

1999

SELF-FOCUS, SELF-SCHEMATA, AND SELF-COMPLEXITY: RELATIONSHIP TO DEPRESSION

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**SELF-FOCUS, SELF-SCHEMATA, AND SELF-COMPLEXITY:
RELATIONSHIP TO DEPRESSION**

**A thesis submitted by Nathan Mascaro
to the Louisiana State University Honors College
in partial fulfillment of**

Upper Division Honors Distinction

**Baton Rouge, LA
1999**

Acknowledgments

During my preparation and defense of the present thesis, the support, guidance, and opportunity provided by Dr. James Geer, Dr. Katie Cherry, Dr. John Baker, and Carolina Hood and the LSU Honor's college were golden.

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ABSTRACT

The present study was designed to examine the hypothesis that a depressive self-schema mediates the depressive's exhibition of a high degree of negative self-complexity, which is a measure, found to be positively associated with depression, of the differentiation and dispersion of the pejorative traits that a person uses to describe him or herself. It was assumed that depressives tend to focus on negative aspects of themselves, reinforcing depressive self-schemata and making them more accessible. These highly accessible bodies of knowledge in turn allow depressives to express negative aspects of themselves with a high degree of complexity. Using a computer program called Pathfinder that can produce representations (PF nets) of the associations among concepts in a person's cognition, it was hypothesized that representations of the cognition of depressed people who have a high tendency to self-focus would consist of negative concepts with an unusually high degree of interconnectedness. Measurements of this interconnectedness, which was supposed to correspond to a negative self-schema, were hypothesized to correlate with a measurement of negative self-complexity. Results indicated that, within PF nets, an increased degree of linking between the self and negative concepts was associated with increased depression scores, and an increased degree of linking on negative concepts in general was associated with the tendency to self-focus. However, neither depression scores nor tendency to self-focus was related to the interconnectedness among clusters of negative concepts. Although negative self-complexity also was significantly correlated with depression scores, it was not associated with any aspects of participants' PF nets. Negative self-complexity appeared to increase in proportion to any increase in depression scores, whereas linking in PF nets between pejorative concepts and the self seemed mainly to distinguish clinical level from non-clinical level depression scores. There is

a brief discussion of the implications of the present study for network theories of emotion and of the fact that negative self-complexity seems to tap into a depressive continuum whereas linking in cognition between the self and negative concepts seems to tap into a dichotomy between depressed and non-depressed states.

Self-Focus, Self-Schemata, and Self-Complexity: Relationship to Depression

In cognitive psychology, the self is often viewed as a network consisting of nodes of information (e.g., memories, postulates, concepts, etc.). According to a spread-of-activation model of memory, certain nodes are strongly associated, or *linked*, with others, and the associations among them can affect the information of which a person is aware (Anderson, 1976). If one node of information becomes salient to a person, that is, if it enters awareness, then it will *activate* the nodes to which it is most strongly linked, thereby making them salient as well. Nodes for self-relevant information are hypothesized to be more strongly interlinked than those for non-self-relevant information (Segal, 1988), with the web-like structure they form being called a self-schema.

As an explanation for the negative, cognitive biases that depressed individuals exhibit, many researchers suggest that there is a *depressive* self-schema (Segal, 1988). Depressive self-schemata, as opposed to those of non-depressed people, consist of more negative nodes that are more highly interlinked. Researchers have commonly described this greater amount of interlinking among nodes as the depressive self-schema being tighter or more interconnected than the self-schema of non-depressed individuals (Malle & Horowitz, 1995; Segal, 1988; Segal, Truchon, Horowitz, Gemar, & Guirguis, 1995). The high degree of interconnectedness of the depressive self-schema increases the likelihood that one node's being activated will activate the entire body of nodes. The relevance of this is that the depressed individual can all-too-easily access a mass of negative self-knowledge, and the constant salience of this knowledge could affect his or her expectations, memories, and interpretations. According to this conceptualization, the depressed individual has trouble shutting off negative self-referencing cognitions.

It has been suggested that the tendency to self-focus mediates to a large extent the development and salience in cognition of a depressive self-schema (Pyszczynski & Greenberg, 1987). An increased tendency to focus on personal flaws is characteristic of depression, and a tendency to self-focus is correlated with, and has been shown to exacerbate depression (Beck, 1967; Ingram, 1990; Musson & Alloy, 1988). Drawing on such findings, theorists suggest that self-focusing can affect the organization of self-schemata as well as increase the effect of the self-schema on a person's awareness (Pyszczynski & Greenberg, 1987; Salovey, 1992; Salovey & Rodin, 1985).

The present research aimed to provide new evidence consistent with a view of depression in which the tendency of depressed individuals to self-focus develops and reinforces the interlinking of negative nodes in the self-schema. To accomplish this, the Pathfinder, computer algorithm (Schvaneveldt, 1990) was used to create representations of people's self-schemata. Using similarity scores that an individual provides between each possible pair of concepts in a group of concepts, Pathfinder produces a web-like, network representation (PF net) of how those concepts are associated with each other in the individual's cognition. Associations or links between concepts are symbolized as lines in between words, making the representation look like a web of words. For the present study, negatively valenced trait adjectives (e.g., lazy, tense) corresponded to negative nodes in the self-schema, and positively valenced trait adjectives (e.g., intelligent, friendly) corresponded to positive nodes. It was hypothesized that people's measured tendency to self-focus and their depression levels would be correlated with the amount of interconnectedness within the clusters of negative and positive trait adjectives in PF nets. The adjectives of people who tend to self-focus having more links between them than those who tend

not to self-focus would suggest a relationship between self-focus and the interconnectedness of nodes in the self-schema. The negative adjectives of people who are depressed and tend to self-focus having more links between them than those of participants who tend not to self-focus, depressed or not, would suggest that an interaction of self-focus with depression is related to the interconnectedness of nodes in the depressive self-schema.

Another aim of the study was to demonstrate the extensiveness of the depressive self-schema model. To do this, the interlinking of nodes within the self-schema, as indicated by the pattern of linking within PF nets, were correlated with measurements of the complexity with which people described themselves, or self-complexity. There has been considerable research recently on the relationship between self-complexity and depression (Campbell, Chew & Scratchley, 1991; Dixon & Baumeister, 1991; Gara et al., 1993; Jordan & Cole, 1996; Linville, 1987; Woolfolk, Novalany, Polino, Gara, & Allen, 1995). Attaining a measure of self-complexity involves having participants sort trait adjectives into groups in a manner that they feel best describes themselves. Aspects of the participants' sorts, (viz., the number of groups into which they sort the adjectives and the variety of adjectives placed into those groups), make up a self-complexity score that tends to be correlated with depression (Gara et al., 1993; Jordan & Cole, 1996; Woolfolk et al., 1995).

In the present study, it was hypothesized that self-focusing develops and reinforces an increasingly interconnected self-schema, which in turn affects behaviors, such as the way a person describes him or herself in the trait sorting task. If it could be shown that the interlinking of nodes in the self-schema was not only correlated with self-focus but also predicted measures of self-complexity, then this would be a step towards integrating the empirical findings about depression

into a theoretical framework that designates a primary causal role to the relationship between self-focus and cognitive self-structures.

In order to assimilate the self-complexity phenomenon into the self-schema model, aspects of the PF nets that participants produced that were indicative of interconnectedness, (e.g., number of links among terms), were correlated with those participants' self-complexity scores which were derived from the trait sorting task. Insofar as the PF nets are valid representations of self-schemata, a significant correlation of interlinking among the Pathfinder concepts with self-complexity and depression would add validity and extensiveness to the self-schema model.

