting refers to a segregation and multiplication of inner schema of self and other. Instead of integrated, realistic, and coherent self- and object- models, the person schematizes role dyads on the basis of multiple 'good' and 'bad' self and object images." (p. 550). Marmar and Horowitz (1986) describe splitting as "the dissociation between two unique states" (p. 27) and state that its defensive purpose is to protect the individual from the disorganizing affects that would be entailed in a realistic, integrated image of the object. They summarize the relevant literature as follows:

Splitting refers to the segregation of the mental representations of the self and others, such that

part rather than whole images are formed. Objects may be seen as either all good or all bad rather than having both good and bad attributes. Similarly, strong currents of contradictory feelings, such as love for a person who is gratifying and hatred when the same person is at another point in time frustrating, are kept apart. When feelings of anger emerge toward the frustrating object, the person has no access to modulating memories of previous positive feelings which might temper the reaction to frustration.

The sense of perspective, which requires the integration of mixed experiences across time, is impaired, leading to an unrealistic and at times dramatic overreaction to the experience of the moment. While these segregated affect states and related images of the self and others are accessible to consciousness at different moments, with neither side of the ambivalence is present in awareness at a given moment precludes the realistic integration of experience. (p. 23)

Thus, Marmor and Horowitz, as well as Melito and Mahler and Kernberg, describe splitting as an affectively based separation of internal representations or memories of self and others.

While there has been much theorizing about splitting, largely based on informal clinical observation of borderline patients, there has been a dearth of empirical studies of the phenomenon. This is in large part due to the fact that operationalizing an inferred unconscious process is quite difficult. In recent years, however, psychodynamic theorists have attempted to remedy the problem by creating measures based on either clinicians ratings of the presence or absence of specific defenses, or self report measures of what have been termed "conscious mental derivatives" of

these unconscious processes. A defense scale has been developed based on clinicians' ratings, The Defense Mechanism Rating Scale (Perry & Cooper, 1986), but it requires lengthy clinical interviews by trained clinicians to administer and is thus often impractical for use in screening subjects for research participation. Two self-report measures have been developed to specifically measure splitting, the Splitting Scale (Gerson, 1984), and the Image Distorting Defense subscale of the Defense Style Questionnaire (Bond et al., 1983). Neither of these has been fully validated, however.

In order to clearly operationalize the concept of splitting, one must first analyze the concept and determine what splits, and on what basis. There appears to be a general agreement among theorists that first images or "memory traces", and later internal representations of the self and others are split along affective lines and that as Marmor and Horowitz point out, when these individuals are in one affective state, they have no access to contradictory memories that might modulate their experiences. If this is the case, then shouldn't these individuals demonstrate this mood congruent memory for information relating to themselves or to significant others in the laboratory as well as in real life? Shouldn't they also demonstrate stronger mood congruent memory effects for this type of information than

individuals who do not utilize this defense mechanism?

Memory Research

Two general areas of memory research seem to be particularly relevant to our understanding of splitting. The first area of interest concerns the mnemonic effects of self-referencing of information and the other area is concerned with the effects of mood on memory.

Self-Referencing

It has been long noticed that people tend to learn new information by relating it to themselves (e.g., the intern syndrome in medical students or psychology graduate students) (Bower & Gilligan, 1979). What is the purpose of this, however? Rogers, Kuiper, and Kirker (1977) and Bower and Gilligan (1979) initiated experiments to compare the memory enhancing properties of self-referencing of adjectives with other forms of processing. Rogers et al., utilizing an incidental recall paradigm, had subjects rate adjectives on their structural, phonemic, semantic, or self-referent qualities. They found that memory for adjectives that had been self-referred was far superior to adjectives that had been rated on other dimensions and that although yes rated items were recalled slightly better than no rated

items in the self-reference condition (yes or no ratings did not make a difference in other conditions), just the act of self-referencing created a strong mnemonic advantage. Bower and Gilligan, in two experiments, first compared recall of trait adjectives that had been judged by subjects as referring to themselves (either generally or by retrieving specific life episodes) with recall for adjectives that had been judged on the basis of their meaning or sound, and then in a second experiment compared recall for adjectives that had been judged in relation to the subjects' self, their mothers, or a less familiar individual (Walter Cronkite). In the first experiment, they found that subjects exhibited superior memory for adjectives that had been self-referred (either on a general basis or by utilizing specific memories), and in the second experiment they found superior memory when subjects related adjectives to either themselves or their mother, but not when subjects applied them to the less familiar individual (Walter Cronkite). They also found that yes items were recalled slightly better than no items, but this effect did not reach significance. In interpreting their results, both of these sets of researchers noted that the self schema is a complex and highly differentiated cognitive concept and therefore enables subjects to associate list words to a number of different cues. Bower demonstrated the fact that this extends to concepts of significant others. Rogers et al. define the self as "an

abstract representation of past experience with personal data...A more formal definition of self is to view it as a list of terms or features that have been derived from a lifetime of experience" (p. 677). They also noted that "in order for self-reference to be such a useful encoding process, the self must be a uniform, well-structured concept" (p. 686). Interpreted in this light, Bower's finding that judging information in relation to their mothers also produced powerful mnemonic effects in subjects, is particularly interesting. This agrees with notions of psychodynamic theorists who suggest that we all have internal representations of both ourselves and significant others. While in normal individuals, we would expect these internal representations or self-schema to be relatively stable and complex, in borderlines we would expect that these self representations are less stable and are affect bound. That is, borderlines should demonstrate less mnemonic advantage of self-referencing than others when their mood at recall differs from that during the self-referencing process.

Mood and Memory

Lets now turn our attention to the literature on mood and memory. In 1981, after a series of experiments in which subjects' moods were varied by use of hypnotic mood

induction procedures and the effects of these moods on memory and other cognitive processes were assessed, Bower proposed a theory of mood and memory that would fit within existing semantic network theories of long term memory such as those described by Anderson and Bower (1973) and Collins and Loftus (1975). "In this theory an emotion serves as a memory unit that can enter into associations with coincident events. Activation of this emotion unit aids retrieval of events associated with it; it also primes emotional themata for use in free association, fantasies, and perceptual categorization." (Bower, 1981, p. 129). In 1984, Gilligan and Bower elaborated on this theory, listing seven postulates and four hypotheses that follow from those postulates. These hypotheses are: 1) State Dependent Recall - memory is superior when recall state matches learning state; 2) Thought Congruity - thoughts, fantasies and memories tend to be congruent with current mood state; 3) Mood Congruity - material which is of a similar affective tone to a subject's current mood state is learned best; and 4) Mood Intensity - learning is positively correlated with the intensity of the subject's mood state (Gilligan and Bower, 1984). In terms of splitting, Bower's second hypothesis, which he calls 'thought congruity', is most salient as it directly addresses current mood state and its effect on availability of affectively congruent or non-congruent material.

According to the Network Theory of Affect, recall congruency (i.e., the thought congruity hypothesis) occurs when an induced mood activates particular emotion nodes that bias the person to search memory for related material. This biased search, as well as activation spreading from the emotion node, results in increased availability of mood congruent memories. Individuals in particular mood states should be more likely to retrieve newly learned material and autobiographical memories congruent with their moods. (Singer & Salovey, 1988, p. 217)

In his 1981 paper, Bower describes an experiment on 'snap judgments' in which subjects were asked to give brief personality sketches of familiar people in their lives after either a positive or negative mood was induced. He reports that character descriptions were congruent with the subjects' moods. He states:

Assuming heterogeneous impressions have been stored about familiar persons, we may suppose that current mood causes retrieval of primarily positive or primarily negative memories of a familiar person. In this way, the summary evaluation is thus biased by the availability of the positive versus negative features that come to mind. (p. 140).

Evidence for recall or thought congruity in other studies utilizing mood induction procedures has been mixed, although generally supportive, with some authors reporting congruity in both positive and negative moods, some reporting congruity in positive moods only and some reporting no congruity. These studies have used a variety of Mood Induction Procedures and a variety of dependent measures. Common mood inductions utilized include, hypnosis, self-

generated imagery and Velten (1968) mood statements. Other studies have used more subtle mood inductions such as music, weather, the receipt of a free gift, or false success or failure feedback. Common dependent measures include number of congruent versus non-congruent autobiographical memories recalled, latency of recall of positive or negative autobiographical memories, recall of positive and negative aspects of stories, and recall of adjective lists, although various other measures have also been utilized (Singer & Salovey, 1988).

Madigan and Bollenbach (1982), using Velten mood statements as mood inductions and autobiographical memories as the dependent measure found congruency effects for both positive and negative moods in three experiments. Teasdale and Russell (1981), Teasdale and Taylor (1981), and Teasdale, Taylor, and Fogarty (1980), all using Velton mood statements but using a variety of dependent measures, also found congruency for both positive and negative moods, as did Natale and Hantas (1982), using both hypnosis and Velten statements and a variety of dependent measures, and Snyder and White (1982), using Velten statements as a mood induction and autobiographical memories as a dependent measure. Wright and Mischel (1982), using self generated imagery and success or failure as mood inductions and self-appraisal and performance expectations as dependent measures

also found congruency for both positive and negative moods. An earlier study by Postman and Brown (1952), using success and failure as a mood induction and recognition threshold for positive and negative adjectives as a dependent measure, also found this congruency effect.

On the other hand, Bower, Gilligan, and Montiero (1981) in five experiments using hypnosis as a mood induction procedure and recall of positive or negative aspects of stories, failed to find the expected recall congruity effect. Gerrig and Bower (1982) also failed to find congruency, using hypnosis as a mood induction and speed of recognition of previously presented words as their dependent measure. Lack of congruity was also reported by Siegel, Johnson, and Sarason (1979) using the Velten mood induction technique and a life experience survey as a dependent measure. Bower and Mayer (1985) also failed to find this effect, again using hypnosis, but this time utilizing a two list interference recall paradigm. These failures to replicate his own earlier results led Bower (Bower & Mayer, 1985) to question whether his earlier mood/memory formulation was too simplistic.

Isen et al. (1978) in two experiments in which the receipt of a free gift and success or failure were used as mood inductions, found congruency in ratings of consumer products

and recall of personality traits for positive moods only. Mischel et al. (1976), using success or failure as mood inductions found similarly skewed results, as did Nasby and Yando (1982) in one of two experiments using children as subjects. Two other studies, one by Riskind, Rholes, and Eggers (1982), and one by Schwarz and Clore (1983) also obtained somewhat asymmetrical results. Singer and Salovey (1988) have noted that in many of the studies in which recall congruency in both positive and negative moods has been found, this has been the result of increased or decreased availability of positive material and has not involved changes in availability of negative material at all. Both Isen (1978, 1985) and Singer and Salovey (1988) have suggested that what may be missing in Bower's mood/memory formulation is a motivational component. These authors suggest that people are motivated to maintain pleasurable experiences and to minimize or end unpleasant experiences. Therefore it is to be expected that while normal individuals may experience an automatic increase in mood congruent associations while in a negative mood state, they will attempt to counter this tendency by the use of controlled processes (e.g., counting their blessings, etc.). According to Isen et al. (1978), "Such persons may in fact have more easy access to negative material in memory, just as good-mood subjects have greater access to positive, but they may actively try to counter this tendency while the

latter have no reason to do so." (p. 10). Singer and Salovey (1988) suggest, "Given time, and a certain amount of higher order processing, more functional, negative mood repairing mechanisms might take over, returning the organism to its initial affective equilibrium" (p. 244). They suggest that one difference between the studies showing congruency in negative mood states and those that don't show this effect may be different time lags between mood inductions and dependent measures. Two other factors appear salient to this author. First, most of the studies that found significant recall congruency effects used strict subject selection criteria, only including subjects who demonstrated strong responses to the mood induction procedures. Also, many of these studies used primarily female subjects. Clark and Teasdale (1985), after noticing that female subjects tended to show stronger recall congruency for adjectives than male subjects did, designed two studies to test this directly and to look at possible reasons for this difference. They found that women did, in fact, show stronger recall congruency than men, although both sexes showed equivalent responses to the mood inductions. They ruled out the possibility that clustering (remembering mood congruent words cues recall of other congruent words) differed between the sexes. What they found in their second study was that usage ratings of personality trait words differed between the sexes, with

mean female usage ratings significantly above mean male ratings. They also found that women recalled more mood congruent than non-congruent high usage words but recalled similar numbers of congruent and non-congruent low usage words. They interpret their findings within associative network theories of mood and memory, noting that "the observed sex difference in the effects of mood on recall of pleasant and unpleasant words arises because activation of concepts denoted by these words has occurred more often in congruent mood states in the previous experience of women than of men" (p. 1602). They relate their findings to previous research findings that depression is more prevalent in women than in men, women are more likely than men to become depressed, and women take longer to recover from depression than men do, suggesting that women's enhanced recall of congruent material while in negative mood states might create a vicious cycle that would both lead to and perpetuate depression. This study is of particular interest in relation to borderline personality for three reasons: first, as noted previously, borderline personality disorder is more often diagnosed in females than in males; second, Dysthymia and Major Depression are often associated with this diagnosis; and third, it would seem that due to the instability of their moods, borderlines would have even more previous experience with associating evaluative trait concepts with mood states than would women generally.

So far we have only considered studies that used mood induction procedures and normal subject populations. What sorts of results have been obtained in studies utilizing naturally occurring moods? These studies can be broken down into two main categories; those that use mood fluctuations in normal individuals, and those that use clinical populations. While the results using normal subjects have again been mixed, those studies that used clinical populations have generally provided stronger support for the mood congruency hypothesis (Singer & Salovey, 1988). For example, Clark and Teasdale (1982) found that depressed subjects generated more positive memories when they felt better and more negative memories when they felt worse. Mathews and Bradley (1983) found that more depressed subjects recalled fewer positive and more negative trait adjectives from a previously presented list. Lloyd and Lishman (1975) found that depressed subjects recalled more intensely negative memories and that speed of recall of positive associations was negatively correlated with degree of depression on the Beck Depression Inventory. Weingartner, Miller, and Murphy (1977), in a study of hospitalized Bipolar patients, found that recall of previously generated associations negatively correlated with change in mood and that congruent associations were recalled best. In an interesting study in which they had subjects

rate their liking of nonsense syllables, Slive et al. (1984) found that depressed subjects recalled more disliked nonsense syllables than non-depressed subjects. Kuiper and Derry (1982), compared recall congruency of previously self-referenced trait adjectives in individuals who scored higher or lower on the Beck Depression Inventory. They found enhanced self-referent recall for non-depressed subjects for non-depressed content, and enhanced self-referent recall for depressed subjects for depressed content.

Rationale

Given all of the above evidence, it would seem likely that borderline subjects would show mood congruency in recall of previously self-referenced adjectives in both positive and negative moods while normal individuals would show this effect only in positive moods (or at least show weaker mood congruency in negative moods). Although demonstrating this effect in a clinical population would have been ideal, practical considerations precluded a study of that scope. It was therefore hoped that by utilizing an analog paradigm, in which subjects were classified on the basis of higher or lower scores on measures designed to tap into characteristics of individuals with this disorder, these same effects would be demonstrated.

The study was designed to specifically look at elements of cognition and memory that are theoretically related to the splitting defense. An incidental recall paradigm utilizing self-referencing of trait adjectives as the orienting task was chosen for a number of reasons. First, personality trait adjectives are thought to be closely tied to self images or self schemas (e.g., Rogers et al.). Also, the use of this methodology allowed for two tests of the mood congruency hypothesis, one involving judgments about the self and one involving recall of information about the self. It was thought that the use of this particular methodology would provide information about the extent to which memory processes were involved in subjects' self judgments and therefore the splitting defense. If the results differed for the two tasks, it might suggest that processes other than mood congruent memory were involved in this defense mechanism. An incidental rather than an intentional recall paradigm was chosen to most closely resemble real life memory processes.

Hypotheses

It was hypothesized that parallel results would be found in the self-referencing and recall portions of the experiment, with low scorers demonstrating mood congruency of self-referencing and recall in positive moods, and high

scorers demonstrating mood congruency of self-referencing and recall for both positive and negative moods. A general bias toward the positive was also expected.

Chapter II

METHOD

Subjects

The subjects were 161 students at the University of Montana, 72 of whom were female, and 89 of whom were male. Their ages ranged from 18 to 48, with a mean of 24 and a median of 21. Most of them were enrolled in an Introductory Psychology course and participated in this study as a partial fulfillment of the research participation requirement of the class. A few of them were students in other psychology courses who volunteered their participation. The Introductory Psychology student subjects were recruited by means of sign up sheets posted in the psychology department, and the other subjects were recruited by sign up sheets distributed in their classes. Subjects were classified into high or low scoring groups by utilizing a median split procedure on scores on the personality measures. For the Introductory Psychology students, these scores were obtained at general pre-screenings at the beginning of the quarter, and for the other subjects these scores were obtained individually prior to their participation in the experimental portion of the study. All subjects were treated in accord with the "Ethical Principles of Psychologists" (American Psychological Association, 1981).

Materials

Personality Measures

All subjects were administered the Borderline subscale of the Millon Clinical Multiaxial Inventory-II (MCMI-II) (Millon, 1987), the Splitting Scale (Gerson, 1984), and the items forming the Image Distorting Defense subscale of the Defense Style Questionnaire (DSQ) (Bond et al., 1983) during the pre-screening at the beginning of the quarter (see Appendixes A, B, and C). The scaling of items from the Image Distorting Subscale was changed from nine to seven point Likert scales so that this scale could be combined with the Splitting Scale. (See Appendix D for combined scale).

The Borderline subscale of the MCMI-II was selected as a measure of the instability and affective lability associated with Borderline Personality Disorder. According to Millon (1987), the MCMI-II represents a refinement of the MCMI-I, and scores on the MCMI-II Borderline Scale correlate .79 with scores on the MCMI-I Cycloid Scale ($n = 756$). For the MCMI-II Borderline Scale, Millon reports a Kuder-Richardson internal consistency coefficient of .92, and a test-retest stability for non-clinical populations of .79 after an interval of between three and five weeks. Varimax Rotated

factor analysis revealed eight factors for the MCMI-II generally; the Borderline Scale loads .63 on Factor One, which is interpreted as representing general maladjustment, .46 on Factor Two, which is interpreted as representing acting out tendency, and .32 on Factor Eight which is interpreted as representing interpersonal ambivalence, internal conflict, and erratic emotionality. Median Base Rate scores on the Borderline Scale for two groups of patients that had been previously diagnosed as suffering from Borderline Personality Disorder were reported as 73 (n = 60) and 79 (n = 99). For clinical populations, Millon claims a general predictive power of 90%. Although high correlations have been reported between this scale and a number of the other clinical scales, Millon reports that these are theoretically consistent. He also reports, however, that the presence of anxious or dysthymic states can artificially inflate scores on the Borderline Scale.

The Splitting Scale and the Image Distorting Defense Subscale of the DSQ were selected as measures of the hypothesized defense mechanism of splitting. Although they have not been well validated, they are the only published self-report scales that measure this elusive construct. Because of their relative lack of demonstrated empirical validity, they were not utilized to classify subjects for the primary analysis, but it was hoped that some further

validation for these scales could be obtained by their inclusion in this study.

The items for the Splitting Scale were developed by Gerson in consultation with psychotherapists who were candidates or supervisors in a postdoctoral psychoanalytic training program. An attempt was made to create sentence stems that would reflect Kernberg's and Kohut's conceptions of this defense mechanism. External criterion validation was accomplished by correlating scores on this measure with scores on the Narcissistic Personality Disorder MMPI Scale developed by Ashby, Lee, and Duke (1979) and with the Rosenberg (1965) Self Esteem Scale. Data from 188 adults of varying economic status and ethnic background was included in this analysis. Of these subjects, 113 were female and 75 were male. No significant sex or age differences were found. The correlation of splitting scores with scores on the Narcissistic Personality Disorder MMPI Scale was .25 ($p < .01$), and there was a significant negative relationship between scores on this scale and the Rosenberg Self Esteem Scale ($r = -.41$, $p < .001$). Gerson reports an item alpha coefficient of .71 ($n = 75$) (internal consistency). Test-retest reliability analysis with a three week lag in administrations yielded a product-moment correlation of .84 ($p < .001$). Factor analysis of the scale revealed three factors; a major splitting factor, a grandiosity factor, and

a factor interpreted as representing splitting in intimate relations. The mean score on the scale was 52.973, with a standard deviation of 11.464 and a range of 26 to 79 (out of a possible 98). Later cross validation of the scale by Glassman (1986) revealed a comparable mean (55.02) and standard deviation (9.82) and again no significant age or sex differences. However, his utilization of confirmatory rather than exploratory factor analysis revealed a different factor structure and suggested that three items of dubious psychometric value (items 1, 7, and 9) do not in fact belong on this scale. Pilot work for this study confirmed Glassman's finding that these three items do not correlate highly with other scale items or with the total scale score. Therefore, revised scale scores were utilized to classify subjects for analyses involving this scale.

