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PERSONALITY, ADJUSTMENT, AND
SELF-PERCEPTION BIASES

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John H. Bergeron

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PERSONALITY, ADJUSTMENT, AND
SELF-PERCEPTION BIASES

By

John H. Bergeron

A DISSERTATION

Submitted to
Michigan State University
In partial fulfillment of the requirements
for the degree of

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2003

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ABSTRACT

PERSONALITY, ADJUSTMENT AND SELF-PERCEPTION BIASES

By

John H. Bergeron

Being cut off from one's own experience of distressing affect or negative self-appraisals could potentially have adverse health consequences (both physical and mental) (Siegel, 1992; Weinberger, 1995). The intent of this study was to use categorical personality styles differing on the dimensions of distress and self-restraint, and similar defensive processes termed self-deceptive enhancement and denial, in order to differentially predict measures of mental health (both other-rated mental health (ORMH) and self-reported self-esteem), self-reported current physical symptoms and family history of heart disease and cancer. 355 participants were administered the Weinberger Adjustment Inventory (WAI), Balanced Inventory of Desirable Responding – 6, Early Memories Index scoring of the Early Memories Test, Rosenberg Self-Esteem Questionnaire, Pennebaker Inventory of Limbic Languidness, as well as demographic questions related to family disease history. Categorical analyses did not evidence group differences on ORMH; although, post hoc dimensional analysis indicated modest support for distress, restraint, and self-deceptive enhancement as predictors of ORMH. Self-deception scales largely overlapped with distress and restraint as predicted suggesting that these defensive processes may be characteristic of those on the extreme end of the WAI dimensions. Further, post hoc analyses suggested that self-deceptive enhancement in particular, while positively correlated with self-report self esteem, was negatively associated with ORMH. Results related to physical health indicated that those high in

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restraint and low in distress reported significantly fewer current physical symptoms than other WAI personality style groups while those higher in distress reported more current physical symptoms. There were no meaningful associations between personality and family history of diseases.

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TERMS USED IN STUDY

WAI = Weinberger Adjustment Inventory

Reactive = high distress, low restraint

Sensitized = high distress, moderate restraint

Oversocialized = high distress, high restraint

Undersocialized = low distress, low restraint

Self Assured = low distress, moderate restraint

Repressor = low distress, high restraint

(Other WAI variables included Denial of Distress and Repressive Defensiveness).

SDE = Self-Deceptive Enhancement (from Balanced Inventory of Desirable Responding)

SDD = Self-Deceptive Denial (from Balanced Inventory of Desirable Responding)

ORMH = Other-Rated Mental Health (summary score from Early Memories Index)

RSEQ = Rosenberg Self-Esteem Questionnaire

Physical Health Symptoms = Pennebaker Inventory of Limbic Languidness (PILL)

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INTRODUCTION

Being cut off from one's own experience of distressing affect or negative self-appraisals could potentially have adverse health consequences (both physical and mental) (Siegel, 1992; Weinberger, 1995). The method of diagnosing emotional problems can affect the proportion of people who receive mental health treatment or even the number who are acknowledged as having such a concern. For example, anxiety and depression are common complaints among those who seek mental health treatment (Levy-Cushman, McBride, & Abeles, 1999). Yet often practitioners rely on self-reported symptoms as the initial clue that someone may be experiencing these disorders. This suggests a reliance on conscious self-reported awareness of distress as a starting point for mental health services. The same is true when conducting research on psychological constructs; much research relies on self-report measures to establish the existence of emotional distress or disturbance. Depending on the type of problem being assessed this reliance may often miss many whose disturbance precludes their ability to report on or be aware of this disturbance. For example, many of the personality disorders are considered to be ego-syntonic such that others are more irritated than the person with the disorder (Vaillant, 1995). Personality traits which do not rise to the level of diagnostic clarity of a personality disorder may still predispose someone to certain types of emotional problems and with the potential inability to recognize or attend to those symptoms or problems.

Some personality styles are more prone to the conscious experience of emotional distress than others. Thus the split can be described as the difference between underlying psychological processes that lead to conscious psychological distress, and underlying psychological processes that do not lead to conscious awareness of psychological

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disturbance. Examination of personality characteristics could identify people who demonstrate longer-term consequences resulting from habitual repression of distress.

A broad but complex definition of mental health offered by Karliner, Westrich, Shedler, and Mayman (1996) can be summarized as follows: Mental health includes the degree of adaptive response to conflicting wishes and fears, the degree to which the self and others are perceived positively or negatively in a simplistic fashion versus a view that is more integrated and textured, the cognitive and emotional strengths of the person, and how well they are able to soothe themselves and regulate self-esteem. Colvin, Block, and Funder emphasize a part of mental health particularly salient to the topic of this study. They state that traditional definitions of mental health “have held that well-adjusted people perceive relatively accurately the impact and ramifications of their social behavior and possess generally valid information about the self” (p. 1152, 1995). They add that a minimum of self-deception or distortion of views of self and others promotes adaptation and mental health.

Repression is an example of the type of mental mechanism that prevents one from experiencing distress (whether it is from external reality or intrapsychic). Repression as considered here is defined as an unconscious defense mechanism aimed at remaining consciously unaware of anxiety and other distressing affects or related thoughts. Those who habitually and successfully use repression over the long term would not be likely to seek mental health treatment yet they may experience the effects of repression in other ways. The repression of anxiety has been theorized to leave one with “blind spots” in the personality and result in somatic costs (Eagle, 2000a). To the extent that we use our

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emotions in part as signals to action (Krystal & Krystal, 1988) the successful repressor is potentially not basing their actions on a full range of data including negative affect.

The actual process of repression as it is occurring has been difficult to study experimentally (Holmes, 1995; Shevrin, 1995). Thus, many researchers have preferred to study its personality correlate trait repression or the tendency to use repression habitually. Research has included studying the histrionic repressor, or one who represses ideas and is only left with conscious affect (Singer & Sincoff, 1995). In contrast, the obsessive repressor is characterized by the tendency to repress affect, relying on defenses such as intellectualization and reaction formation. Research on this latter group has demonstrated physiological hyperarousal in experimental tasks that many consider stressful, yet the repressor self-reports no distress (Weinberger, Schwartz, & Davidson, 1979). Their affective state however, is perhaps belied by the extreme autonomic response, a state that the repressor remains unaware. Weinberger describes this group as endorsing moral and responsible traits while denying antisocial behaviors and the experience of negative affect. Such research has produced debate over the ability of self-report measures to assess psychological variables where the denial of distress is involved (Shedler, Mayman, & Manis, 1993). Further, it has spawned research demonstrating that repressors avoid negative affect by distracting oneself with happy thoughts (Boden & Baumeister, 1997). This study included repressors as one personality style that may lack awareness of distress or informed judgment of mental health. Therefore, repressors' other-rated and self-reported mental health was assessed and compared to that of other personality styles.

Is the repressor the only personality style to defend against distress and resulting in a lack of awareness of this process? Perhaps comparison to other personality styles

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can elucidate similar tendencies as well as help explain more about the processes used by the repressor. The trait repressor has been described as high in self-restraint and low in emotional distress (Weinberger & Schwartz, 1990). However, those low in both self-restraint and distress may too, exhibit a tendency to defensively remain unaware of negative affect. They may act out through antisocial impulsive behaviors in part to defend against the conscious experience of negative affect (D'Angelo, Weinberger, & Feldman, 1995). Further, control over impulses may be compromised when one tries to change negative affective states (Tice, Bratslavsky, & Baumeister, 2001) into more positive ones. Thus those low in self-reported restraint and distress, referred to as undersocialized by Weinberger and Schwartz because of their tendency to engage in antisocial behaviors, were also considered in the current study. Overall, personality styles based on their degree of self-restraint and distress were assessed in terms of the associated self-report and other-rated mental health.

There is mounting evidence for the value of viewing personality by the dimensions of distress and self-restraint. This has both parallels to the superfactors agency and communion as well as the ability to frame defensive mental mechanisms which prevent conscious experience (and therefore self-report) of emotional distress. While Weinberger and colleagues have measured various personality styles along the distress and restraint dimensions, others have elucidated self-deceptive tendencies that relate to personality superfactors agency and communion. Paulhus and John (1998) suggest that self-deceptive enhancement (endorsement of rare positive attributes) and self-deceptive denial (denial of antisocial, negative attributes) are unconscious trait-like personality attributes. It remains unknown whether these systems (a. Weinberger's

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distress and self-restraint; b. Paulhus and John's self-deceptive enhancement and self-deceptive denial) mimic each other or represent divergent types of processes all working to keep distress from consciousness.

Therefore it would be helpful to determine the extent to which the constructs, distress/self-restraint and self-deceptive enhancement/self-deceptive denial, are the same or similar. Is a repressor more likely to deny aggressive or antisocial traits or as Paulhus and John (1998) suggest would they also endorse rare positive attributes via self-deceptive enhancement? Likewise, someone low in self-restraint may utilize defensive processes that prevent awareness of distress such as self-deceptive enhancement. These processes may be different than those used by the repressor. This study therefore will investigate the overlap between enhancement/denial and distress/self-restraint.

Paulhus and Reid (1991) state that self-deceptive enhancement is related to adjustment while self-deceptive denial is not. They hypothesize that perhaps the former "offensive" maneuvers are more effective than the use of defense mechanisms. However, it is unclear whether the above relationships are misleading due to a frequent reliance on self-report methodology when measuring adjustment. While it first appeared that self-deceptive enhancement in particular was receiving attention along the lines of the Taylor and Brown (1988) positive thinking research, there is some work now to suggest that frequent use of self-deceptive enhancement is not as associated with such positive outcomes. It would be useful to determine the extent that SDE and SDD are related to observer or clinician rated adjustment.

Identifying which system (a. Weinberger's distress and self-restraint; b. Paulhus and John's self-deceptive enhancement and self-deceptive denial), if either, better

accounts for differences in self-report versus other-rated mental health could add to understanding of the specific processes that contribute to this discrepancy.

Understanding these processes may clarify the relationship between repressive coping and somatic hyperarousal. Research indicates that repressive copers tend to have physiological hyperarousal during stressful situations (Weinberger, 1995); stress that they are not consciously aware of. They also have poorer immune system functioning and may be at risk for certain diseases (Brown et al., 1996). Finally, examination of the self-reported physical symptoms among these various personality styles may indicate types of defensive processes beyond a repressive style that may be expressed somatically.

In the current study, categorical personality styles differing on the dimensions of the experience of distress and self-restraint were used to differentially predict measures of mental health (other-rated mental health and self-reported self-esteem), a self-report measure of physical symptoms, and family history of certain diseases. Parsing personality styles in this way, two dimensions producing six personality categories, allows for the identification of those who, for example, habitually repress negative emotions or externalize negative attitudes about the self (high restraint, low distress). It was expected that people would differ on the ability to appraise their own mental health based on their personality styles. This would be evidenced by discrepancies between self-reported and other-rated measures. This was then contrasted with the ability of two measures of self-deception (self-deceptive enhancement and self-deceptive denial) to predict the above measures of mental and physical health. Finally, the overlap of constructs between the categorical personality styles and self-deception was investigated.

Repression

Therefore, we can ask what is the mechanism by which a potentially negative psychological process does not lead to a consciously experienced state of psychological distress such as anxiety, hostility, or depression? One of the earliest contemporary explanations for this is the frequent use of the psychological defense of repression. Repression in Freud's view is defined as the forgetting of incompatible ideas that if remembered, would produce distressing affect (Breuer & Freud, 1957). He suggested that anxiety is the signal affect that invokes the defensive process against the experience of incompatible ideas or affects. If the use of repression can keep anxiety and other negative affects from conscious awareness then it is possible that the processes generating those affects represent a psychological disturbance. This disturbance in someone else, not repressing similar affect, may reflect distress worthy of psychological treatment. Is the only problem with the latter person that they do not repress this anxiety? Instead, in both people is there an underlying psychological disturbance that impacts the person regardless of whether the anxiety is experienced or repressed? That is, we may clearly see why someone with distressing anxiety seeks mental health treatment. But for the other person, successfully utilizing repression, are there any costs associated with this?

Eagle (2000a) explicates Freud's views on the potentially pathogenic aspects of repression. By preventing distressing affect from awareness, a level of excitation remains that would otherwise be discharged during expression. Freud argued that instinctual drives and impulses are the source of this excitation requiring constant counterforces to repress, as opposed to repressing one traumatic temporal event or idea (Eagle, 2000a).

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The idea, unable to enter consciousness and thereby be worked over and thought through, maintains its initial intensity; its veracity remains unchallenged (Eagle, 2000b).

Normally, an idea would be reduced both in affective strength and by “cognitive rectification” by thinking about it alongside other experiences (Eagle, 2000b). Shevrin (1998) explains that because a repressed idea is not allowed to enter the mind’s network of associations, it has no temporal place. It cannot be anchored to one event in time. Therefore it may “float” freely remaining near consciousness as an idea which is just as immediate today as it was when first repressed. Other theorists argue that the focus and source of repression may be any idea incompatible with one’s self-view, emotion attached to an incompatible idea, or the repression of parts of relationships (Mitchell & Black, 1995).

Another cost to the successful use of repression over the long term may be a somatic one. Regarding the undischarged level of excitation caused by repression, Freud states “the incompatible idea is rendered innocuous by its sum of excitation being transformed into something somatic” (Breuer & Freud, 1957). The idea that psychological phenomena that remain unconscious can have an impact on the body is not unique to the use of repression. It is seen in the field of psychosomatic medicine (Traue, 1995), where conversion disorders speak to the potential of the mind’s distress being expressed somatically. In summary, potential costs of repression include “blind spots” in the personality, unconscious intense affect and cognition, and somatic costs.

Much of the debate surrounding repression between psychodynamic theorists and cognitive experimentalists regards whether such defenses (e.g. repression) are wholly unconscious. Cramer (2001) states that the most common psychodynamic view of

defenses, one promoted by Anna Freud (1946) more explicitly than her father, does include the idea that defenses are entirely unconscious. Further, they have the goal of preventing anxiety from awareness whereas coping responses are conscious efforts at responding to anxiety. Freud himself made little effort to describe when defenses might be conscious or unconscious because he did feel they could be conscious at first, yet through automaticity become unconscious. This is reasonable if we can envision that the first conscious instantiations of certain defenses occurring in childhood could become unconscious while still a toddler. Cognitive theorists such as Bower (1995) argue that if repression involves tiny portions of the conscious will to ignore certain distressing information, this may affect memory at time of encoding, storage, or recall, thereby having a pervasive impact.

Holmes (1995) argues that there is no experimental evidence for repression, despite many attempts at demonstrating it. Unfortunately, his 1990 review of studies focuses on studies prior to 1975 and it is not known how he might view more contemporary research. The majority of experiments reviewed by him were attempting to measure constructs other than repression, so it is difficult to argue that these experiments are examples of the absence of repression (Aureille, 1999).

Shevrin (1995) noted a limitation of much research on repression. He suggested that most research designs attempted to apply group level experimental manipulations, thereby obfuscating the specific and idiosyncratic impact of the experimental manipulation on each participant. He has had success with his methodology that is notably specific to each research participant. By showing subliminal “unconscious conflict” words specific to each participant and based on interviews with each of them, he

has demonstrated brain reactivity that he suggests is evidence of repression (Shevrin, Bond, Brakel, Hertel, & Williams, 1996).

Thus one way researchers have addressed the split between conscious and unconscious awareness given the difficulty measuring repression experimentally has been to focus on people's tendency to use characteristic defenses over time. To some extent this contributes toward defining their personality or character. For example, in the personality disorders we see an extreme over-reliance and rigid application of certain defenses. Thus some people may use repression much more than others. Vaillant (1995) suggests that some defenses are more mature or more adaptive than others. Further, the habitual enactment of immature defenses, contributes to poorer long-term life outcomes. These characteristic defenses have long term consequences that spread beyond the immediate situation in which a defense is invoked. Therefore it is possible that the frequent use of repression may have longer-term benefits and costs. Further, it may possess correlates in behavior outside of the clinical environment that may be observable even if repression proper often is not. Those who do not utilize repression or attempt but fail probably have a higher rate of anxiety and depression than those who do use it. Habitual use of repression may be less adaptive to the extent that we are informed by our negative emotions. Krystal and Krystal (1988) suggest that a primary purpose of negative emotions is to act as a signal to action. By recognizing some situation as emotionally aversive we may avoid that situation in the future unless there are valid cognitive arguments against avoiding it. Frequent use of repression may result in the lack of an emotional barometer for stressful situations.