Review of Literature

Self-Schemata

Demonstrating that self-knowledge is more highly interconnected than other domains of knowledge would not only help explain the increased salience in cognition of self-relevant information, but it is necessary in order to support the validity of the self-schema model (Segal, 1988). Segal et al. (1988) provided a test of the hypothesized interconnectedness of self-knowledge by using a variation of the Stroop color naming task (Stroop, 1935). Participants were asked to list words that they felt were self-descriptive. Using a priming methodology, researchers presented participants with a word (the prime) that they had or had not judged as self-descriptive, which was followed by a self-descriptive word (the target) that was printed in color. It took participants longer to name the color of the target when the prime was self-descriptive than when it was not. The fact that it took longer when the prime word and the target word were both self-descriptive than when only the target was is important. It implies that the prime word's being connected to the target word in the participant's cognition, when the prime word was presented, produced a trace for the target word that interfered with the participant's naming the color in which the target word was printed. The interference implies that self-descriptive information is interconnected in cognition and can be viewed as a body of interlinked nodes.

It is likely that the self-schemata of depressed and non-depressed people are different. There is considerable evidence of cognitive differences between depressed and non-depressed individuals besides the obvious ones involving the amount of negative content in awareness. In a Stroop task that did not involve any priming, Gotlib and McCann (1984) found depressed participants, but not non-depressed participants, to have longer color naming latencies for

depressed content words than for manic or neutral content words. The phenomenon was not the result of a transient mood, because inducing depressive or manic moods did not increase color naming latencies. This suggests that there are stable cognitive differences, beyond mood congruency effects, associated with depression.

However, for self-schema theories, which provide a model for differences between depressive and normal information processing, to have any value, it must be empirically demonstrated that there are differences in these interconnected structures. The differences in schematic structure should be shown to account for at least a portion of the differences between depressive and non-depressive processing (Segal, 1988). In consideration of this, Segal has conducted a series of studies using variations of the Stroop task.

Segal and Vella (1990) found that self-aware and depressed participants had longer color naming latencies than controls for self-relevant prime/target pairs. In a later Stroop variation, the positivity and negativity of self-descriptions were varied, and participants were primed with a positive or negative phrase that was either self-descriptive or not self-descriptive (Segal et al., 1995). The longest color naming latencies were found for depressed participants who were primed with a self-descriptive negative phrase and asked to name the color of a self-descriptive negative target. This suggests that depressives have a self-schema that is more negative and more interconnected than the same structures that non-depressed individuals have.

Using a different methodology, Malle and Horowitz (1995) reached similar conclusions about negative self-schemata in general. Participants judged descriptions of negative constructs (e.g., nervous, dependent) to be more similar to each other than those of positive constructs. In another part of the study, participants were identified as having either negative or positive self-

schemata (e.g., dependent or independent), and they described general, behavioral examples of the construct they represented. As judged by blind raters, negative schematic participants gave more accurate descriptions than positive schematic participants of the construct that they represented. Also, participants who had scores on inventories that were indicative of negative (e.g., depressive) constructs scored more consistently on different measures of that same construct than participants who had scores indicative of positive constructs. Yet test-retest reliability was high for both groups of participants. Because test-retest results were the same for both groups, neither group's views of themselves were changing more than the other's over time. So an increased stability of self-report for participants with negative self-views could not account for the increased convergent validity of the different measures that they completed. Researchers interpreted the disparity in measures of convergent validity between negative self-view participants and positive self-view participants as meaning that negative self-view participants had tightly organized, or highly interlinked, self-schemata. The tight organization of negative self-schemata, it was inferred, facilitated negative self-view individuals' highly consistent self-reporting across measures.

These studies provide considerable evidence that there are depressive self-schemata consisting of tightly organized and integrated elements, and that activating a few elements of a schema makes it easier to access large bodies of negative, self-relevant information. These schemata either play a larger role in depressive than non-depressive processing, or are present in the former but not the latter.

Self-Complexity

A subset of the research on schematic theories of depressive processing involves the

complexity of self-structures. Self-complexity is especially relevant to the idea that there are differences between depressed and non-depressed people not just in content of self-knowledge but in how that content is organized.

The measure of self-complexity with which this study is concerned is a measure of the way people organize what Linville (1987) called self-aspects. She supposed that people organize self-knowledge within multiple self-aspects that tend to represent important roles or activities in their lives. She further hypothesized that people with high *self-complexity* (i.e. those with many self-aspects containing distinct types of information) are less vulnerable to *affective extremity*. That is, the experiencing of a particular amount of emotion will have less extreme effects on the person with high self-complexity than on the person with low self-complexity. According to Linville, consciousness corresponds, along the lines of spread-of-activation theory (Anderson, 1976), to salient elements in memory activating associated elements, and thus making them salient. The more similar the knowledge is between self-aspects, the easier it is for activation to spread from one self-aspect to another. Those with high self-complexity have low affective extremity because their multiple and highly differentiated self-aspects act as buffers against the spread of affect (Linville, 1987). For example, if in one aspect of life a person with high self-complexity experiences dysphoria, it will not have global effects. Conversely, due to a lack of distinction between self-aspects, the individual with low self-complexity will experience a spillover of affect from one self-aspect to another, causing a larger proportion of the self to experience dysphoria.

Linville (1985 as cited in Linville, 1987) developed a measurement of self-complexity in which trait adjectives are printed on cards that participants arrange into groups describing meaningful aspects of their lives. Participants may use the terms in more than one group and they

need not use all the terms. To measure self-complexity, the H statistic, which quantifies the number of independent clusters of terms implicit in a participant's sort, is used (Attneave, 1959 in Linville, 1987). The H statistic decreases as terms tend to be clustered together in a sort (i.e., it increases with the amount of dispersion of terms in a sort). The way the measure works is that each adjective is considered as falling into one implicit group, which Woolfolk et al. (1995) called a Unique Group Combination (UGC). A UGC is one of all the possible combinations of groups to which a certain term could be allocated. For example, if a participant arranged the traits into three groups, then each trait would fall into one of 8 UGCs: no group (not used), group one only, group two only, group three only, group one and two, group one and three, group two and three, or group one, two, and three. UGCs are used to quantify the number of self-aspects in a participant's card sort and the redundancy of placement of trait adjectives among those self-aspects. The formula for the H statistic is:

$$\log_2 n - (\sum_i n_i \log_2 n_i) / n,$$

where n is the total number of traits available for sorting and n_i is the number of traits in a UGC. \log_2 is used so that self-complexity will exponentially increase (in a somewhat conveniently measured fashion) as a participant approaches having one trait adjective in each of his or her UGCs and is maximized when he or she does so. For, when $2^x=1$, $x=0$; when $2^x=4$, $x=2$; when $2^x=8$, $x=3$, when $2^x=12$, $x=3.585$, etc. If a participant was given 33 adjectives to sort into self-aspects and he or she sorted them into 33 groups, with each group containing one adjective, then he or she would demonstrate the maximum possible amount of dispersion or complexity.

Linville (1987) found that, in line with her affective extremity hypothesis, under high stress, those with lower self-complexity experienced more depressive symptoms than those with

higher self-complexity. There has been some support for this phenomenon. Dixon and Baumeister (1991) found that people lower in self-complexity were faster to escape from self-focus after failure feedback, as evidenced by shorter essays and less time writing in front of a mirror. This was interpreted as participants being aware that they were at a high risk of spillover of the negative affect. (Self-complexity did not, however, correlate with a depressive trait checklist.) Campbell et al. (1991) found a moderate, positive correlation between self-esteem and self-complexity. Neither self-complexity nor self-esteem was related to extremity of mood change, however, though both related to frequency of mood change; And the influence of self-complexity was due largely to its correlation with self-esteem.

More recent experiments suggest an opposite role in depression for self-complexity. Woolfolk et al. (1995) pointed out that Linville (1987) used a higher ratio of positively valenced adjectives to negatively valenced ones, increasing the possibility of confounding content and organization. That is, it would seem that people who are more depressed would use more negatively valenced words to represent themselves than would non-depressed people. And being that most of the words available for sorting were positive in previous trait sorting tasks, depressed people may simply have had less words to choose from that they felt were self-descriptive. In a series of studies using a larger number of negative terms, Woolfolk et al. (1995) failed to replicate the stress buffering effect. In fact, self-complexity was inversely related to self-esteem and depression.