The Defense Style Questionnaire (Bond et al., 1983) was designed to attempt to elicit "manifestations of a subject's characteristic style of dealing with conflict, either conscious or unconscious, based on the assumption that persons can accurately comment on their behavior from a distance" (p. 334). In pilot research utilizing thirty subjects, item-to-total correlations among items designed to measure the same defense were calculated and only items that correlated with their parent defense at a significance level greater than .001 were retained. Scores of 209 subjects

(111 of whom were considered to be normal and functioning well and 98 of whom were psychiatric patients) were then correlated with two tests designed to measure ego development, and item-to-total correlations for each defense were again performed. It was found that defense scores correlated with the measures of ego development as they theoretically should have. Principal Component factor analyses revealed four factors. Factor Two (Image Distorting Defenses) consisted of items which apparently measured splitting, omnipotence, and primitive idealization. All three defenses loaded greater than .50 on this factor. This factor had a significant positive correlation with the factor thought to measure immature acting-out defenses and a significant negative correlation with the factor thought to be measuring mature healthy defenses. In a later validation study (Bond et al., 1989) scores on the DSQ were correlated with scores on the Defense Mechanism Rating Scale (DMRS) (Perry & Cooper, 1986), a scale that utilizes clinicians ratings of defense mechanisms; the Life Events Scale, a checklist questionnaire regarding life events; and the Health-Sickness Rating Scale. Complete data were obtained for 156 patients, 130 outpatients and 26 inpatients. In this study, scores on the Image Distorting Defense subscale significantly correlated with the DMRS immature defenses, with high Life Events Scale Scores and negatively correlated with age. However, of the twelve items that loaded on the

DSQ image-distorting factor in the previous study, only five correlated with the DMRS image distorting defenses and also with the DMRS immature defenses.

Mood Inductions

The mood induction procedure chosen for the first part of the study (self-referencing) was the use of music. As in the Clark and Teasdale (1985) study, subjects listened either to a passage from "Coppelia" by Delibes (positive condition), or to "Russia Under the Mongolian Yoke" by Prokofiev recorded at half speed (negative condition). In order to minimize demand characteristics, listening to the music was presented as one of the experimental tasks (see Appendix F for specific subject instructions). The music was played on a tape recorder that was hooked into a public address system in the research room. Each passage was seven minutes in duration.

The mood induction procedure chosen for the second part of the experiment was a modified version of the Velton Mood Induction Procedure (1968), similar to that used by Teasdale and Russell (1983). Subjects were asked to read booklets containing one statement on each page and to try to get into the feelings expressed by each statement (see Appendix F for mood statements and Appendix E for specific instructions).

This lasted for seven minutes.

Manipulation Checks

For the first part of the study, the manipulation check was a three item questionnaire that asked subjects to rate the emotional tone of the music, their involvement in the music and their mood by means of seven point Likert scales (see Appendix G for complete subject packets). For the second part of the study subjects' moods were assessed by means of a seven point Likert scale, with anchors of very happy, neither happy nor unhappy, and very unhappy (again, see Appendix G).

Stimulus Material

The stimulus material consisted of individual slides of 54 personality trait adjectives (in white, with blue backgrounds) that were presented on a screen at the front of the room for eight seconds each. The adjectives were selected from the list of 555 trait adjectives rated for likableness and published by Anderson (1968). One half of the adjectives were selected from the upper third of norms (likeable) and one half were from the lower third of norms (unlikable). An attempt was made to choose words that had low standard deviations, comparable meaningfulness ratings,

comparable rankings, and different meanings. Except for the first and last six adjectives presented to the subjects, which were balanced for likableness, the order of presentation was determined randomly (see Appendix I for word list).

Procedure

When the subjects arrived at the research room, they were told that the study that they were participating in was concerned with various cognitive processes and that their mood would be assessed after each task. At each desk was a packet with all of the rating scales and other measures in the order in which they were to be utilized (with black sheets between each segment of the experiment). Specific subject instructions are contained in Appendix F, and a sample packet is contained in Appendix H.

After filling out the face sheets, the subjects were asked to listen to some music (mood induction one). They were told "please try to really get into it as we will be asking you some questions about your experience of it afterwards". After listening to the music, they were asked to answer the three questions asking them to rate their experience (manipulation check one). They were then told that next a number of adjectives would be presented to them on the

screen at the front of the room and were asked to rate whether each one applied to them as it was presented. The fifty four adjectives were then presented to the subjects and they circled yes or no for each one to indicate whether it applied to them or not. This represented the self-referencing portion of the experiment.

Next, as a distraction, the subjects were asked to work on some arithmetic problems. At the end of eight minutes they were told to stop working and again asked to rate their mood. Neither the arithmetic problems nor the mood ratings were actually scored as part of the experiment.

Subjects were next asked to read through booklets containing one statement per page that they would find near their seats, and to try to get into the feelings described by each statement. They were told to continue reading the statements until they were asked to stop (mood induction two). After seven minutes they were asked to stop and to rate their moods (manipulation check two). They were then asked to write down as many of the adjectives from the blue slides as they could remember, in any order that they remembered them. This represented the recall portion of the experiment.

Chapter III

RESULTS

Descriptive Data

Scores on Personality Measures

Scores on the MCMI-II Borderline Scale ranged from 0 to 76, with a mean of 22.23, a median of 19, and a standard deviation of 16.04. There were no sex differences found on scale scores (two tailed $t(155) = -.38, p = .71$), and no differences in scores for the subjects in the two mood conditions (two tailed $t(156) = -.81, p = .42$).

Scores on the Splitting Scale-Revised ranged from 20 to 64, with a mean of 42.9, a median of 43 and a standard deviation of 9.16. There were no sex differences found on scale scores (two tailed $t(155) = .54, p = .59$), and no differences in scores for the subjects in the two mood conditions (two tailed $t(155) = -1.48, p = .14$).

Scores on the Image Distorting Subscale of the DSQ ranged from 12 to 65, with a mean of 33.6, a median of 33 and a standard deviation of 10.46. Significant sex differences were found on scale scores (two tailed $t(156) = -5.56, p < .0001$). Males scored higher on this scale than did females (M MALES = 37.3, M FEMALES = 28.9). However, no differences in scores were found for subjects in the two mood conditions (two tailed $t(155) = -.85, p = .40$).

Correlations between Personality Measures

For the subjects who participated in this study, Pearson product moment correlations were calculated between scores on the three personality measures. These all reached significance; the highest was between the MCMI-II Borderline Scale and the Splitting Scale-Revised ($r = .568$, $p < .01$, percent of variance accounted for $= .32$), the second highest was between the Splitting Scale-Revised and the Image Distorting subscale of the DSQ ($r = .455$, $p < .01$, percent of variance accounted for $= .21$), and the lowest was between the Image Distorting Subscale of the DSQ and the MCMI-II Borderline Scale ($r = .262$, $p < .01$, percent of variance accounted for $= .07$).

Because it was more fully validated, the experimental data was first analyzed using the MCMI-II Borderline Scale as the personality classification variable. However, scores on this measure were not normally distributed. For this reason and also to determine whether higher scorers on the two measures would behave in a similar manner, the data was then reanalyzed using the revised Splitting Scale as the personality classification variable. Because of the significant sex differences found on the Image Distorting Defense subscale, and also because of its weaker relationship with the other two personality measures,

results were not analyzed utilizing this scale. It should also be noted that although pilot work had revealed sex differences in scores on the Revised Splitting Scale and heteroscedasticity in the relationship between the MCMI-II Borderline scores and the Revised Splitting Scale scores (see appendix E), for the experimental subjects the relationship between these measures was found to be homoscedastic.

Personality Measure Scores for High and Low Scoring Groups

Table One presents the descriptive statistics for the high and low scoring groups after the median split procedure was utilized to classify subjects.

Table One

	MCMI-II BPD	Splitting Scale (rev)
Low Scorers		
Range	0 to 18	20 to 42
Mean	9.5	35
Median	10	37
SD	4.9	5.7
High Scorers		
Range	20 to 76	44 to 64
Mean	35	49
Median	30	50
SD	13	5.4

Experiment - Part One - Self-Referencing

Manipulation Checks - First Mood Induction

All of the manipulation checks were first analyzed utilizing scores on the MCMI-II Borderline Scale (BPD Scale) as the personality classification variable and then re-analyzed utilizing scores on the revised Splitting Scale as the personality classification variable.

All of the analyses utilized a 2 X 2 X 2 factorial general linear model unbalanced analysis of variance (anova), with the first factor representing the mood condition (positive or negative), the second factor representing the personality factor (higher or lower scorers), and the third factor representing the sex of the subjects (male or female).

Analysis of Mood Ratings (MCMI-II BPD Scale)

This analysis revealed a significant main effect of condition, $F(1,148) = 27.16$, $p < .001$, $MSe = 1.088$, a significant main effect of sex, $F(1,148) = 9.5$, $p < .002$, $MSe = 1.088$, and a trend toward a two way interaction between the condition and personality factors, $F(1,148) = 3.17$, $p < .10$, $MSe = 1.088$, on subjects' ratings of their moods.

Generally, subjects, regardless of personality or sex, rated their mood as more positive in the positive condition than in the negative condition (\bar{M} POS = 3.245, \bar{M} NEG = 4.131).

Males generally rated their mood as more positive than did females regardless of condition (\bar{M} MALES = 3.426, \bar{M} FEMALES = 3.950).

Although not reaching significance, there was a trend for lower scorers on the MCMI-II BPD Scale (LBs) to rate their mood as more positive in the positive mood condition than higher scorers on the MCMI-II BPD Scale (HBs) (\bar{M} LBs = 3.085, \bar{M} HBs = 3.405) and to rate their mood as more negative in the negative mood condition than high scorers (\bar{M} LBs = 4.274, \bar{M} HBs = 3.989). The reason for this is not clear as no pre-induction mood ratings were obtained. However, the lack of significant differences between the mood ratings of high and low scorers in the non-induced moods suggests that these subjects may have responded differently to the mood induction procedure or may have had a different perceptual set regarding mood intensity.

Analysis of Mood Ratings (revised Splitting Scale)

This analysis revealed a significant main effect of

condition, $F(1,139) = 22.57$, $p < .001$, $MSe = 1.108$, a significant main effect of sex, $F(1,139) = 2.96$, $p < .10$, $MSe = 1.108$, on subjects' ratings of their moods.

As in the analysis that used MCMI-II BPD scores as the personality classification variable, subjects generally rated their moods as more positive in the positive mood condition than in the negative mood condition (M Positive = 3.259, M Negative = 4.102).

Also consistent with the analysis using MCMI-II BPD scores to classify subjects was the finding that males generally rated their mood as more positive than did females (M Males = 3.40, M Females = 3.96) regardless of condition.

Inconsistent with the previous analysis, however, was the lack of a finding of a trend toward a condition by personality interaction and the finding instead of a trend toward a condition by sex interaction. This interaction (although not reaching significance) resulted from the fact that while the males' and females' mood ratings were not that different in the positive mood condition (M Males = 3.13, M Females = 3.39), they were more different in the negative mood condition (M Males = 3.67, M Females = 4.54).

Ratings of Emotional Tone of Music (MCMI-II BPD Scale)

There was a significant main effect for condition, $F(1,148) = 380.80$, $p < .001$, $MSe = 1.124$, a significant (but uninterpretable) main effect for sex, $F(1,148) = 3.94$, $p < .05$, $MSe = 1.124$, on ratings of the emotional tone of the music.

Generally, all subjects, regardless of personality or sex, rated the positive condition music as more happy than the negative condition music (\underline{M} POS = 2.285, \underline{M} NEG = 5.659).

In the positive mood condition, LB Males and HB Females rated the music as most happy (\underline{M} LBMs = 2.0, \underline{M} HBFs = 2.143), while HB Males and LB Females rated the music as least happy (\underline{M} HBMs = 2.476, \underline{M} LBFs = 2.522). In the negative mood condition, LB and HB Females rated the music as most unhappy (\underline{M} LBFs = 5.929, \underline{M} HBFs = 6.053), LB Males rated the music as somewhat less unhappy (\underline{M} LBMs = 5.524), and the HB Males rated the music as least unhappy (\underline{M} HBMs = 5.130). This is interesting, in that the ratings of the happiness of the music by HB Females contrast with their mood ratings. While their ratings of the emotional tone of the music are more extreme than those of the low scoring Females, their ratings of their moods tend to be more neutral.

Ratings of Emotional Tone of Music (revised Splitting Scale)

This analysis revealed a significant main effect for condition, $F(1,139) = 336.60$, $p < .001$, $MSe = 1.156$, and a significant main effect of sex, $F(1,139) = 4.72$, $p < .05$, $MSe = 1.156$, on ratings of the emotional tone of the music.

Generally, subjects in the positive mood condition rated the music as more happy than subjects in the negative mood condition (M positive = 2.30, M negative = 5.63).

Males generally rated the music as more happy than did Females regardless of condition (M Males = 3.77, M Females = 4.16).

This analysis contrasts with the analysis in which the MCMI-II BPD Scale was used to classify subjects, in that in this analysis the personality factor did not interact with the condition and sex factors.

Ratings of Involvement in Music

No significant effects were found for the condition, personality, or sex factors on subjects' ratings of their involvement in the music when using either the MCMI-II BPD Scale or the revised Splitting Scale to classify subjects.

Self-Referencing Analyses and Results

The self-referencing data was first analyzed utilizing scores on the MCMI-II Borderline Scale as the personality classification variable and then was reanalyzed using scores on the revised Splitting Scale to classify subjects. The data was then analyzed separately for each sex, again using scores on the MCMI-II BPD Scale as the personality classification variable.

Each of these analyses utilized a 2 X 2 X 2 X 2 unbalanced analysis of variance (anova) with three between subjects factors (mood condition, personality classification, and sex) and one within subjects repeated measure factor (congruent vs non-congruent adjectives). For each analysis the dependent measure was the number of adjectives rated as applying to the self.

Table Two contains the significant F ratios for effects involving the congruence factor that were obtained in each analysis. In general, the results were similar when using the MCMI-II BPD scores and the Splitting Scale scores as the personality classification variable. Analyzing the data for each sex separately revealed a different pattern of results for males and females, however, although this was not apparent in the combined analyses.

Table 2 (Self-Referencing)
F Ratios For Effects Involving Congruence Factor

Factors	BPD	Splitting	Females	Males
COND X CONG	409.16 ***	388.89 ***	152.48 ***	274.54 ***
COND X PERS X CONG	9.52 **	3.72 *	6.44 **	3.00 (t)

*** = $p < .001$, ** = $p < .01$, * = $p < .05$, (t) = $.05 < p < .10$

The hypothesized condition by congruence interaction was found in all analyses, indicating the general bias towards positivity in self-referencing. The hypothesized three way interaction between the condition, personality, and congruence factors was also found, although this interaction was not in the form expected. In addition, this interaction differed in males and females.

Several other significant results were found that did not involve the congruence factor. For these analyses the dependent variable was the mean number of adjectives self-referenced (collapsing over the congruence factor). The F ratios for these effects that were significant or that approached significance in each analysis are presented in Table Three.

Table 3 (Self-Referencing)
F Ratios For Effects Involving Between Subjects Factors

Factors	MCMII-II Score	Splitting Score	Females Only	Males Only
PERS	4.75*	3.01 (t)	3.30 (t)	
SEX	3.74*		NA	NA
C X P				6.53**
P X S		3.22 (t)	NA	NA
CXPXS	3.26 (t)		NA	NA

** = $p < .01$, * = $p < .05$, (t) = $.05 < p < .10$

As can be seen in Table three, the patterns of results are somewhat different for each analysis. Results differ when utilizing the MCMII-II BPD Scale or the Splitting scale s the personality classification variable. In addition, a different pattern of results is obtained for males and females.

Analysis of Data For All Subjects - Using MCMII-II BPD Scale

For this analysis, there were 156 subjects with usable data of whom 70 were female and 86 were male.

Analysis of the self-referencing data revealed a significant condition by congruence effect, $F(1,148) = 409.16$, $p < .001$, $MSe = 28.4$, and a significant condition by

personality by congruence effect, $F(1,148) = 9.52, p < .002$, $MSE = 28.4$.

Figure One graphically represents the condition by congruence interaction. As can be seen in this figure, in the positive mood condition, subjects rated more congruent than non-congruent adjectives as applying to themselves ($M_{CONG} = 24.73, M_{NCONG} = 12.805$), and in the negative mood condition this effect was reversed ($M_{CONG} = 11.963, M_{NCONG} = 24.894$). Or to state it another way, subjects generally rated more positive than negative adjectives as applying to themselves, regardless of mood condition.

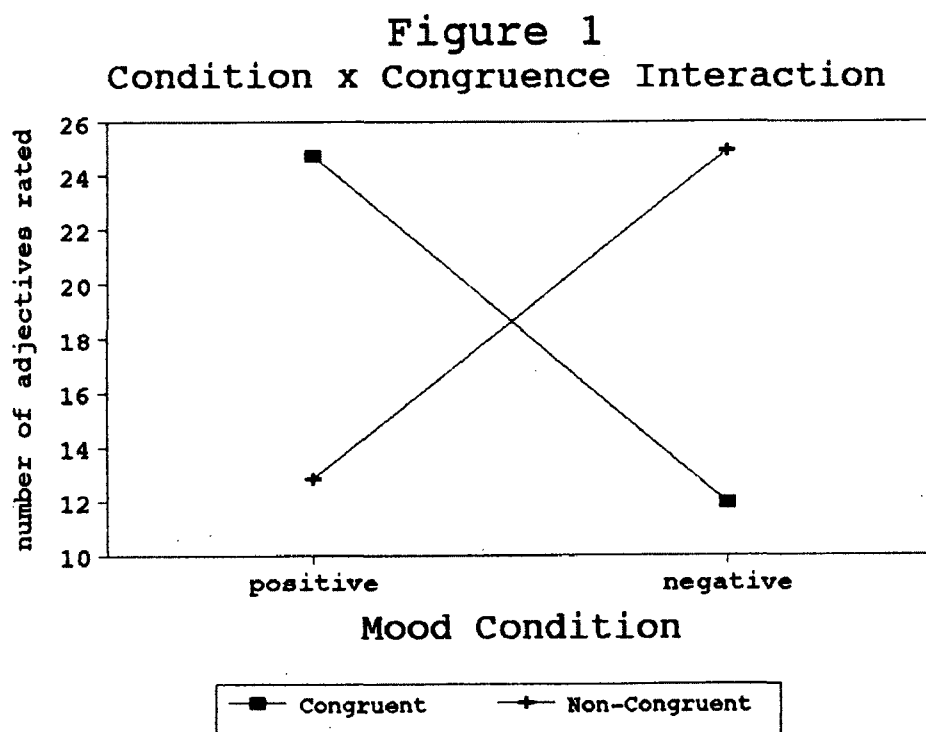
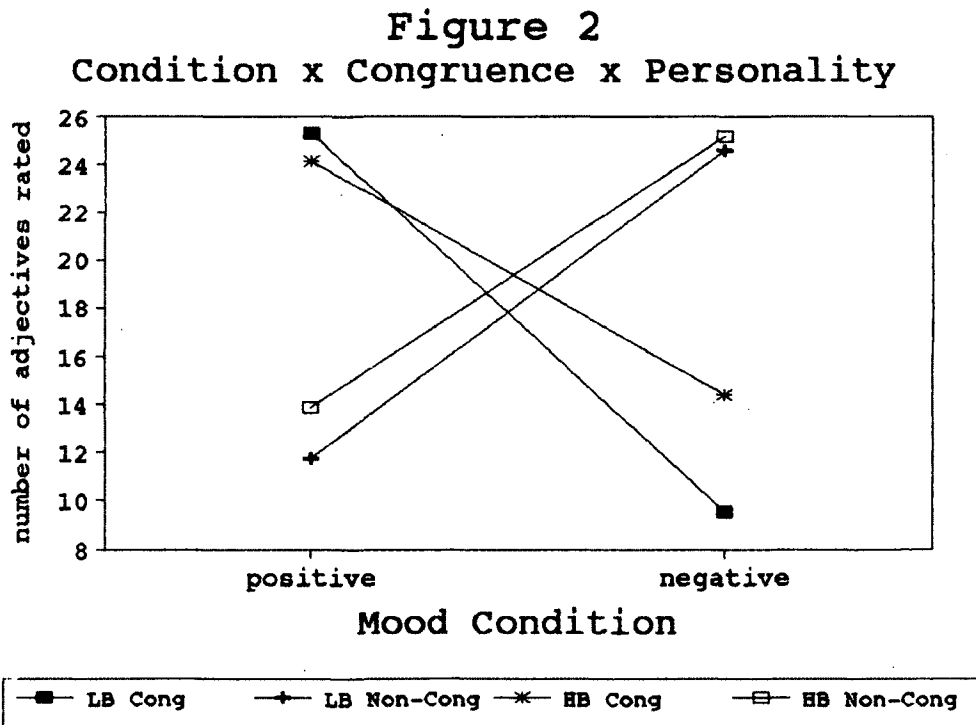
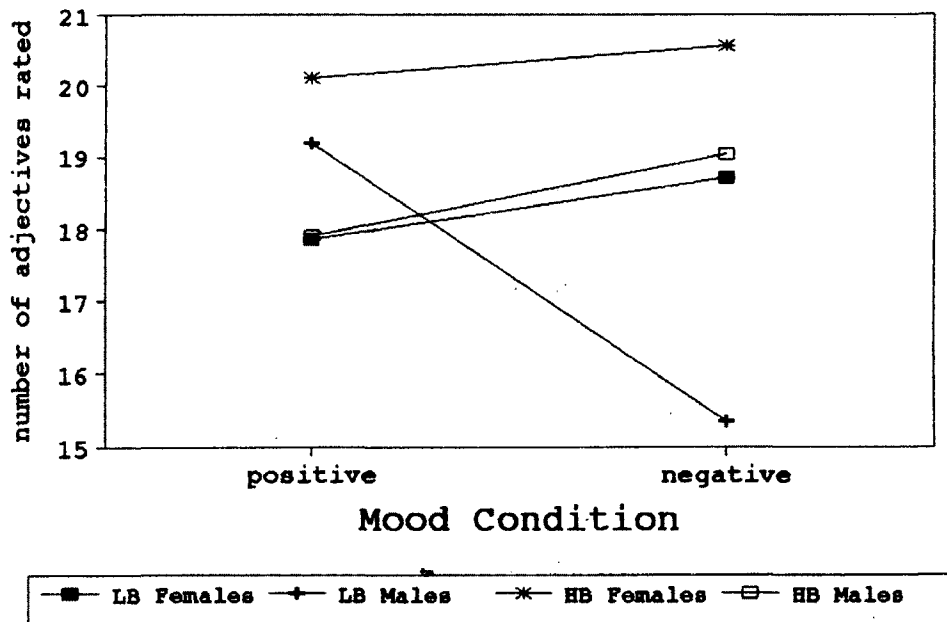