Trait Repression

While the classic definition of repression most often refers to keeping an incompatible idea or thought from consciousness while the affect remains, at times the process of repression has also been referred to as keeping negative affects from awareness while still maintaining the related conscious thought (Schwartz, 1995). Repressive coping as a personality trait typically refers to this latter definition typified by a personality style more prone to intellectualization than hysterical emotionality (Weinberger et al., 1979). Much of the earlier operationalization of personality styles or conscious correlates for repression involved the Byrne Repression-Sensitization Scale (Byrne, 1961). At one end are those who tend to ignore distress, at the other end are those who attend to it. A problem with the Byrne scale has been that it has demonstrated high correlations (often above 0.8) with self-report measures of anxiety and social desirability leading many to conclude that it is predominantly a measure of anxiety (Cramer, 1991).

Related research has examined the tendency to consciously deny the experience of emotional distress. Shedler, Mayman, and Manis (1993) scored college students' self-reported earliest memories as either emotionally healthy or unhealthy. Out of 58 participants, they identified 18 as unhealthy on early memories who also self-reported low Neuroticism. The authors classified these 18 subjects as defensive deniers of distress. These subjects exhibited the highest blood pressure and heart rate increases on an experimental anxiety task. They also found that within the defensive denier group, Neuroticism score was negatively correlated with degree of physiological hyper-reactivity (or degree of denial of distress). To ensure that coding of early memories was

not limited to expert raters, the authors asked undergraduate personality psychology students to re-score this data; this yielded similar results. Thus, Shedler and colleagues found that this group of defensive deniers, while consciously unaware of emotional distress, experienced physiological hyper-reactivity suggestive of distress. Note that this is a construct similar to the repressive copers because of the conscious disavowal of distress combined with evidence of distress on other measures.

Weinberger, Schwartz, and Davidson (1979) introduced a method of identifying “repressive copers” which built on previous work studying the differences between repressors versus sensitizers or those who readily attend to threatening stimuli.

Weinberger et al.’s method was useful in that it utilized self-report measures to assess repression that had been previously assessed through projective techniques. They based their method on a self-report measure of consciously experienced anxiety, the Taylor Manifest Anxiety Scale (TMAS) and a measure of defensiveness, the Marlowe-Crowne Social Desirability Scale (MCSD). While the name of the MCSD sounds as if it may only measure one’s desire to appear socially acceptable or appropriate, even its authors concluded that it in effect measures defensiveness. Most items involve denial of selfish thoughts, feelings, and behaviors in relation to others. The questions (e.g. “No matter who I’m talking to, I’m always a good listener”) are not as face valid as the anxiety measure and this perhaps gets at unconscious information. Importantly, this method differs from the Byrne scale by separating out anxiety or negative affect, from defensiveness. Via this methodology, there remains a small correlation between anxiety and defensiveness (approximately 0.2), which is thought to more accurately reflect the relationship between anxiety and defensiveness.

Repressive Coping

With their methodology, Weinberger and colleagues (Weinberger et al., 1979) describe the repressive coper (low self-reported anxiety and high defensiveness) as people who exhibit extreme self-control or restraint. This self-control is especially related to impulses that may contradict their standards for acceptable behavior. They report little experience of negative affect and work to maintain a positive self-image. While they are described as exhibiting less aggression and more avoidance in daily life, they exhibit more aggressive and less avoidant content in analysis of recalled dream content. Research has demonstrated that they exhibit physiological stress reactions at least as large as people who describe themselves as highly anxious (Weinberger & Davidson, 1994). They also exhibit heightened levels of salivary cortisol at baseline and under stressful conditions as well as elevated resting glucose, cholesterol, and blood pressure (Brown et al., 1996). They may be at increased risk for a number of health related problems such as cancer (Goldstein & Antoni, 1989; Kraft, 1999).

Other Formulations

Holmes (1995) argues that research on repressive coping does not provide evidence of repression. He suggests that because repressors deny subjective distress, yet show physiological hyperarousal during the stressful task, they must be “aware” of their own distress and therefore could not be repressing it. He believes that the physiological arousal demonstrates their awareness of distress. While Freud argued for somatic costs to repression, Holmes instead considers their arousal as indicative of the use of denial rather than repression. He does not explicitly say so, but it appears from his argument that this act of denial is a more conscious response than repression; otherwise his intention of

arguing against unconscious processes would be lost. Weinberger however, has demonstrated that repressive copers do not respond in ways that are consistent with people who are conscious of distress yet seek to hide it from others. He compared performance of repressive copers to self-reported “impression managers,” on several interpersonal tasks (Weinberger & Davidson, 1994). The repressors differed from impression managers by providing less socially desirable responses, ones that would leave them potentially disappointing the experimenter. Thus, repressors do appear to inhibit characterologically or repress awareness of distressing affect, deny antisocial or selfish motives, and are willing to be viewed negatively by others while doing so.

Cognitive and Affective Implications of Repressive Coping

Evidence from repressive coping research can inform us to the possible emotional and physical benefits or costs to the habitual use of repression. An immediate benefit of repressive coping may be the avoidance of negative affect itself. Weinberger identifies several processes utilized by the repressive coper to prevent awareness or the experience of negative affect. These include selective attention, memory, perception, and unconscious defenses such as intellectualization, and attributions. When faced with a stressful situation, it appears that many people consciously experience anxiety, yet repressors do not and instead express distress physiologically. To identify the potential processes involved in their ability to keep such anxiety from consciousness, Boden and Baumeister (1997) had repressors watch a distressing or neutral video and then asked them to recall a happy or sad memory from their past. They found that repressors were faster than other groups at recalling happy memories. Repressors were not faster than other groups at recalling sad memories, nor were they faster at recalling happy memories

after viewing a neutral video. Boden and Baumeister concluded that repressors are adept at responding to stressful stimuli by thinking pleasant thoughts. They followed this by a similar experiment except that participants recorded thoughts on a thought record after the video, with no demand to think happy or sad thoughts, or think about the video or anything else. They found that repressors, compared to other groups, were more likely to think of happy thoughts. Further, those thoughts were more likely to be unrelated to the video. They concluded that repressors naturally (as opposed to being told to think happy thoughts) respond to stress with happy thoughts that are unrelated to the stressor. This study demonstrated the presence of cognitive and affective responses to stress that are different in the repressive copers than in others.

Much of the research on repressive coping has demonstrated cognitive and affective differences between the repressive copers and others, or it has demonstrated physiological differences and/or associated implications for physical health. However, less effort has been made to link psychological (cognitive and affective) differences to psychological outcomes or costs. Thus, the present study aimed to measure the presence of distress in the repressive copers via projective techniques assessing mental health.

a. Links between brain function, physiological correlates, and long term physical health

While some people experience stress psychologically as emotional distress, others may express stress physically. Thus, consideration of the interaction between mind and body may help clarify processes which for example, lead the repressive copers to experience physiological hyperarousal in stressful experiments (Weinberger et al., 1979). The finding that repressors report experiencing depression or anxiety less so than others is consistent with research on laterality of brain functioning. The right hemisphere of the

brain is considered to be more associated with the experience of emotions and especially negative affect (Springer & Deutsch, 1993). Repressors have been shown to communicate less negative affective information from the right to left hemisphere than non-repressors (Davidson, 1985) and repressors have greater activation in left frontal regions than non-repressors (Tomarken & Davidson, 1994). As such it is perhaps easier to imagine how the psychological process of repression may have implications for broader physiological functioning in the body. Related research has demonstrated repressors as having poorer immune system functioning as measured on several physiological indices (Brown et al., 1996); (Jamner, Schwartz, & Leigh, 1988) as well as higher cholesterol and fasting insulin levels (Barger, Marsland, Bachen, & Manuck, 2000).

These physiological differences between repressors and non-repressors could have implications for longer-term physical health. Repressors have been shown to have increased incidence and poorer outcomes for diseases such as cancer (Goldstein & Antoni, 1989; Jensen, 1987; Phipps & Srivastava, 1997) and asthma (Lehrer, 1998). For example, Kraft (1999) assessed 220 women for repressor status when they were seeing their doctor for a breast biopsy (and prior to knowing the biopsy results). Biopsy results were cancer positive for 36% of repressors while only for 6% of the truly low anxious women (low anxiety, low defensiveness). In addition, repressive copers have been shown to report more frequent visits to medical providers in the past year (Bowen & Schwartz as cited in Schwartz, 1995), yet present themselves in an overly positive fashion on health related questionnaires (Myers & Vetere, 1997). Therefore, in the

present study self-report physical symptoms were assessed for differences between personality styles.

If repressive coping has implications for cognition and emotion, brain laterality, physiological processes and longer-term physical health, the costs associated with remaining unaware of distress are potentially significant. Yet the invocation of this style most likely occurs prior to these consequences. Understanding the processes and motivations involved may be better understood by looking at their competing defensiveness/distress styles; styles which all attempt to resolve the experience of distressing affect in particular ways.

Distress and Self-Restraint

Weinberger and colleagues' earlier measurement of repressive coping highlighted both the denial of aggressive impulses and lapses in self control as tapped by the Marlowe-Crowne Social Desirability scale and the denial of distress inferred by the Taylor Manifest Anxiety Scale (Weinberger et al., 1979). Following this work, they hypothesized that while repressors may be perhaps too high in self-restraint, there may also be negative consequences associated with being too low in self-restraint. Thus, they began studying the dimensions of experienced distress and self-restraint as primary dimensions of personality, whose intersection determines a number of personality characteristics (Weinberger & Schwartz, 1990). These dimensions are relevant here as they capture the repressor, defined as high self-restraint, low distress, but also place the goal of defense mechanisms as managing distress, central to this description of personality. Further, the relationship between these two dimensions of personality is clear. The amount of distress one experiences partly defines personality, but that distress

also invokes ego controls (and perhaps superego reactions) in response to the internal/external threat.

D'Angelo, Weinberger, and Feldman (1995) measured both parents and their early teenaged son's distress and self-restraint, then four years later looked at son's adjustment across several domains. They found that fathers with low restraint had sons with poorer adjustment as measured by greater symptoms of depression, lower grades, increased truancy and at-risk behaviors. Note that the latter two indicators suggest problems with impulse control or self-restraint. This relationship remained for most adjustment variables even after partialling out son's restraint at baseline. Similarly, Weinberger (1998) reported that the highest recidivism rates among juvenile offenders were seen among those low in distress and self-restraint. Among externalizing inpatient adolescents, those who were most likely to exhibit acting-out behaviors had the greatest denial of distress, suggesting that they were defensively preventing the experience of distress by acting out. These studies suggest that acting out may be an alternative to consciously experiencing distress that has notable consequences. Further, the construct of self-restraint has important implications for adaptation or life adjustment.

In related research, Tice, Bratslavsky, and Baumeister (2001) investigated the relationship between affective distress and impulse control to determine why people ignore long term goals that require self-regulatory abilities in favor of short-term gratification of impulses (e.g. eating too much, smoking, drinking, risky sexual behaviors). They operationalized impulsive behaviors as eating, delay of gratification, and procrastination across 3 experiments. They found that people do not choose short term gratifying behaviors due to a loss of self-regulatory ability, desire, or motivation.

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Rather they do so with the belief that at that very moment they can alleviate distress, by pursuing the impulsive eating, procrastinating, etc. For example, with procrastination, the presence of exciting distractors (which would boost mood), the belief that they could improve their mood, and a negative affective state were all necessary to result in significant procrastination. When participants were manipulated into believing that they had no control over their affective state, people in negative moods procrastinated significantly less time than people who thought they could change their mood. This highlights how self-restraint may be compromised by the immediacy of the need to regulate distress. These findings parallel the above work with juvenile offenders or those low in self-restraint and distress (but likely high in denial of distress). Their actions (low self-restraint) may have been to deny distress.

The above studies demonstrate the utility of characterizing personality via distress and self-restraint and doing so evidences differences in behavior. The very need to defend against distress may result in behaviors with adverse consequences and implications for adjustment. Those behaviors may be at the undercontrolled externalizing end, self-medicating behaviors such as removing oneself from the situation or oral soothing choices such as food, alcohol, etc. Instead, they may be at the overcontrolled end in which one's attempt to ignore the presence of distress, or ignoring even being in a situation that would reasonably invoke distress, may handicap one in that they must also ignore other data.

Westen and Harnden-Fischer (2001) examined personality clusters among eating disordered women and found 3 main clusters of characteristics. As in the above studies, this work demonstrates the relevance of, and relationship between, emotional distress and

impulse control (self-restraint) in a study unrelated to the repressive coping literature. Group 1 identified as “high functioning/perfectionistic” was described as conscientious, having moral and ethical standards, empathic, and self-critical. This group had high correlations with obsessive-compulsive personality disorder. Group 2, the “constricted/over controlled” group, was described as passive and unassertive, having difficulty expressing/acknowledging anger, inhibited and having difficulty acknowledging expressing wishes, or impulses. This group had high correlations with schizoid, schizotypal and avoidant personality disorders. Finally, Group 3, termed “emotionally dysregulated/undercontrolled” had impulsive behaviors (binge eating etc.), frequent uncontrolled displays of anger and upset, and had high correlations with DSM-IV Cluster B personality disorders especially borderline personality. What is evident across these personality types is the tendency to describe personality by the relationship between affective distress and control over impulses as well as the relevance of high moral standards to some personality styles (reminiscent of Weinberger’s restraint dimension).

Thus the dimensions of distress and self-restraint have merit as meaningful descriptors of personality as seen in the above related research. Consideration of these two dimensions as a whole, and research on the associated personality categories suggested by Weinberger, may help further refine understanding of the repressor and its competing personality adaptations. Specifically, it may aid understanding of the discrepancies between conscious and unconscious understanding and attendant consequences of those discrepancies.

For the current study, so far Weinberger and colleagues' distress and self-restraint have been reviewed as personality dimensions which when viewed categorically, may identify people who differ on levels of emotional adjustment and physical symptomatology. While the repressive copers has been considered in the literature more extensively as a personality style in which defenses may preclude experience of distress and result in stress expressed through the body (Weinberger et al., 1979), the same may be true of those low in self-restraint and distress (undersocialized). Research in the area of self-deception has parallels with that of repressive coping; specifically, Paulhus and John (1998) identify unconscious trait-like tendencies to deceive the self by denying negative attributes or conversely, endorsing positive ones. Paulhus and John have made preliminary investigations of the role of these two self-deceptive styles as they relate to psychological adjustment. They have also suggested a hypothesized relationship between these modes of self-deception and Weinberger's two dimensions. Investigation of Weinberger's dimensions in relation to Paulhus and John's may allow for further differentiation between the undersocialized and repressive copers distinct ways of keeping distress out of consciousness.

Self-Deception

This research has included addressing whether self-deception is adaptive and whether it has any negative consequences. Self-deception as studied in the social/personality psychology literature describes a process in which one possesses two competing beliefs and is motivated to remain unaware of one of these beliefs in order to protect one's sense of self or self-esteem (Sackeim & Gur, 1979). Authors disagree to what extent this construct is a reincarnation of psychoanalytic defense mechanisms or

whether one subsumes the other. Eagle (1998) suggests that while there is conceptual overlap, defenses such as repression do not include “beliefs” per se; that is, a repressed wish is not “motivated” in the more overt way that a self-deception is. He states that if someone were confronted with an unconscious wish, they would not believe it as it would remain ego-alien. Eagle prefers to refer to repression as a “self-deceptive mechanism” indicating their degree of similarity. However, his argument overly focuses on one extreme definition of self-deception that most would agree is separate from a defense. Other definitions of self-deception do more easily imply substantial overlap with definitions of defense (see Lockard & Paulhus, 1988).

Paulhus argues instead that some definitions of repression can be explained by self-deception (Paulhus & Suedfeld, 1988 as cited in Lockard & Paulhus). He believes in fact, that the repressive coper can be described by the construct of self-deception (Paulhus & John, 1998). Further, he refers to Sackeim and Gur’s work as a competing way of viewing defense in personality (Paulhus & John, 1998). Paulhus and John (1998) state that unconscious forms of self-deception involve both enhancement of positive attributes and denial of negative ones. They suggest the latter is more closely related to the traditional psychoanalytic view of defense. In contrast, they regard self-deceptive enhancement as an “offensive” intrapsychic maneuver that somehow is less related to defense because, these authors believe, one is not defending against a threat but enhancing a positive attribute. Although Paulhus seems to describe self-deception as similar to defense, he also regards only some types of unconscious self-deception as equivalent to defenses.