Because implicit groups, UGCs, within participants' card sorts tended to consist of purely positive or purely negative terms, and UGCs are the major factor in self-complexity scores, it was considered that separate, negative and positive self-complexity scores might be meaningful

(Woolfolk et al., 1995). Negative self-complexity was found by deleting all the positive terms from a participant's sort and then measuring self-complexity, and positive self-complexity was found by deleting all the negative terms from the sort. Negative self-complexity correlated positively with depression and lower self-esteem, whereas positive self-complexity changed with varying the number of positive adjectives available for sorting. (These results are reminiscent of Malle Horowitz' (1995) findings that measures of negative self-views are more consistent across measures than those of positive self-views.) Also, the actual complexity of arrangement of negative terms (i.e., their dispersion) accounted for variance in depression beyond its relation to the number of negative terms used (i.e., negative content.) This finding suggests that the way information is organized is related uniquely to depression.

In a previous study measuring clinically depressed people's cognitions about themselves and significant others, Gara et al. (1993) found results similar to Woolfolk et al. (1995). Participants generated attribute by self and significant other matrixes and indicated whether the attributes were descriptive of themselves and others that they knew. Certain terms tended to co-occur when being attributed to the self or others, and these attribute clusters were analyzed using HICLAS analysis (DeBoeck & Rosenberg, 1988 as cited in Gara et al., 1993). In the cluster analysis, the more clusters formed, the higher self-complexity was judged to be, because it took more clusters to account for all the attributes used. For example, if a participant tended to attribute the same traits to every person, then these traits would be considered as part of one cluster. Thus, one cluster would account for every trait and self-complexity would be low. Results indicated that depressed people had more negative and less positive descriptions of themselves and significant others than non-depressives. They exhibited higher negative self-

complexity and lower positive self-complexity as measured by the HICLAS analysis. Beck Depression Inventory (BDI) scores were positively correlated with negative self-complexity.

Using a computerized trait sorting technique that consisted of 16 positively and 16 negatively valenced terms that were relevant to children, Jordan and Cole (1996) measured self-complexity in fourth, sixth, and eighth graders. Again, there was no support for a stress buffering effect. Also, both positive and negative self-complexity were positively correlated with depressive symptoms in the children.

These self-complexity findings give us pause, however, as they appear to contradict findings that indicate negative content in depressive self-schemata to be tightly organized (Malle & Horowitz, 1995; Segal et al., 1995). This is because self-complexity, with which depression is positively correlated, is a measure of dispersion (Woolfolk et al., 1995; Gara et al., 1993; Jordan & Cole, 1996). Yet the results of Segal et al.'s (1995) Stroop variation indicated that negative content was more integrated, less dispersed, in the depressive cognition.

This contradiction is revealed as illusory, however, if we consider that the card sort is not a direct representation of a person's cognition. The card sort task involves participants organizing previously selected terms, whereas the words used in the Stroop variation were tailored to each participant. It is likely, then, that the card sort, rather than a representation of cognitive structure, is a reflection of how familiar people are with applying certain terms to themselves. Depressives can be considered to be experts in negative appraisal, as they chronically focus on their flaws and attribute negative events to themselves (Beck, 1967; Musson & Alloy, 1988). Woolfolk et al. (1995) suggested that the self-complexity phenomenon might result from the depressive's tendency to self-focus and ruminate on flaws, leading to more complex

descriptions of and differentiation between negative aspects of the self. Increased self-awareness does in fact increase the accessibility of self-knowledge (Salovey, 1995; Gibbons, 1987), and a tendency to self-focus probably promotes a higher degree of organization of that knowledge. This could account for depressed people's familiarity with negative traits and their ability to describe themselves negatively with greater complexity.

Self-Focus

The notion that depressives tend to self-focus or that their cognition is similar to those who self-focus may facilitate the subsuming of findings about self-complexity under a schematic model of depression. In fact, self-focusing is intimately tied to depression. As mentioned earlier, depressives as well as those in whom self-awareness was induced showed higher color naming latencies than controls in a modified Stroop task, suggesting similarities in cognition between the two groups (Segal & Vella, 1990). Depressives tend to self-focus, and correlates of self-focusing are similar to many of those of depression (Smith, Ingram, & Roth, 1985; see Ingram, 1990, and Musson & Alloy, 1988 for reviews). A tendency to self-focus is correlated with depressive symptoms (Ingram & Smith, 1984; Smith & Greenberg, 1981), and with clinical depression (Ingram, Lumry, Cruet, & Sieber, 1987). And those who tend to self-focus react to stressful or emotional events by ruminating, and this is associated with more frequent and longer lasting depressive symptoms (Wood, Saltzberg, Neale, Stone, & Rachmiel, 1990; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Fredrickson, 1993). These results lead one to conclude that either a significant proportion of those who tend to self-focus are caused to do so because of a higher frequency of depressed moods, or heightened self-awareness increases the accessibility of the negative cognitive structures of those in whom these structures are available.

A combination of both could also occur. For, if a negative mood induces a negative type of self-focusing, then this might develop and reinforce negative self-schemata, which would only promote further rumination.

Salovey and Rodin's (1985) model of affect-action sequences offers explanation as to how the unique structure of a depressive schema (and, in this case, its expression in the form of negative self-complexity) could be linked with mood induced self-focus. They propose that affect can alter the cognitive structures that process self-relevant information, that those altered structures affect social behaviors, and that social behaviors feed back to the self, helping to maintain positive affect or relieve negative affect. The part of this model that concerns the present study is that, in terms of specific images and sensations, moods, as opposed to emotions, are ambiguous. So when a mood is induced, there is a motive to understand and specify it. Thus, moods induce self-focus, which increases the salience of "autobiographical" information (Salovey, 1992). To demonstrate, Salovey (1992) showed that, on the Linguistic Implications Form, a measure of self-focus, participants in whom happy and sad moods were induced scored higher than controls.

The general notion, then, is that mood can induce self-focus, which can increase familiarity with certain domains of the self, such as negative self-schemata. This consequently enhances the ability to express the self-domains with greater complexity in tasks like the card sort. This relates to depression in obvious ways. If negative moods motivate focusing on negative domains of the self, then the increased presence of sad or "blue" moods in depression (Beck, 1967) would cause depressives to focus on negative aspects of the self. If a person cannot identify or perform the actions necessary to relieve his or her negative feelings, (if, say, they are caused by a deficiency of

receptors for certain neurotransmitters, irrational beliefs about the self, unrealistic expectations for the self, or similar mood inducing phenomena which would seem not to be relievable by simple behavioral adjustments), then this could produce a destructive cycle of increasing self-focus and self-derogation, as Pyszczynski and Greenberg (1987) propose.

Evidence that affect induces self-focus. It appears that affect induces self-focus (Carr, Teasdale, & Broadbent, 1991; Salovey, 1992; Wood, Saltzberg, & Goldsamt, 1990). Wood et al. (1990) found that inducing dysphoric moods increased self-focus. Salovey (1992) found that those in whom both sad and elated moods were induced showed higher self-complexity, suggesting an increased awareness of the self. Carr et al. (1991) found inducing dysphoric moods to increase the number of self-focused, negative responses to a sentence completion task, whereas inducing elated moods increased the number of positive, self-focused responses and the number of neutral, externally focused responses.

Self-focus and negative self-schemata. There is also evidence that self-focus in depression increases reliance on what are, ostensibly, negative self-schemata (Gibbons, 1987; Lyubomirsky & Nolen-Hoeksema, 1995; Pyszczynski & Greenberg, 1987; Pyszczynski, Greenberg, & Holt, 1987; Pyszczynski, Hamilton, Herring, & Greenberg, 1989). Pyszczynski et al. (1987) had depressed and non-depressed participants judge the likelihood of negative or positive events happening to themselves and to others. This was done when participants were internally focused, when they were externally focused, and when they were not induced to focus. Without focusing, non-depressed participants judged negative events as less likely to happen to themselves than positive events and judged negative events as less likely to happen to themselves than to others. Depressed individuals judged negative and positive events as equally likely to happen to

themselves and positive events as less likely to happen to themselves than to others. But when participants were induced to focus externally, the negative bias for depressives disappeared. It was exacerbated, however, when they were induced to focus internally. The same effects were found for memory biases as well (Pyszczynski et al., 1989). Lyubomirsky and Nolen-Hoeksema (1995) found similar results. As compared to non-dysphoric, self-focused individuals and dysphoric, externally focused individuals, dysphoric participants in a self-focusing condition judged positive events as less likely to occur and indicated a greater negative bias on Krantz and Hammen's (1979) Cognitive Biases Questionnaire.