Figure 2 is a graphical representation of the three way interaction between the condition, personality, and congruence factors. As can be seen in this figure, the significant three way interaction results from the fact that although there is not a significant difference between the number of congruent (positive) adjectives or non-congruent (negative) adjectives that HB and LB subjects rate as applying to themselves in the positive mood condition or the number of non-congruent (positive) adjectives that the two groups rate as applying to themselves in the negative mood condition, HBs rate significantly more congruent (negative) adjectives as applying to themselves than do LBs in the negative mood condition.



Although not of primary interest, several other significant effects were observed. These were a significant main effect of personality, $F(1,148) = 4.75, p < .05, MSe = 40.90$, a significant main effect of sex, $F(1,148) = 3.74, p < .05, MSe = 40.90$, and a trend toward a three way interaction between the condition, personality, and sex factors, $F(1,148) = 3.26, p < .10, MSe = 40.90$, on the mean number of adjectives rated as applying to the self (collapsing over congruence factor). Figure 3 is a graphical representation of these results.

Figure 3
Condition x Personality x Sex



Higher scorers generally rated more adjectives as applying to themselves than did lower scorers, and females rated more adjectives as applying to themselves than did males.

However, interpretation of these findings must be tempered by the trend toward a three way interaction between the condition, personality, and sex factors. As can be seen in Figure 3, female higher scorers rated more adjectives as applying to themselves than did other subjects regardless of condition. Females (both higher and lower scorers) rated similar numbers of adjectives as applying to themselves in the two mood conditions, as did males who were higher scorers. However, males who were lower scorers rated more adjectives as applying to themselves in the positive condition than in the negative condition.

Analysis of Data For All Subjects -Utilizing Splitting Scale

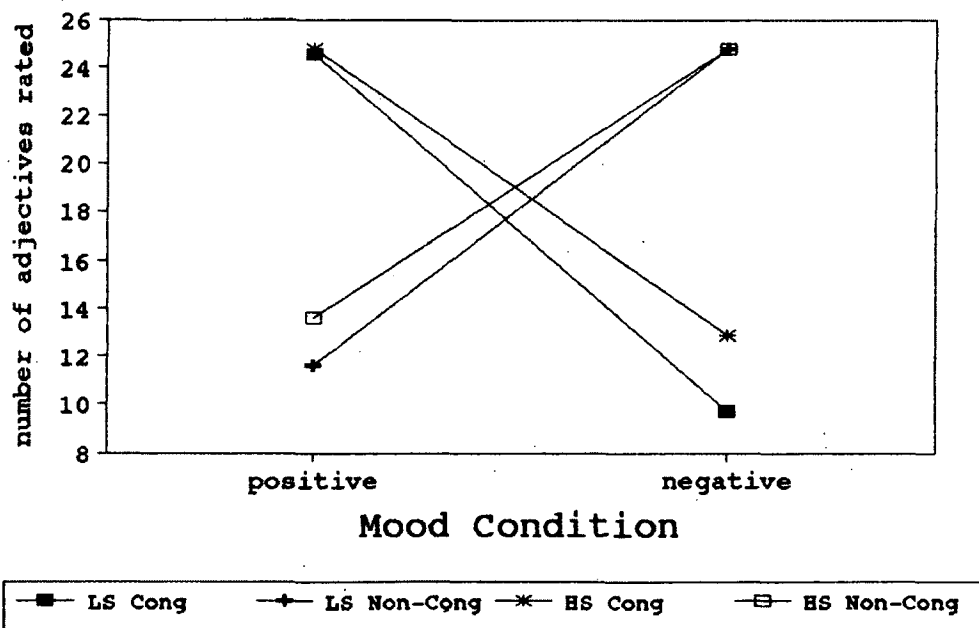
For this analysis, there were 147 subjects with usable data, 67 of whom were female and 80 of whom were male. In other respects, this analysis was identical to the previous one.

Analysis of this data utilizing Splitting Scale scores as the personality classification variable reveals a similar pattern of significant results as was obtained using MCMI-II Borderline Scores. A significant condition by congruence effect, $F(1,139) = 388.89, p < .001, MSe = 29.39$, and a marginally significant condition by personality by congruence effect, $F(1,139) = 3.72, p = .056, MSe = 29.39$,

were found.

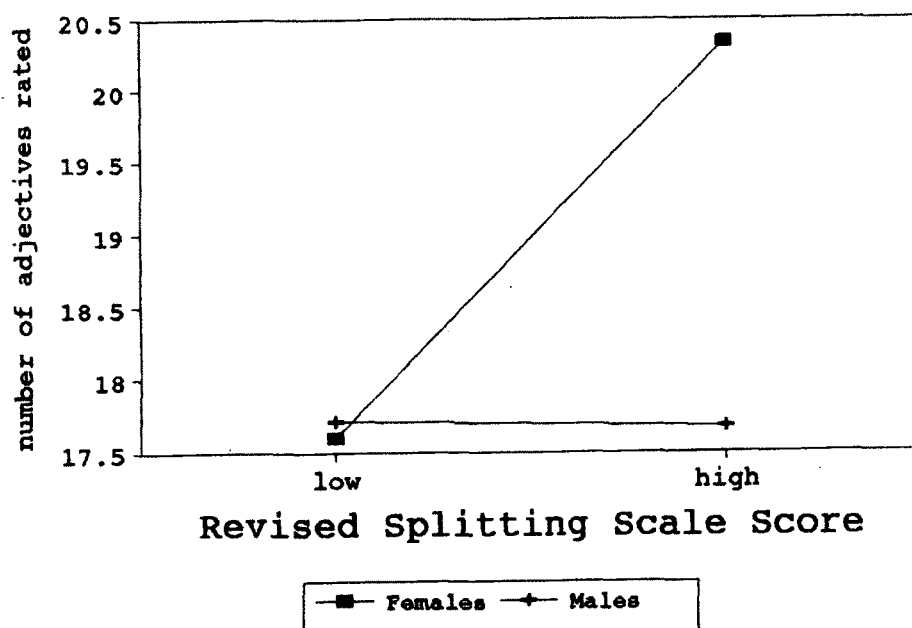
Figure 4 is a graphical representation of these results. As can be seen in this figure, higher and lower scorers rated the same number of congruent (positive) adjectives as applying to themselves in the positive mood condition, and the same number of non-congruent (positive) adjectives as applying to themselves in the negative mood condition. However, higher scorers rated more non-congruent adjectives as applying to themselves in the positive mood condition than did lower scorers, and also more congruent adjectives as applying to themselves in the negative mood condition. Also, while higher scorers rated about the same number of adjectives as applying to themselves in both conditions, lower scorers rated less negative adjectives as applying to

Figure 4
Condition x Personality x Congruence



In addition, there were non-significant trends toward a main effect of personality, $F(1,139) = 3.01, p < .10, MSe = 42.45$, and toward a two way interaction between the personality and sex factors, $F(1,139) = 3.22, p < .10, MSe = 42.45$, on the mean number of adjectives rated as applying to the self (collapsed over the congruence factor). Figure 5 is a graphical representation of these results.

Figure 5
Personality x Sex Interaction



As can be seen in Figure 5, higher scoring females rated more adjectives as applying to themselves than did other subjects, who rated approximately equal numbers of adjectives as applying to themselves.

Sex Differences in Self-Referencing by MCMI-II BPD Scores

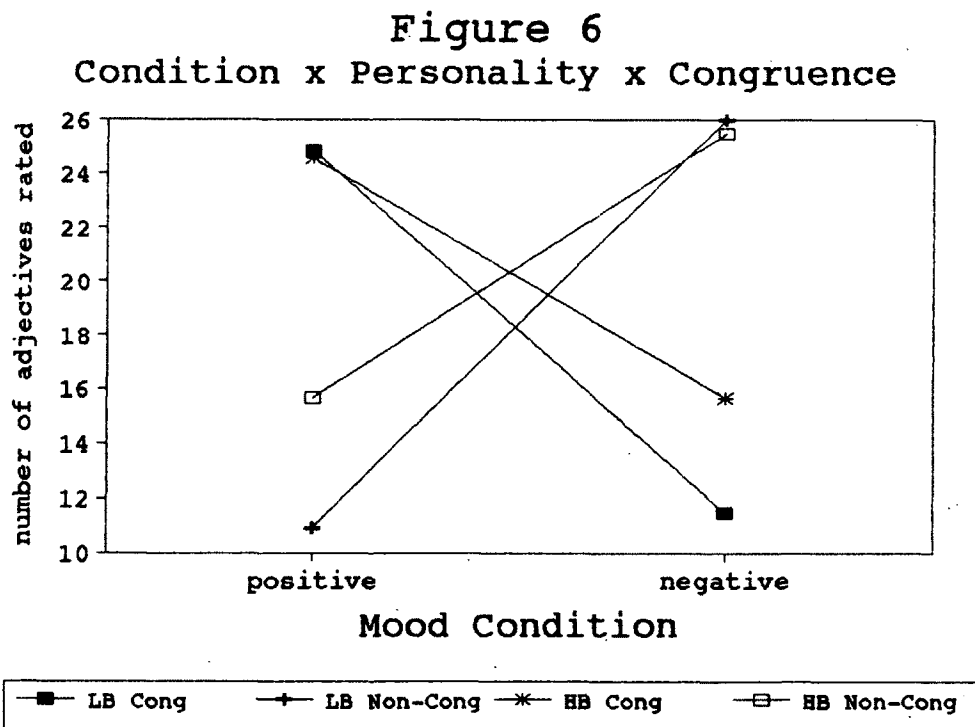
The same three way interactions between the condition, personality, and congruence factors were found when analyzing the data for males and females separately. However, these interactions were somewhat different for the two sexes. Generally, higher scoring females rated more negative adjectives as applying to themselves in both mood conditions than did lower scoring females. On the other hand, higher scoring males rated more negative adjectives as applying to themselves than did lower scoring males in the negative mood condition only.

Females Only

Analysis of the females' self-referencing data revealed a significant condition by congruence interaction, $F(1,66) = 152.48$, $p < .001$, $MSe = 30.64$, and a significant condition by personality by congruence interaction, $F(1,66) = 6.44$, $p < .01$, $MSe = 30.64$.

As can be seen in Figure 6, these results are slightly different from those obtained when including male subjects. HB and LB females do not differ in the number of congruent (positive) adjectives that they rate as applying to themselves in the positive condition, or in the number of

non-congruent (positive) adjectives that they rate as applying to themselves in the negative condition. However, HB females rate more non-congruent (negative) adjectives as applying to themselves in the positive condition and more congruent (negative) adjectives as applying to themselves in the negative condition than do LB females. Or to put it another way, higher scorers rated more negative adjectives as applying to themselves than did lower scorers, regardless of mood condition.



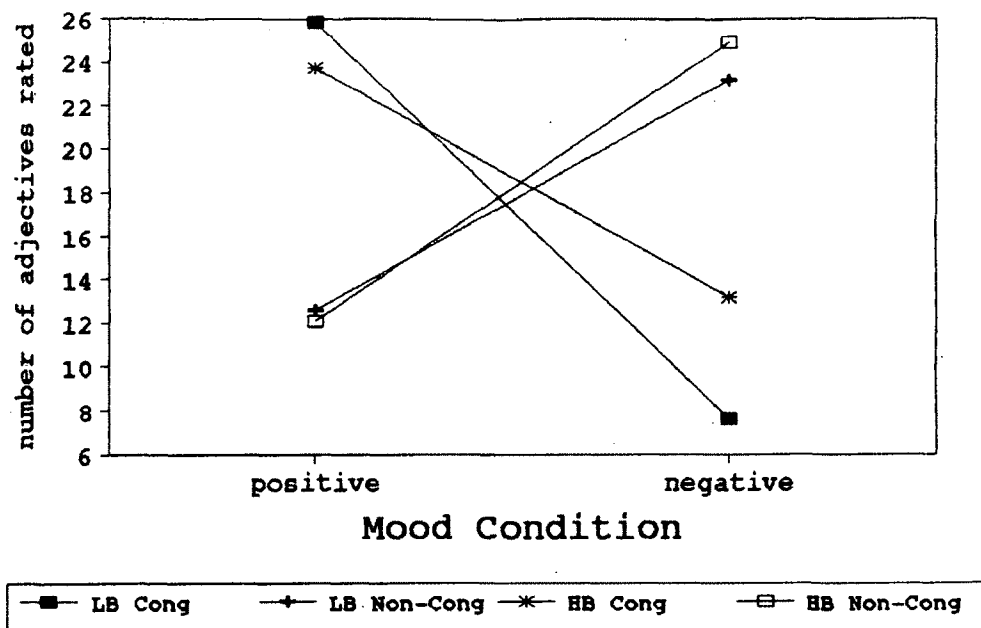
There was also a trend toward a main effect for personality, $F(1,66) = 3.3$, $p < .10$, $MSe = 42.18$, on the mean number of adjectives rated as applying to the self (collapsing over the congruence factor), although this effect did not reach significance. Generally, high scoring females rated more adjectives as applying to themselves than did low scoring females ($M_{HBF} = 22.83$, $M_{LBF} = 18.29$).

Males Only

Analysis of the males' self-referencing data revealed a significant condition by congruence interaction, $F(1,82) = 274.54$, $p < .001$, $MSe = 26.6$, and a trend toward a condition by personality by congruence interaction, $F(1,82) = 3.0$, $p < .10$, $MSe = 26.6$.

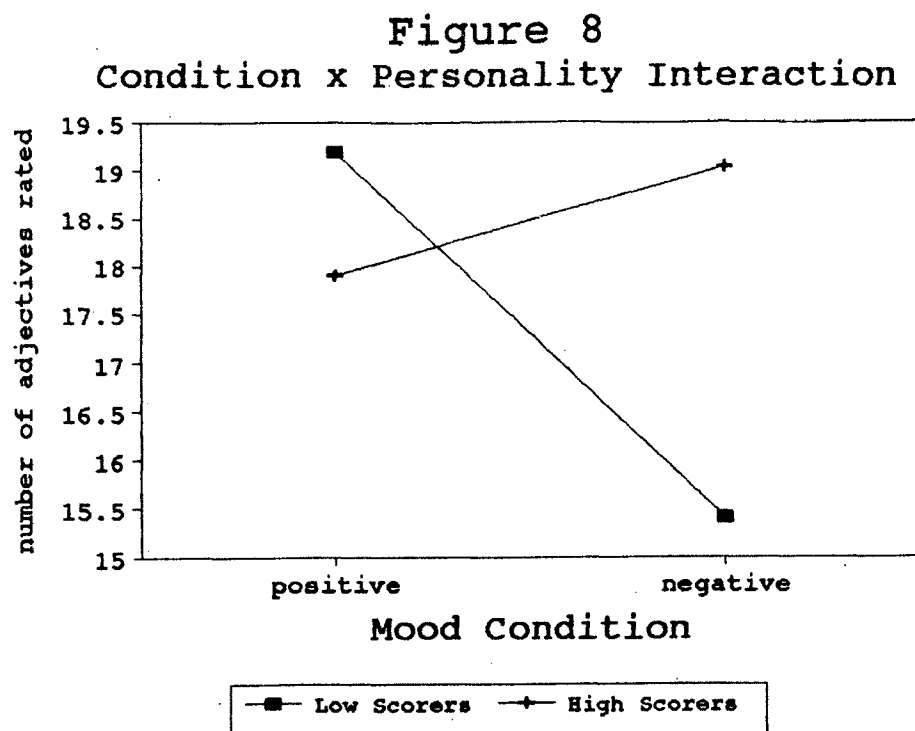
Figure 7 is a graphical representation of these results. As can be seen in this figure, these results differ from those of the females in that while HB males rate more congruent (negative) adjectives as applying to themselves in the negative condition than do LB males, the LB and HB males do not differ in the number of non-congruent (negative) adjectives that they rate as applying to themselves in the positive condition.

Figure 7
Condition x Personality x Congruence



Analysis of the males' ratings also revealed a significant condition by personality interaction, $F(1,82) = 6.53$, $p = .10$, $MSe = 39.86$, on the mean number of adjectives rated as applying to the self (collapsed over the congruence factor).

Figure 8 is a graphical representation of this interaction. As can be seen in this figure, males who were low scorers rated more adjectives as applying to themselves in the positive mood condition than in the negative mood condition, while for males who were high scorers this pattern was reversed.



Self-Referencing Results Summary

The results of the self-referencing analyses do not generally support a mood congruency hypothesis in judgments about the self. Instead, a bias toward positivity in self-referencing was generally found, although this was stronger for low scorers than for high scorers on the two personality measures. In addition, high scoring females differed from high scoring males in that the high scoring females rated more negative adjectives as applying to themselves than did low scoring females regardless of mood condition, while high scoring males rated more negative adjectives as applying to themselves than did low scoring males in the negative mood

condition only.

Considered in isolation, the results for males could conceivably provide some support for personality differences in mood congruency of self-referencing. However, this is complicated by the results for females, which suggest a lessening of positive bias in high scorers rather than mood congruency per se, since female high scorers rated equal numbers of negative adjectives as applying to themselves regardless of their mood. This suggests that high scoring males and females may differ in some important aspects.

Experiment - Part Two - Recall

Manipulation Check - Second Mood Induction

Mood ratings were analyzed first using the MCMI-II BPD Scale as the personality classification variable and then re-analyzed using revised Splitting Scale scores to classify subjects.

Both analyses utilized a 2 X 2 X 2 factorial general linear model unbalanced analysis of variance (anova). The first factor represented the mood condition, the second factor represented the personality classification and the third factor represented the sex of the subject.