In sum, self-deception has been described by some as synonymous with defense mechanisms, while others say they are related but not the same. It has also been suggested that self-deception includes both defensive and “offensive” maneuvers. However, it is unclear whether this distinction is a valid or useful one because the more “offensive” maneuvers may be describing more manic defenses.

Self-Deception Research

Following on Sackeim and Gur’s work on self-deception, Paulhus (1984) factored an array of available socially desirable responding measures and found two factors which he argued represented self-deception and impression management (IM). Later, Paulhus and Reid (1991) refined this by suggesting that the self-deception factor could be parceled into a self-deceptive enhancement and self-deceptive denial factor that were relatively orthogonal (Paulhus & John, 1998). He states that the former two are unconscious while IM is conscious. Unlike self-deceptive enhancement (SDE) and self-deceptive denial (SDD), IM is susceptible to anonymous versus public task demands. Paulhus describes these tendencies as akin to personality attributes. That is, some people are more likely to habitually use self-deceptive enhancement while others deny antisocial, non-conformist attributes and behaviors (self-deceptive denial). If the latter relates to more socialization concerns it is interesting that SDD correlates highly with IM under anonymous conditions. Paulhus and John argue thus that the same people tend to use both conscious and unconscious mechanisms of “exaggerated moralism and social conventionality” (Paulhus & John, 1998). Note the overlap to Westen’s and Harnden-Fischer’s first group of eating disordered women and Weinberger’s high restraint groups.

Paulhus states that the SDE measure focuses on “exaggerating positive cognitive attributes (overconfidence in one’s judgments and rationality)” (and that it measures ego enhancement rather than ego defense) (Paulhus, 1991). The self-deceptive denial scale (SDD), described by Paulhus as closer to traditional psychoanalytic defensiveness, refers to denial of negative attributes such as hostile or sexual thoughts or feelings that may be viewed as antisocial (for example “I never get jealous over the good fortune of others.”). It correlates with IM, and the Marlowe-Crowne Social Desirability scale (Paulhus & John, 1998).

Self-Deception and Adjustment

Paulhus and Reid (1991) argue that ego enhancement as measured via self-deceptive enhancement is related to adjustment while ego defense (self-deceptive denial) is not. They suggest that this may be because defenses don’t work in some situations, or that ego enhancement is more proactive; if you have that you don’t need defense. Because self-reported adjustment is more related to ego enhancement, they speculate that ego enhancement is superior to ego defense in promoting adjustment. Here at least, they say self-deceptive denial neither promotes adjustment nor impairs it. While these authors attempt to define this ego protecting process as something other than an ego defense, it may be a more mature form of defense than SDD. Instead it may represent a rather brittle defense that requires obfuscation of the threat not by denying the threat, but by distraction to something else. To the extent that self-deceptive enhancement is similar to a narcissistic style of self-esteem it may represent a brittle defense as opposed to a more mature adaptive style than SDD. In fact, Robins and Beer (2001) also describe self-enhancement as an offensive not defensive mechanism yet they acknowledge that it may

also be related to self-esteem “of a rigidly defended nature.” (Robins & Beer, 2001)

Below, research on Paulhus and Reid’s hypotheses is reviewed.

Self-Enhancement: Self-Report Versus Observer Ratings

Methodologically, two types of self-enhancement were considered. The first method, already mentioned above, involves self-report responses. The second method involves comparison of self to peer ratings on measures such as performance in an experimental task. In this latter case, self-enhancers are those who rate their own performance higher than peers rated that person’s performance. Paulhus describes a related construct, trait self-enhancement, identified by a combination of high scores on narcissism and SDE. When this construct was studied in small group interaction tasks trait self-enhancers were seen positively by group members at the first meeting but after 7 weeks, peer ratings declined for trait self-enhancers (Paulhus, 1998). Despite this, trait self-enhancers had high self-esteem (self-report) ratings at start and end. To make this comparison, deceptive self-enhancement was computed as the difference between self-ratings versus peer ratings for positive contribution to the task. Deceptive self-enhancement score was positively related to trait self-enhancement (combination of narcissism and SDE). Thus, to the extent that narcissism and SDE overlap (correlated 0.50 in this study) they highlight the potential for the positive aspects of SDE’s relation to adjustment (measured by self-report self-esteem ratings) to be perhaps oversimplified. At the same time that self-reported self-esteem and self-ratings remain high, observer ratings of self-enhancers performance declined, suggesting that getting an answer as to the adaptiveness of self-enhancement depends on whom you ask.

In other work, examination of the discrepancy between self-ratings and other ratings in group performance tasks was also used independent of the SDE construct. Robins and Beer (2001) asked small group participants to rate self and other effectiveness in achieving group goals, then computed self-enhancement bias as the difference between self and other ratings. They found self-enhancers to be more narcissistic on the Narcissistic Personality Inventory, to attribute their performance to their own abilities, and to experience an increase in positive affect after the task. Note that this sounds like the increase in positive affect seen in repressive copers after they have been exposed to a stressful task. In addition, those actually rated as doing well by peers, and those who overestimated how peers would rate them, also reported an increase in positive affect. As there was no relationship between negative affect and self-enhancement bias, the authors suggested that this is inconsistent with a traditional psychoanalytic view of defense mechanisms. Instead, they postulated that the self-enhancement bias was an offensive mechanism fostering positive self-views instead of the defense mechanisms goal of warding off threats to the self.

However, Robins and Beer (2001) followed this study by comparing self-rated academic achievement and ability in college freshmen with their actual college GPA and whether they graduated after 5 years. The discrepancy index to establish self-enhancement bias was based on self-reported high school GPA and SAT scores, with those actual data available from high school transcripts. They found that across college, self-enhancers became less ego-involved in college achievement, declined in self-esteem and in self-reported emotional well being. Further, in contrast to the Taylor and Brown (1988) assertion that positive illusions promote better performance, self-enhancers did no

better academically and did not graduate any faster, than those without a self-enhancement bias. Thus, Robins & Beer concluded that while self-enhancers may experience some immediate emotional benefit from self-enhancement, in the longer term, they actually experience emotional declines in self-esteem with no advantage in actual achievement. Importantly, they note that the relationship between narcissism and self-enhancement suggests that self-enhancement as a trait is not random but has psychological meaning. I would add, that to the extent that it is related to narcissism, this might explain the discrepancy seen when self-enhancers self-report that all is well while their performance and emotional well being over time does not follow in kind.

Weinberger and Schwartz (1990) have also demonstrated that self-report endorsement of narcissistic tendencies is most associated with their undersocialized category, those low in both distress and self-restraint. Yet, in the Robins and Beer (2001) study, those who were more accurate in their self-appraisals also had increased positive affect as did those who overestimated peers appraisals of their own performance. Perhaps these latter two share some similarities to the Weinberger Adjustment Inventory (WAI) groups including self-assured, repressors, and even oversocialized who might be quite responsive to the idea that others rated them well. It is possible that deceptive self-enhancement describes a similar tendency seen across Weinberger's low distress categories. Similarly, self-deceptive denial (SDD) may be descriptive of both high restraint WAI groups as it represents a defensive attempt to deny antisocial impulses and desires.

In sum, the above studies suggest that much of the evidence for a positive relationship between self-deceptive enhancement and adjustment is based on self-report

methods. The same is true for the smaller or non-existent relationship between self-deceptive denial and adjustment. In studies that included other methods, self-enhancers positive self-view is contrasted by either poorer ratings from observers or by achievement or self-report self-esteem levels which decline mildly over time. Thus, it is less clear that self-deceptive enhancement itself provides some benefit. Further, it suggests evaluation of the relationship between self-deceptive denial and adjustment should also include other measurement methods.

Relationship between Repressive Copers and Self-Enhancers

Paulhus and John (1998) argue that the vast majority of personality components, whether they focus on response styles, values and motives, self-perceived personality, fall into two superdimensional concerns or motives. Examples they cite include Freud's Id vs. Superego, Adler's dominance-striving vs. social interest, Wiggins dominance vs. nurturance, Gilligan's achievement vs. relationships, and Weinberger's distress vs. restraint. All of these contain one dimension approximating self-oriented concerns such as self-esteem, autonomy, achievement, while the other is concerned with interpersonal connectedness and succor through relationships. Paulhus and John refer to these two dimensions as egoistic and moralistic biases respectively. Factor analyses of the Big 5 personality constructs can be each partly linked to either a factor described as overcontrol or impulse restraint, and another related to surgency and positive emotionality (Block, 2001) as if there may be two overarching factors linking the Big 5 together. Further, Paulhus and John argue that the intercorrelations seen among Big 5 factors increase when respondents are asked to respond in socially desirable ways. This tends to collapse their structure from five factors to two factors in ways that mimic Paulhus and John's egoistic

or moralistic biases. These self-deceptive biases, in factor analyses (Paulhus & John, 1998), are associated with either self-deceptive enhancement (egoistic) or self-deceptive denial (moralistic).

Several studies have demonstrated SDE to be more related to Extraversion (or Surgency) and Openness (Meston, Heiman, & Trapnell, 1998; Paulhus & John, 1998; Paulhus & Reid, 1991) while SDD has been more related to Agreeableness. Conscientiousness has demonstrated correlations with both that might be more comprehensible when it is split into Ambition and Dutifulness, in which the former associates with self-deceptive enhancement (SDE) while Dutifulness associates with self-deceptive denial (SDD) (Paulhus & John, 1998). Similarly, Weinberger states that his operationalization of the self-restraint dimension contains components of the Big Five Agreeableness and Conscientiousness dimensions while the distress dimension which assesses both negative affect and low experience of positive affect may be similar to the Big Five factor Neuroticism (D'Angelo et al., 1995). Further, Ramanaiah, Byravan, and Nguyen (1996) found that Neuroticism, Extraversion, and Agreeableness were the most likely Big Five factors to distinguish between Weinberger's six distress and self-restraint categories. Thus, comparing distress/self-restraint and SDE/SDD with the Big Five conceptualization of personality demonstrates both their centrality to personality and their potential overlap.

If Weinberger's dimensions are not direct measures of defense, they seem closely related, with distress perhaps being a primary instigator of defensive responses, and restraint possibly representing the characterological manifestation and maturity level of defense. Paulhus' SDE and SDD also are either measuring some form of different

defensive maneuvers or are closely related. Each is related to primary personality components across personality measurement classification schemes. In each system there appears to be one dimension that focuses on personal gain or self-esteem as seen in the low restraint, low distress, or high SDE (egoistic bias). Each system also contains concern with morality seen in the repressive copers and perhaps high distress high restraint, and also in high SDD (moralistic bias). To the extent that each of these is tapping defensive processes the relation to personality is evident. Defenses affect how we see ourselves and the world. This in turn affects how the world sees us thereby, shaping our personalities.

At first glance, it may seem likely that Weinberger's repressors are most likely to endorse the highest degree of self-deceptive denial as the oversocialized and self-assured should be attuned to perceived shortcomings. However, the latter groups may be attuned to shortcomings in different ways. The oversocialized could be aware of their shortcomings through a lower level of self-deceptive enhancement and may still have a high level of self-deceptive denial. The self-assured could be aware of their shortcomings in that they did not need to deny antisocial tendencies given their moderate degree of restraint. Thus, both the oversocialized and repressor groups should have the highest levels of self-deceptive denial. It is expected that self-deceptive denial will act dimensionally; that is, both high restraint categories will have high levels of self-deceptive denial. Self-deceptive enhancement is also expected to act dimensionally with lower distress groups endorsing higher self-deceptive enhancement, except that the undersocialized are expected to have the highest level of self-deceptive enhancement. In

that respect self-deceptive enhancement would not merely be synonymous with (the opposite of) distress.

Link to Mental Health/Adjustment

To restate, SDE has been described as something other than a defense (“offense”) and that it may be positively related to adjustment while SDD has not been related to adjustment. Generally these are statements based on self-report findings. Perhaps they may be related to adjustment differently than above when assessed by methods that do not rely on conscious awareness of personality characteristics. Cramer (1998) and others (Colvin et al., 1995) caution that for self-enhancing individuals, comparisons of their scores on any one self-report measure to another self-report outcome measure (e.g. adjustment, depression) could contain the same self-enhancing bias. Therefore, she states that research which does not control for self-enhancing biases when measuring adjustment makes those results somewhat suspect.

One method of ascertaining the degree of mental health in various levels of distress and restraint is to compare them to some index of mental health that is not susceptible to self-report biases. It is expected that repressors and perhaps those low in distress and restraint may overestimate their own levels of mental health. Thus projective measures may offer a more direct measure when reliance on self-report is at issue.

Hypotheses

Mental and physical health practitioners often rely on self-reported symptoms of distress as the entry point to interventions. The ability to experience negative affect as a signal to action and to have relatively undistorted self and other views are primary components of mental health. Those unaware of distress and who positively distort self-views may have poorer mental and physical functioning. Being unaware of negative affect, or rather being unaware of stress that in others would produce negative affect may be somatized and lead to adverse mental and physical health consequences. Impact on mental health could include poorer relationships with others. Physical implications could include more physical stress on the body as well as an increased likelihood of developing conditions such as cancer.

1. Weinberger Adjustment Inventory (WAI) and Health

Thus, what are the processes that contribute to the discrepancy between other-rated and self-report mental health? Would assessing the Weinberger (distress and restraint) and Paulhus (self-deceptive enhancement and denial) systems in relation to other-rated mental health help explain these discrepancies?

H: 1a. Undersocialized (low distress, low self-restraint) and Repressors (low distress, high self-restraint) have lower other-rated mental health than self-report mental health (Rosenberg Self-Esteem Questionnaire).

H: 1b. Undersocialized (low distress, low self-restraint) and repressors (low distress, high self-restraint) have lower other-rated mental health than the self-assured (low distress, moderate self-restraint).

Given that practitioners rely on self-reported symptoms, are there systematic tendencies where some people are poorer reporters who unintentionally minimize symptoms?

H: 1c. Repressors will report a smaller number of physical health symptoms than the self-assured or the undersocialized.

Similarly, is there a relationship between repressor status and cancer?

H: 1d. Repressors will have higher incidence of family history of cancer than other WAI groups.

2. Self-Deceptive Enhancement (SDE)/Self-Deceptive Denial (SDD) and Health

Previous self-report research suggests that self-deceptive enhancement is positively associated with, and self-deceptive denial is not associated with, adjustment when operationalized as self-report self-esteem. Is this still true when adjustment, or mental health, is assessed by others?

H: 2a. Self-deceptive enhancement will be positively correlated with self-report mental health; more than self-deceptive denial is positively correlated with self-report mental health.

H: 2b. As opposed to the idea that SDE is positively related to adjustment, neither SDE nor SDD will be positively correlated with other-rated mental health.

What is the psychological defensive process that contributes to poorer physical health?

H: 2c. Self-deceptive denial will be positively correlated with physical health symptoms; more than self-deceptive enhancement is positively correlated with physical health symptoms.

H: 2d. SDD will be positively correlated with incidence of cancer in family history.

3. Weinberger Adjustment Inventory and Self-Deceptive Enhancement/Self-Deceptive

Denial

Is the repressor the only style to defend against distress and are their different processes involved for other groups? Are the Weinberger and Paulhus systems describing similar or different processes regarding how people keep distress from consciousness?

H: 3a. Self-deceptive enhancement is used most by the undersocialized.

H: 3b. Self-deceptive denial is used most by repressors.

4. Exploratory Analyses

a. Dimensional analyses that parallel categorical hypotheses will be performed because analysis of continuous data does not result in loss of information the way that categorical analyses can. For example, other-rated mental health will be predicted by the Weinberger dimensions of distress and restraint in regression analysis.

b. Planned contrasts that focus on a subset of WAI groups will be followed by post hoc analyses to provide a fuller picture of the ways in which WAI groups differ from each other.

c. Exploratory analyses will be performed where appropriate in order to examine the data set for some results that are inconsistent with their hypotheses and perhaps suggest a more complex set of relationships than expected.