Gibbons (1987) found that depressed participants wrote more intimate negative statements (e.g., wrote statements concerning negative life events that were more revealing) than controls, though this was not the case for positive statements. Depressed individuals were also more accurate in rating the intimacy of their own statements, where accuracy was determined by the similarity of ratings to those of blind judges. Using a mirror to raise self-awareness improved control participants' accuracy more than it improved depressives', presumably because depressives were already self-focused. Gibbons (1987) interpreted these findings as depressed individuals being more aware of negative self-information and better able to reveal it.

Such findings are interpretable through self-regulatory perseveration theory of depression (Pyszczynski & Greenberg, 1987). Roughly, depressive self-focusing is a coping strategy gone awry, resulting from an inability to reduce the discrepancy between actual and desired states. This dysfunctional coping style results in a self-derogating cycle that increases the saliency and negativity of the depressive self-schema, and thereby perseverates the depressive state.

Rationale for the Present Study

Inducing affect has been shown to increase self-focus as well as self-complexity. Self-focusing increases the accessibility of self-knowledge and is related to depressive symptoms, and depressive self-focusing promotes negative biases. These findings, and research examining the presence and activity of depressive self-schemata, imply that as the expert scientist relies on a theory consisting of multiple, integrated elements, the depressed individual is caught up in a depressive self-schema consisting of highly interrelated elements. Mood induced focusing on content within a depressive self-schema may increase the accessibility of, and interconnectedness among, elements of that schema in a similar manner that the expert scientist's studying a theory increases the accessibility of the theory's elements in the scientist's own cognition. And as a scientist can rely on a theory to generate detailed explanation, so the depressive schema may allow the depressed person to describe him or herself in negative terms with greater complexity. In a pilot study, Salovey (1992) found inducing self-awareness to increase measures of self-complexity, strengthening the notion that an increased accessibility of self-structures allows for more complex descriptions of the self.

But the presence of a depressive schema is obviously not adaptive. It is a trap that can dominate consciousness, because, upon the activation of one or a few of its elements, the interconnectedness of those elements makes them highly and rather chronically accessible. So if it is self-focusing that reinforces this phenomenon, then self-focusing is important in the maintenance of depression. For this rumination would promote the salience of certain types of thoughts and expectations. And, extending the scientific theory analogy once more, as Aristotelian expectations prevented us for 2000 years from perceiving blatant phenomena in

nature, the dominance of certain expectations and interpretations probably results in the top-down processing associated with the destructive spiral of depression (Beck, 1967; Bower, 1981; Pyszczynski & Greenberg, 1987).

A study by Hedlund and Rude (1995) evidenced the fact that depressive self-schemata remain latent in the cognition of recovering depressed patients, thus increasing their vulnerability to negatively biased processing. Though in Hedlund and Rude (1995) both groups had no depressive symptoms, self-aware participants who had once been depressed exhibited more negative biases on two of three cognitive tasks than self-aware participants who had never been depressed. Perhaps recovering depressives are less prone than active depressives to self-focus, thereby decreasing the accessibility of the depressive self-schema and eventually weakening, through disuse or interference, the destructive interconnectedness among its elements.

In the present research, we aimed to demonstrate that the depressive's self-focusing tendency is related to the interrelation among, and accessibility of, elements in the depressive self-schema; which in turn is related to expressing negative self-knowledge with increased complexity. To demonstrate this, it would be helpful to show, first, that measurements of the interconnectedness among nodes in the depressive self-schema increase as a function of measurements of depression and tendency to self-focus; and secondly, that measurements of the degree of interconnectedness within the self-schema is related to the complexity with which people describe themselves.

In the present study, in order to support the first hypothesis, the Pathfinder computer algorithm was used to generate a network representation (PF net) of individuals' self-schemata (Schvaneveldt, 1990). These network representations were based on similarity scores that

participants provided between all the possible pairs of a group of positively and negatively valenced trait adjectives and self-referential terms. Aspects of the PF nets were examined as a function of measurements of individuals' self-focus tendencies and levels of depression. To demonstrate the second hypothesis, aspects of these network representations were correlated with the same measure of self-complexity that Woolfolk et al. (1995) and Linville (1987) used. Thus, in the present study, there were two between subjects independent variables, level of depression and tendency to self-focus. The dependent variables were Pathfinder's network output and self-complexity scores from the card sort task.

Measuring Aspects of Depressive and Self-Focusing Cognition

Rather than interpreting the relationship between depression and self-focus through behavioral tasks, a well attested, explicit representation of cognition was used. The Pathfinder algorithm has proven itself a useful measure of cognitive structuring of semantic information (Schvaneveldt, 1990). In order to produce a network representation of the associations among a group of concepts, Pathfinder uses similarity scores that individuals provide between each possible pair of a group of concepts. These network representations, web-like structures containing patterns of linear links among concepts, are reflections of how people represent or structure information (Schvaneveldt, 1990). Pathfinder networks have been shown to reflect individual differences in level of expertise in certain fields, specifically those of air-combat (Schvaneveldt, 1985), computer programming (Cooke & Schvaneveldt, 1988), electronic warfare (Wyman & Randel, 1998), and locomotive classification (Gammack, 1990). Regarding clinical issues, Bushman (1996) found that high-trait-aggressive individuals had different Pathfinder networks, (more links between aggressive words and ambiguous words), than individuals with

low-trait-aggression.

Pathfinder was used in the present study to examine the relationship between depression and self-focus. This was accomplished by examining the changes in the organization of network representations as a function of individuals' scores on the Private Self Consciousness scale (PSC; Fenigstein, Scheier, & Buss, 1975), and the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). More specifically, in order to discern the relationship between self-focus and depression, aspects of Pathfinder's network output were examined as they related to BDI scores, to PSC, and with the interaction between PSC and BDI scores.

To conduct the above analyses, Pathfinder networks were computed for each participant. Those networks were used to quantify the degree of interlinking of concepts in participants' cognitions. The concepts used in the present study were first person pronouns (me, myself, and I), and positively and negatively valenced trait adjectives that describe personality characteristics (e.g., intelligent, irritable). Assuming that self-focus increases the salience of and familiarity with personally evaluative information, then self-focusing individuals' networks should increasingly resemble those that reflect expertise.

Chi and Koeske (1983) studied how Pathfinder represents expertise by applying it to a 4.5 year old child's dinosaur knowledge. They compared network representations of familiar to unfamiliar dinosaurs. Familiar dinosaurs had more links with other dinosaurs than did unfamiliar ones. The ratio of links within clusters of familiar dinosaurs to links between clusters of familiar dinosaurs was greater than that for unfamiliar ones. The child's organization of familiar dinosaurs into distinct clusters reflected the objective taxonomy of those dinosaurs. Those who are depressed and self-focus should tend to focus on negative self-appraisal. However, there is no

objective criteria, which is similar to the agreed upon taxonomy of dinosaurs in the Chi and Koeske (1983) study, according to which negative self-appraisal *should* be organized into distinct clusters. It was not assumed, therefore, that specific negative concepts ought to cluster together. Nor was it assumed that to the extent that participants are experts on negative self-appraisal their networks would have higher ratios of links within to links between these specific clusters. Rather, a weaker assumption was made that those who focus on negative aspects of themselves would have more links on negative concepts, more interlinking within the general domain of negative concepts, as opposed to positive ones, and more links between negative concepts and self-referential terms than those who did not focus on negative aspects of themselves. (Perhaps further research might specify particular concepts that do tend to form clusters).