Analysis of the mood ratings with the MCMI-II BPD Scale as the personality classification variable revealed a significant effect of condition, $F(1,148) = 51.1, p < .001$, $MSe = 1.869$, and no significant effects of the personality or sex factors. Subjects rated their moods as most positive in the positive mood condition ($M = 3.155, SD = .16$) and most negative in the negative mood condition ($M = 4.748, SD = .16$).

Analysis of the mood ratings with the revised Splitting Scale as the personality classification variable revealed a significant main effect of condition, $F(1,139) = 56.84, p < .001$, $MSe = 1.701$, and a significant two way interaction between the condition and personality factors, $F(1,139) = 5.46, p < .05$, $MSe = 1.701$. Although all subjects generally rated their moods as more positive in the positive mood condition than in the negative mood condition, higher scorers rated their moods as more positive in the positive mood condition than did lower scorers ($M_{HS} = 2.65, M_{LS} = 3.49$), and slightly more negative in the negative mood condition ($M_{HS} = 4.82, M_{LS} = 4.64$).

Recall Analyses and Results

For the recall data, analyses utilizing four separate dependent measures were conducted. The congruency of

subjects' intrusions was analyzed first. An analysis was then conducted combining the recalled list items and the subjects' intrusions to form the dependent measure. Recall of the adjectives that were actually presented to the subjects was analyzed, and then another analysis was conducted excluding the first and last six adjectives that were presented to the subjects.

As with the self-referencing data, the recall data was first analyzed using MCMI-II BPD Scale scores to classify subjects, and was then re-analyzed utilizing the revised Splitting Scale scores as the personality classification variable. Separate analyses were also performed for each sex. The only exception to this is the intrusion data, which was not re-analyzed because no significant sex or personality differences were found involving the congruence factor.

Each of these analyses utilized a four factor unbalanced analysis of variance, with three between subjects factors (mood condition, personality classification, and sex) and one within subjects repeated measure factor (congruent vs non-congruent adjectives). Each of these factors has two levels.

The results of these analyses are summarized in Tables

Four and Five. Table Four presents the F ratios for effects involving the congruence factor that approached or reached significance. As this table illustrates, the results of these analyses are less clear cut than the results of the self-referencing analyses. Generally, the hypothesized condition by congruence interaction is found, indicating a bias toward positivity in recall. However, the hypothesized three way interaction between the condition, personality, and congruence factors is found in some analyses but not in others, and again this interaction is not in the form expected. Also, the only real evidence for mood congruence is found in the analysis of subjects' intrusions, and no personality differences involving the congruency factor are found in this analysis. One interesting finding is that when we exclude the first and last six adjectives presented to the subjects from our analysis, almost all interactions involving the congruence factor disappear, and the one effect that remains does not reach significance.

Table Four (Recall)
F Ratios For Effects Involving Congruence Factor

	Intrusions	Recall + I				Recall				Excluding			
	BPD	BPD	Sp	F	M	BPD	Sp	F	M	BPD	Sp	F	M
Cong (C)	46.15 ***												3.0 (t)
CONDxC	63.36 ***	35.56 ***	41.67 ***	11.65 ***	27.68 ***	5.61 *	7.36 **		5.91 *			2.94 (t)	
CxPxC			5.11 *	3.99 *			2.83 (t)	2.79 (t)					
CxPxCxS				NA	NA	2.92 (t)		NA	NA			NA	NA

*** = p<.001, ** = p<.01, * = p<.05, (t) = p<.10

Inspection of Table Four reveals that the three way

condition by personality by congruence interaction was only found when analyzing the data for women separately or when the data was analyzed utilizing the Splitting Scale as the personality classification variable. Also, this effect only reached significance when intrusions were combined with actually recalled items to form the dependent variable.

Table Five contains the F ratios for each of the analyses that did not include the congruence factor and that were significant or approached significance.

Table Five (Recall)
F Ratios For Effects Involving
Between Subjects Factors

	Intrusions BPD	BPD	Sp	F	M	BPD	Sp	F	M	BPD	Sp	F	M	
Cond	7.23 **			2.8 (t)										
Pers		4.36 *			4.23 *	3.03 (t)				2.9 (t)				
Sex		12.73 ***	10.1 **	NA	NA	14.37 ***	12.5 ***	NA	NA	13.65 ***	12.32 ***	NA	NA	
CxP				15.27 ***	3.23 (t)			9.15 **		3.01 (t)		8.77 **		
CxS				3.26 (t)	NA	NA	3.22 (t)	3.26 (t)	NA	NA	3.12 (t)	2.81 (t)	NA	NA
PxS				3.76 (t)	NA	NA		3.76 (t)	NA	NA		NA	NA	
CxPxS	6.15 **	17.6 ***	7.95 **	NA	NA	10.19 **		NA	NA	8.32 **		NA	NA	

*** = $p < .001$, ** = $p < .01$, * = $p < .05$, (t) = $.05 < p < .10$

As Table Five indicates, a more consistent pattern of results is found for effects not involving the congruence factor. In all but one of the analyses combining subjects of both sexes, significant condition by personality by sex interactions were found on the mean number of adjectives

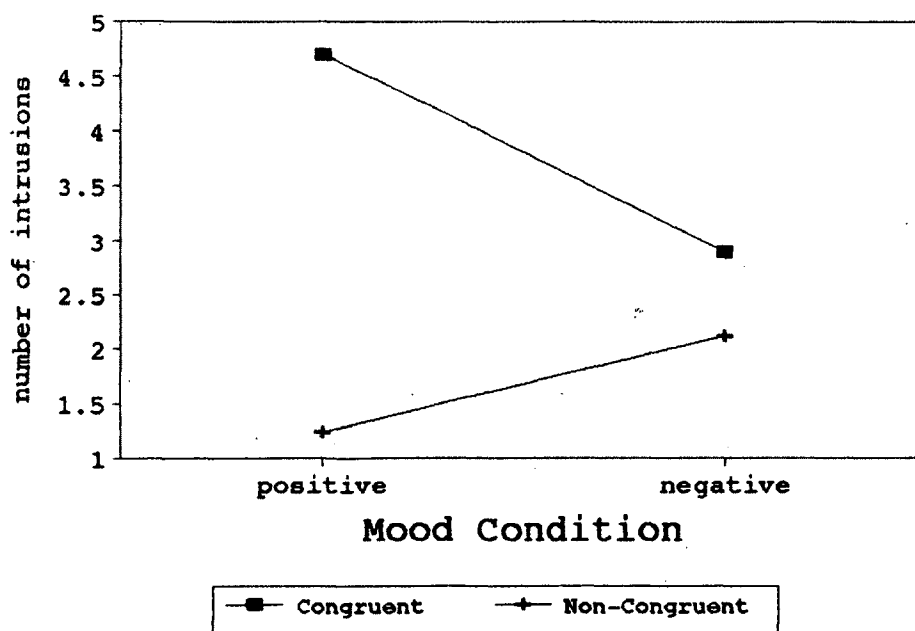
recalled (collapsed over congruence). Significant interactions were also found between the condition and personality factors in all of the analyses utilizing female subjects. However, the only effects found in the analyses for male subjects are when intrusions are included with recall. In this analysis, a significant main effect for personality was found as was a non-significant trend toward an interaction between the condition and personality factors. The results for these analyses will be described in more detail.

Intrusions

There were 156 subjects with usable data for this analysis, 70 of whom were female and 86 of whom were male. The MCMI-II BPD Scale was used as the personality classification variable.

This analysis revealed a significant main effect for congruence, $F(1,148) = 146.15, p < .001, MSe = 2.63$, as well as a significant two way interaction between the condition and congruence factors, $F(1,148) = 63.36, p < .001, MSe = 2.63$. Figure 9 is a graphical representation of these results.

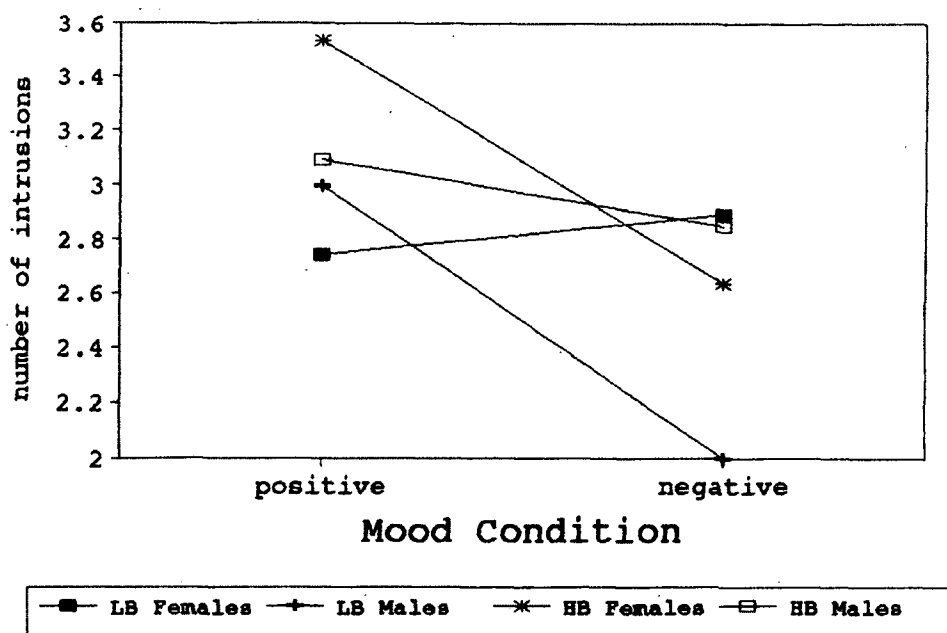
Figure 9
Condition x Congruence Interaction



As can be seen in this figure, subjects in both conditions had more congruent than non-congruent intrusions, although this effect was much greater in the positive mood condition than in the negative mood condition.

A significant main effect of condition, $F(1,148) = 7.23$, $p < .01$, $MSe = 3.79$, and a significant three way interaction between the condition, personality, and sex factors, $F(1,148) = 6.15$, $p < .05$, $MSe = 3.79$, on the mean number of intrusions (collapsed over the congruence factor) were also observed. Figure 10 is a graphical representation of these results.

Figure 10
Condition x Personality x Sex



As can be seen in this figure, in the positive mood condition HB females had the most intrusions and LB females had the least, while in the negative mood condition LB females and HB males had the most intrusions, HB females had slightly less intrusions, and LB males had the least.

Recall Plus Intrusions

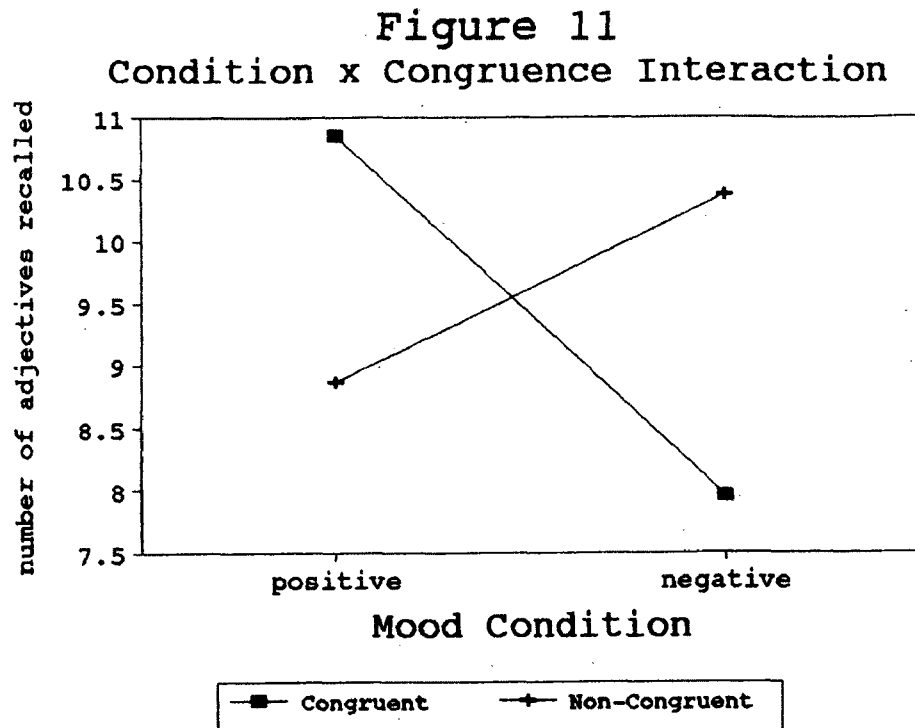
The results of the analyses of recall with intrusions (including both female and male subjects) differ when utilizing the MCMI-II BPD Scale or the Splitting Scale as the personality classification variable. When using the MCMI-II BPD Scale, only the condition by congruence interaction was significant, but when using the Splitting

Scale both this interaction and the Condition by Personality by Congruence interactions were significant. Analyses of this data for each sex separately (again using the MCMI-II BPD Scale to classify subjects) revealed different patterns of results for the two sexes. Females who were classified on the basis of their scores on the MCMI-II BPD Scale had a similar pattern of results as subjects who were classified on the basis of their Splitting Scale scores, while male subjects showed only the Condition by Congruence effect, as did the combined sample when classified on the basis of their scores on the MCMI-II BPD Scale.

Recall Plus Intrusions - Utilizing MCMI-II Borderline Scale

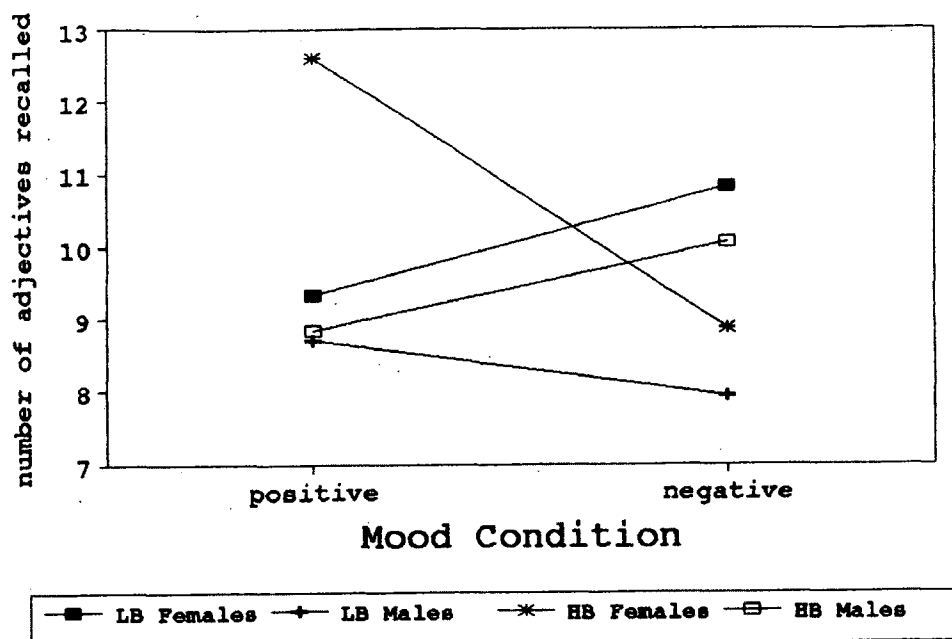
Analysis of this data revealed a significant condition by congruence effect, $F(1,148) = 36.56, p < .001, MSe = 7.87$, and no other significant effects involving the congruence factor. Figure 11 is a graphical representation of these results.

As can be seen in Figure 11, subjects recalled (and misrecalled) more congruent adjectives when in the positive mood condition and more non-congruent adjectives while in the negative mood condition.



There was also a significant main effect for personality, $F(1,148) = 4.36, p < .05, MSe = 13.87$, a significant main effect for sex, $F(1,148) = 12.73, p < .001, MSe = 13.87$, and a three way interaction between the condition, personality, and sex factors, $F(1,148) = 17.61, p < .001, MSe = 13.87$ on the mean number of adjectives recalled (collapsed over the congruence factor). Figure 12 graphically represents these results.

Figure 12
Condition x Personality x Sex

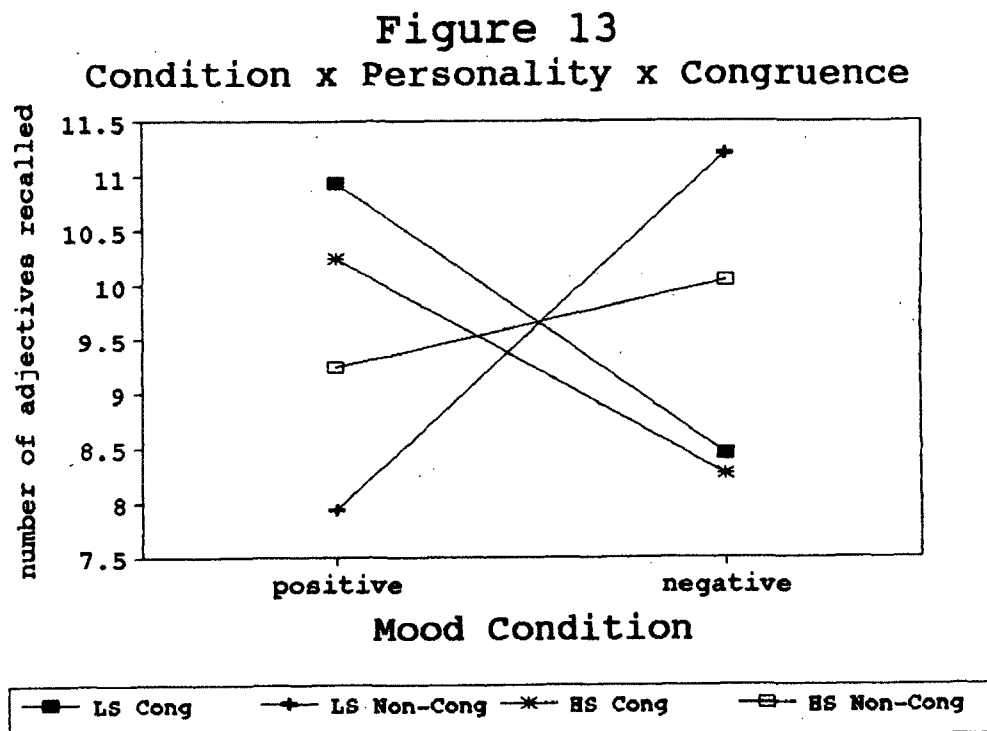


As can be seen in Figure 12, HB females recalled the most adjectives in the positive mood condition, while HB males recalled the most adjectives in the negative mood condition. On the other hand, LB females recalled the most adjectives in the negative mood condition, while LB males recalled about the same number in each condition.

Recall Plus Intrusions - Utilizing Revised Splitting Scale

Utilizing the Revised Splitting Scale as the personality classification variable, a significant condition by congruence interaction was obtained, $F(1,139) = 41.67$, $p < .001$, $MSe = 7.69$, as was a significant condition by personality by congruence interaction, $F(1,139) = 5.11$,

$p < .05$, $MSe = 7.69$. Figure 13 is a graphical representation of these results.

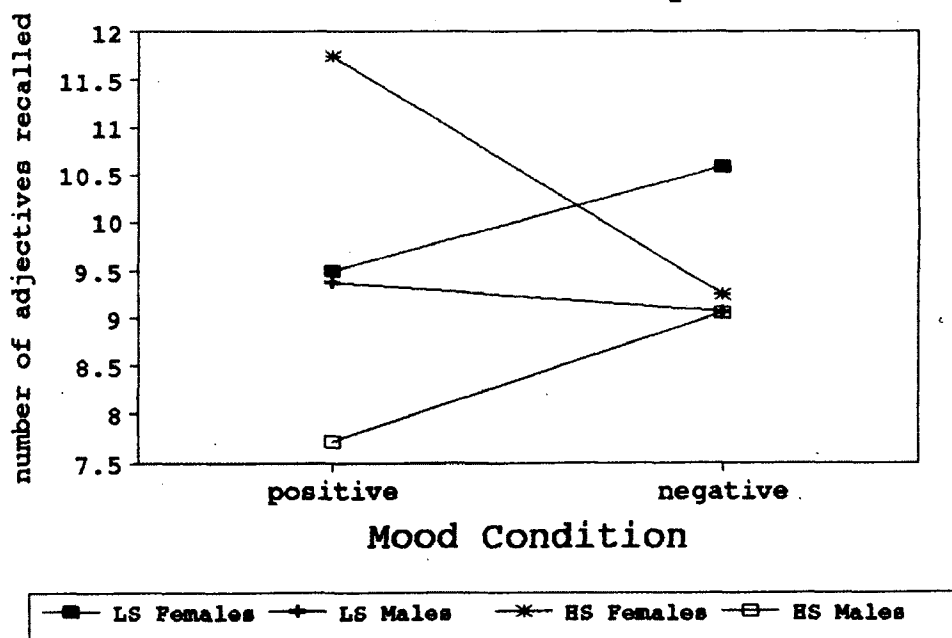


As can be seen in Figure 13, low scorers on the splitting scale recalled about the same number of congruent adjectives as high scorers did in both the positive and negative mood conditions. However, while high scorers recalled more non-congruent adjectives than low scorers did in the positive mood condition, in the negative mood condition this pattern was reversed.