METHODS

Participants

Three hundred seventy two undergraduates, ranging in age from 17 to 54, enrolled in undergraduate Psychology courses at Michigan State University were recruited via the Psychology Department Subject Pool for participation. Recruitment was performed via the computerized subject pool registration procedures created by the Department of Psychology. Data collection occurred between June and October of 2002. Data collection was completed when at least 40 participants were classified into each of Weinberger's six personality types on the WAI (see Table 1). Because Weinberger suggests that restraint increases with age and he presents different norms for people age 30 and above, data analyses were restricted to participants under the age of 30. This eliminated 16 participants from analysis. One other participant was removed due to endorsement of items indicating the participant was not being truthful on the WAI.

Table 1. *Participants' Distribution across Weinberger Adjustment Inventory*

WAI Category	<i>N</i>	%
Reactive	72	20.3
Sensitized	65	18.3
Oversocialized	49	13.8
Undersocialized	42	11.8
Self-Assured	68	19.2
Repressor	57	16.1

Thus the sample of participants eligible for data analyses was 355, 78 males (22%) and 276 females (77.7%). The respondents included in analyses had a mean age of 20.03. Overall the sample was 17.5% racial and ethnic minority. See Tables 2 and 3 for descriptive information on education levels, racial background, and education levels of parents.

Table 2. *Participant Educational and Racial Background*

Variable	<i>N</i>	%
Year in College		
Freshman	101	28.5
Sophomore	57	16.1
Junior	73	20.6
Senior	121	34.1
Graduate	3	.8
Racial Background		
African American	31	8.7
Asian American	17	4.8
Caucasian	293	82.5
Latin American	1	.3
Native American	3	.8
Biracial	10	2.8

Table 3. *Educational Level for Parents of Participants*

Parent Education Level	<u>Mother</u>		<u>Father</u>	
	<i>N</i>	%	<i>N</i>	%
Some high school or less	12	3.4	8	2.3
High school graduate or GED	69	19.4	53	14.9
Some college or technical school	92	25.9	70	19.7
College or technical school graduate	108	30.4	135	28.0
Professional/Graduate degree	74	20.8	86	24.2

Procedure

Participants were recruited from the MSU Psychology Department Subject Pool and were asked to participate in anonymous group administered testing. They received course credit for their participation in research. Participants began by reviewing and completing the consent form (see Appendix A) if willing to participate. The consent form included statements indicating the types of questions to be asked in the study. The

experimenter also read the consent form and responded to questions as needed. Consent forms were collected at which time the measures packet was then distributed.

Participants first completed demographic questions (see Appendix B). Participants then completed the Early Memories Test by being asked to think about five of their earliest memories, and to write a description of each one of them on a separate page. They were given approximately 7 minutes to complete each memory recall. This test was scored using the Early Memories Index to get a measure of adjustment which should be less subject to self-perception biases. Several self-report questionnaires were next completed by participants (all used in at least several previous projects with undergraduates): They were asked to complete (in order) the (1) Balanced Inventory of Desirable Responding –6, expanded form, a measure of the degree to which people tend to have general positive or negative biases in self-perception and the tendency to shape their presentation to others in socially appropriate ways. These and subsequent measures responses were recorded on Scantron “bubble” forms. Next they completed the (2) Rosenberg Self-Esteem Questionnaire. This widely used scale asks about how positively one feels about themselves. They then completed a measure of physical symptoms/complaints tailored to the college student population, the (3) Pennebaker Inventory of Limbic Languidness. Next, they completed the (4) Weinberger Adjustment Inventory a self-report measure of personality. Finally they were asked to answer questions regarding parental and grandparental disease history. The data on disease history was used in hypotheses related to physical health and personality. Participants were then thanked for their participation and given the opportunity to provide contact information should they be interested in receiving a summary of study results.

Importantly, this information was not associated with their response data in any way, maintaining anonymity.

Measures

Personality

Weinberger Adjustment Inventory. (WAI, Weinberger, 1997; Weinberger & Schwartz, 1990)

This measure consists of 84 items assessing the personality dimensions of distress and self-restraint (see Appendix C). The distress scale is composed of 4 subscales regarding depression, anxiety, low self-esteem, and low well-being (low positive emotions). The restraint dimension is composed of items assessing the 4 subscales of impulse control, suppression of aggression, consideration of others, and responsibility. There are also 3 items that attempt to determine whether respondents were putting forth a reasonable and honest effort in their responses. Inventory items include “I enjoy doing most of the things I do during the week” and “people who get me angry better watch out.” A sample validity item includes “everyone makes mistakes at least once in a while.”

Weinberger (1997), using confirmatory factor analysis, found support for these two superordinate factors with their respective subscales, across youth, young adult and adult samples, and clinic versus non-clinic populations. The WAI dimensions may be crossed to form 6 personality categories or styles as follows: low distress, low restraint = “undersocialized,” low distress, moderate restraint = “self-assured,” low distress, high restraint = “repressor,” high distress, low restraint = “reactive,” high distress, moderate restraint = “sensitized,” high distress, high restraint = “oversocialized.” Weinberger and

Schwartz (1990) demonstrated concurrent validity with these personality styles for example by showing that the undersocialized style endorsed significantly more narcissistic and sociopathic tendencies on scales assessing those latter constructs, while the oversocialized style scored highest on a scale assessing obsessive worrying. Dimensionally, those respondents high in distress all scored significantly higher on a measure of self-denigration than those low in distress.

Subscale alpha coefficients in a sample of 229 non-clinic young adults (Weinberger, 1997) (ages 18-30) ranged from .70 to .87, while the alpha for distress was .95 and the alpha for restraint was .89. In the current sample, subscale reliabilities ranged from .74 to .85 with a mean reliability of .81. Alphas for distress and restraint in the current sample were .93 and .88 respectively. Weinberger currently recommends scale cutoffs for people under age 30 such that low distress includes people with a distress score less than 72, and the cut scores separating low, medium, and high restraint are 105 and 120 respectively. In the present study, the cut score for distress was maintained at 72 based on half the sample being below and above this score. However, restraint cut scores were chosen at 111 and 123 respectively so that one third of the sample fell within each restraint level as per the scale author's method for computing his original cut scores.

Self-Perception/Social Desirability

Balanced Inventory of Desirable Responding – 6, Expanded. (BIDR-6, Paulhus, 1984, 1991)

This measure consists of 58 items measuring the tendency to positively or negatively bias one's self-view either by enhancement of positive attributes (Enhancement) or denial of negative ones (Denial), and the tendency to manage one's

presentation for the sake of others (Impression Management). Participants were asked to rate on a 7-point Likert scale how much they agreed or disagreed with each statement where 1="Not True" and 7="Very True." Sample items include, "I am very confident of my judgments" and "I don't gossip about other people's business" (see Appendix D). Previous research with the BIDR found alpha reliabilities ranging from .68 to .86 (Paulhus, 1991) while 5-week test-retest correlations ranged from .65 to .69 (Paulhus, 1991). Coefficient alphas for the current sample were .68 for Enhancement and .74 for Denial. One item was removed from each of these scales to improve reliability. Two items of Paulhus' Denial subscale that could be considered insensitive were not included in the current study.

Previous research has demonstrated positive correlations between adjustment and the enhancement subscale, the "Big 5" personality factors of Dominance and Extraversion, as well as between narcissism and the enhancement subscale (Paulhus & John, 1998). Further, the denial subscale correlates with the Big 5 factors of Agreeableness and Conscientiousness.

Adjustment/Mental Health

Rosenberg Self-Esteem Questionnaire (RSEQ, Rosenberg, 1965)

This measure consists of 10 items measuring self-worth and self-acceptance. Examples of items include "I feel that I have a number of good qualities" and "I take a positive attitude toward myself" (see Appendix E). Respondents were asked to rate their agreement on a 5-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree." This scale is widely used and has demonstrated good reliability and validity;

the coefficient alpha in one study was .72 (Tolman & Porche, 2000). Coefficient alpha for the current study was .85.

Early Memories Index (EMI)

The EMI is a scoring system for use with the Early Memories Test (EMT, Mayman, 1968). The EMI scores early memories for positive or negative emotional tone and outcome of the memory, views of self and others as well as perceptions of caregivers depicted in memories (see Table 4 for subscales). Karliner, Westrich, Shedler, and Mayman state that early memories "can be reflective of, and shaped by, one's current needs, desires, and struggles" and represent "one's internal experience or psychological state" (p. 52, 1996).

The short form of the EMT, used in the current study (EMT-S), asks respondents to think about their earliest memories and then write down five of these memories. These include their earliest memory, their next earliest memory, their earliest memory of each parent, and a memory of a "high point" in their life (See Appendix F). The EMT has been used as a measure of mental health or adjustment.

Shedler, Mayman, and Manis (1993) used the EMT to identify a subgroup of people who self-reported little emotional distress, yet who exhibited high physiological arousal in a stressful task. The authors suggested that the EMT was able to identify distress that was not readily apparent on the self-report distress measure. Karliner, Westrich, Shedler, and Mayman (1996) operationalized the EMT scoring criteria into the EMI. They had clinicians globally rate early memories for emotional health then compared those global ratings to the EMI scoring criteria scored by other raters and found the two methods correlated at 0.80. Thus, they suggested that the EMI can serve as

a reasonable stand-in for clinician's global judgments of emotional well-being. Karliner et al. also asked raters to apply the EMI scoring criteria to the Shedler et al. study early memories data. Karliner et al. re-classified subjects from the Shedler et al. study based on the EMI and received the same significant results as the original scorers. Cousineau (1997) used the EMT/EMI to predict health-care utilization based on mental health whereas more self-report measures were unable to. To study adult attachment, Futterman (1999) used the above scoring criteria on the early memories of college students and found that those who self-reported as securely attached and were clinician judged as emotionally well-adjusted, had more positive affect tone, and better narrative outcomes on the EMI than those who self-reported secure attachment but who were judged to be less mentally healthy.

In the current study training on the EMI scoring was conducted between this author and four graduate student coders using scoring examples provided by Karliner, Westrich, and Shedler (2002). Initial reliability was established across all five coders by scoring 15 memory sets together and discussing discrepancies and coming to group consensus where possible. Coefficient alphas for the nine subscales on the above 15 memory sets ranged from .80 to .89 after reviewing discrepancies. This author served as one coder for all memories. The other four graduate student coders were each given memories to code on approximately 90 subjects each (30 memory sets at a time) and they served as a second coder for each memory set. In order to check for scorer drift, Spearman Brown alphas were computed for each set of 30 memories and discrepancies were reviewed between coders prior to the next set of 30 were scored. After reviewing major discrepancies between each two-coder set, Spearman-Brown alphas for the nine

EMI variables ranged from .80 to .86 with a mean alpha of .83 for the entire data set of memories. The Spearman-Brown alpha for the overall EMI summary score was .97. See Table 4 for Spearman Brown alphas and the percent raw agreement data for each subscale. Karliner, Westrich, and Shedler (2002) suggested a minimum scorer agreement for each subscale based on a Spearman Brown alpha of at least .60 when using two coders. Spearman Brown alphas are reported here to maintain similar procedures to those suggested by the scale authors; Spearman Brown numbers reported were all within .01 of their respective coefficient alphas.

Table 4. *Reliability/Inter-rater agreement for the Early Memories Index*

Variable	Spearman Brown	Exact Match		Off by 1		More than 1	
		<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
EMI 1: Positive Affect	.84	222	59.7	144	38.7	6	1.6
EMI 2: Negative Affect	.86	203	54.6	163	43.8	6	1.6
EMI 3: Benevolent Others	.83	207	55.6	158	42.5	7	1.9
EMI 4: Malevolent Others	.85	208	55.9	155	41.7	9	2.4
EMI 5: Positive Outcome	.83	220	59.1	140	37.6	12	3.2
EMI 6: Negative Outcome	.85	212	57.0	150	40.3	10	2.7
EMI 7: Confidence	.80	185	49.7	182	48.9	5	1.3
EMI 8: Insecurity	.80	186	50.0	175	47.0	11	3.0
EMI 9: Caregiver Abandon	.83	197	53.0	164	44.1	11	3.0

Physical health

Pennebaker Inventory of Limbic Languidness (PILL, Pennebaker, 1982)

This measure contains 54 items that represent physical symptoms and sensations one may have had in the previous year (see Appendix G). Participants were asked to rate on a scale from 1 to 5, where 1="have never or almost never experienced the symptom" and 5="more than once every week." Sample items include "coughing," "face flushes," and "headaches." Previous research on 939 college students (Pennebaker) yielded alphas ranging from .88 to .91 and 2-month test-retest reliabilities ranging from .79 to .83.

Coefficient alpha for the current study was .93. The PILL has been used to demonstrate that repressors endorse significantly fewer physical symptoms than non-repressors (Myers & Vetere, 1997).

Demographics

Demographics Measure

Questions were asked regarding gender, age, ethnicity, parents' education levels (see Appendix B), and parental and grandparental disease history (see Appendix H).

RESULTS

Demographics

The potential impact of the demographic variables gender, age, ethnicity, and parents' education on hypotheses was assessed by using correlations (two-tailed tests) with self-deceptive enhancement/denial, Weinberger Adjustment Inventory (WAI) personality types, other-rated mental health, self-report self-esteem, current physical health symptoms, and family disease history for heart disease and cancer. Gender was the only demographic variable to exhibit a pattern of significant correlations across predictor and outcome variables (see Table 5). Gender however, was not considered an experimental factor both because the study design precluded data collection on enough males and females to attain adequate power, and because the design requirements of the 6 cell WAI typology did not require gender specific analyses in previous data analyses by the scale author (Weinberger & Schwartz, 1990).

Table 5. *Gender with Summary Variables*

	Distress	Restraint	SDE	SDD	EMI	RSEQ	PILL	HD	Cancer
Gender	-.17*	-.28*	.17*	-.30*	-.10	.10*	-.15*	-.12*	-.13*

Note: Gender is a dichotomous variable coded: 1=female, 2=male such that for example the negative correlation with distress above suggests males endorsed less distress than females. * $p < .05$.

Data Screening

All predictor and outcome composite variables were screened for skewness and kurtosis. Self report mental health (Rosenberg Self-Esteem Questionnaire) was significantly negatively skewed while family history of cancer and family history of heart disease were positively skewed. Log transformations applied to these variables reduced their skew; however, in all analyses, use of log transformed variables did not make any

significant impact on results including effect sizes. Therefore, for ease of interpretation, the initial variables were retained in all analyses instead of their log transformed counterparts. Intercorrelations among the major variables are presented in Table 6.

Table 6. *Intercorrelations of Personality, Self Perception Biases, Mental and Physical Health*

Variable	2	3	4	5	6	7	8	9
1.Distress	-.16**	-.41**	-.14**	-.14**	-.77**	.35**	.09	.03
2.Restrictant		.13**	.50**	.14**	.13*	-.13*	.01	-.08
3.Self-Deceptive Enhancement			.26**	-.03	.35**	-.22**	-.01	-.04
4.Self-Deceptive Denial				.07	.09	-.11*	.03	-.09
5. Other-Rated Mental Health					.12*	-.04	-.03	-.05
6. Rosenberg Self-Esteem Quest.						-.31**	-.09	.02
7. Physical Health Symptoms							.17**	.08
8. Heart Disease -family history								.18**
9. Cancer - family history								

* $p < .05$; ** $p < .01$.

Standard Analyses for Hypotheses

Hypotheses related to the Weinberger Adjustment Inventory (WAI) and Health

Hypothesis 1a:

Hypothesis 1a predicted that the undersocialized and repressors would have lower other-rated mental health than self-report self-esteem (RSEQ). In order to compare means both variables were standardized for the entire sample ($N=355$). A paired samples t -test that included both repressors and undersocialized revealed that the mean for RSEQ ($M = 4.43$, $SD = 0.43$) was significantly higher than that for other-rated mental health ($M = 3.47$, $SD = 0.74$), as predicted, $t(98) = 4.24$, $p < .01$. In order to improve ease of

interpretation, Means and *SD* provided above are from the original variables prior to standardization and are based on a pooling of the repressor and undersocialized groups. The mean difference between standardized variables in the above *t*-test was 0.50. Thus, the hypothesis was supported.

While the above *t* test confirmed the hypothesis, it is possible that this result was caused by either the undersocialized or repressors and not both groups. Thus separate paired samples *t* tests were performed, one for each subgroup to determine whether both groups would have lower other-rated mental health than self-reported mental health. The *t* test for the undersocialized $t(41) = 2.11, p = .04$, indicated that this group had higher self-reported mental health ($M = 4.33, SD = 0.39$) than other-rated mental health ($M = 3.45, SD = 0.78$). The *t* test for repressors, $t(56) = 3.81, p < .001$, also indicated that they have higher self-reported mental health ($M = 4.50, SD = 0.45$) than other-rated mental health ($M = 3.49, SD = 0.72$). Thus, the hypothesis was supported for both the undersocialized and repressors.