A possible methodological objection. It might be argued that the Pathfinder task does not necessarily tap into self-evaluation specifically, as opposed to knowledge of evaluative terms regardless of their application to the self. However, what would be measured in the present study was the extent to which the depressive cognition, as opposed to that of non-depressed individuals, contains negative, evaluative information that is more interconnected. If it is more interconnected for depressed than for non-depressed people, then depressives should rate negative terms as more similar than should non-depressed people.

Moreover, depressive self-schemata are assumed to interfere with information processing, causing depressed people to be chronically aware of negative aspects of themselves. Were this not the case, depressed people could simply decide to only be aware of positive aspects of themselves. To the extent that a chronically accessible, depressive self-schema does affect information processing, a negative trait adjective would be more likely to activate a depressive

than a non-depressive self-schema. The activation of the depressive self-schema would then affect how a participant rated the similarity of negative and positive terms. It should be noted that the present study is a strong test of the extent of the depressive self-schema's effects on cognition in that it is based on the assumption that the depressive self-schema interferes with cognitive tasks to an excessive degree.

In any case, to ensure that the Pathfinder task was tapping into self-knowledge, first person pronouns, as stated earlier, were included in the domain of words for which participants provided similarity ratings. Negative adjectives being highly interlinked would imply that negative information, though not necessarily self-information, is highly interconnected. However, negative adjectives tending to be linked to first person pronouns would imply that the dense body of negative information is linked to the self. Furthermore, if the tendency of negative concepts to be interlinked increased as measures of PSC increased, a negative self-schema model would be the most parsimonious explanation for such findings. That is, it would be most reasonable to argue that depressive's have a dense and negative self-schema, with the density and negativity increasing as self-focus increases.

Specific hypotheses. Self-focus should increase the accessibility of self-knowledge, of which negative concepts appear to be more highly interconnected than positive concepts (Malle & Horowitz, 1995). High self-awareness is associated with processing information in a negatively biased manner (Larsen & Cowan, 1988; Musson & Alloy, 1988; Nolen-Hoeksema et al., 1993; Wood et al., 1990), and an increased awareness of any negative schemata may be what mediates this. That is, negative self-schemata may be latent in cognition, becoming activated only when an individual engages in self-focus. It was hypothesized, therefore, that PSC would correlate

positively with the number of links on and between negative concepts, and between negative concepts and first person pronouns in participants' PF nets. Depressive mood should increase the likelihood of focusing on negative content of the self, thus increasing the likelihood of interconnected/depressive self-schema characteristics. So BDI scores should also correlate positively with links on and between negative concepts, and between negative concepts and first person pronouns. It was hypothesized that there would be an interaction between PSC and BDI scores. As participants' BDI scores increase, linking to negative concepts, linking within the domain of negative concepts, and links between first person pronouns and negative concepts should increase at a greater rate for those with higher PSC than for those with lower PSC.

In addition, it was hypothesized that as PSC increased, those with lower BDI scores would have more links on and between positive concepts, and more links between positive concepts and self-referential terms, whereas those with higher BDI scores would have less. Because participants with higher PSC but lower BDI scores apparently self-focus, but on something other than depressive content, perhaps they are in an opposite situation as depressed people, being induced to self-focus by euphoric or generally positive moods.

Predicting Self-Complexity

The interlinking of nodes in the self-schema was hypothesized to relate to the tendency to describe the self with increased complexity. To demonstrate this, the measures of interlinking within the participant's PF nets were correlated with measures of their self-complexity as defined by the results of a card sort task. Participants whose negative concepts in the network representations had more links on them, more links to first person pronouns, and greater cohesion should have higher negative self-complexity scores for the card sort. Participants whose positive

concepts had more links on them, more links to first person pronouns, and greater cohesion should have higher positive self-complexity scores. Such results would relate the highly interconnected organization of concepts in network representations to increased self-complexity scores.

The study's results being consistent with hypotheses would suggest that the increased interrelation of negative concepts within the depressive self-schema increases the accessibility of that information, and therefore the ability to represent the self, in negative terms, with greater complexity.

Method

Participants

The participants were 92 undergraduate, Louisiana State University students enrolled in psychology classes. They received course credit for their participation in the study.

Measures

Self-Schemata. Pathfinder networks that represented self-schemata were computed using 10 trait adjectives, 5 positively valenced and 5 negatively valenced, and the terms, “I”, “myself”, and “me”.

Participants rated the similarity of each possible pair (78 pairs total) of the 13 words. A PF net was produced for each participant based on these similarity scores. For a list of the 13 terms, see Appendix A.

The adjectives used in the task were selected from a list, developed by Peabody (1987), of 57 pairs of adjectives that were seen as representing the spectrum of personality evaluations. A pilot study was conducted to determine which terms from the list were most often used by LSU students. One hundred undergraduates in an LSU psychology class were asked to pick the words from Peabody’s (1987) list that they felt were the most self-descriptive. The five most commonly selected negative and positive terms were selected for the Pathfinder task. The same data were used to select the 15 positive and 15 negative adjectives for the card sort task.

Self-Complexity. From Peabody’s (1987) list, 15 positive and 15 negative terms, selected from the data resulting from the pilot study mentioned above, were printed on cards. A list of the terms can be found in Appendix A. Each participant was instructed to sort these terms into groups that they felt to be meaningful, using as many of the terms as they liked, as many times as

they liked. Positive and negative self-complexity scores based on the H statistic, described earlier, were used to quantify the number of groups a participant formed and the redundancy of placement of terms among the groups. This resulted in two self-complexity scores for each participant.

Depression. The Beck Depression Inventory (BDI; Beck et al., 1961) was used as the depression measure. Commonly used in cognitive research with undergraduate populations, the BDI is a valid, reliable, and enduring measure of depressive tendencies (Beck, Steer, & Garbin, 1988). There is a concern about its being less valid and reliable with student populations than with clinical ones (Tanaka-Matsumi & Kameoka, 1986). However, prudence dictates that, in the interest of avoiding any misinterpretations of results, we use the same operationalization of depression as used by those studies on which the present study is based.

Self-Focus. A subscale of the Self-Consciousness scale (Fenigstein et al., 1975), Private Self-Consciousness (PSC), was used to measure self-focus. The PSC subscale is moderately reliable (test-retest, .79, Fenigstein et al., 1975), and the Self-Consciousness scale has been endorsed as an effective indicator of aspects of self-consciousness (Carver & Glass, 1976; Turner et al., 1978).

Procedure

Over the period of one semester, participants individually came to the lab, where they read and signed an informed consent form, performed the Pathfinder and card sort tasks, and completed the depression and self-focus scales. Following the signing of the consent form and answering of all questions, individuals began the first of the two tasks. The order of the tasks was counterbalanced, so half of the participants performed the Pathfinder task first, and the others

perform the card sort first.

Individuals performed the Pathfinder task on a computer. As each pair of the 13 terms appeared, in a random sequence, participants rated the similarity of the pairs on a 1-9 point scale. The instructions for the task were presented on the computer screen and can be found in Appendix B.

For the trait sorting task, participants were asked to sort cards on which trait adjectives had been printed into groups that they felt best described aspects of themselves. The directions for the task were taken from those used by Linville (1987) and can be found in Appendix B.

After participants finished the last task, they completed the BDI and the PSC scale, they were given slips for course credit, and they were debriefed.

From the PF nets for each individual, the average number of links on positive concepts, average number of links on negative concepts, number of links among all the positive concepts, number of links among all the negative concepts, number of links between positive concepts and first person pronouns, and number of links between negative concepts and first person pronouns were computed. These measures were analyzed along with participants' BDI and PSC scores, and with their positive and negative self-complexity scores.

Data Analysis

Pearson correlation analysis was used to determine the extent to which PSC and BDI scores were related to the six variables resulting from the Pathfinder output in a way that conforms to the earlier stated hypotheses. In order to determine the interaction effects for PSC and BDI on the variables from the Pathfinder output, a regression equation was created consisting of a BDI term, a PSC terms, and a BDI x PSC term predicting the various pathfinder variables.