In this analysis, two other significant effects were observed. There was a significant main effect of sex, $F(1,139) = 10.10$, $p < .01$, $MSe = 15.24$, and a significant three way interaction between the condition, personality, and sex

factors, $F(1,139) = 7.95$, $p < .01$, $MSe = 15.24$, on the mean number of adjectives recalled (collapsing over the congruence factor). Figure 14 graphically represents these results.

Figure 14
Condition x Personality x Sex

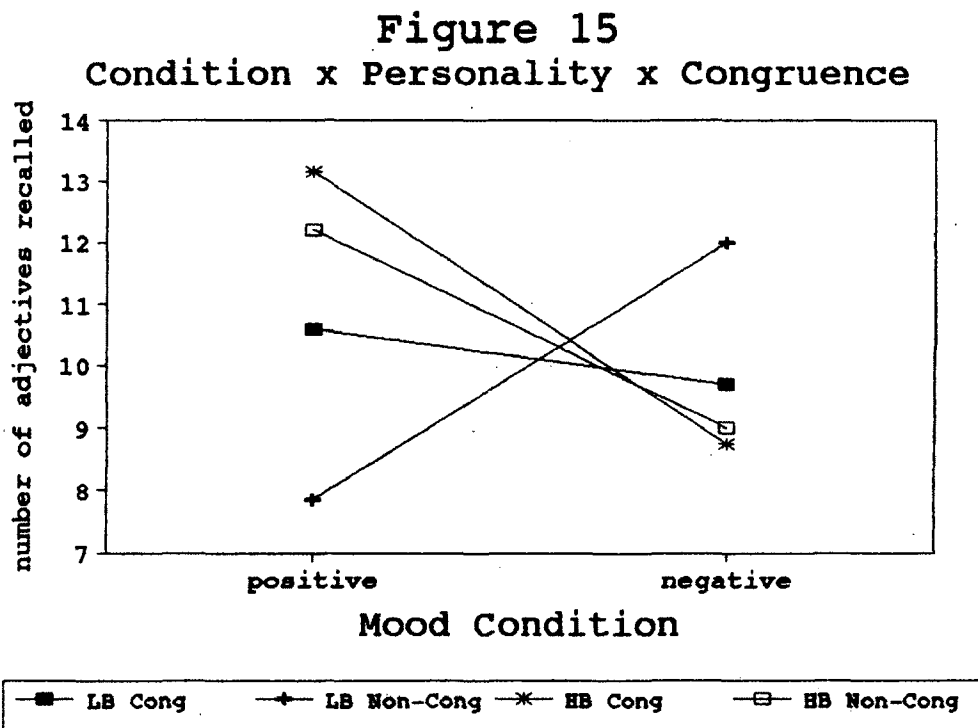


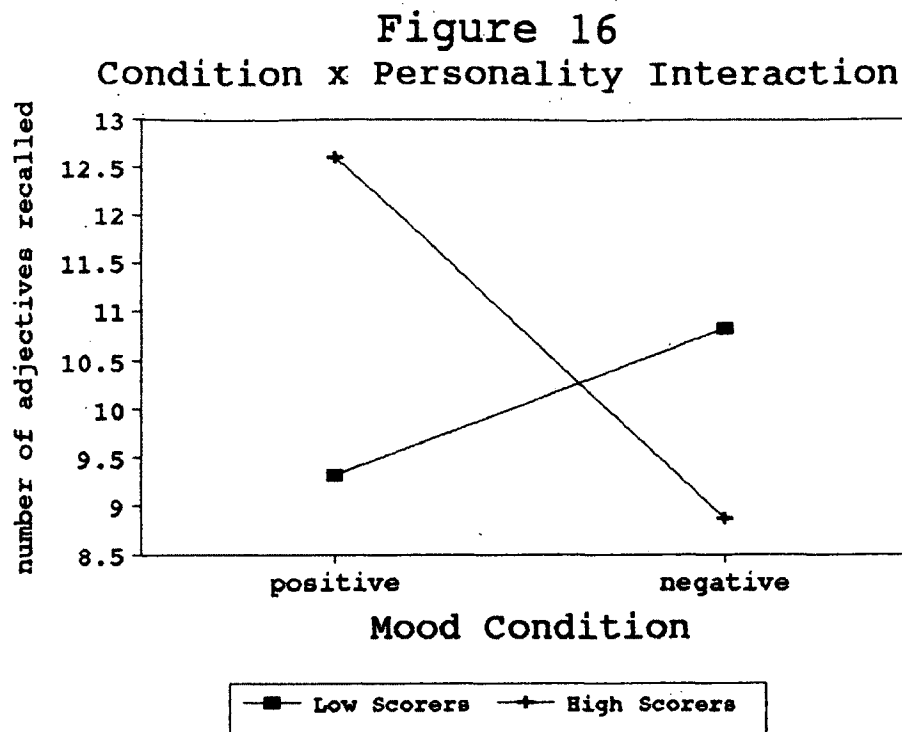
Females only

Analyzing the data for females separately reveals the same significant condition by congruence interaction, $F(1,66) = 11.65$, $p > .001$, $MSe = 7.43$, as was found for all subjects. However, a significant three way interaction was also found between the condition, personality, and congruence factors, $F(1,66) = 3.99$, $p < .05$, $MSe = 7.43$.

As can be seen in Figure 15, HB females recalled (and

misrecalled) similar numbers of congruent and non-congruent adjectives in both the positive and the negative mood conditions, although they recalled more of both kinds in the positive mood condition. LB females, however, recalled (and misrecalled) significantly more congruent than non-congruent adjectives in the positive mood condition, and significantly more non-congruent than congruent adjectives in the negative mood condition.



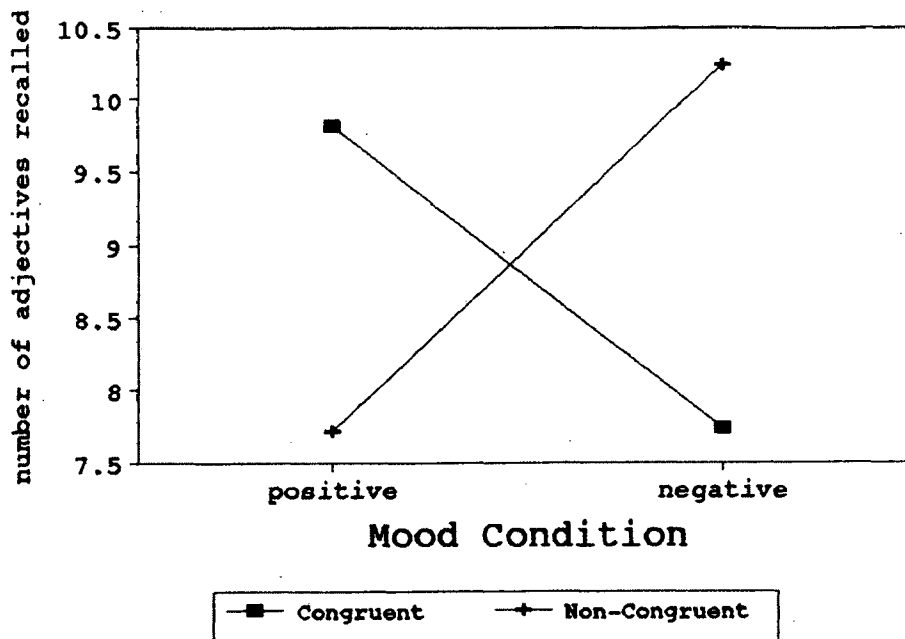


As can be seen in Figure 16, there was also a significant condition by personality interaction, $F(1,66) = 15.27$, $p < .001$, $MSe = 15.02$, on mean number of adjectives recalled (collapsing over the congruence factor), with HB females recalling more adjectives in the positive mood condition and LB females recalling more adjectives in the negative mood condition.

Males Only

The data for males differs from the data for females in that the only significant effect involving the congruence factor is the condition by congruence interaction, $F(1,82) = 27.68$, $p < .001$, $MSe = 8.22$.

Figure 17
Condition x Congruence Interaction



As can be seen in Figure 17, males recalled significantly more congruent than non-congruent adjectives in the positive mood condition and significantly more non-congruent than congruent adjectives in the negative mood condition. This parallels the findings when both males and females are included in the analysis, and also the findings for low scoring females.

List Recall

Analyzing the recall data without including the subjects' intrusions revealed a similar pattern of results as the analyses with intrusions did, although the results for these analyses were not as strong. Significant condition by

congruence interactions were found in all the analyses except for the separate analysis of the female data. Although not reaching significance, trends toward a condition by personality by congruence interaction were observed in the analysis using the Splitting Scale as the personality classification variable and in the separate analysis of the female data. A trend toward a four way interaction between the condition, personality, sex, and congruence factors was found when the MCMI-II BPD Scale was used as the personality classification variable.

List Recall by MCMI-II Borderline Scale

A significant condition by congruence interaction, $F(1,148) = 5.61, p < .05, MSe = 5.92$, and a trend towards a four way interaction between the condition, personality, sex and congruence factors, $F(1,148) = 2.92, p < .10, MSe = 5.92$, was found for recall of list items.

As can be seen in Figure 18, subjects generally recalled more congruent than non-congruent adjectives when in a positive mood and more non-congruent than congruent adjectives when in a negative mood. However, as can be seen in Figure 19, interpretation of this finding should be tempered by the trend toward a four way interaction which suggests that this holds true for all subjects except the HB

females who recall about the same number of congruent and non-congruent adjectives in both moods, although they recall more of both types in the positive mood condition.

Figure 18
Condition x Congruence Interaction

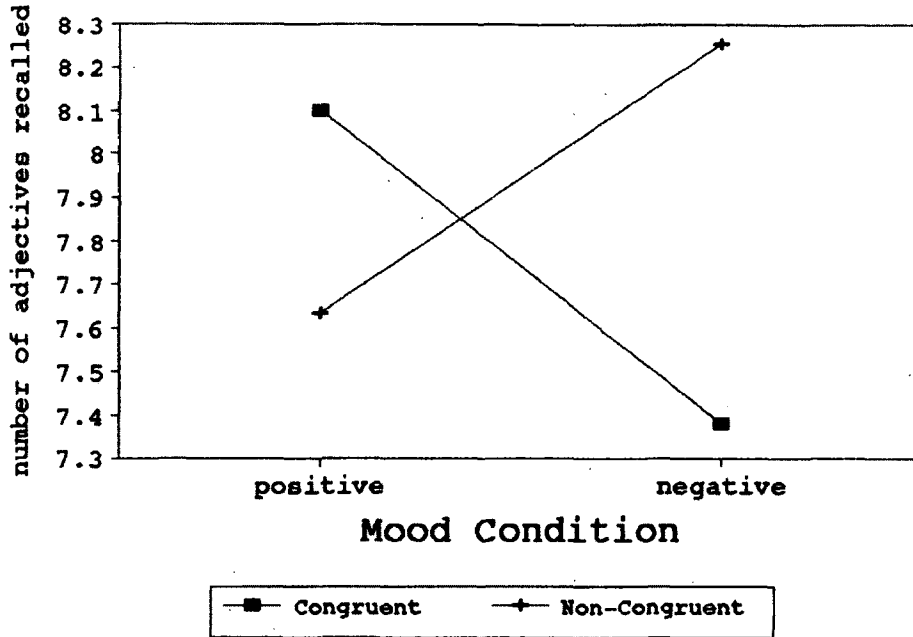
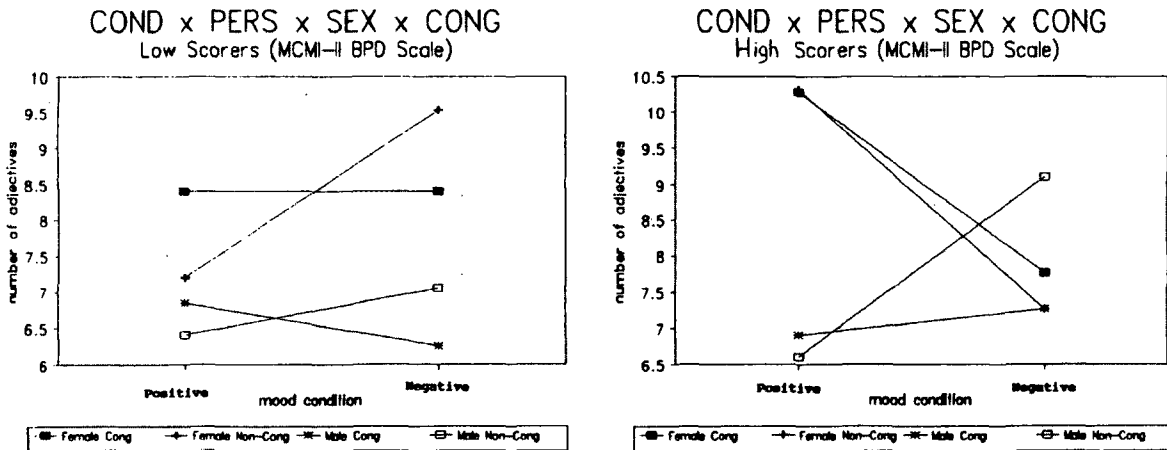
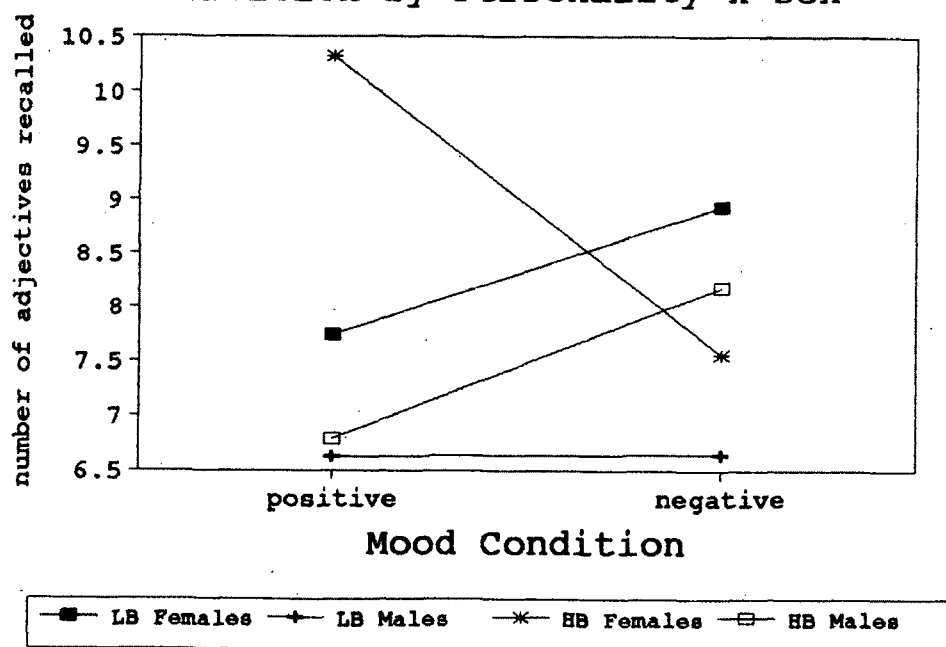


Figure 19



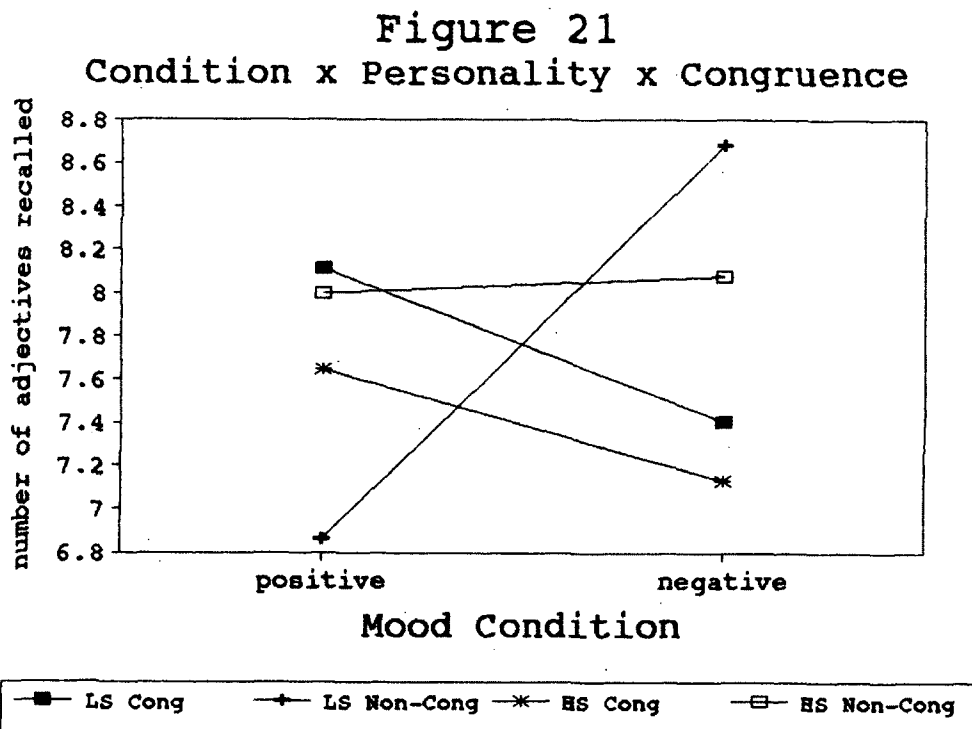
A significant main effect of sex, $F(1,148) = 14.37$, $p < .001$, $MSe = 13.07$, a significant three way interaction between the condition, personality, and sex factors, $F(1,148) = 10.19$, $p < .01$, $MSe = 13.07$, and a trend toward a main effect for personality, $F(1,148) = 3.03$, $p < .10$, $MSe = 13.07$, on the mean number of adjectives recalled (collapsed over the congruence factor) were also observed. As Figure 20 illustrates, while both HB and LB females recalled more adjectives in the positive mood condition than HB and LB males, and LB females recalled more adjectives than LB males in the negative condition, in this condition HB males recalled more adjectives than HB females.

Figure 20
Condition by Personality x Sex



List Recall by Splitting Scale Score

Analysis of the data using the Splitting Scale score as the personality classification variable reveals a significant condition by congruence interaction, $F(1,139) = 7.36, p < .01, MSe = 5.86$, and a trend toward a three way condition by personality by congruence interaction, $F(1,139) = 2.83, p < .10, MSe = 5.86$. Figure 21 is a graphical representation of these results.