Hypothesis 1b:

A planned contrast was used to test the hypothesis that the self-assured group ($M = 3.57, SD = 0.75$) would have a higher mean other-rated mental health than the other WAI personality styles (average mean = 3.39). Results did not support the hypothesis, $t(347) = 0.85, p = .40$ as there was no significant difference between the self-assured and the mean of other WAI groups.

Hypothesis 1c:

A planned contrast was used to test the hypothesis that the self-assured ($M = 19.51, SD = 9.17$) and undersocialized ($M = 17.74, SD = 8.04$) would have a higher mean

self-report physical symptoms than the repressors ($M = 14.79$, $SD = 6.98$). Results supported the hypothesis, $t(347) = 2.63$, $p = .009$.

Hypothesis 1d:

A planned contrast was used to test the hypothesis that repressors have more reported history of cancer ($M = 1.24$, $SD = 0.20$) among parents and grandparents than the other WAI groups (average mean for groups = 1.22, $SD = .23$). Results did not support the hypothesis as there was no significant difference between repressors and other WAI groups, $t(337) = 0.41$, $p = .68$.

*Hypotheses related to Self-Deceptive Enhancement (SDE)/Self-Deceptive Denial (SDD)
and Health*

Hypothesis 2a:

To test the hypothesis that self-deceptive enhancement is more positively correlated with RSEQ ($r = 0.35$, $p < .001$, one-tailed) than self-deceptive denial is with RSEQ ($r = 0.09$, $p = .04$, one-tailed), z scores were computed for these zero order correlations using Fisher's transformation. A significance test for the difference between these z scores was computed based on procedures described by Meng, Rosenthal, and Rubin (1992) to account for the correlation between predictors. This significance test indicated that, as predicted, the correlation between self-deceptive enhancement and RSEQ was significantly larger than between self-deceptive denial and RSEQ, $z(355) = 4.09$, $p < .001$, one-tailed. The hypothesis was supported.

Hypothesis 2b:

Two-tailed correlations were calculated in order to test the hypothesis that neither self-deceptive enhancement ($r(355) = -0.03$, $p = .56$) nor self-deceptive denial ($r(355) =$

0.07, $p = .17$) would be positively correlated with other-rated mental health. Neither correlation significantly differed from zero. While an actual test of a null finding is not possible, an alternative is to demonstrate that these correlations are significantly smaller than some known value. In this case the goal was to test that the correlation with SDE and other-rated mental health above was significantly smaller than the correlation between SDE and RSEQ (a similar procedure was not performed for SDD, because the correlation between SDD and RSEQ was not significant). A significance test was performed (again using the procedure described by Meng, Rosenthal, and Rubin (1992)) comparing the correlation between SDE and RSEQ with the correlation between SDE and ORMH with the expectation that the latter would be significantly lower. Results supported the hypothesis such that the observed correlation between SDE and ORMH was significantly lower, $z(355) = 5.49, p < .001$, one-tailed.

Hypothesis 2c:

One-tailed correlations were performed in order to test the hypothesis that self-deceptive denial ($r(355) = -0.22, p < .001$) would be more positively correlated with physical health symptoms than self-deceptive enhancement ($r(355) = -0.11, p = .02$) would be with those same health symptoms. Results did not support the hypothesis; in fact, contrary to the hypothesis, both types of self deception were negatively correlated with physical health symptoms in this sample. As such, the significance test for a difference between correlations was not performed.

Hypothesis 2d:

A one-tailed correlation was performed to test the hypothesis that self-deceptive denial would be positively correlated with family history of cancer. Results did not support the hypothesis, $r(345) = -0.09, p = .04$.

Hypotheses related to the Weinberger Adjustment Inventory and Self-Deceptive Enhancement/ Self-Deceptive Denial

Hypothesis 3a:

A planned contrast was performed in order to test the hypothesis that the undersocialized have the highest mean self-deceptive enhancement ($M = 5.55$) of all WAI personality styles (average of other groups' means = 5.01). Results did not support the hypothesis, $t(347) = 1.27, p = .21$.

Hypothesis 3b:

A planned contrast was performed in order to test the hypothesis that the repressors ($M = 6.81$) have the highest mean self-deceptive denial (SDD) of all WAI personality styles (average of other groups' means = 3.94). Results supported the hypothesis, $t(347) = 7.64, p < .001$.

Post Hoc and Dimensional/Exploratory Analyses

Analyses described in this section were aimed at addressing three goals. The first was to directly follow up on the above analyses to address the context of each hypothesis where applicable; for example, performing an ANOVA when the above hypothesis only involved a planned contrast within an ANOVA structure. Second, because dimensional analyses do not involve loss of information the way categorical analyses can, the above hypothesis related analyses may benefit from dimensional analysis. A third goal of these exploratory analyses was to better understand relationships between the variables of interest in this study related to personality, defensive processes, mental and physical health, as well as the method used to evaluate them (self-report versus other rating).

Analyses related to Other-Rated Mental Health

The planned contrast in Hypothesis 1b did not allow for the examination of distress and restraint as main effects in the prediction of other-rated mental health (ORMH). Thus, a 2x3 ANOVA was performed to investigate these effects. The overall factorial ANOVA for differences between other-rated mental health for the 6 WAI subgroups was significant, $F(5, 347) = 2.32, p = .04, \eta^2 = 0.03$. Results indicated a statistically significant main effect for distress, while the main effect for restraint and the interaction were not significant (see Tables 7 and 8). Tukey post hoc analyses were not significant beyond the level of a trend ($p = .06$) for a difference between the self-assured and reactives.

Table 7. Means and SD of ORMH for Distress and Restraint categories

WAI Category	Distress	Restraint	<i>M</i>	<i>SD</i>
Reactive	High	Low	3.22	.79
Sensitized	High	Medium	3.28	.79
Oversocialized	High	High	3.50	.65
Undersocialized	Low	Low	3.45	.78
Self-Assured	Low	Medium	3.57	.75
Repressor	Low	High	3.49	.72

Table 8. Analysis of Variance Results predicting ORMH

Variable	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Restraint	1.46	2	.73	1.30	.27
Distress	2.55	1	2.55	4.53	.03
Interaction	1.46	2	.73	1.29	.28
Residual	195.18	347	.56		
Total	4300.32	353			

The relationship between ORMH and the WAI dimensions was examined with multiple regressions. Distress and restraint were entered into a stepwise multiple regression predicting ORMH. The overall model was significant, $F(2,350) = 6.32$, $p = .002$, as were the β s for distress, $R = .15$, $\beta = -.13$, $p = .02$, and restraint, $R = .11$, $\beta = .12$, $p = .03$. However the β s were lower than both zero order correlations with other-rated mental health (ORMH). This could be due to their intercorrelation or the presence of a suppressor. Self-deceptive enhancement (SDE), the tendency to inflate one's positive attributes, may affect these independent variables. As such, when SDE was entered into a stepwise multiple regression along with distress and restraint, all three IVs were significant (see Table 9). The inclusion of SDE had the effect of increasing the β for distress from $-.13$ to $-.18$. Further, while the zero order correlation between SDE and ORMH was not significant, in the regression the β was significant at $-.12$. Together these predictors suggest that distress and SDE are negatively associated with ORMH while restraint is positively associated with ORMH.

Table 9. *Summary of Step-wise Regression Analysis for Variables Predicting ORMH (N = 352)*

Predictor Variables	Zero order r	B	$SE\ B$	β	R	R^2	Adj R^2	ΔR^2	Sign.
<u>Step:</u>									
1. Distress	-.15	-.01	.002	-.18	.15	.02	.02	.02	.006
2. Restraint	.14	.01	.003	.13	.19	.04	.03	.01	.002
3. SDE	-.03	-.03	.01	-.12	.22	.05	.04	.01	.001

In an attempt to more clearly understand the relationship between ORMH and SDE, ORMH was grouped into an ordinal grouping variable so that means of SDE could be examined for differing levels of ORMH (see Table 10).

Table 10. *Variable Means across 4 levels of ORMH*

ORMH Mean	SDE	RSEQ	Distress	Restraint
1 (lowest)	5.04	3.82	79.56	113.06
2	5.53	4.12	71.65	114.92
3	4.79	4.01	75.26	116.79
4 (highest)	4.87	4.09	70.09	118.29
Total	5.06	4.01	74.14	115.79

Contrast Analyses for SDE: 1 < 2, ns; 3,4 < 2, $p = .07$. Distress: 2, 4 < 1, $p = .006$.

A posteriori contrasts were used to determine the following: group 2 had significantly greater SDE than group 4, the highest in ORMH, even though groups 2 and 4 did not differ significantly in distress. Likewise, group 2 had significantly lower distress than group 1 (the lowest group in ORMH). Figure 1 shows graphically the plot between distress scores and SDE across ORMH groups.

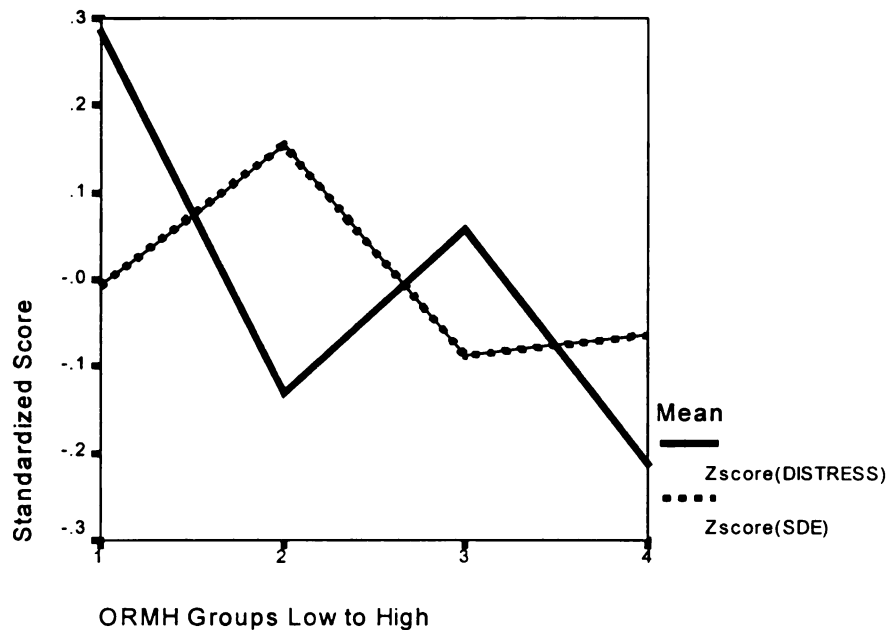


Figure 1. Distress and Self-Deceptive Enhancement means for Other-Rated Mental Health Groups

Analyses related to Self-Deceptive Enhancement and Denial

SDE

Hypothesis 3a.1, that the undersocialized would have higher self-deceptive enhancement than other WAI groups, was not supported. Observation of group means (see Table 11) suggests other possible group differences. Therefore, a 2x3 Factorial ANOVA was performed to test for WAI group differences in SDE using the WAI dimensions of distress and restraint. The overall model was significant, $F(5, 347) = 13.33, p < .001, \eta^2 = 0.16$. Post hoc analyses indicated statistically significant group differences such that the high distress groups (reactive, sensitized, and oversocialized) used less self-deceptive enhancement than the self-assured and repressors (see Table 12 and Figure 2). In addition there was a statistically significant main effect for distress such that those high in distress use much less SDE than those low in distress. There was

a trend suggesting a main effect for restraint, $p = .08$. Inspection of Figure 2 suggested that the low distress groups may be responsible for this trend. When those groups alone were entered into an ANOVA there was a main effect for restraint suggesting that for those low in distress, those higher in restraint used more SDE, $F(2,164) = 4.36$, $p = .01$, $\eta^2 = 0.05$.

Table 11. *Means and SD of SDE for Distress and Restraint categories*

WAI Category	Distress	Restraint	<i>M</i>	<i>SD</i>
Reactive	High	Low	3.92 ^a	3.01
Sensitized	High	Medium	4.05 ^a	2.78
Oversocialized	High	High	4.02 ^a	2.08
Undersocialized	Low	Low	5.55	2.54
Self-Assured	Low	Medium	5.93 ^b	2.81
Repressor	Low	High	7.14 ^b	3.21

Means with different superscripts are significantly different from each other.

Table 12. *Analysis of Variance Results predicting SDE*

Variable	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Restraint	40.36	2	20.18	2.58	.08
Distress	415.86	1	415.86	53.15	.000
Interaction	34.26	2	17.13	2.19	.11
Residual	2715.26	347	7.83		
Total	12263.00	353			

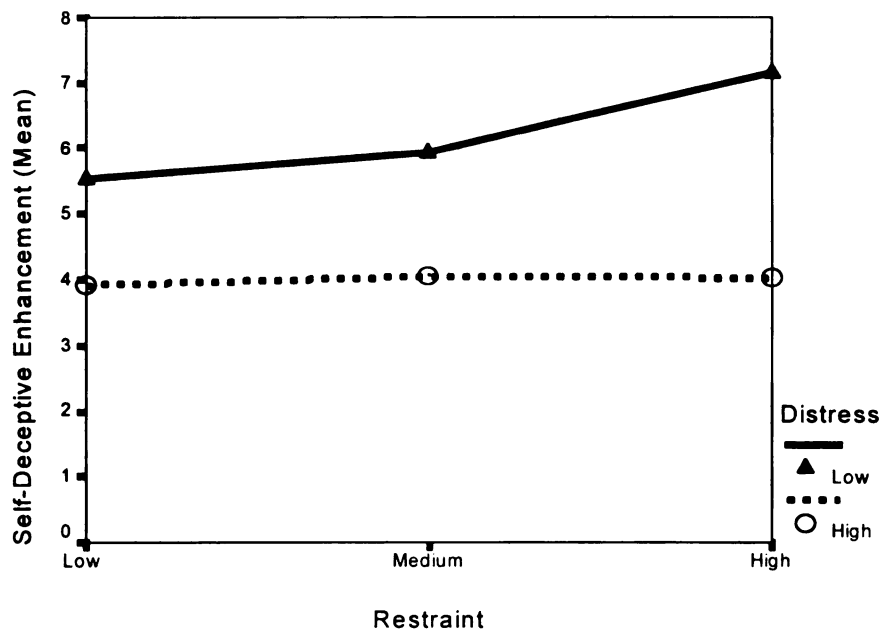


Figure 2. Self-Deceptive Enhancement means by Distress and Restraint

One benefit of SDE, despite its being a self-report measure, is that it may capture information of which the respondent is not aware. Thus, the above patterns may be highlighted through the use of difference scores (Colvin et al., 1995; Colvin, Block, & Funder, 1996).

In this study for example subtracting ORMH from self-report self-esteem, or the opposite of distress, would give an index of the discrepancy between self and other ratings. A positive value would indicate one has over-evaluated oneself while a negative value represents an underestimate. Thus, a difference score was created here to assess such a discrepancy and allow for comparison to SDE. For this computation, the opposite of distress was used rather than self-report self-esteem because it more closely approximates what others have referred to as self-reported adjustment (SRADJ) (Robins

& Beer, 2001) and it has more variance in this sample. Table 13 shows difference scores for the difference groups based on level of self-reported adjustment and level of ORMH.

Table 13. *Means of Difference Scores and SDE for Difference groups*

Difference group	Difference Score	SDE
	<i>M</i>	<i>M</i>
1. Low SR ADJ, Low ORMH	.10 ^b	4.34 ^a
2. High SRADJ, High ORMH	-.13 ^b	5.88 ^b
3. High SRADJ, Low ORMH	1.52 ^c	6.33 ^b
4. Low SRADJ, High ORMH	-1.42 ^a	3.68 ^a
Total	.01	5.06

SR ADJ = self-reported adjustment (opposite of distress). Tukey post hocs at .05: difference score: a < b < c; SDE a < b.