Pearson correlations were computed between the variables from the Pathfinder output and positive and negative self-complexity scores from the card sort task. This was done in order to examine the hypothesis that the interconnectedness of positively valenced concepts in cognition, and their association with the self, is related to positive self-complexity; and the interconnectedness of negatively valenced concepts, and their association with the self, is related to negative self-complexity.

Ethical Considerations

Participants were given subject numbers, which were used to match their scores for the tasks with their BDI and PSC scores. Their names were not linked to the data, so the study was confidential.

The only perceivable risk was that performing the tasks might cause participants to become upset. However, the study sample was not a clinical one, and organizing and rating the similarity of trait adjectives is not considered by the researchers to place the participants under any higher risk of emotional upset than do everyday activities.

Results

Due to the number of analyses performed on the same variables, we decided to use a conservative significance level of .01 for all analyses. Also, due to the increased proportion of females with mood disorders relative to males, we checked all of the variables for gender effects. However, there were no statistically significant effects for gender in any of the analyses.

Correlations Between and Within Word Clusters

Before testing any of our hypotheses, we computed Pearson correlations between the six categories of pathfinder data. The six variables were: links per negative trait-adjective (lnk/neg), links per positive trait-adjective (lnk/pos), links between negative trait-adjectives and 1st person pronouns (neg-self), links between positive trait-adjectives and 1st person pronouns (pos-self), links within the negative trait-adjectives cluster (neg-neg), and links within the positive trait-adjectives cluster (pos-pos). This preliminary analysis would allow us to determine if any of our dependent variables were so intercorrelated as to warrant our controlling for some of them when analyzing their relationships with the Beck Depression Inventory (BDI), the Private Self-Consciousness (PSC) scale, and self-complexity. Such an analysis would also be useful for examining the nature of the networks that participants generated regardless of private self-consciousness or depression levels.

As indicated in Table 1, lnk/pos was significantly, positively correlated with lnk/neg ($r = .59, p < .001$), pos-pos ($r = .66, p < .001$), pos-self ($r = .63, p < .001$), and neg-self ($r = .32, p < .005$). Lnk/neg was significantly, positively correlated with neg-neg ($r = .62, p < .001$) and neg-self ($r = .64, p < .001$). The most parsimonious explanation for the relationship of lnk/pos with lnk/neg and neg-self is that some people simply have more links among concepts than others do.

As for the relationship of lnk/pos with pos-self and pos-pos, the latter two underlie the former.

So the variables should necessarily be correlated. The same is true for the relationship of lnk/neg with neg-self and neg-neg.

Table 1

Correlations Between Cognitive Network Categories

categories ($n = 92$)	lnk/neg	lnk/pos	neg-self	pos-self	neg-neg	pos-pos
lnk/neg	--	** .594	** .643	.212	** .626	.238
lnk/pos		--	* .321	** .634	.206	** .660
neg-self			--	.209	.092	.169
pos-self				--	.058	.090
neg-neg					--	.108

* $p \leq .01$, ** $p \leq .001$

BDI and PSC Scale Correlations with Aspects of PF Nets

Our first hypothesis was that both PSC scores and BDI scores would be correlated with an increased degree of linking, in participants' pathfinder networks (PF nets), between negative trait adjectives (neg-neg) and from negative trait adjectives to first person pronouns (neg-self).

We conducted a series of analyses to examine the validity of this hypothesis, and beyond this, to specify the relationship of the PSC scale and the BDI with aspects of PF nets.

Over-All Correlations. We conducted a Pearson correlation analysis to examine the relationships of the BDI ($M = 7.04$, $SD = 5.08$) and the PSC scale ($M = 23.75$, $SD = 5.01$) with aspects of the pathfinder output. Table 1 indicates that, in partial confirmation of our hypothesis, the BDI was significantly positively correlated with neg-self ($r = .276$, $p < .01$) and the PSC scale

was significantly correlated positively with lnk/neg ($r = .276, p < .01$). The hypothesized correlation of BDI and PSC scores with linking between negative concepts, however, was not observed. So as depression or tendency to self-focus increased, people did not necessarily consider negative traits to be more interrelated, though they did either link more negative concepts to their self-concepts or have more links to negative concepts in general.

Table 2

Correlations of Indexes of Interest with Network Categories

	network categories ($n = 92$)					
indexes	lnk/neg	lnk/pos	neg-self	pos-self	neg-neg	pos-pos
BDI	.049	-.168	*.276	-.251	-.015	.088
PSC	*.276	.164	.252	.043	.100	.045

* $p \leq .01$

Partial Correlations. In order to ascertain particular variables' unique relationships with the BDI and the PSC scale, we performed a series of partial, pearson correlations. When controlling for, thus removing the variance associated with, lnk/neg and lnk/pos, BDI scores still significantly predicted neg-self ($pr = .31, p < .005$). However, PSC scores were not correlated with lnk/neg ($pr = .12, p > .10$) when controlling for the variance associated with lnk/pos, neg-self, and neg-neg. Neg-self and lnk/pos must not be partialled out in order for PSC scores to be significantly correlated with lnk/neg ($pr = .28, p < .01$). The PSC scale's significant association with lnk/neg being contingent on not controlling neg-self makes sense considering that PSC scores approached a significant relationship with neg-self ($r = .25, p = .015$) and neg-self is integral to lnk/neg. The fact that lnk/pos also needed to remain uncontrolled suggested that linking between positive and negative concepts as well might be meaningful. So as a subsequent

analysis we correlated the PSC scale and the BDI with links between positive and negative concepts (pos-neg). PSC approached a significant relationship with pos-neg ($r = .20$, $p = .053$), but BDI did not ($r = -.15$, $p > .10$). Thus, though PSC only *approached* significant correlations with links between negative concepts and the self and between negative concepts and positive concepts, these two nearly significant effects had an additive effect that caused PSC to be significantly correlated with over-all linking to negative concepts.

Correlations with Individual Concepts. We next examined the BDI and the PSC scale in relation to the number of links on specific concepts. The analysis revealed no significant effects for the BDI, but the PSC scale had a pearson coefficient of $r = .30$ ($p < .01$) with the term “tense”.

Analyses of the BDI as a Dichotomous Variable. Upon examination of scatter plots, we noticed that neg-self was very sensitive to range restriction. That is, if one just looked at BDI scores ranging from 0 to about 10, then their association with neg-self appeared to be random, and the case was similar for scores ranging between 11 and 18 (18 being the highest BDI score in the study). However, it looked as though the 0-10 score range was generally associated with fewer neg-self than was the 11-18 score range. One possible explanation for this was that neg-self was not associated with a continuum from lower to higher BDI scores, but rather distinguished two groups, depressed and non-depressed, from one another. We wanted to determine whether neg-self distinguished those with clinical level BDI scores (i.e. $BDI > 10$) from those with below clinical level scores, or if it was associated with a dichotomy between those scoring above and those scoring below the median BDI score, of seven. Consequently, we decided to perform two point biserial correlation analyses in which the BDI was re-coded as a

dichotomous variable while the pathfinder data remained continuous. For the first analysis, we split the BDI distribution at a clinical level cutoff score by re-coding all the BDI scores ranging from 0 and 10 (10 being an often accepted cutoff score for indicating mild depression; Beck, Steer, and Garbin, 1988) as zero, and re-coding scores ranging between 11 and 18 as one. In the second analysis, we performed a median split by re-coding all scores in the zero to six range as zero and all scores in the 7-18 range as one. This was a simple way of getting a general idea of the ranges of BDI scores between which certain pathfinder variables could distinguish. The first analysis would indicate whether or not a variable could distinguish clinical level scores ($BDI > 10$) from non-clinical level scores ($BDI \leq 10$), and the second analysis would indicate if a variable could distinguish below median scores ($BDI < 7$) from scores at or above the median ($BDI \geq 7$).