As can be seen in Figure 21, although high and low scorers recall similar numbers of congruent adjectives in the positive and the negative mood conditions, and although both groups recall more non-congruent than congruent adjectives

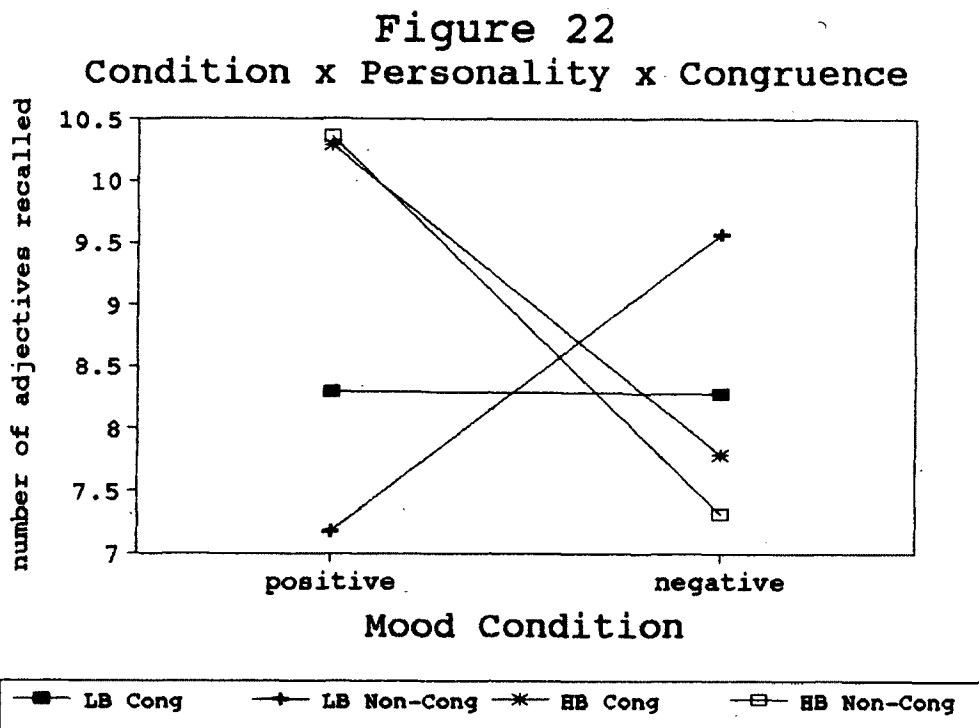
in the negative mood condition, low scorers recall significantly more non-congruent adjectives in the negative mood condition than in the positive mood condition, while high scorers recall similar numbers of non-congruent adjectives in both mood conditions.

Other effects found in this analysis were a significant main effect of sex, $F(1,139) = 12.5, p < .001, MSe = 13.96$, a marginally significant personality by sex interaction, $F(1,139) = 3.76, p = .054, MSe = 13.96$, and a trend towards a condition by sex interaction, $F(1,139) = 3.26, p < .10, MSe = 13.96$, on the mean number of adjectives recalled (collapsing over the congruence factor).

Generally, females recalled more adjectives than did males (M Females = 8.53, M Males = 6.95). High scoring females recalled more adjectives than did low scoring females (M HBF = 8.93, M LBF = 8.12), while for males this pattern was reversed (M HBM = 6.49, M LBM = 7.41). Also, females recalled more adjectives in the positive mood condition than in the negative mood condition (M F+ = 8.84, M F- = 8.21), while for males this pattern was reversed (M M+ = 6.46, M M- = 7.44).

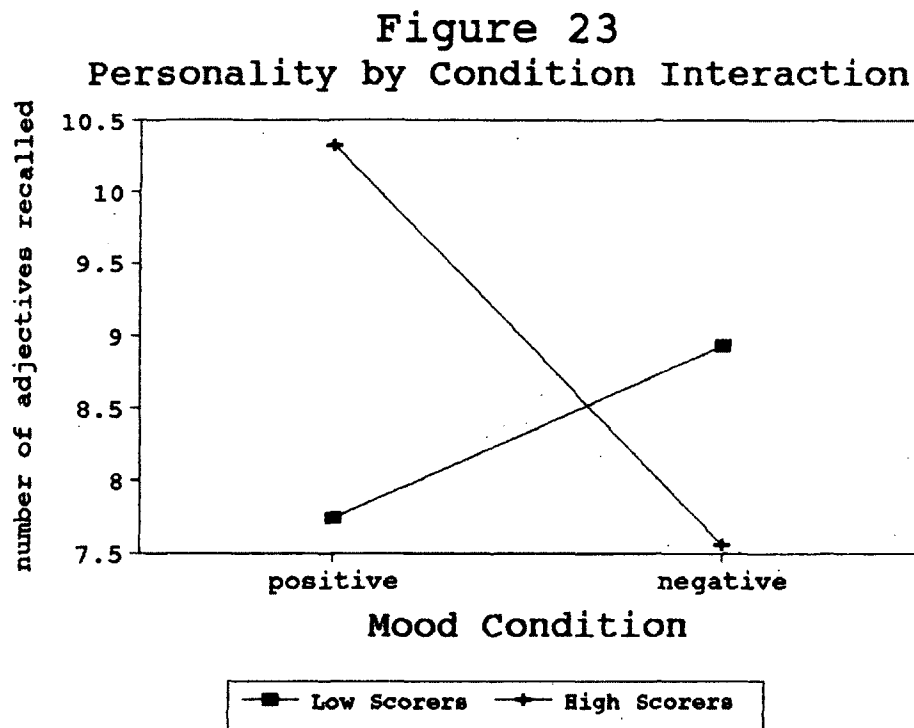
Females Only

Analysis of the data for females revealed a trend toward a three way interaction between the condition, personality, and congruence factors, $F(1,66) = 2.79, p < .10, MSe = 6.57$, and a significant interaction between the condition and personality factors, $F(1,66) = 9.15, p < .01, MSe = 14.34$, collapsing over the congruence factor.



As can be seen in Figure 22, HB females recall similar numbers of congruent and non-congruent list adjectives in both the positive and the negative mood conditions, although they remember more of both types of adjectives in the positive mood condition. On the other hand, LB females

recall similar numbers of congruent adjectives in both conditions, but also recall more non-congruent than congruent adjectives in the negative mood condition and more congruent than non-congruent adjectives in the positive condition.

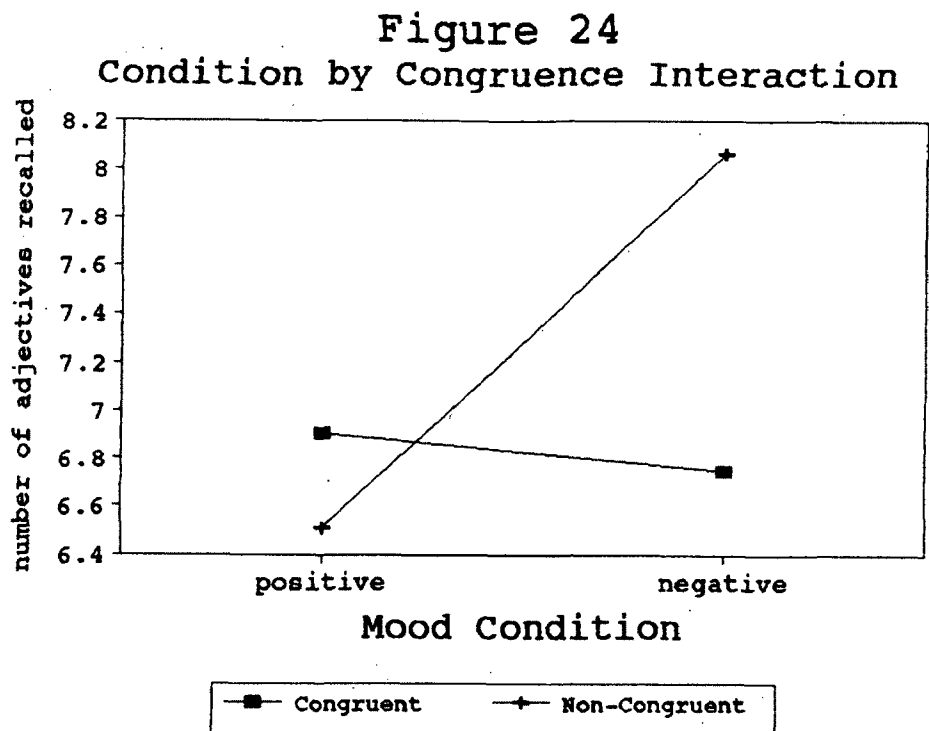


As can be seen in Figure 23, HB females recall more adjectives in the positive mood condition, while LB females recall more adjectives in the negative mood condition.

Males Only

Analysis of the data for male subjects revealed only one significant effect. There was a significant condition by

congruence interaction, $F(1,82) = 5.91, p < .05, MSe = 5.39$.



As can be seen in Figure 24, males recall about the same number of congruent adjectives in both mood conditions. However, they recall fewer non-congruent than congruent adjectives in the positive mood condition, and more non-congruent than congruent adjectives in the negative mood condition.

Recall Without First and Last Six List Items

When the first and last six items presented to the subjects were excluded from the analyses, no significant effects were found in any analyses including the congruence factor, although there was a non-significant trend toward a

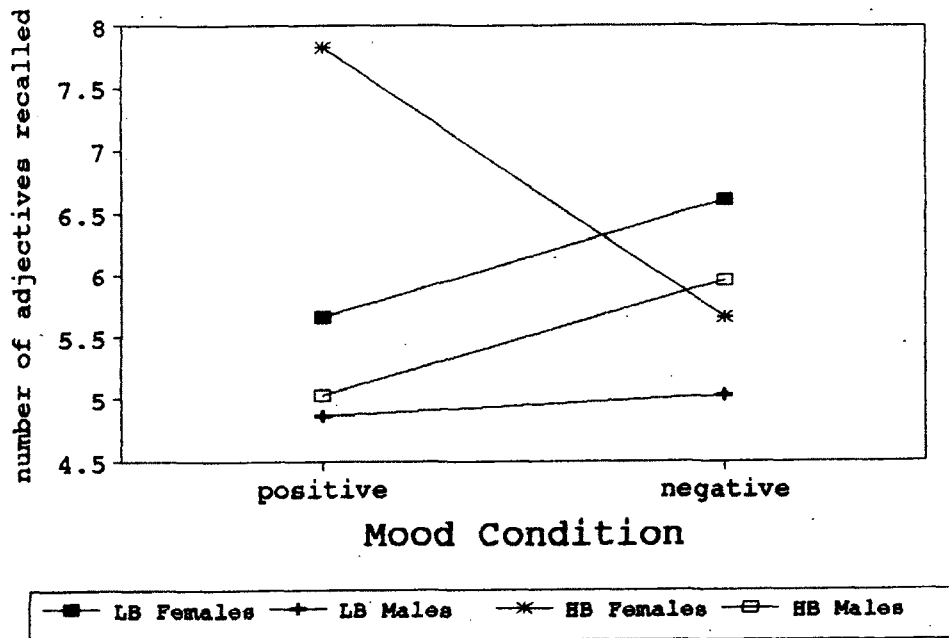
main effect for congruence in the analysis of the male data, and a non-significant trend toward a two way interaction between the condition and congruence factors in the analysis when the revised Splitting Scale was used as the personality classification variable.

The pattern of results for the between subjects factors in these analyses was the same as the patterns observed in the analyses of intrusions, list items and intrusions, and list items.

Recall Without 1st and Last Six Items by MCMI-II Borderline Scale

No significant effects involving the congruence factor were found in this analysis. However, a significant main effect of sex, $F(1,148) = 13.65, p < .001, MSe = 8.34$, and a significant three way interaction between the condition, personality, and sex factors, $F(1,148) = 8.32, p < .01, MSe = 8.34$, on the mean numbers of adjectives recalled (collapsed over the congruence factor) were found.

Figure 25
Condition by Personality by Sex



As can be seen in Figure 25, the HB females differ from the three other groups in that they alone recall more adjectives in the positive condition than in the negative condition.

Recall Without 1st and Last Six Items by Splitting Scale Score

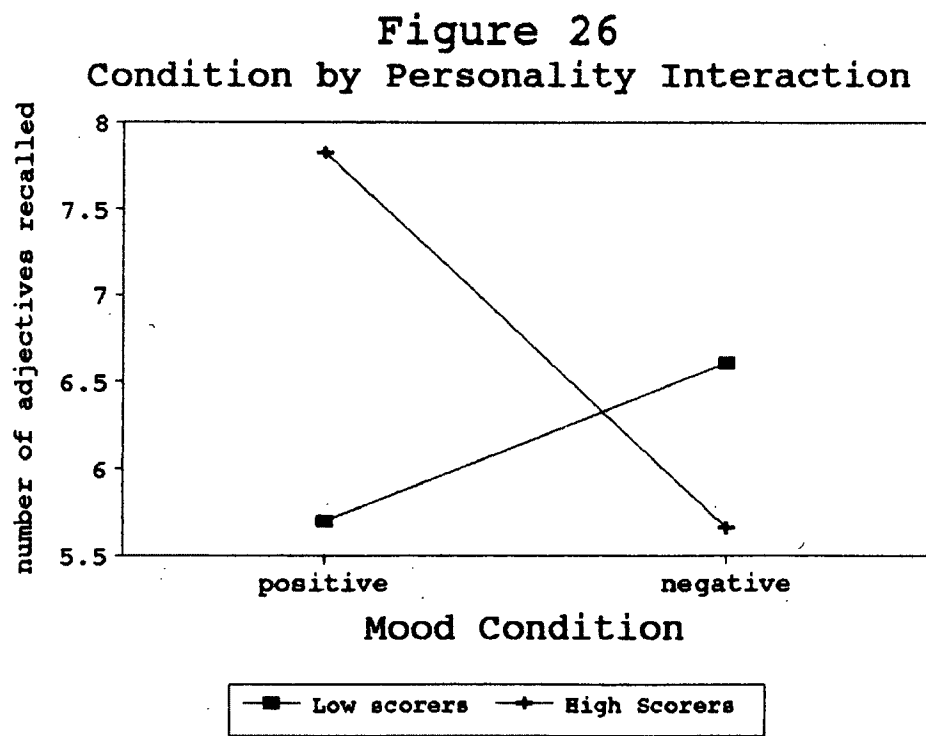
There were no significant effects involving the congruence factor in this analysis, although there was a trend toward a condition by congruence interaction, $F(1,139) = 2.94$, $p < .10$, $MSe = 4.05$.

There was a significant main effect of sex, $F(1,139) =$

12.32, $p < .001$, $MSe = 8.86$, on the mean number of adjectives recalled (collapsing over the congruence factor). Females recalled an average of 6.4 adjectives, while males recalled an average of 5.1 adjectives.

Females Only

No significant effects were found involving the congruence factor. However, a significant interaction was found between the condition and personality factors, $F(1,66) = 8.77$, $p < .01$, $MSe = 9.02$, on the mean number of adjectives recalled (collapsed over the congruence factor). Figure 26 is a graphical representation of this interaction.



As this figure illustrates, high scorers recalled more adjectives in the positive mood condition, while low scorers recalled more adjectives in the negative mood condition.

Males Only

No significant effects were found for any factors in this analysis, although there was a trend toward a main effect of the congruence factor, $F(1,82) = 3.0$, $p < .10$, $MSe = 3.48$. On the average, males recalled more non-congruent than congruent adjectives (M Congruent = 4.977, M Non-Congruent = 5.488).

Recall Results Summary

The results of the recall analyses support the hypothesized general positive bias in recall. However, the hypothesized three way interaction between the condition, personality and congruence factors was only found in the analyses of the female data or when the Splitting Scale was utilized as the personality classification variable and was not in the form hypothesized. Higher scorers did not show recall congruence for both moods, but rather showed a decrease in positive bias relative to lower scorers regardless of their mood, recalling more negative adjectives than other subjects in both mood conditions. Higher scorers

also remembered more of both the positive and negative adjectives in the positive mood condition while lower scorers did not show this effect.

Of secondary interest was a consistent pattern involving the mean number of adjectives recalled collapsing over the congruence factor. In the positive mood condition, females recalled more adjectives than males, and HB females recalled more adjectives than LB females. In the negative mood condition, however, LB females recalled the most adjectives, followed by HB males, HB females, and LB males.

Chapter IV

DISCUSSION

Splitting

As noted in the introduction, the development and utilization of the splitting defense is considered by many psychodynamic theorists to be of central importance in both the diagnosis and etiology of borderline personality disorder. While there are a number of different conceptualizations of this defense mechanism (e.g. Kernberg, 1966 & 1975, Kohut, 1971, & Horowitz, 1977), these have in common a theme of internal representations, images of self and others, and/or memories being split along affective lines. Thus the borderline's pathology is thought to involve the inability to integrate information of opposing affective valences. Therefore, as Marmor & Horowitz (1986) have pointed out, when individuals with this defensive organization are in one affective state, they have little or no access to memories or information which would allow them to modulate their feelings, thoughts, or perceptions. As a result, their perceptions of themselves and others have a black and white quality that varies with their current mood. The present study was based on the idea that one would expect these individuals to demonstrate stronger mood congruency effects for information related to themselves

than would others. Because of the practical and ethical problems inherent in studying this clinical population, an analog paradigm was utilized, with comparisons made between higher and lower scorers on instruments designed to measure borderline pathology and the splitting defense specifically. As noted in the results section, the original hypotheses were not supported. The question that remains then is what, if anything, does this study reveal about the nature of the splitting defense.

If one accepts the notion that there is a continuum that ranges from mental health to borderline pathology, and if one accepts the idea that scores on the assessment devices utilized in this study reflect an individual's place on that continuum, then this study would seem to suggest that mood congruent recall is not involved in the splitting defense, at least when individuals are in a relatively mild mood state (the mean mood rating at recall in the positive condition was 3.2, and in the negative condition was 4.7, with a rating of 4 representing neutral). There is a problem with this interpretation, however, in that these individuals did not show mood congruency in their self-referencing either. While the lack of congruency found in the self-referencing results can also be explained by the relatively mild moods reported by the subjects (the mean mood rating at self-referencing in the positive condition

was 3.2 and in the negative condition was 4.1), there is also another problem with this interpretation, having to do with the general continuum idea. Theoretically, this defensive organization is thought to develop at a very early age (Mahler, 1968, 1971) and to be central to the development of the whole personality structure (Kernberg, 1975). Therefore, one would expect that an individual would either develop this type of pathology, or would not. In other words, according to psychodynamic theories, the idea of a person being a little bit borderline is similar to the idea of a person being a little bit pregnant. This idea may or may not be true. Unfortunately, this experiment (again because of the mild mood states induced) did not provide information to either support or disconfirm this theoretical position.

Taking the above information into account, it seems to me that the question of the relationship between mood congruent memory and the defense mechanism of splitting remains open. This is due in large part to limitations of the experimental design. These limitations, which will be discussed in the following section, include the weakness of the mood induction procedures utilized, and characteristics of the subject population and the assessment devices used to classify them.

Limitations of the Experimental Design

As already noted, the moods reported by subjects in both conditions and both portions of the experiment were relatively mild, with all means less than one point from neutral. In contrast to this study, most of the studies that have found significant mood congruency effects (e.g. Teasdale, et al., 1980) only included subjects who demonstrated strong responses to the mood induction procedures. In the same vein, it has been demonstrated that the effects of mood induction procedures such as those utilized in this study are fairly brief in duration (e.g. Isen & Gorgoglione, 1983, Chartier, & Ranieri, 1989), usually lasting only a few moments at most. In this study, because of the number of adjectives presented to the subjects, the time that elapsed between the end of the mood induction procedure and the complete presentation of the adjectives was at least eight minutes. It is likely that the very mild effects of the mood inductions reported by the subjects were greatly diffused in that time period. Thus the present study was in effect comparing two groups of subjects who were both in basically neutral moods. It is this factor that represents the major flaw in the experimental design.

The other factors that represent limitations in the

present study are related to each other and involve the assessment devices used to classify subjects and the nature of the subject population utilized. First, it is important to recall that the subjects were drawn from a college student population and can thus be considered to be generally relatively high functioning individuals. Also, while the assessment devices chosen to classify subjects for this study represented the best self-report measures available of the splitting defense and of borderline pathology, there are problems with these instruments. The only attempt at construct validation of the Splitting Scale involved correlating it with two other personality measures. A fairly strong negative correlation with a measure of self-esteem, and a positive (but weaker) correlation with a relatively unknown Narcissism scale were obtained. Also, while the splitting defense is associated with Borderline Personality Disorder, the self-report measures that have been created to measure this syndrome have been found to be confounded with depressive symptomatology and general psychopathology (e.g. Edell, 1984, & Conte et al., 1980). Although the MCMI-II Borderline Scale is more widely utilized than most scales designed to measure this disorder, Millon reports that this scale is also confounded with dysthymia and anxiety, and that scores are related to a factor interpreted as representing general maladjustment (1987).

Given these facts, it is important to consider the score ranges that subjects obtained on these measures. As noted in the results section, scores on the Revised Splitting Scale were normally distributed and ranged from 20 to 64, with a mean of 35 in the low scoring group, and a mean of 49 in the high scoring group. This scale consists of 11 seven point Likert scales and it is important to keep in mind that a score of 44 could be obtained by endorsing 'neither agree nor disagree' for each item. Even if one considers that a high score on this scale indicates that an individual utilizes the splitting defense (which is in itself a questionable assumption), there is no data available on what constitutes a clinically relevant high score. In any case, given the score ranges that were obtained in this sample, it is unlikely that more than a few of the subjects in the high scoring group had scores that clearly reflected the utilization of this defense mechanism.