Observation of the difference scores suggests that those with a positive difference score do have high levels of self-deceptive enhancement while those with a negative difference score have low levels of self-deceptive enhancement. Tukey post hoc analyses confirmed this, indicating that there were two largely different levels of SDE. The lower level was determined by endorsement of a low level of self-reported adjustment while the high level of SDE was associated with a high level of self-reported adjustment. Within these levels it appears that the presence of a high level of ORMH reduces the amount of self-deceptive enhancement endorsed. However these differences within each of these SDE levels were not statistically significant (group 1 compared to group 4 and group 2 compared to group 3).

SDD

Hypothesis 3a.2, that repressors used more self-deceptive denial than all other WAI groups, was supported. Observation of groups' means (see Table 14) suggests other possible group differences. Therefore, a 2x3 Factorial ANOVA was performed to test for WAI group differences in SDD using the WAI dimensions of distress and restraint. The

overall model was statistically significant, $F(5, 347) = 24.72, p < .001, \eta^2 = 0.26$ as were the main effects for both distress and restraint (see Table 15). The main effect for distress suggested that participants high in distress used less SDD than those low in distress, regardless of restraint level. For restraint, the more restrained participants were the more SDD they reported. Post hoc analyses indicated statistically significant group differences such that reactives, sensitized, and undersocialized used less SDD than the oversocialized and repressors (see Table 15 and Figure 3). Further, the self-assured used less self-deceptive denial than repressors.

Table 14. *Means and SD of SDD for Distress and Restraint categories.*

WAI Category	Distress	Restraint	<i>M</i>	<i>SD</i>
Reactive	High	Low	2.72 ^a	2.00
Sensitized	High	Medium	3.98 ^a	2.38
Oversocialized	High	High	5.61 ^d	2.91
Undersocialized	Low	Low	3.21 ^a	1.92
Self-Assured	Low	Medium	4.18 ^b	2.15
Repressor	Low	High	6.81 ^{c,d}	2.64

Post hoc analyses: group differences indicated by letter superscripts: a < d; b < c.

Table 15. *Analysis of Variance Results predicting SDD*

Variable	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Restraint	576.18	2	288.09	52.53	.000
Distress	33.38	1	33.38	6.09	.01
Interaction	15.16	2	7.58	1.38	.25
Residual	1902.89	347	5.48		
Total	9273.00	353			

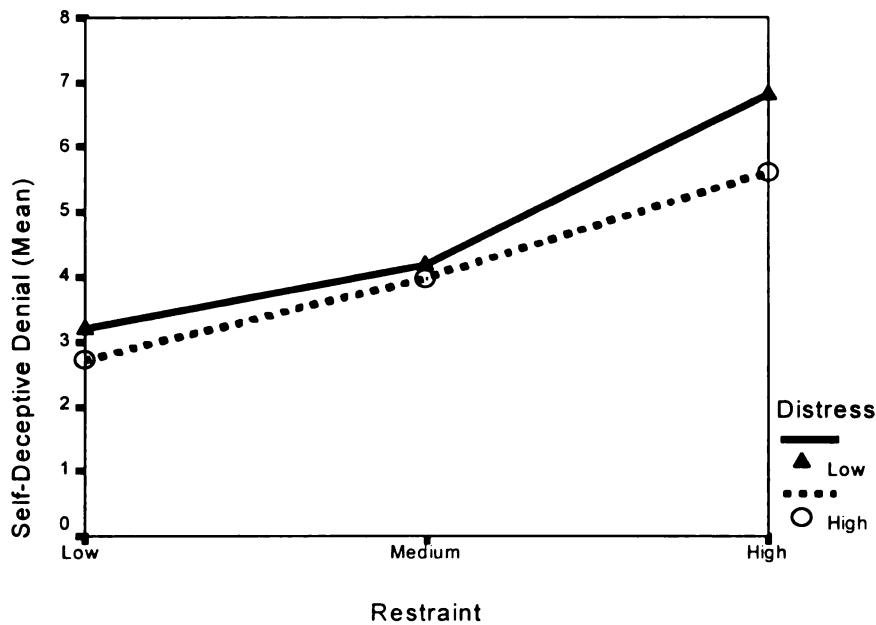


Figure 3. Self-Deceptive Denial means by Distress and Restraint

A goal of this study was to examine commonalties and differences between the Weinberger (Weinberger & Schwartz, 1990; Weinberger et al., 1979) and Paulhus et al. methods (Paulhus, 1984, 1991) of assessing defensive processes. Inspection of zero order correlations (see Table 6) was used as a guide to aid this. In order to understand how SDD related to the Weinberger constructs related to restraint and repressor status, step wise regressions were performed that included self-deceptive denial, restraint, repressive defensiveness, and denial of distress. Self-deceptive denial was able to be explained by restraint and repressive defensiveness, $F(2,349) = 105.43, p < .01$ (see Table 16). In contrast, the combination of these variables that explained the most variance occurred when repressive defensiveness was predicted by denial of distress, self-deceptive denial, and restraint, $F(3,348) = 72.01, p < .001$ (see Table 17).

Table 16. *Summary of Step-wise Regression Analysis for Variables Predicting SDD (N = 352)*

Predictor Variables	Zero order r	B	$SE\ B$	β	R	R^2	Adj R^2	ΔR^2
Step:								
1. Repressive Defensiveness	.51	.15	.02	.38*	.51	.26	.25	.26
2. Restraint	.50	.07	.01	.37*	.61	.38	.37	.12

Note: Step 3: Denial of Distress was not significant and excluded from the model. * $p < .001$.

Table 17. *Summary of Step-wise Regression Analysis for Variables Predicting Repressive Defensiveness (N = 352)*

Predictor Variables	Zero order r	B	$SE\ B$	β	R	R^2	Adj R^2	ΔR^2
Step:								
1. SDD	.51	.99	.12	.39*	.51	.26	.35	.26
2. Denial of Distress	.36	.40	.05	.35*	.60	.36	.36	.11
3. Restraint	.34	.08	.02	.18*	.62	.38	.38	.02

* $p < .001$.

DISCUSSION

A primary goal of the study was to examine differences between self-report mental health and other-rated mental health with the expectation that mental health cannot be adequately assessed by self-report methods alone. Other-rated mental health was operationalized here by the independent scoring of early memories for affect tone, views of self and others, positive or negative expectations about life events, and whether caregivers were experienced as caring or neglectful. To restate, a general definition of mental health includes adaptive responses to conflict, perceptions of self and others that integrate both positive and negative aspects, cognitive and emotional strengths, and the ability to soothe oneself and maintain self-esteem (Karliner et al., 1996). A component of mental health particularly relevant here is the ability to be relatively accurate in perceptions of self, others, and social interactions (Colvin et al., 1995).

A possible difference between mental health ratings by others and self-report can be explained through defensive processes. Thus for example having some degree of self-deceptive enhancement may be adaptive. That is, moderate self-enhancement, or the tendency to inflate one's positive attributes, may promote a lower experienced degree of distress (although it could also be that only the presence of lower distress allows for the expression of self-deceptive enhancement).

In any case, a high level of self-deceptive enhancement may be maladaptive and that in itself may explain some differences in mental health for those low in distress. Even though the high distress groups have low self-deceptive enhancement, and therefore one might expect self-deceptive enhancement to be positively correlated with mental health, in fact in this study self-deceptive enhancement was negatively correlated with

other-rated mental health. For that to be so suggests that some people high in self-deceptive enhancement have lower other-rated mental health.

Another goal was to determine to what extent the defensive processes described by Paulhus explain characteristics of the personality styles defined by Weinberger as distress and restraint. That is, certain personality styles may have characteristic defensive processes that accompany them. A third goal of the study was to examine relationships between personality styles, defensive processes, and physical health. For example, could over-reliance on certain defensive processes, which may be aimed at protecting conscious distress, result in poorer physical health.

Because of the overall small effect sizes in this study, analyses reported in the results section and discussed here include those of borderline significance and trends. Not doing so invites Type II error perhaps more so than making conclusions resulting from Type I error. This is also true for the dimensional and exploratory analyses, these can add to knowledge gained in terms of this sample of college students.

Other-Rated Mental Health

One goal of this study was to demonstrate differing levels of mental health based on different data collection methodologies. Specifically, self-report self esteem would be a valid measure for many except for those whose defensive processes preclude their ability to accurately judge and perhaps overestimate their own mental health. In those instances, other-rated mental health could be especially important in providing valid information beyond self-report. In this study other-rated mental health was operationalized through multiple coders rating respondent's recall of their earliest memories and therefore served as a measure independent of respondents self-report.

Those earliest memories are not expected to accurately or exactly reflect specific experiences but are expected to be more a projection of current needs and conflicts.

Mixed support was found for hypotheses related to other-rated mental health and the Weinberger groups in that, as hypothesized, the undersocialized and repressor groups were found to have higher self report self esteem vs. other-rated mental health, yet the self-assured group did not exhibit significantly higher other-rated mental health than other WAI groups. Restraint and distress were both significant predictors of other-rated mental health.

To review, the undersocialized and repressors are two of three low distress groups in the Weinberger personality typology notable for their low restraint and high restraint respectively. The undersocialized were expected to have higher self-report self-esteem than other-rated mental health as a result of high self-deceptive enhancement, while the repressors were expected to have higher self-report self-esteem than other-rated mental health as a result of a high level of self-deceptive denial. Although both groups did have higher self-report self-esteem, as predicted, it appears not only do repressors have the highest level of self-deceptive denial *and* self-deceptive enhancement, but both groups may have higher self-report self-esteem scores as a result of their use of self-deceptive enhancement. For both groups, the discrepancy between self evaluation and that by others may be explained through self-deceptive enhancement, and this distortion may reflect Colvin, Block, and Funder's (1995) comments on the accuracy of self-perception as a component of mental health.

Dimensional post hoc analyses indicated that distress and restraint significantly predicted other-rated mental health. This suggests that Weinberger's dimensions are

important self-report constructs in terms of other-rated mental health. In comparison, the hypothesis above that relied on categories where the self-assured were not significantly higher on other-rated mental health suggests that for this study categorical analyses, which can result in a loss of information, may have weakened the strength of these relationships. As such, regression analysis indicated that distress and self-deceptive enhancement were negatively associated with other-rated mental health while restraint was positively associated with it. Earlier it was suggested that higher restraint may positively relate to other-rated mental health because in previous studies boys lower in restraint had poor adjustment on several types of measures (D'Angelo et al., 1995; Weinberger, Tublin, & Ford, 1990). Likewise, regression analysis suggested restraint was positively correlated with other-rated mental health.

When self-deceptive enhancement was taken into account in post hoc analysis the negative relation between distress and other-rated mental health was strengthened. The role of self-deceptive enhancement in the regression predicting other-rated mental health indicated that the impact of distress upon other-rated mental health was suppressed. Therefore, those high in self-deceptive enhancement, namely the low distress groups, potentially had "artificially" low distress scores prior to adjusting for self-deceptive enhancement.

This has methodological implications in that some researchers (Paulhus, 1998) suggest self-deceptive enhancement should not be statistically controlled when assessing mental health. They suggest it is a necessary component of mental health and that controlling for it removes part of the definition of mental health. Note however, in this study while self-deceptive enhancement was positively correlated with the Rosenberg

Self-Esteem Questionnaire as in other studies, self-deceptive enhancement here was negatively correlated with other-rated mental health. Cramer (1998) however argues that when two self-report measures both potentially containing self deceptive biases are correlated, important inaccuracies remain hidden. That may explain why self-deceptive enhancement is positively correlated with RSEQ but negatively correlated with other-rated mental health in this sample, and why the relationship between distress and other-rated mental health is strengthened when self-deceptive enhancement is taken into account. It may be that self-reported adjustment is in part defined by the ability to enhance one's positive attributes but that is a different construct than adjustment defined by mental health.

Although the Weinberger Adjustment Inventory (WAI) groups did not statistically differ from each other, the patterns of minor variations in mean scores when considered in conjunction with regression results were as might be expected. For example the self-assured group had a slightly higher mean score than the repressors who had a slightly higher mean score than the undersocialized group. For the high distress groups it appears that as restraint increases so does other-rated mental health. Perhaps in this college sample the range of other-rated mental health scores was too narrow. Using the Early Memories Index, Shedler, Karliner, and Katz (in press) demonstrated differing means for psychiatric inpatients ($M=2.7$ [$SD=.89$]) vs. healthy controls ($M=3.5$ [$SD=.54$]). Yet, Shedler et al.'s healthy controls appear similar to this college sample ($M=3.4$ [$SD=.76$]) on other-rated mental health.

One reason for using both other-rated and self-report measures of adjustment in this study was to determine whether or not other-rated mental health acts as a valid

alternative measure of mental health that adds information beyond what is provided by self-report methods. First, if other-rated mental health can capture both self awareness of mental health and defensiveness that may impact mental health, then some self-report measures that assess defensiveness might correlate more highly with other-rated mental health than measures that do not assess defensiveness. This is because those self-report measures assessing defensiveness are not intended to be fully face valid to the respondent. For example, on the self-deceptive enhancement measure, the respondent should think they are answering questions about liking themselves or being confident, where in fact, extremely endorsed items are scored as unconsciously enhancing their attributes. However, no such systematic correlations were found where defensiveness measures correlated more highly with other-rated mental health than the latter correlated with self-report measures not tapping defensiveness (e.g. RSEQ or distress).

Despite this, other-rated mental health was correlated both with face valid measures of adjustment such as distress and restraint and self-deceptive enhancement (a measure of defensiveness), when all three were predictors together. In that respect, other-rated mental health did appear to capture both self-awareness of mental health and defensiveness. It is this latter defensiveness that could hypothetically promote or impede mental health through its association to distress. Yet these correlations were not large enough to suggest that other-rated mental health is an exemplar measure for explaining large variance in those self-report measures of mental health, at least in this sample of college students. But the fact that other-rated mental health, a projective measure independently scored by raters, did correlate with self-report measures of adjustment and defensiveness is impressive.

When other-rated mental health was divided into four groupings post hoc, those highest in other-rated mental health had low distress scores as expected, but so did those who were moderately low in other-rated mental health. Not only did this latter group have low distress but they had significantly higher self-deceptive enhancement than the group lowest in other-rated mental health. While this argument may tend to simultaneously offer validation for both measures, self-deceptive enhancement and other-rated mental health, their independence in terms of method of measurement strengthens this argument.

Self-Deceptive Enhancement and Denial related to Other-Rated Mental Health

Defensive processes have been studied extensively for their links to mental health (Cramer, 1991). Some defenses are considered more adaptive than others, while rigid over-reliance on some defenses may be maladaptive in itself (Vaillant, 1995). Importantly, the method chosen to define mental health may determine which defenses are seen as adaptive. In this study, self-deceptive enhancement was shown to be more highly correlated with self-report self esteem (RSEQ) than was self-deceptive denial. The aim of this hypothesis was to both confirm similar previous findings and then to demonstrate different relationships of self-deceptive enhancement/self-deceptive denial with other-rated mental health. It was predicted that contrary to past work suggesting that self-deceptive enhancement is positively associated with adjustment (Paulhus, 1991, 1998), in this analysis, it was expected self-deceptive enhancement and self-deceptive denial would not be positively associated with other-rated mental health. The key distinction is that past work (Paulhus & Reid, 1991) measured adjustment via self-report methodology. It was expected that previous findings were a function of the self-report

methodology. In the current study it was expected that other-rated mental health would provide a measure not filtered through one's own defenses; that is, one's tendency to deny, enhance, etc. would not affect other-rated mental health scores the way it would affect self-esteem scores. The current findings would suggest that self-deceptive enhancement is not positively correlated with adjustment. In part to deal with the impossibility of proving a null finding, self-deceptive enhancement was examined to show that it correlated with other-rated mental health to a lesser degree than with self-report self-esteem. The observed correlation between self-deceptive enhancement and other-rated mental health was significantly lower than the correlation observed here with self-report self-esteem and with those of other studies using college students (for example correlation between self-deceptive enhancement and RSEQ = .34 in Paulhus & Reid, 1991).

Inspection of self-deceptive enhancement using difference scores shows that self-deceptive enhancement is working as expected in that the sign (+/-) and magnitude of the difference between self-reported self esteem and other-rated mental health corresponds to the magnitude of self-deceptive enhancement. In addition, although not statistically significant, the mild differences seen in self-deceptive enhancement levels did correspond with the other-rated mental health data in Table 13 in a predictable way. That is, in both cases when other-rated mental health goes low to high, then self-deceptive enhancement decreases.