Table 3 illustrates how different pathfinder variables differentiated between different ranges of BDI scores. The median split analysis revealed that degree of *lnk/pos* and *pos-self* predicted BDI scores' being at or above the median ($r_{pb} = -.28, p < .01$ and $r_{pb} = -.27, p \leq .01$, respectively), but degree of *neg-self*, the network variable that had the strongest over-all relationship with BDI scores, did not ($r_{pb} = .14, p > .10$). The clinical cutoff split analysis revealed that degree of *neg-self* distinguished between clinical and non-clinical level BDI scores ($r_{pb} = .37, p < .001$), though degree of *lnk/pos* and *pos/self* did not ($r_{pb} = -.10, p > .10$ and $r_{pb} = -.11, p > .10$, respectively). It is evident, then, that linking to positive concepts better predicts above versus below median BDI scores, whereas linking from the self to negative concepts better predicts clinical level versus non-clinical level BDI scores.

Table 3

BDI Point Biserial Correlations with Specific Network Categories

network categories	BDI dichotomies ($n = 92$)	
	median (7) split	cutoff (10) split
lnk/pos	*-.276	-.103
pos-self	*-.266	-.112
neg-self	.138	**-.373

* $p \leq .01$; ** $p \leq .001$ Interaction Between PSC and BDI Scores

Our second hypothesis was that high BDI scores interact with high PSC scores to predict an exaggerated degree of linking on negative concepts, between negative concepts, and from negative concepts to the self, and that low BDI scores interact with high PSC scores to predict an exaggerated degree of linking on positive concepts, between positive concepts, and from positive concepts to the self. PSC scores were not correlated with BDI scores ($r = .136$, $p > .10$), and the fact that both measures were correlated with some manner of linking to negative concepts was encouraging for our assumption that those with high Private Self-Consciousness who are depressed are more in touch with any depressive self-schema and therefore have exaggerated expression of that self-schema, (expressed by increased linking to negative concepts), on the pathfinder task. To examine possible interaction effects, we created a PSC x BDI interaction term. However, when the interaction term was placed in a regression with the PSC and BDI main effect terms, it did not significantly predict additional variance for any of the Pathfinder variables. Thus, the PSC x BDI interaction hypothesis was rejected.

Average Network Representations

Finally, for purposes of illustration, we utilized the function of the pathfinder program that computes the average network for any group of participants. We computed the average PF net for both tales of the distribution of BDI scores, that is, for the 24 participants with BDI scores above 10 and for the 21 participants with scores below three. The two average networks are presented in Figures one and two. They provide a clear illustration of the increased degree of linking between positive concepts and the self and the decreased degree of linking between negative concepts and the self for participants whose BDI scores were in the left hand tale of the distribution compared to those who scored in the right hand tale.

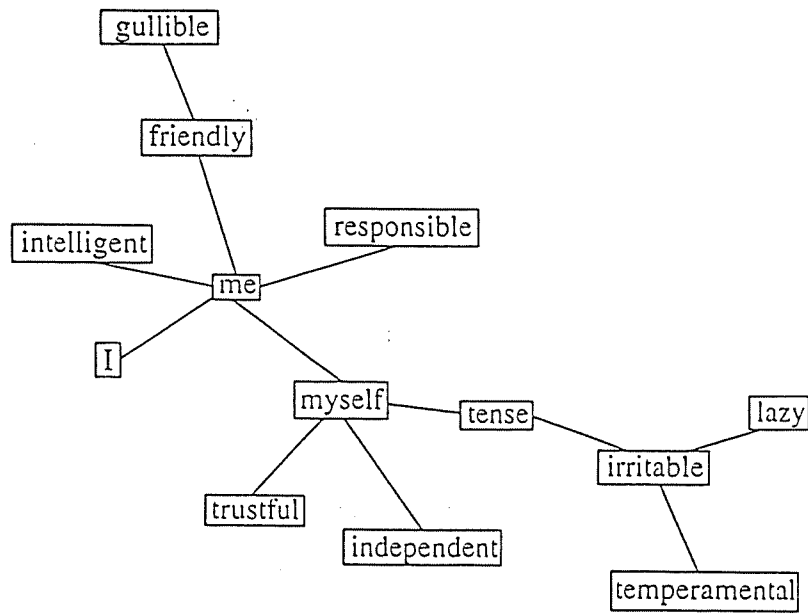


Figure 1. Average PF net for participants scoring at or below 10 on the BDI

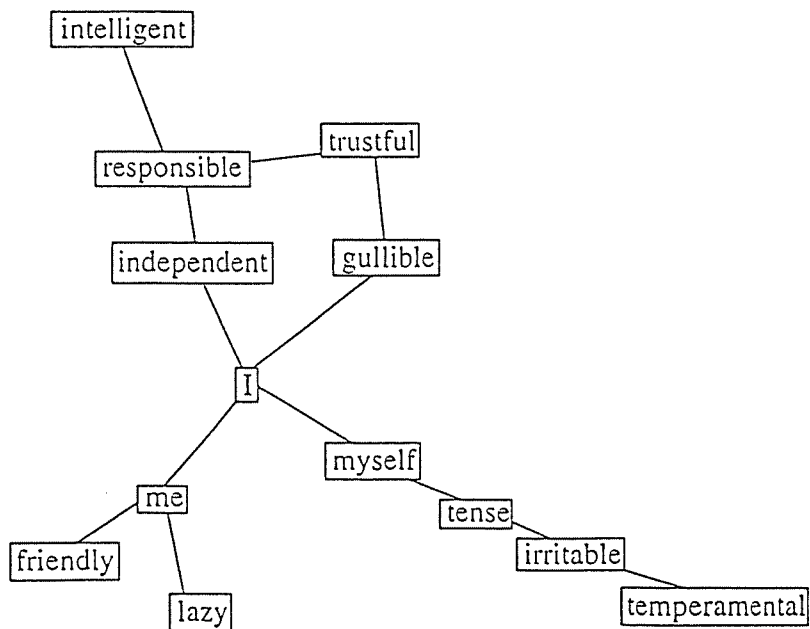


Figure 2. Average PF net for participants scoring above 10 on the BDI.

Self-Complexity Correlations

The next part of the study involved testing our final hypothesis that the patterns of linking within PF nets is related to self-complexity, the tendency to sort trait-adjectives into distinct clusters, and therefore shed light on the association between depression and self-complexity. First, in order to assure that self-complexity did in fact have a relationship with the BDI, and to determine if it had any relationship with the PSC scale, we correlated the BDI and the PSC scale with negative self-complexity (-SC) and positive self-complexity (+SC). A Pearson correlation analysis ($n = 92$) revealed that BDI scores had a significant relationship with -SC ($r = .33$, $p < .005$), and that +SC and -SC were correlated with each other ($r = .37$, $p < .001$). When controlling for +SC, BDI was still correlated with -SC ($r = .32$, $p < .005$). The PSC scale was not correlated with -SC or +SC ($r = .09$, $p > .10$ and $r = .06$, $p > .50$, respectively), and the BDI was not significantly correlated with +SC ($r = .08$, $p > .10$).

The pathfinder variables were then correlated with -SC and +SC (see Table 4). However, none of them were significantly related to +SC or -SC. Self-complexity also did not have any significant relationships with individual concepts. So patterns of linking in participants' PF nets, even though correlated with BDI scores, did not account for the correlation between negative self-complexity and BDI scores.

Finally, the BDI was re-coded as a dichotomous variable and correlated with self-complexity in the same way that it had been re-coded and correlated with the pathfinder variables. -SC significantly distinguished BDI scores at or above the median from those scores below the median ($r_{pb} = .28$, $p < .01$), and it also distinguished clinical level BDI scores from non-clinical level scores ($r_{pb} = .27$, $p < .01$). The best explanation for -SC's significant correlation with both

types of BDI dichotomies is that -SC, rather than tapping into a dichotomy between depressive and non-depressive scores, taps into a continuum from lower to higher BDI scores.