As was also noted in the results section, scores on the MCMI-II BPD scale were not normally distributed and the variances of the high and low scoring groups were unequal because of the influence of a few extremely high scores. The obtained scores ranged from 0 to 76, with a mean of 9.5 in the low scoring group and a mean of 35 in the high scoring group. Millon (1987) suggests that raw score cut off points of 42 for males and 51 for females suggest the

likely presence of this disorder, based on prevalence rates of 11 and 14 percent respectively. Again, only a few of the subjects in the present study would meet that criteria. It should also be noted that as this sample was not drawn from a clinical population, the base rates for this disorder should be even lower, indicating the need for higher cut off scores. Thus it is unlikely that many of the subjects obtained scores that would suggest the presence of borderline pathology.

It could be argued that these characteristics of the subject population and the assessment devices used to classify them do not represent true design weaknesses, particularly if one accepts the continuum idea. However, the lack of real construct validity of the MCMI-II BPD Scale and the Splitting Scale may lead one to wonder whether these instruments are measuring what they are purported to measure. Also, due to the exploratory nature of the research, it would make sense to maximize the probability of obtaining significant results by using actual clinical subjects, as one would expect these individuals to be most likely to demonstrate these effects.

Discussion of Experimental Results

While on the surface, the results obtained in this study appear rather complex, most of what was found can be explained fairly simply by referring to what is known about the personality measures utilized in the study, encoding biases, self-concept, and gender differences in self esteem.

Generally, the results support the idea that individuals in relatively neutral mood states demonstrate positive biases in self-judgments and in either the encoding or retrieval of information related to the self. Both males and females who are higher scorers on the Splitting Scale and females who are higher scorers on the MCMI-II BPD scale, however, demonstrate less positive bias than their lower scoring counterparts. In the following pages, these results will be discussed in more detail.

Self-Referencing

As noted above, females who were higher scorers on the MCMI-II BPD scale and all subjects who were higher scorers on the Splitting Scale rated more negative adjectives as applying to themselves than did lower scoring subjects, regardless of their mood condition. Male higher scorers on the MCMI-II BPD scale rated more negative adjectives as

applying to themselves than did lower scorers in the negative mood condition only.

It makes sense that individuals who would endorse more problems on a psychological test would also endorse more negative adjectives as applying to themselves in this experiment. But why were the results different when the MCMI-II BPD Scale or the Splitting Scale was used to classify subjects? And why were the results different for males and females when the MCMI-II BPD scale was used to classify them? To answer these questions, it will be helpful to think about the nature of the two different scales. Because the MCMI-II BPD Scale has many varied items that are differentially weighted, there are a number of ways to obtain a relatively high score on this measure. The Splitting Scale, however, is more brief and homogeneous and negatively correlates with a measure of self-esteem.

It is generally accepted that women have more self-esteem problems than do men (Maccoby & Jacklin, 1974). Combining this information with what is known about the two scales, we can begin to make sense out of the observed pattern of results. Concerning the results obtained when utilizing Splitting Scale scores as the classification variable, it makes sense that higher scorers on this measure (individuals with self-esteem problems) would endorse more negative items

as referring to themselves than individuals without such problems. Also, while no item analysis was done to look at the ways in which males and females arrived at their scores on the MCMI-II BPD scale, it makes sense that the actual items endorsed by subjects of each sex may have differed, although their total scores did not. Thus it is quite possible that females who were higher scorers on this measure may have endorsed more items reflecting low self-esteem than did males who were higher scorers.

What is particularly interesting about the results when the MCMI-II BPD Scale was used to classify subjects is that they seem to suggest a tendency toward mood congruence of self-referencing in male high scorers (in a very mild negative mood state), but a general lessening of positive bias in female high scorers. These results appear to conflict with previous research indicating that women show stronger mood congruency effects than males do (Clark & Teasdale, 1982). However, in understanding these results we need to keep in mind the differences in self esteem noted above. Because of women's lower self-esteem, it is possible that negative aspects of their self image are generally available to them, regardless of their current mood state. Males, however, may only experience these aspects of their self-concepts while in a negative mood.

Intrusions versus List Recall

The first question that one might want to ask is why would subjects' intrusions be mood congruent while their recall of list items was not? To answer this question, it will be important to keep in mind the fact that the mood ratings of subjects in each of the two experimental conditions were not very different from neutral. As noted earlier, it has been demonstrated in previous research that subjects who are not particularly responsive to mood induction procedures do not show recall congruency (e.g. Teasdale & Russell, 1983). However, to my knowledge, researchers have not looked at the mood congruency of subjects' intrusions. If mood congruence is a real phenomenon, then one would expect these pseudo-recalled items to be mood congruent and sensitive to subtle mood states, as they are self-generated, and are not under conscious control. The fact that these were congruent in very mild mood states is quite interesting. While there were no personality differences found involving the congruence of the subjects' intrusions, it is important to keep in mind the fact that the moods of the subjects were not particularly intense and the scores obtained on the personality measures may not have reflected either borderline pathology or the utilization of the splitting defense.

Number of Adjectives Recalled

Another relatively simple and consistent finding involved the numbers of adjectives recalled by different subjects in the two mood conditions. To understand this pattern of results, it will be important to consider sex and personality differences in the relevance of information about personality traits. It has been found that women are more interpersonally oriented than are men (Gilligan, 1982). Research has supported the idea that trait adjectives are more generally meaningful and more often utilized in talking or in thinking by women than by men (e.g. Clark & Teasdale, 1985). It also seems reasonable to expect that individuals who admit to having more problems would find such adjectives to be more salient or relevant than individuals who admit to having less problems. Therefore it makes sense that women would generally recall more of these evaluative trait adjectives than would men and that higher scorers would recall more than lower scorers. The one apparently somewhat odd finding was the fact that women who were higher scorers on the MCMI-II BPD scale recalled many more adjectives than did lower scoring women in the positive mood condition, but they recalled somewhat fewer than lower scoring women in the negative mood condition. One explanation of this might be that the cognitive functioning of the higher scoring women (who likely had lower self-esteem and/or were less happy

generally) was more sensitive to the influence of a mildly negative mood state than was the functioning of the lower scoring women. This idea is consistent with previous findings that depressive feelings constrain learning or memory processes and cognitive functioning generally (Breslow, Kocsis, & Belkin, 1981).

Differences in Positive Bias in Recall

As noted previously, higher scorers on the Splitting Scale and female higher scorers who were classified on the basis of their scores on the MCMI-II BPD Scale did not show the same degree of positive bias in recall as did lower scorers on these measures or males who were higher scorers on the MCMI-II BPD scale. Why might this have been the case?

Research has shown that normal individuals develop what have been termed self-enhancing biases (Taylor & Brown, 1988) and that depressed individuals demonstrate what has been termed depressive realism (e.g. Alloy & Abramson, 1979). More recent research has demonstrated the development of self-perpetuating encoding biases (e.g. Hill, Lewicki, & Neubauer, 1991). The results of this study would suggest that many individuals (the low scorers on these measures and also the males that were high scorers on the MCMI-II BPD Scale) have a somewhat pervasive tendency either

to encode or to recall predominantly positive information about themselves. The higher scorers on the Splitting Scale and the female higher scorers on the MCMI-II BPD Scale do not show this bias, however.

This suggests that it is not that these individuals have a bias to recall negative information, but that they lack the positive bias that the lower scorers show. Whether this is the cause or the result of their lower self-esteem is not clear. However, it does suggest that they would likely be more prone to depression than lower scorers on these measure as they are more cognizant of negative information about themselves than the lower scorers. Why higher scoring males differ from higher scoring females in this respect is not clear. However, as feminist theory suggests, male qualities and males generally are more highly valued in our culture. Thus males may be attended to and praised more often, which may lead to the differences that are found in self-esteem between the sexes. In addition, males tend to have a different coping style than females. While females tend to spend time thinking about their problems, men tend to push such thoughts out of their mind, and to take action to attempt to solve their problems instead. Thus males tend to have more experiences of mastery than do women, leading to increased self-confidence, self-worth, and life satisfaction (McGrath, Keita, Strickland, & Russo, 1990).

Implications of These Findings

There are a number of possible implications of these findings. For example, one wonders if lower scorers on measures designed to tap into psychopathology are individuals who have a bias to recall positive information related to themselves, or whether they recall more positive than negative information because they find it more salient or relevant. The evidence in this area is mixed. It is true that the results in the self-referencing and recall portions of this experiment are generally parallel, but although it has been found in previous research that subjects recall items that they have rated as applying to themselves slightly better than items that they have rated as not applying to themselves, this result has generally not reached significance. If there is in fact a positive bias operating, this could call into question the validity of self-report measures of psychopathology, as individuals are often not aware of their own maladaptive behaviors. In support of this idea is the fact that a number of subjects in the current study did not endorse any problems or negative adjectives as applying to them, and it would seem likely that all individuals have some problems or negative traits. On the other hand, it is possible that, as previous research has suggested, this lack of awareness and distortion of reality is necessary for healthy adjustment

(e.g. Taylor & Brown, Alloy & Abramson). If this is in fact the case, it would call into question some of the basic tenets of insight oriented therapy, in which individuals are encouraged to become aware of both their positive and their negative characteristics.

Directions for Future Research

Unfortunately, this research was unable to adequately address the original question regarding splitting and mood congruency because of aspects of the experimental design and of the subject population. The mood inductions that were utilized in this study were not powerful enough to enable the study of this phenomenon, and it is also likely that the subject population did not include enough individuals who relied on the splitting defense to adequately test the experimental hypotheses. One also wonders whether the use of an adjective list is the best way to get at individuals' self-concept. Given these factors, it would seem reasonable to design another study to attempt to study the relationship between mood congruent recall and splitting, with stronger mood induction procedures, a clinical population, and possibly a different recall task. For example, having subjects generate their own list of self-descriptors and then testing recall at a later time might tap into self-concept more accurately. It would also be interesting to

administer the splitting scale to two groups of subjects, one group judged by their clinicians to utilize this defense mechanism and the other group judged not to exhibit this defense mechanism to see if this is in fact what this scale is measuring.

There are also a number of further analyses of this data that might be interesting. One could perform an item analysis on the subjects' MCMI-II Borderline Scale scores to see if men and women did in fact arrive at higher scores differently. One could analyze the subjects' recall of the items that they rated as applying to themselves and the items that they rated as not applying to themselves separately to see if different patterns might be revealed.

There are also a number of other possible projects that this research has suggested. One idea would be to correlate scores on the MCMI-II BPD Scale and the Splitting Scale with measures of depression and self esteem.

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Appendix A

MCMI II - Borderline Scale

(All keyed true - weights in parentheses)

Subjects are asked to say whether the following items are true of them or not by marking true or false on the answer sheet. If they can not decide about an item, they are instructed to mark it false.

1. (2) In the last few weeks I begin to cry even when the slightest of things goes wrong.
2. (1) As a teenager I got into lots of trouble because of bad school behavior.
3. (2) If my family puts pressure on me I am likely to get angry and resist doing what they want.
4. (2) I often feel I should be punished for the things I have done.
5. (3) Other people seem more sure than I am of who they are and what they want.
6. (2) I tend to burst out in tears or in anger for unknown reasons.
7. (2) I began to feel lonely and empty about a year or two ago.
8. (2) My drug habits have often gotten me into a good deal of trouble in the past.
9. (1) Lately, I find myself crying without any reason.
10. (1) In the past I've gotten involved sexually with many people who didn't matter much to me.
11. (3) My own "bad temper" has been a big cause of my troubles.
12. (1) I don't mind bullying others to get them to do what I want.
13. (2) I'm a very erratic person, changing my mind and feelings all the time.
14. (1) I feel very tense when I think of the day's happenings.

15. (1) Lately, my strength seems to be draining out of me, even in the morning.
16. (1) I began to feel like a failure some years ago.
17. (3) I have always had a terrible fear that I will lose the love of people I need very much.
18. (1) I seem to go out of my way to let people take advantage of me.
19. (3) Lately I have begun to feel like smashing things.
20. (2) I have given serious thought lately to doing away with myself.
21. (1) Some people say I enjoy suffering.
22. (2) I often let my angry feelings out and then I feel terribly guilty about it.
23. (1) Lately I feel jumpy and under terrible strain, but I don't know why.
24. (1) I can't seem to sleep and wake up just as tired as when I went to bed.
25. (3) I've done a number of stupid things on impulse that ended up causing me great trouble.
26. (1) I never forgive an insult or forget an embarrassment that someone caused me.
27. (1) I am the sort of person that others take advantage of.
28. (1) I always try to please others even when I dislike them.
29. (2) Serious thoughts of suicide have occurred to me for many years.
30. (3) I can't understand it but I seem to enjoy hurting persons I love.
31. (2) I don't see anything wrong with using people to get what I want.
32. (1) I ran away from home as a teenager at least once.
33. (2) I very often say things quickly that I regret having said.

34. (2) For some time now I have been feeling very guilty because I can't do things right anymore.
35. (1) I've become quite discouraged and sad about life in the last year or two.
36. (2) I don't know why but I sometimes say cruel things just to make others unhappy.
37. (1) I speak out my opinions about things no matter what others may think.
38. (1) When someone in authority insists that I do something, I'm likely to put it off or do it poorly on purpose.
39. (1) I just don't have the strength to fight back anymore.
40. (1) I often think that I don't deserve the good things that happen to me.
41. (3) I feel pretty aimless and don't know where I'm going in life.
42. (3) Sometimes I feel like I must do something to hurt myself or someone else.
43. (3) My moods seem to change a great deal from one day to the next.
44. (2) I don't blame anyone who takes advantage of someone who allows it.
45. (1) I've changed jobs more than three times in the past couple of years.
46. (1) For some time now I've been feeling sad and blue and can't seem to snap out of it.
47. (1) I really get annoyed with people who expect me to do what I don't want to do.
48. (2) In the last few years I have felt so guilty that I may do something terrible to myself.
49. (1) I sometimes get confused and feel upset when people are kind to me.

50. (2) My use of so-called illegal drugs has led to family arguments.
51. (2) There are members of my family who say I'm selfish and think only of myself.
52. (1) Frankly, I lie quite often to get out of trouble.
53. (1) My parents often told me that I was no good.
54. (1) I deserve the suffering I've gone through in life.
55. (3) My feelings toward important people in my life often swing from loving them to hating them.
56. (2) My parents always disagreed with each other.
57. (1) I used to be really restless, traveling around from place to place with no idea of where I would end up.
58. (1) I get very irritated if someone demands that I do things his way rather than my own.
59. (1) Lately, I have gone all to pieces.
60. (1) I seem to encourage the people I love to hurt me.
61. (3) People who I admired greatly at first have often become real disappointments to me later.
62. (1) I prefer to be with people who will be protective of me.

Appendix B
Splitting Scale

Subjects are asked to respond to items describing "how people feel" by circling a number from 1 to 7 to indicate whether the items are not at all true (1) to very true (7) of them

*in the absence of a current relationship, subjects are asked to recall their most recent relationship

1. I hate to hear someone close to me being criticized.

1 2 3 4 5 6 7

2. When I'm with someone really terrific, I feel dumb.

1 2 3 4 5 6 7

3. When I'm angry, everyone around me seems rotten.

1 2 3 4 5 6 7

4. My friends don't know how much I'd like to be admired by people.

1 2 3 4 5 6 7

5. It's hard for me to get angry at people I like.

1 2 3 4 5 6 7

6. It's very painful when someone disappoints me.

1 2 3 4 5 6 7

7. I have absolutely no sympathy for people who abuse their children.

1 2 3 4 5 6 7

8. Sometimes I feel I could do anything in the world.

1 2 3 4 5 6 7

9. There are times when my wife (husband)/ girlfriend (boyfriend) seems as strong as iron, and at other times as helpless as a baby.*

1 2 3 4 5 6 7

10. I often feel like I can't put the different parts of my personality together so that there is one me.

1 2 3 4 5 6 7

11. Sometimes I feel my love is dangerous.

1 2 3 4 5 6 7

12. When I'm in a new situation, there's often one person I really dislike.

1 2 3 4 5 6 7

13. It's hard for me to become sexually excited when I'm depressed.

1 2 3 4 5 6 7

14. Some people have too much power over me.

1 2 3 4 5 6 7

Appendix C

Image Distorting Subscale - DSQ

Subjects are asked to rate the degree to which they agree or disagree with each statement by circling a number from one to nine, with one indicating that they strongly disagree and nine indicating that they strongly agree.

1. I am superior to most people I know.

1 2 3 4 5 6 7 8 9

2. I often feel superior to people I'm with.

1 2 3 4 5 6 7 8 9

3. I ignore danger as if I were superman.

1 2 3 4 5 6 7 8 9

4. I pride myself on my ability to cut people down to size.

1 2 3 4 5 6 7 8 9

5. I'm a real put down artist.

1 2 3 4 5 6 7 8 9

6. I've got special talents that allow me to go through life with no problems.

1 2 3 4 5 6 7 8 9

7. I fear nothing.

1 2 3 4 5 6 7 8 9

8. Sometimes I think I'm an angel and other times I think I'm a devil.

1 2 3 4 5 6 7 8 9

9. As far as I'm concerned, people are either good or bad.

1 2 3 4 5 6 7 8 9

10. I always feel that someone I know is like a guardian angel.

1 2 3 4 5 6 7 8 9

11. There's no such thing as finding a little good in everyone. If you're bad, you're all bad.

1 2 3 4 5 6 7 8 9

12. There is someone I know who can do anything and who is absolutely fair and just.

1 2 3 4 5 6 7 8 9

Appendix D
Screening Materials

Feeling Scale

Please respond to the following items that describe ways that people feel by circling a number from 1 to 7, with 1 indicating that you strongly disagree and 7 indicating that you strongly agree with the statement.

1	2	3	4	5	6	7
strongly disagree			neither agree nor disagree			strongly agree

1. I hate to hear someone close to me being criticized.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

2. As far as I'm concerned, people are either good or bad.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

3. I am superior to most people I know.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

4. I pride myself on my ability to cut people down to size.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

5. I ignore danger as if I were superman.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

6. When I'm with someone really terrific, I feel dumb.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

7. When I'm angry, everyone around me seems rotten.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

8. I've got special talents that allow me to go through life with no problems.

1 2 3 4 5 6 7

9. My friends don't know how much I'd like to be admired by people.

1 2 3 4 5 6 7

10. Sometimes I think I'm an angel and other times I think I'm a devil.

1 2 3 4 5 6 7

11. It's hard for me to get angry at people I like.

1 2 3 4 5 6 7

12. It's very painful when someone disappoints me.

1 2 3 4 5 6 7

13. I have absolutely no sympathy for people who abuse their children.

1 2 3 4 5 6 7

14. Sometimes I feel I could do anything in the world.

1 2 3 4 5 6 7

15. There are times when my wife (husband)/ girlfriend (boyfriend) seems as strong as iron, and at other times as helpless as a baby.

(if you are not currently involved in a relationship, please recall your most recent relationship)

1 2 3 4 5 6 7

16. I'm a real put down artist.

1 2 3 4 5 6 7

17. I always feel that someone I know is like a guardian angel.

1 2 3 4 5 6 7

18. I often feel like I can't put the different parts of my personality together so that there is one me.

1 2 3 4 5 6 7

19. There is someone I know who can do anything and who is absolutely fair and just.

1 2 3 4 5 6 7

20. Sometimes I feel my love is dangerous.

1 2 3 4 5 6 7

21. I often feel superior to people I'm with.

1 2 3 4 5 6 7

22. When I'm in a new situation, there's often one person I really dislike.

1 2 3 4 5 6 7

23. I fear nothing.

1 2 3 4 5 6 7

24. It's hard for me to become sexually excited when I'm depressed.

1 2 3 4 5 6 7

25. There's no such thing as finding a little good in everyone. If you're bad, you're all bad.

1 2 3 4 5 6 7

26. Some people have too much power over me.

1 2 3 4 5 6 7

Please circle the number that most accurately reflects your current feelings.

RIGHT NOW MY MOOD IS:

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
very good			neither good nor bad			very bad

Personality Questionnaire

Please say whether the following items are true of you or not by circling true or false for each item. If you can not decide about an item, please mark it false.