The complex role between self-deceptive enhancement and other-rated mental health can be seen in the exploratory analysis that divided other-rated mental health into 4 ordinal groupings. While the group lowest in other-rated mental health (Group 1) had the

highest levels of distress, the next higher group (Group 2) had the lowest level of distress. There was a trend suggesting Group 2 also had the highest self-deceptive enhancement. It is an intriguing possibility that those moderately low in other-rated mental health may be reducing the distress seen in those lowest, through increased self-deceptive enhancement.

If that is true, self-deceptive enhancement would appear to act as a defense as opposed to merely overemphasizing one's positive traits. Recently, researchers have begun to suggest self-deceptive enhancement may act in the short-term to bolster self-esteem in the face of failure, and at least in the extreme may be maladaptive in the long run (Paulhus, 1998; Robins & Beer, 2001). In contrast, the group highest on other-rated mental health had high self-esteem, low distress, and relatively low self-deceptive enhancement. This makes sense given their high level of other-rated mental health. The need for self-deceptive enhancement may not be present. Also of note is that for the four groupings of other-rated mental health, restraint continued to demonstrate its linear pattern such that as other-rated mental health increased so did restraint.

Self-Deceptive Enhancement and Denial related to WAI

Hypotheses aimed at the overlap between Weinberger and Paulhus et al. conceptualizations of defensiveness attempted to formally test ways in which these two systems overlap. It was hypothesized that the undersocialized group would endorse use of self-deceptive enhancement more than other WAI groups. Yet, a planned contrast failed to support this hypothesis. Analysis of variance indicated that those low in distress used more self-deceptive enhancement than those high in distress and for low distress groups, as restraint increased so did self-deceptive enhancement. Sixteen percent of the

variance in self-deceptive enhancement was explained by distress and restraint, but distress comprised 81% of that explained variance suggesting that self-deceptive enhancement is much more related to distress than to restraint.

It was previously suggested that perhaps distress degrades or prevents adaptive use of restraint with regard to other-rated mental health. While that may not be the case for other-rated mental health, perhaps for self-deceptive enhancement it may be true. That is, for those high in distress, self-deceptive enhancement use remains low regardless of restraint level. They may be unable to make use of self-deceptive enhancement. Yet when distress is low, self-deceptive enhancement use is high and goes higher as restraint level increases. However, it should be noted that this main effect for restraint (with low distress groups) was still small and when all groups were included neither the main effect for restraint nor the interaction were significant.

While self-deceptive enhancement seems more related to distress than restraint, the opposite was true for self-deceptive denial, or the unconsciously motivated tendency to deny antisocial thoughts, feelings, and behaviors especially sexual and aggressive ones. Repressors were hypothesized to endorse the highest level of restraint of all WAI groups and a planned contrast supported this hypothesis. Further, analysis of variance indicated that the more restraint endorsed, the higher the use of self-deceptive denial. The low distress groups also used more self-deceptive denial. Together restraint and distress accounted for 26% of the variance in self-deceptive denial with restraint responsible for 88.5% of that explained variance and in that sense self-deceptive denial appears more related to restraint than to distress.

Because self-deceptive denial appears to share meaning with Weinberger's repressor construct in that they both tend to deny negative social thoughts, feelings, or wishes exploratory analyses were used to investigate how they relate. A post hoc multiple step-wise regression indicated that 37% of the variance in self-deceptive denial could be explained by repressive defensiveness and restraint. Similarly, repressive defensiveness could be explained by self-deceptive denial ($\beta = .39$), denial of distress ($\beta = .35$), and restraint ($\beta = .18$). The β for restraint decreased in importance as a result of self-deceptive denial's presence in the regression. This makes sense given their above association. It is interesting however that not only do self-deceptive denial and restraint contribute but also the β for denial of distress is sizable. This fits with Weinberger's (1998) definition of the repressive coper as one who not only possesses personality attributes related to seeing the self as socially upstanding, not likely to experience antisocial feelings or attitudes, but also as one who remains unaware of any experience involving negative emotions, particularly ones directed at the self.

Interestingly, while it was suggested earlier that perhaps the undersocialized and repressors have distinct ways of keeping distress at bay it appears from analyses that repressors use much more self-deceptive denial than the undersocialized, repressor is also use as much if not more self-deceptive enhancement than the undersocialized.

When considering both methods of self-deceptive biases in comparison to distress and restraint it appears to a large extent that they do map onto these two Weinberger constructs. But not perfectly so and that makes sense given that the latter are personality styles whereas self-deceptive denial and self-deceptive enhancement are defensive processes. The hypothesis that self-deceptive denial would parallel restraint seems

largely supported. However, for self-deceptive enhancement, the undersocialized certainly did not use the most self-deceptive enhancement. It seems to largely parallel distress except that repressors also had the highest level of self-deceptive enhancement.

Physical Health

A wide literature has investigated the links between personality and physical health (Adler & Matthews, 1994). For example regarding negative affect or neuroticism, some suggesting that anxiety predicts later increased mortality. Although negative affect may be linked to poorer physical health in some studies, other literature suggests that expression of negative affect, for example expressed through writing about traumatic experiences, improves later physical health (Smyth, 1998). In fact being asked to suppress thinking about the traumatic event after the writing sessions resulted in poorer immune functioning (Petrie, Booth, & Pennebaker, 1998). In that respect, repressor's lack of negative affect experience and expression could compromise physical health. Repressor status has been linked to poorer recovery from myocardial infarction (Shaw, Cohen, Doyle, & Palesky, 1985).

Hypotheses related to mental health and physical health were aimed at demonstrating personality differences in self-reported current physical symptoms and familial history of cancer and heart disease. In this study, physical symptoms were operationalized as the frequency with which 54 various somatic symptoms occur at least every month or so. Generally, support was only found for hypotheses related to current physical health symptoms. It was hypothesized that repressors would report significantly fewer physical health symptoms or complaints than the other low distress groups (undersocialized and self-assured) and a planned contrast supported this hypothesis.

However, the hypothesis that repressors would also report a higher family history of cancer was not supported. Further, contrary to the hypothesis that the correlation between self-deceptive denial and physical health symptoms would be greater than for that between self-deceptive enhancement and health symptoms, in fact in this sample both self-deceptive processes were negatively associated with current physical health symptoms. Likewise, the hypothesis that self-deceptive denial would be positively correlated with a family history of cancer was not supported.

Myers and Vetere (1997) found that repressors reported fewer physical symptoms than non-repressors and this finding was replicated in the present study. They stated that repressors "respond in an overly positive fashion" to self-report health measures. There are several possible explanations for this finding. One would be that the repressive personality style encourages or co-occurs with fewer physical health symptoms. Another possibility would be that repressors experience a similar number of physical symptoms as other personality styles, yet when asked to recall or reflect upon them at a later date they are unable, or perhaps repressive tendencies minimize recall of physical symptoms. Determining which of these two possibilities is more likely would be an important distinction to make that has implications for physical health. If repressors are not good or accurate reporters of physical health symptoms this would be useful for health-care providers to know especially when assessing symptoms of emerging disease processes and early indicators that suggest disease prevention strategies. However, if they actually experienced fewer physical health symptoms this would be important to understand in terms of the psychological processes and fall. Two general findings exist that would support the former idea that repressors are poor reporters of physical health status and

functioning. First, they seem unaware or ill attuned to physiological indices of distress such as a racing heart beat or pulse (Weinberger et al., 1979). Second is the common finding of other physical indicators of distress such as higher cortisol levels, higher antibody levels, and for recovery from periodontitis among repressors (Atkinson, 1998; Brown et al., 1996; Jamner et al., 1988).

Past research has suggested a possible link between cancer and personality (Kraft, 1999; Phipps & Srivastava, 1997). Because cancer rates are likely to be so low in the current study's young adult college sample, data were collected asking participants to report on history of cancer in their families. It was hoped that occurrences of heart disease or cancer for example in family members may be such an extreme and important event that they would be less susceptible to personality based self-report biases in recall. If the current study had found a link between repressor status and cancer history in families, that would not have indicated a direct relationship between repression and cancer. It could however suggest further research aimed at testing the link between family history, and transmission of personality adaptations such as repressive coping across generations.

From a methodological standpoint, many studies assessing the relationship between personality, affective expression, and cancer, may have had attenuated relationships because several forms of cancer with different etiologies are often included in the studies (Kiecolt Glaser, McGuire, Robles, & Glaser, 2002). If certain cancers have a higher relationship to personality than other forms of cancer then by asking about generalized history of cancer in families in the current study may be asking about too

wide array of disease types to demonstrate any significant relationships to personality variables.

There were some intriguing findings in the exploratory results related to physical health. Specifically, both distress and family history of heart disease significantly predicted current physical health symptoms. Further, an increased incidence of family history of cancer was positively related to a family history of heart disease.

Possible explanations for the correlation between higher distress and increased levels of heart disease among parents and grandparents of respondents include: people in a typically higher distressed state may be primed to recall negative information and recall such information at a higher rate than others do, the higher incidence of significant diseases and family members could act as a stressor upon college students increasing their level of distress, and/or higher levels of stress run in families could be passed from generation to generation and that stress is correlated with heart disease.

Finally, the correlation between cancer history and heart disease history in families suggests either some families experience a higher rate of generalized disease processes, or an increased tendency in some respondents to recall and be able to report on knowledge of family diseases (and perhaps some people are typically unaware of, or unable to report such information). However analysis of respondents' tendencies to report "don't know" regarding parents' and grandparents' disease history was unrelated to any personality construct in the study. Thus if there were such a tendency to be aware or unaware of the major medical history of parents and grandparents, it was not identifiable in any patterned way in the present study.

Summary

In summary, some low distress groups were shown to have higher self-esteem than mental health rated by others. The Weinberger dimensions of distress and restraint correlated with other-rated mental health in meaningful and expected directions. The conscious experience of distress can be an indicator of emotional problems and perhaps further degrade mental health as distress symptoms themselves interfere with functioning. Likewise, control over one's impulses is a developmental achievement that promotes adaptive functioning. Interestingly, there was no striking data to suggest that the highest levels of restraint, or self-deceptive denial, were harmful to mental health. In contrast, the same could not be said for self-deceptive enhancement as it correlated negatively with other-rated mental health. Self-reported physical symptoms were related to personality as those high in distress reportedly experienced a greater number of physical symptoms and repressors endorsed the fewest physical symptoms.

Thus, perhaps high restraint, or self-deceptive denial, alone is not detrimental but combined with high self-deceptive enhancement it can be. So in response to the question raised earlier as to whether repressors also use self-deceptive enhancement, it appears they do just as much as self-deceptive denial. In addition, it could not be said here that the undersocialized and repressors use characteristically different methods for defending against distress because repressors were high in both self-deceptive enhancement and denial while the undersocialized were only high in enhancement. Thus, for both groups the method of avoiding distress may be via enhancement while repressors avoid awareness of certain bodily states, as seen through their lower reported physical symptoms, by self-deceptive denial. Thus, it may be self-deceptive denial specifically

that contributes to poorer somatic awareness and physiological hyperreactivity in repressors.

Meanwhile, to address the recent literature on the benefits of positive self-illusions, in the current study, self-deceptive enhancement was negatively associated with mental health as rated by others. Thus, this data may support others who recently have suggested that this type of enhancement could bolster self-esteem in the moment (Paulhus, 1998), but at a cost and one that is seen by others. This data supports the idea that it is self-deceptive enhancement which contributes to the split between self-report and other-rated mental health (at least when self-report relies on self-esteem as a measure of this).

Strengths, Limitations, and Implications for Future Research

Strengths of the study designed included its multi-method nature. For example, the inclusion of both self-report ratings and other-rated mental health provided some independence from self-report biases. For example, although the self-deceptive enhancement and denial scales are considered to be unconsciously motivated, these self-report measures have rarely been studied alongside projective measures. Further, the inclusion of related constructs, those of the Weinberger dimensions of distress and restraint and Paulhus' self-deceptive enhancement and denial allow comparison between them but also emphasize the differing strains of research that are attempting to assess similar constructs. Findings indicated that self-report personality variables and defensive processes successfully related to other-rated mental health. Self-deceptive enhancement and self-deceptive denial showed logical relationships to the Weinberger dimensions of distress and restraint suggesting the former may describe characteristic defensive

processes used by those personality classifications; especially given that these dimensions seem universal given their similarity to other common two-dimensional personality classification systems such as agency and communion. Importantly, other-rated and self-report mental health exhibited differing relationships to self-deceptive enhancement.

Limitations included the generally modest effect sizes. Relationships between other-rated mental health and the other variables of interest were typically small. It may be difficult to use the Early Memories Index (EMI) on a healthy college population, particularly in continuous analyses. The EMI may be better suited to categorical cutoffs in order to identify discrete groups rather than expecting minor EMI variations between individuals to be meaningful and sizable regarding mental health. Likewise, although Weinberger has successfully used the WAI on college samples, the meaning for example of a college student who is classified as “undersocialized” may be different and more subtly undersocialized than from a sample tapping the population more broadly. Despite small effect sizes, the relationships between other-rated mental health and personality and defensive processes were meaningful and in logical directions. For example, the apparently non-significant relationship between self-deceptive enhancement and other-rated mental health was clarified, and became significant, when distress and restraint were also taken into consideration. Further, observation of the patterns between self-deceptive enhancement and distress across other-rated mental health groupings possibly demonstrates why zero-order correlations may be small, yet important and significant relationships are contained within those groupings.

The EMI was not the only construct that potentially suffered from a restriction of range in this college sample. The Rosenberg Self-esteem Questionnaire was clearly

skewed such that most participants endorsed higher self-esteem. Fortunately, the Weinberger distress dimension, which taps more sub-factors related to adjustment, was able to be used as an alternate measure of self-reported adjustment in some analyses. Further, Weinberger has successfully used his categorical approach to distinguish his six personality styles from each other on various self-report variables. Perhaps, future research using the Weinberger typology could examine whether distress and restraint correlate more highly with self-report variables more so than with data collected through other methods. In this study, categorical analyses appeared to weaken significance of relationships between the Weinberger system and other-rated mental health, self-deceptive enhancement and denial, and physical health variables when compared to dimensional analyses.

Similarly, several of the expected relationships between mental and physical health were not found. In particular, this may be due to a reliance on self-report data collection regarding physical health. Although family health history was an attempt to tap such discrete and memorable events that they would be less susceptible to self-report biases, they may also be too far removed from respondents' current life functioning to be meaningfully related to personality and mental health. To establish relationships between personality, mental health, and physical health it is helpful to use more discrete markers of physical status not susceptible to self report such as actual records related to physical health; yet these measures are often difficult to obtain or costly to obtain for research.

This study attempted to maintain some commonality to previous studies by using similar definitions of adjustment self-esteem or mental health. Thus, the Rosenberg, while a brief measure, was in part used because of its inclusion in related prior studies

and because Shedler et al. (1993) suggested that this measure, like many that tap any degree of neuroticism, such as the Beck Depression Inventory, or various anxiety scales, should all serve the purpose of allowing some people, specifically those with illusory mental health, to deny the distress that is contained in that scale. Perhaps the operationalization of the various mental health constructs contributed to modest relationships sizes in this study. That is, what is termed mental health, adjustment, and self-esteem, may not be close enough in meaning as had been expected. The measure of other-rated mental health attempts to address perceptions of others, perceived dependability of others, etc. Therefore, the inclusion of a self-report mental health measure that assesses not only self-esteem, but attitudes towards others, conflicts with others, self perceived ability or competence at affect regulation, coping skills, and life satisfaction, may all broaden the definition of self-report mental health beyond self-esteem and more closely match the constructs assessed by the projective measure. However, others have used self-esteem as a proxy for self-reported adjustment and in doing so, have demonstrated meaningful differences between this and observer rated constructs. In those studies, perhaps the same thing was not being assessed between observer-rated and self-reported measures, yet given the tendency for the discrepancy between measures to demonstrate meaningful associations with other study variables, suggests that the discrepancy was tapping something important.

Recall the comments by Colvin, Block, and Funder (1995) that a requirement of mental health is the ability to see oneself and others accurately, minimizing the need for distortions. In contrast, Paulhus (1998) states that most authors find, as common criteria for mental health, both positive views of self and good relationships with others. This

latter comment highlights two ideas. First is that self-esteem measures, when used as measures of adjustment, capture the first part of Paulhus' criteria but not good relationships. Second, note how Colvin, Block, and Funder (1995) view self perceptive accuracy as fundamental while Paulhus sees self-love as fundamental to mental health. These definitional differences may also be seen in the measures used in this study.