- T F 1. In the last few weeks I begin to cry even when the slightest of things goes wrong.
- T F 2. As a teenager I got into lots of trouble because of bad school behavior.
- T F 3. If my family puts pressure on me I am likely to get angry and resist doing what they want.
- T F 4. I often feel I should be punished for the things I have done.
- T F 5. Other people seem more sure than I am of who they are and what they want.
- T F 6. I tend to burst out in tears or in anger for unknown reasons.
- T F 7. I began to feel lonely and empty about a year or two ago.
- T F 8. My drug habits have often gotten me into a good deal of trouble in the past.
- T F 9. Lately, I find myself crying without any reason.
- T F 10. In the past I've gotten involved sexually with many people who didn't matter much to me.
- T F 11. My own "bad temper" has been a big cause of my troubles.
- T F 12. I don't mind bullying others to get them to do what I want.
- T F 13. I'm a very erratic person, changing my mind and feelings all the time.
- T F 14. I feel very tense when I think of the day's happenings.
- T F 15. Lately, my strength seems to be draining out of me, even in the morning.

- T F 16. I began to feel like a failure some years ago.
- T F 17. I have always had a terrible fear that I will lose the love of people I need very much.
- T F 18. I seem to go out of my way to let people take advantage of me.
- T F 19. Lately I have begun to feel like smashing things.
- T F 20. I have given serious thought lately to doing away with myself.
- T F 21. Some people say I enjoy suffering.
- T F 22. I often let my angry feelings out and then I feel terribly guilty about it.
- T F 23. Lately I feel jumpy and under terrible strain, but I don't know why.
- T F 24. I can't seem to sleep and wake up just as tired as when I went to bed.
- T F 25. I've done a number of stupid things on impulse that ended up causing me great trouble.
- T F 26. I never forgive an insult or forget an embarrassment that someone caused me.
- T F 27. I am the sort of person that others take advantage of.
- T F 28. I always try to please others even when I dislike them.
- T F 29. Serious thoughts of suicide have occurred to me for many years.
- T F 30. I can't understand it but I seem to enjoy hurting persons I love.
- T F 31. I don't see anything wrong with using people to get what I want.
- T F 32. I ran away from home as a teenager at least once.
- T F 33. I very often say things quickly that I regret having said.
- T F 34. For some time now I have been feeling very guilty because I can't do things right anymore.

- T F 35. I've become quite discouraged and sad about life in the last year or two.
- T F 36. I don't know why but I sometimes say cruel things just to make others unhappy.
- T F 37. I speak out my opinions about things no matter what others may think.
- T F 38. When someone in authority insists that I do something, I'm likely to put it off or do it poorly on purpose.
- T F 39. I just don't have the strength to fight back anymore.
- T F 40. I often think that I don't deserve the good things that happen to me.
- T F 41. I feel pretty aimless and don't know where I'm going in life.
- T F 42. Sometimes I feel like I must do something to hurt myself or someone else.
- T F 43. My moods seem to change a great deal from one day to the next.
- T F 44. I don't blame anyone who takes advantage of someone who allows it.
- T F 45. I've changed jobs more than three times in the past couple of years.
- T F 46. For some time now I've been feeling sad and blue and can't seem to snap out of it.
- T F 47. I really get annoyed with people who expect me to do what I don't want to do.
- T F 48. In the last few years I have felt so guilty that I may do something terrible to myself.
- T F 49. I sometimes get confused and feel upset when people are kind to me.
- T F 50. My use of so-called illegal drugs has led to family arguments.
- T F 51. There are members of my family who say I'm selfish and think only of myself.

- T F 52. Frankly, I lie quite often to get out of trouble.
- T F 53. My parents often told me that I was no good.
- T F 54. I deserve the suffering I've gone through in life.
- T F 55. My feelings toward important people in my life often swing from loving them to hating them.
- T F 56. My parents always disagreed with each other.
- T F 57. I used to be really restless, traveling around from place to place with no idea of where I would end up.
- T F 58. I get very irritated if someone demands that I do things his way rather than my own.
- T F 59. Lately, I have gone all to pieces.
- T F 60. I seem to encourage the people I love to hurt me.
- T F 61. People who I admired greatly at first have often become real disappointments to me later.
- T F 62. I prefer to be with people who will be protective of me.

Appendix E

Subject Instructions

Please be seated at one of the desks that contains a packet of materials, but do not look at the materials yet.

(WHEN EVERYONE IS SEATED)

If you do not have either a pen or a pencil, please raise your hand and we will bring you one.

(WHEN EVERYONE HAS A PEN OR PENCIL)

In the study today, you will be participating in a number of experiences involving various mental processes. Some of these will involve judgments of various kinds, some of these will involve concentration, and some of these will involve reasoning. We will be asking you to rate your mood after each task.

Please turn over your packet and fill out the first page. This page will be separated from the rest of your materials, and kept in a separate place, to ensure the confidentiality of your experimental materials. Only the primary researcher will have access to this identifying information, and only so that you can be contacted again, if necessary. All the rest of your materials will be identified only by a subject number. Please print clearly.

Please do not turn the page until you are instructed to do so.

*First we would like you to listen to some music. Please try to really get into it, as we will be asking you some questions about your experience of it afterwards. You may even want to close your eyes.

(PLAY TAPE)

(WHEN MUSIC ENDS)

Please turn to the next page on which you will find three questions asking you to rate your experience. Please do these ratings now.

(PAUSE)

Please raise your hand if you are not finished.

(WHEN EVERYONE IS FINISHED)

Please turn to the next page.

We will now be presenting some adjectives to you on the screen here. Each one will be presented for 5 seconds. For each one, please circle yes or no to indicate whether it applies to you. Circle yes if you think it applies to you generally or if you can think of a specific instance in your life in which it has applied to you. Please rate them in order, from 1 to 54. Again, please do not turn the page until you are asked to do so.

(PRESENT ADJECTIVES)

OK, now turn the page.

The next three pages contain arithmetic problems of different types. Please work on these problems until you are asked to stop. If you come to a problem that you are having a hard time with or find frustrating, just go on to the next one. If you happen to finish before we tell you to stop, please just sit quietly.

(AFTER 8 MINUTES)

ok, you can stop now.

Turn to page 8 and rate your mood right now. Then turn to the next page, which should be blank.

On the seat next to you, you will find a small booklet with one statement on each page. I'll be asking you to read through these booklets, trying hard to get into the mood states described by each statement. For each statement, imagine a time when you felt like this and bring back that feeling. Really try to feel the feelings. Its very important that you become as involved in this as you can. Read through the statements at your own rate. As you read each statement think of a time you felt like that and imagine that feeling. You can spend more time on statements that you find really effective and less time on statements that you find less effective. Just repeat the statements to yourself into you really feel that feeling. When you finish reading through the booklet, read through it again, allowing your feelings to build. ok, start now.

(AFTER 7 MINUTES)

ok, you can stop now.

Turn to the next page in your packet of materials, which should be page 10 and rate your mood right now.

(AFTER 1 MINUTE)

ok, please turn the page. Now I'd like you to write down as many of the adjectives from the blue slides as you can remember, in any order in which you remember them. Please write clearly, but don't worry about spelling.

(AFTER 7 MINUTES)

ok, you can stop now. Before you leave you will need to come up and sign the sheet to receive experimental credit. Also, any of you who are interested in finding out the results of the study can sign up on a special sheet, and the final results will be mailed to you. Please don't tell other students about the memory part of this experiment for the next few weeks, as that could destroy the validity of the study. If you have any questions about any part of this study, you can contact Elizabeth Bell through the Psychology department. Thank you very much for your participation.

(Play Happy music)

Appendix F
Mood Statements

(NEGATIVE CONDITION)

I FEEL UNHAPPY.

I FEEL SAD AND BLUE.

I FEEL FED UP.

I JUST FEEL DRAINED OF ENERGY, WORN OUT.

I FEEL PRETTY LOW.

THINGS SEEM FUTILE, POINTLESS.

I FEEL HOPELESS.

I FEEL DOWNHEARTED AND MISERABLE.

I FEEL SO TIRED AND GLOOMY THAT I WOULD RATHER JUST SIT THAN DO ANYTHING.

I FEEL HEAVY AND SLUGGISH.

IT SEEMS SUCH AN EFFORT TO DO MUCH.

I'M FED UP WITH IT ALL.

(POSITIVE CONDITION)

I FEEL PRETTY GOOD RIGHT NOW.

I FEEL HAPPY.

I FEEL CHEERFUL, CONFIDENT.

I CAN THINK QUICKLY AND CLEARLY RIGHT NOW.

RIGHT NOW, I FEEL VERY CONTENTED.

RIGHT NOW, I FEEL LIKE SMILING.

I FEEL ALERT, HAPPY, AND FULL OF ENERGY.

I HAVE A FEELING OF LIGHTNESS AND JOY.

I REALLY LIKE THIS LIGHTEARTED FEELING.

I CAN FEEL A SMILE ON MY FACE.

I FEEL SO GOOD I ALMOST FEEL LIKE LAUGHING.

IT FEELS GREAT TO BE ALIVE

Appendix G
Subject Packet

PLEASE PRINT CLEARLY

NAME: _____

SEX: (CIRCLE) FEMALE MALE

AGE: _____

PHONE NUMBER: _____

PLEASE CIRCLE THE NUMBER THAT MOST ACCURATELY REFLECTS YOUR EXPERIENCE

1. HOW INVOLVING WAS THE MUSIC? (HOW MUCH DID YOU GET INTO IT?)

$\overbrace{\quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7}^{\hspace{1cm}}$
 not at all very involving
 involving

2. WHAT WAS THE EMOTIONAL TONE OF THE MUSIC?

$\overbrace{\quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7}^{\hspace{1cm}}$ very sad
 very cheerful very
 cheerful sad

3. HOW DO YOU FEEL RIGHT NOW?

$\overbrace{\quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7}^{\hspace{1cm}}$
 very happy very unhappy

1.	YES	NO	53.	YES	NO
2.	YES	NO	54.	YES	NO
3.	YES	NO			
4.	YES	NO			
5.	YES	NO			
6.	YES	NO			
7.	YES	NO			
8.	YES	NO			
9.	YES	NO			
10.	YES	NO			
11.	YES	NO			
12.	YES	NO			
13.	YES	NO			
14.	YES	NO			
15.	YES	NO			
16.	YES	NO			
17.	YES	NO			
18.	YES	NO			
19.	YES	NO			
20.	YES	NO			
21.	YES	NO			
22.	YES	NO			
23.	YES	NO			
24.	YES	NO			
25.	YES	NO			
26.	YES	NO			
27.	YES	NO			
28.	YES	NO			
29.	YES	NO			
30.	YES	NO			
31.	YES	NO			
32.	YES	NO			
33.	YES	NO			
34.	YES	NO			
35.	YES	NO			
36.	YES	NO			
37.	YES	NO			
38.	YES	NO			
39.	YES	NO			
40.	YES	NO			
41.	YES	NO			
42.	YES	NO			
43.	YES	NO			
44.	YES	NO			
45.	YES	NO			
46.	YES	NO			
47.	YES	NO			
48.	YES	NO			
49.	YES	NO			
50.	YES	NO			
51.	YES	NO			
52.	YES	NO			

429 <u>+631</u>	623 <u>- 79</u>	29 <u>x34</u>	12 <u>+86</u>	169 <u>- 97</u>	784 <u>+321</u>
--------------------	--------------------	------------------	------------------	--------------------	--------------------

92 <u>-72</u>	92 <u>x 6</u>	728 <u>-645</u>	84 <u>+641</u>	98 <u>x 8</u>	683 <u>- 54</u>
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534 <u>-197</u>	18 <u>x14</u>	65 <u>- 7</u>	108 <u>x 12</u>	8268 <u>- 152</u>	541 <u>+678</u>
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42 <u>x 2</u>	854 <u>-542</u>	16 <u>x 5</u>	52 <u>x 3</u>	98 <u>-34</u>	934 <u>x 8</u>
------------------	--------------------	------------------	------------------	------------------	-------------------

144 <u>x 12</u>	367 <u>-294</u>	87 <u>+23</u>	691 <u>+475</u>	323 <u>- 15</u>	87 <u>x 6</u>
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193 <u>+249</u>	48 <u>x 4</u>	67 <u>+56</u>	91 <u>- 6</u>	576 <u>+268</u>	998 <u>-687</u>
--------------------	------------------	------------------	------------------	--------------------	--------------------

763 <u>+121</u>	43 <u>x12</u>	957 <u>-421</u>	27 <u>x 7</u>	645 <u>x597</u>	95 <u>x 5</u>
--------------------	------------------	--------------------	------------------	--------------------	------------------

54 <u>x 2</u>	102 <u>- 63</u>	751 <u>+ 60</u>	90 <u>x 2</u>	308 <u>x 7</u>	451 <u>- 64</u>
------------------	--------------------	--------------------	------------------	-------------------	--------------------

963 <u>-104</u>	651 <u>x 4</u>	483 <u>+673</u>	62 <u>x 2</u>	274 <u>-131</u>	93 <u>x 4</u>
--------------------	-------------------	--------------------	------------------	--------------------	------------------

23 <u>x 4</u>	731 <u>-584</u>	305 <u>+ 20</u>	74 <u>+852</u>	983 <u>x 3</u>	15 <u>x 9</u>
547 <u>+594</u>	23 <u>x64</u>	6235 <u>+2140</u>	86 <u>x12</u>	479 <u>- 29</u>	500 <u>+127</u>
50 <u>+624</u>	50 <u>-34</u>	602 <u>x 5</u>	884 <u>+973</u>	68 <u>- 3</u>	990 <u>+980</u> 170
34 <u>x 6</u>	3133 <u>x 32</u>	479 <u>-279</u>	96 <u>+546</u>	624 <u>x 9</u>	87 <u>-29</u>
587 <u>+516</u>	82 <u>x 6</u>	987 <u>-564</u>	756 <u>-529</u>	23 <u>x 4</u>	230 <u>+ 89</u> 319
17 <u>x16</u>	4635 <u>+ 78</u>	645 <u>-268</u>	50 <u>-32</u>	87 <u>x 6</u>	569 <u>+123</u>
348 <u>+ 564</u>	126 <u>x 34</u>	498 <u>x 78</u>	9865 <u>+4765</u>	4356 <u>-3398</u>	56 <u>x78</u>
98 <u>+1533</u>	7895 <u>x 25</u>	429 <u>-197</u>	7621 <u>+ 753</u>	587 <u>x 48</u>	7821 <u>- 658</u>
573 <u>x 82</u>	1534 <u>- 984</u>	86 <u>x 9</u>	9832 <u>+ 497</u>	753 <u>+1438</u>	387 <u>- 91</u>

657	6428	7624	358	9852	4657
<u>x 72</u>	<u>+8539</u>	<u>-4681</u>	<u>x 81</u>	<u>x 25</u>	<u>+ 859</u>

5167	129	82	286	8672	86
<u>-3527</u>	<u>+657</u>	<u>x 6</u>	<u>x 12</u>	<u>+ 625</u>	<u>x 8</u>

2419	6284	925	715	65	864
<u>- 57</u>	<u>+ 467</u>	<u>+526</u>	<u>x 5</u>	<u>+99</u>	<u>-487</u>

789	421	877	134	8341	777
<u>+254</u>	<u>x 12</u>	<u>- 552</u>	<u>+ 64</u>	<u>x 2</u>	<u>-529</u>

846	1234	684	7551	8241	78
<u>-621</u>	<u>x 5</u>	<u>- 21</u>	<u>+ 188</u>	<u>x 65</u>	<u>x 2</u>

92	864	5772	785	21	75
<u>x21</u>	<u>+2164</u>	<u>- 821</u>	<u>x 8</u>	<u>x68</u>	<u>+24</u>

764	9548	99	1285	644	98251
<u>+259</u>	<u>- 64</u>	<u>x45</u>	<u>- 726</u>	<u>+8592</u>	<u>x 1</u>

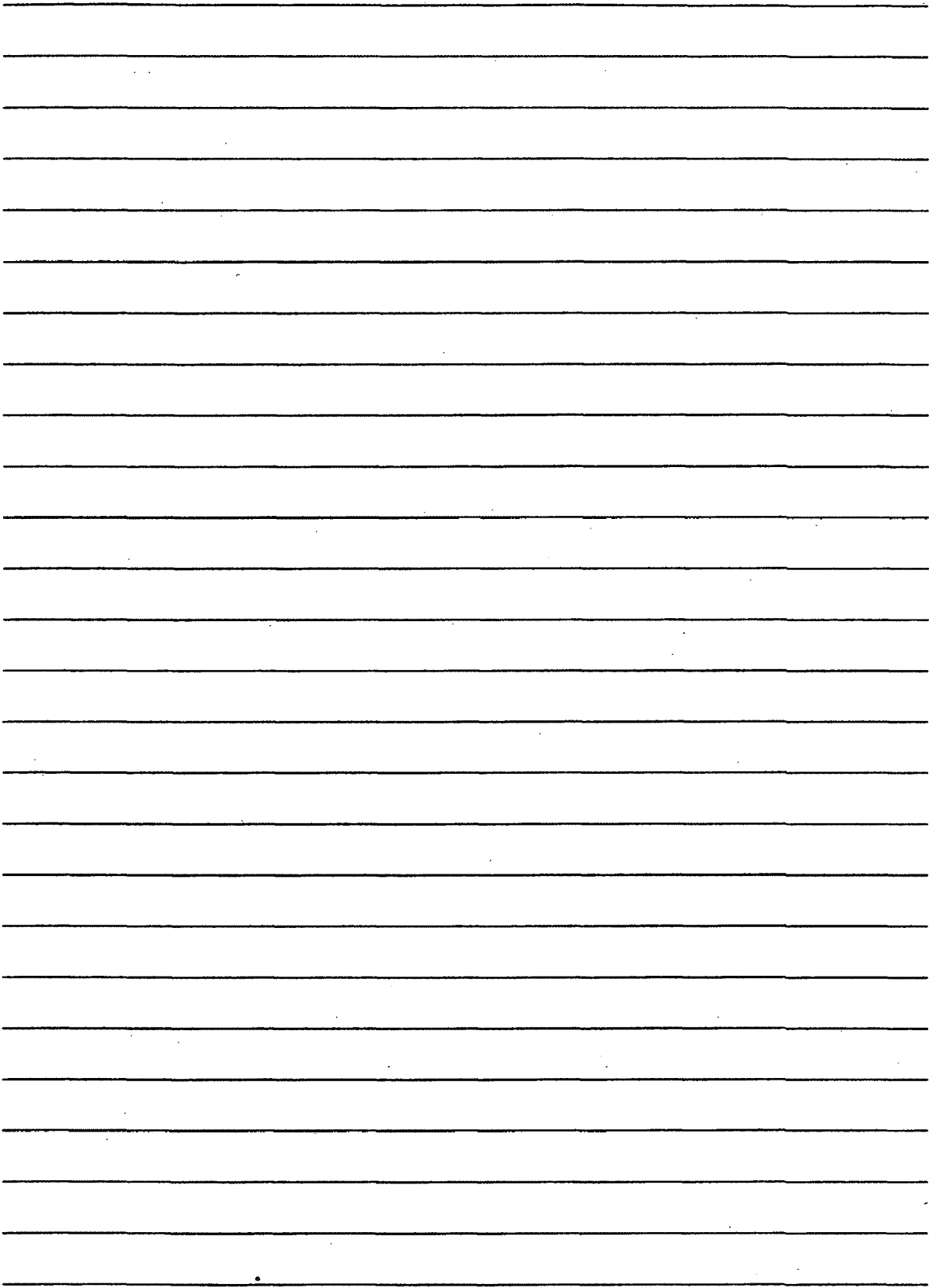
644	854	741	573	85	755
<u>+982</u>	<u>x 8</u>	<u>-622</u>	<u>x 3</u>	<u>+211</u>	<u>+944</u>

432	6781	6782	314	919	441
<u>x 9</u>	<u>+ 856</u>	<u>- 957</u>	<u>x 7</u>	<u>+3527</u>	<u>- 32</u>

Please circle the number that most accurately reflects your current feelings.

RIGHT NOW I FEEL:

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



Appendix H

Adjective List

kind	moody	sincere
self reliant	capable	energetic
unappreciative	patient	malicious
incompetent	lazy	dependable
gossipy	relaxed	greedy
modest	cowardly	oversensitive
grouchy	thoughtful	confident
jumpy	forgiving	
talented	egotistical	
loyal	humorless	
boring	shallow	
generous	easy going	
rude	imaginative	
intelligent	phony	
warm	understanding	
friendly	unfriendly	
irresponsible	helpful	
cold	observant	
dishonest	mean	
incompetent	pleasant	
humorous	honest	
maladjusted	pessimistic	
jealous	careless	
enthusiastic	sincere	