Future research, therefore, that contrasts self report versus other-rated measures could benefit from a broader measure of self-report mental health. Even studies that include self report adjustment measures that include more measures than this study, still tap constructs that will all get at a similar valence (negative affectivity) as they tap things like neuroticism, life satisfaction, etc. They should consider including self-report measures of relationships with others as this appears consonant in the Paulhus' and Colvin, Block, and Funder definitions. For example, people with a dismissing attachment style may see themselves very high in self-esteem yet not endorse rewarding relationships with others.

Repressors were shown to have fewer physical health symptoms than other groups. This replicates a similar finding (Myers & Vetere, 1997) and should be followed up in future research given repressor's tendency to exhibit somatic reactions that could potentially lead to later physical illness. It could be important to determine the accuracy of their self-reported symptom levels, whether they actually experienced fewer symptoms, experienced a similar degree of symptoms to other groups but do not consciously acknowledge them, or later upon recall are consciously poor historians. Certainly, as other work indicates that repressors are generally not attuned to physiological distress and avoid negative self information, it is a reasonable assumption

(L. M. Myers, personal communication, May 29, 2003) that repressors do experience more symptoms than they are reporting and research is needed to assess this. This has implications for physicians' use of patients' verbal self-report of symptoms in doctor visits. Consider the impact of ignoring symptoms of myocardial infarction, or delaying seeking treatment. If such a tendency was predictable in some people, it would be useful to know in timely diagnostic situations that rely on self-report as well as promoting coping skills in those people that include an awareness of bodily symptoms.

The study designs that have looked prospectively at repressor status and cancer diagnoses, when patients report physical symptoms to their doctor, are important. They could be followed on by combining that with the above self-report symptom measures and even physician rating of the apparent veracity and usefulness of patient symptom reports. But if it is true that they under-report a more relevant question might be what to do with that knowledge. If someone characteristically represses disturbing information, it isn't necessarily immediately adaptive for them to be made aware of such information. At a minimum, awareness by those practitioners who use self-report information for decision making should be aware of the potential for that data to be inaccurate in systematic ways.

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APPENDICES

Appendix A: Consent Form

MICHIGAN STATE UNIVERSITY
Department of Psychology

DEPARTMENTAL RESEARCH CONSENT FORM

1. You are being asked to participate in a study in that involves responding to questions concerning your personal attitudes, adjustment, and health, as well as writing responses about past experiences in your life.
2. It will take approximately 90 minutes to complete the questionnaires and you will receive course credit for the completion of the questionnaires.
3. Participation will require you to read items included in various questionnaires and respond to each item by first reading each item and then either filling in the number on the answer sheet, or writing where appropriate, the response that best reflects your perceptions, feelings, and thoughts regarding that item. There are no known risks to participating in this study and participation in the study does not guarantee any beneficial results to you. This paragraph constitutes your explanation of the study.
4. Your participation is voluntary and you participate only if you freely consent to do so. You can refuse to participate at any time with no penalty including refusal to participate in certain procedures, answer certain questions, or to not participate at all.
5. The results of the study will be treated in strict confidence and you will remain anonymous in any report of its findings. Within these restrictions, results of the study will be made available to you at your request. Your privacy will be protected to the maximum extent allowable by law. Your responses will be anonymous because you will be assigned a study ID that is never related to you or your name in any way.
6. At your request, you can discuss any questions or concerns you may have about the study with John Bergeron, M.A. (14 Olds Hall, phone: 355-9564) or Dr. Norman Abeles (5C Olds Hall, phone: 355-9564). If you have questions regarding your role and rights regarding participation as a research subject you may contact MSU's Human Subjects committee at: David E. Wright, Ph.D. Chair, University Committee on Research Involving Human Subjects (517) 355-2180.

By signing my name below I agree to participate in the above study.

Student ID # A _____ Today's Date: _____

Please Print your name: _____

Signed: _____

If you would like a summary of results sent to you please fill out below:
(please provide either email address or mailing address).

(email) Address: _____ (Please print)

Appendix B: Demographic Information

You may mark your answers on this page.

1. What is your gender? (Circle one)

1 = Female 2 = Male

2. What is your current age? _____years

3. What year are you in college? (Circle one)

1 = freshman

2 = sophomore

3 = junior

4 = senior

5 = grad.

4. What is your racial or ethnic background?

1 = Asian

2 = Black/African-American

3 = Caucasian/White

4 = Latino/Latina

5 = Native American

6 = Biracial, please specify: _____

7 = Other, please specify: _____

5. Mother's education:

1 = some high school or less

2 = high school graduate or GED

3 = some college or technical school

4 = college or technical school graduate

5 = Professional/Graduate degree

6. Father's education:

1 = some high school or less

2 = high school graduate or GED

3 = some college or technical school

4 = college or technical school graduate

5 = Professional/Graduate degree

If you want to give additional info. for any item on any of these measures please make a note on the back of this page, including the question number.

Appendix C: Weinberger Adjustment Inventory

Please choose the best response from the scale below for each of the following statements and record your answer on your LARGE SCANTRON sheet.

	1	2	3	4	5
	False	Somewhat False	Not Sure	Somewhat True	True
65.	I enjoy most of the things I do during the week.				
66.	There have been times when I said I would do one thing but did something else.				
67.	I often feel that nobody really cares about me the way I want them to.				
68.	Doing things to help other people is more important to me than almost anything else.				
69.	I spend a lot of time thinking about things that might go wrong.				
70.	There are times when I'm not very proud of how I've done something.				
71.	No matter what I'm doing, I usually have a good time.				
72.	I'm the kind of person who will try anything once, even if its not that safe.				
73.	I'm not very sure of myself.				
74.	Some things have happened this year that I felt unhappy about at the time.				
75.	Once in a while, I don't do something that someone asked me to do				
76.	I can remember a time when I was so angry at someone that I felt like hurting them.				
77.	I am answering these questions truthfully.				
78.	In recent years, there have been a lot of times when I've felt unhappy or down about things.				
79.	I usually think of myself as a happy person.				
80.	I have done some things that weren't right and felt sorry about it later.				
81.	I usually don't let things upset me too much.				
82.	I can think of times when I did not feel very good about myself				
83.	I should try harder to control myself when I'm having fun.				
84.	I do things that are against the law more often than most people.				
85.	I really don't like myself very much.				
86.	I usually have a great time when I do things with other people.				
87.	When I try something for the first time, I am always sure that I will be good at it.				
88.	I never feel sad about things that happen to me.				
89.	I never act like I know more about something than I really do.				
90.	I often go out of my way to do things for other people.				
91.	I sometimes feel so bad about myself that I wish I were somebody else.				
92.	I'm the kind of person who smiles and laughs a lot.				
93.	Once in a while, I say bad things about people that I would not say in front of them.				
94.	Once in a while, I break a promise I've made.				
95.	Once in a while, I get upset about something that I later see was not that important.				
96.	Everyone makes mistakes at least once in a while.				
97.	Most of the time, I really don't worry about things very much.				

1 - 2 - 3 - 4 - 5
False Somewhat Not Somewhat True
False Sure True

98.	I'm the kind of person who has a lot of fun.
99.	I often feel like not trying any more because I can't seem to make things better.
100.	People who get me angry better watch out.
101.	There have been times when I did not finish something because I spent too much time "goofing off."
102.	I worry too much about things that aren't important.
103.	There have been times when I didn't let people know about something I did wrong.
104.	I am never unkind to people I don't like.
105.	I sometimes give up doing something because I don't think I'm very good at it.
106.	I often feel sad or unhappy.
107.	Once in a while, I say things that are not completely true.
108.	I usually feel that I am the kind of person that I want to be.
109.	I have never met anyone younger than I am.

1 - 2 - 3 - 4 - 5
Almost Not Sometimes Often Almost
Never Often Always

110.	I feel I can do things as well as other people can.
111.	I think about other people's feelings before I do something they might not like.
112.	I do things without giving them enough thought.
113.	When I have the chance, I take things that don't really belong to me.
114.	If someone tries to hurt me, I make sure I get even with them.
115.	I enjoy doing things for other people, even when I don't receive anything in return.
116.	I feel afraid if I think someone might hurt me.
117.	I get into such a bad mood that I feel like just sitting around and doing nothing.
118.	I become "wild and crazy" and do things other people might not like.
119.	I do things that are really not fair to people I don't care about.
120.	I will cheat on something if I know no one will find out.
121.	When I'm doing something for fun (for example, partying, acting silly), I tend to get carried away and go too far.
122.	I feel very happy.
123.	I make sure that doing what I want will not cause problems for other people.
124.	I break laws and rules I don't agree with.
125.	I feel at least a little upset when people point out things I have done wrong.
126.	I feel that I am a special or important person.

1 2 3 4 5
Almost **Not** **Sometimes** **Often** **Almost**
Never **Often** **Always**

127.	I like to do new and different things that many people would consider weird or not really safe.
128.	I get nervous when I know I need to do my best (on a job, team, etc.)
129.	Before I do something, I think about how it will affect the people around me.
130.	If someone does something I really don't like, I yell at them about it.
131.	People can depend on me to do what I know I should.
132.	I lose my temper and "let people have it" when I'm angry.
133.	I feel so down and unhappy that nothing makes me feel much better.
134.	In recent years, I have felt more nervous or worried about things than I have needed to.
135.	I do things that I know really aren't right.
136.	I say the first thing that comes into my mind without thinking enough about it.
137.	I pick on people I don't like.
138.	I feel afraid something terrible might happen to me or somebody I care about.
139.	I feel a little down when I don't do as well as I thought I would.
140.	If people I like do things without asking me to join them, I feel a little left out.
141.	I try very hard not to hurt other people's feelings.
142.	I feel nervous or afraid that things won't work out the way I would like them to.
143.	I stop and think things through before I act.
144.	I say something mean to someone who has upset me.
145.	I make sure I stay out of trouble.
146.	I feel lonely.
147.	I feel that I am really good at things I try to do.
148.	When someone tries to start a fight with me, I fight back.

Appendix D: Balanced Inventory of Desirable Responding

On your SMALL SCANTRON sheet please Pencil in your study ID# in the PID section. Using the scale below as a guide, Pencil in the appropriate number on your SMALL SCANTRON sheet for each statement to indicate how much you agree with it.

	1	–	2	–	3	–	4	–	5	–	6	–	7
	Not True				Somewhat True				Very True				
1.	My first impressions of people usually turn out to be right.												
2.	It would be hard for me to break any of my bad habits.												
3.	I don't care to know what other people really think of me.												
4.	I have not always been honest with myself.												
5.	I always know why I like things.												
6.	When my emotions are aroused, it biases my thinking.												
7.	Once I've made up my mind, other people can seldom change my opinion.												
8.	I am not a safe driver when I exceed the speed limit.												
9.	I am fully in control of my own fate.												
10.	Its hard for me to shut off a disturbing thought.												
11.	I never regret my decisions.												
12.	I sometimes lose out on things because I can't make up my mind soon enough.												
13.	The reason I vote is because my vote can make a difference.												
14.	My parents were not always fair when they punished me.												
15.	I am a completely rational person.												
16.	I rarely appreciate criticism.												
17.	I am very confident of my judgments.												
18.	I have sometimes doubted my ability as a lover.												
19.	It's all right with me if some people happen to dislike me.												
20.	I don't always know the reasons why I do the things I do.												
21.	I sometimes feel irritated when I don't get my own way.												
22.	I could never enjoy being cruel.												
23.	Seeing any attractive person of the opposite sex makes me think about sex.												
24.	I have never felt joy over someone else's failure.												
25.	I have gotten so angry at a friend that I felt like hitting him(her).												
26.	I have never felt like I wanted to kill someone.												
27.	There have been occasions when I was mean to someone unimportant.												
28.	I never enjoy watching sexy scenes in movies.												
29.	I enjoy it when obnoxious people get put down.												
30.	I rarely have sexual fantasies.												
31.	Once in a while I think of things too bad to talk about.												
32.	I can't think of anyone I hate deeply.												
33.	There have been occasions when I felt like smashing things.												
34.	Few of the things I do are simply for my own gain.												
35.	I must admit that revenge can be sweet.												
36.	I never get jealous over the good fortune of others.												
37.	There have been times when I felt like rebelling against authorities, even though I knew they were right.												
38.	I have never done anything that I'm ashamed of.												

Appendix E: Rosenberg Self Esteem Questionnaire

Please note, now your answers will be recorded on your LARGE SCANTRON sheet.

On your LARGE Scantron sheet please Pencil in your study ID# in the PID section.

Please choose, using the scale below, the best choice for each statement and enter the appropriate number on the LARGE SCANTRON sheet.

Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

1.	I feel that I am a person of worth, at least on an equal basis with others.
2.	I feel that I have a number of good qualities.
3.	All in all, I am inclined to feel that I am a failure.
4.	I am able to do things as well as most other people.
5.	I feel I do not have much to be proud of.
6.	I take a positive attitude toward myself.
7.	On the whole, I am satisfied with myself.
8.	I wish I could have more respect for myself
9.	I certainly feel useless at times.
10.	At times, I think I am no good at all.

Appendix F: Early Memories Test

Early Memories Cover Page

In the next few pages we will ask you to remember some of your earliest memories, and to tell us about these memories in writing. These memories are very important to us. Please do not rush, but take the time to describe your memories in detail.

We will ask you to recall a total of five memories. Before you turn the page, take a moment to relax. Let your thoughts go back to your childhood, think back as far as you can, and try to recall your very *earliest* childhood memory. Try to remember a specific incident or event, not just a fragmentary impression.

When you have recalled this earliest memory, turn ahead to the next page where there will be a space to write about it.

We will do these together so you will have about 7 minutes to think and write about each memory.

[illegible]

Is there a mood or feeling tone that goes along with this memory? Please explain.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Is there a mood or feeling tone that goes along with this memory? Please explain.

[illegible]

Is there a mood or feeling tone that goes along with this memory? Please explain.

[illegible]

Is there a mood or feeling tone that goes along with this memory? Please explain.

Appendix G: Pennebaker Inventory of Limbic Languidness

Several common symptoms or bodily sensations are listed below. Most people have experienced most of them at one time or another. We are currently interested in finding out how prevalent each symptom is among various groups of people. Using the scale below, please indicate how frequently you experience each symptom, marking your answer on your LARGE SCANTRON sheet.

For all items, use the following scale:

1	2	3	4	5
Have never or almost never experienced the symptom	Less than 3 or 4 times per year	Every month or so	Every week or so	More than once a week

11	Eyes water	38.	Swollen joints
12	Itchy eyes or skin	39.	Stiff or sore muscles
13	Ringing in ears	40.	Back pains
14	Temporary deafness or hard of hearing	41.	Sensitive or tender skin
15	Lump in throat	42.	Face flushes
16	Choking sensations	43.	Tightness in chest
17	Sneezing spells	44.	Skin breaks out in rash
18	Running nose	45.	Acne or pimples on face
19	Congested nose	46.	Acne/pimples other than face
20	Bleeding nose	47.	Boils
21	Asthma or wheezing	48.	Sweat even in cold weather
22	Coughing	49.	Strong reactions to insect bites
23	Out of breath	50.	Headaches
24	Swollen ankles	51.	Feeling pressure in head
25	Chest pains	52.	Hot flashes
26	Racing heart	53.	Chills
27	Cold hands or feet even in hot weather	54.	Dizziness
28	Leg cramps	55.	Feel faint
29	Insomnia or difficulty sleeping	56.	Numbness or tingling in any part of body
30	Toothaches	57.	Twitching of eyelid
31	Upset stomach	58.	Twitching other than eyelid
32	Indigestion	59.	Hands tremble or shake
33	Heartburn or gas	60.	Stiff joints
34	Abdominal pain	61.	Sore muscles
35	Diarrhea	62.	Sore throat
36	Constipation	63.	Sunburn
37	Hemorrhoids	64.	Nausea

Appendix H: Family Health History

Please indicate any family history of the following diseases or conditions:

You may mark your answers on this page.

	Heart Disease	Cancer
Mother*	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No
Maternal grandmother	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No
Maternal grandfather	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No
Father*	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No
Paternal grandmother	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No
Paternal grandfather	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> Don't Know <input type="checkbox"/> No

*if there is more than one person that applies (e.g. mom and step-mom) here we are interested in the person you spent more time growing up with or who had a larger impact on you.