Table 4

Self-Complexity Correlations with Network Categories

	network categories ($n = 92$)						
self-complexity	lnk/neg	lnk/pos	neg-self	pos-self	neg-neg	pos-pos	pos-neg
-SC	-.089	-.128	.100	-.159	-.150	.038	-.128
+SC	-.135	-.138	-.037	-.036	-.154	-.102	-.099

In sum, part of the pattern hypothesized to indicate “depressive expertise” was observed. There was an over-all correlation between the BDI and links between negative concepts and the self, and the PSC scale was correlated with a complicated pattern of linking to negative concepts that consisted of them being linked partially to the self and partially to positive concepts. In particular, PSC scores were associated with an increased number of links on the word “tense”. However, BDI and PSC scores being correlated with linking between negative traits, the other part of the pattern hypothesized to indicate “depressive expertise”, was not observed. Nor was the BDI x PSC interaction observed that was supposed to evidence that those high in PSC tend to express their cognitive structures more explicitly than those with low PSC.

BDI scores were correlated positively with -SC, but, contrary to hypotheses, there was no correlation between any pattern of linking in PF nets and participants’ self-complexity scores. Thus, the two general types of variables (the pathfinder variables and self-complexity) appear to be independently related to depression.

Regarding the point biserial correlation analyses, lnk/pos and pos-self only distinguished

above median from below median BDI scores, and neg-self only distinguished those above from those below the BDI cutoff of 10 for mild depression. In contrast to both of these trends, -SC was correlated significantly with both BDI dichotomies. Considering that -SC and neg-self were correlated over-all with BDI scores and also distinguished clinical level scores from non-clinical level scores, -SC from the card sorting task and neg-self from the pathfinder task are most likely to be meaningful correlates of clinical depression. -SC and neg-self descriptive statistics for participants scoring above 10 and participants scoring at or below 10 on the BDI are presented in Table 5.

Table 5

Neg-Self and -SC for Depressed and Non-depressed Groups

	BDI \leq 10			BDI >10		
	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
neg-self	2.35	2.58	68	4.96	3.56	24
-SC	1.66	0.85	68	2.19	0.76	24

Discussion

Cognitive Networks

The outcome of the pathfinder task lends support to network theories of emotion. The fact that aspects of pathfinder networks (PF nets) were associated with BDI scores evidences the notion that the relationship among concepts within a person's cognition is associated with the mood the person is experiencing. A decrease in the degree of linking in PF nets to positive concepts and a decrease in linking between positive concepts and the self predicted above median BDI scores, but not necessarily clinical level scores. The degree of linking between the self and negative concepts could not distinguish BDI scores below the median from BDI cores at or above the median, but it could distinguish clinical level from non-clinical level BDI scores. These patterns of correlation suggest that representations of cognitive networks tap into mood quantity/severity as well as mood quality. The network pattern associated with the PSC scale also evidences the link between cognitive networks and affect. Those with higher PSC, who presumably were more focused on their subjective states, had more links to negatively valenced adjectives, specifically to the term "tense", than individuals with lower PSC.

The degree of linking to positive concepts and the degree of linking between positive concepts and the self differentiated above median from below median BDI scores, and the degree of linking to negative concepts was associated with the measure of Private Self-Consciousness, or the tendency to focus on one's subjective state. None of these variables, however, could distinguish clinical from non-clinical level BDI scores. Such results imply that an increased degree of cognitive linking to negative concepts, a decreased degree of linking to positive concepts, and a decreased degree of linking between positive concepts and the self are indicative of moods that,

though they may be more aversive than usual, are distinct from clinical depression. For it is specifically the attachment of negative concepts to the self (neg-self) that seems to indicate clinical levels of depression. Why neg-self indicates clinical versus non-clinical level BDI scores but is not associated with a continuum running from the lowest BDI scores to the highest BDI scores will be discussed later.

Self-Complexity

The over-all correlation analysis of the BDI and the series of correlation analyses of the BDI as a dichotomous variable imply that, unlike the pathfinder variables, negative self-complexity (-SC) is continuously associated with the BDI. That is, -SC's being related to a continuum moving from lower to higher BDI scores is the simplest explanation for the fact that -SC has an over-all correlation with BDI scores, and can distinguish between above and below median BDI scores as well as between clinical and non-clinical level BDI scores. It seems apparent, then, that depression increases in proportion to increases in -SC, or the number of distinct clusters of negative traits that a person uses in his or her self-description. Implications of -SC's possibly tapping into a depressive continuum in light of neg-self's tapping into a depressive versus non-depressive dichotomy will be addressed later in the discussion.

Comparing Self-Complexity and Cognitive Networks

Neg-self and -SC were the two most meaningful correlates of the BDI index in that they were the only two variables that were correlated over-all with the BDI and could distinguish clinical from non-clinical level BDI scores. However, neg-self and -SC made independent contributions to predicting the variance in BDI scores. An analysis of the individual tasks from which the two variables are derived may shed light on the different aspects of depression of which

the variables are a function.

-SC measures the tendency to sort negative traits according to aspects of one's life such that there are more negative traits which do not continuously co-occur with other negative traits. It was naively assumed that those with a tendency towards introspection, as measured by the PSC scale, would be more familiar with analyzing and critiquing themselves, thus leading to better and more distinct memory for negative life aspects, and therefore higher -SC. PSC, however, was not correlated with -SC. Of course, the tendency to self-focus in general need not be associated with the tendency to ruminate specifically on negative life aspects. We suspect that the PSC scale is more a measure of a person's tendency to analyze their subjective feelings and desires than of their tendency to analyze particular life aspects or particular behavior in certain situations. In fact, for the present study it would have been prudent to compare public self-consciousness, the tendency to think about oneself as a social object (Fenigstein, et al., 1975), to -SC, or simply to find or develop an inventory measuring the tendency to ruminate specifically upon negative life aspects.

The finely distinguished negative self-schema implied by high -SC, a measure of the degree to which distinct clusters of negative traits are present in the self-concept, is the sign of someone who has operated for a long time within a negative mode of cognition, or who has much experience analyzing negative aspects of his or her life. So, considering that -SC increases in proportion to increases in BDI scores, then perhaps -SC is associated not so much with a depressive state getting switched on and off as with a depression which exists on a continuum and which can increase gradually over time. Increased -SC may be the function of a person's having an amplified attention to negative aspects of his or her life. The increased amount of negative

information that would be solidified into memory due to such an amplified attention might simply carry with it an increased experience of negative affect, thus causing BDI scores to increase in proportion to a person's remembrance of negative life aspects.

The pathfinder task's premise is that the predominance in cognition of certain concepts is a function of the degree to which they are linked to other concepts, and thus we can arrive at an indication of a person's cognitive network by analyzing how he or she views certain concepts in relation to other concepts. Insofar as the traits selected for the present study are emotionally charged, then high PSC individuals being more in touch with their negative emotions than are low PSC individuals is evidenced by an increased degree of linking for high PSC individuals to the negative traits generally, and specifically to the concept "tense". Perhaps, then, those with the negatively biased networks that were indicative of depression (i.e. more links between the self and negative concepts) were so conscious of (i.e. overwhelmed by) a certain emotion that it affected their cognitive networks, specifically the part involved in defining the self-concept. The increase in neg-self which was indicative of clinical level BDI scores might perhaps result from a vulnerability that, when activated, triggers an overwhelmingly depressive mood that affects a person's cognitive network. This potential explanation is even more attractive considering that the pattern of increased neg-self appeared not to be associated with a depressive continuum, as it did not distinguish above from below median BDI scores, but appeared to be associated with a dichotomy between clinical and non-clinical level BDI scores. That is, the activation of a latent vulnerability triggering a depressive mood that affects a person's cognitive network is consistent with the observation that neg-self appeared to be associated with either the presence or the absence of a depressive state, but not a depressive continuum.

Future research might involve investigating how Linville's card sorting task and the pathfinder task predict depression over time, thus substantiating the relationship of -SC and cognitive network biases to the duration and stability of depression. Given our interpretations, -SC would predict a depression that increases and decreases gradually, whereas the presence of more links of negative concepts to the self would predict a depression that gets turned on and off. Woolfolk, et al. (1995) did find -SC to predict less recovery from depression over time, but there is no research of the same kind with the pathfinder method.

Future explorations of the causes underlying the variables' relationships to depression are obviously encouraged. For example, because neg-self seems associated with an either/or type of depression, and a drop in self-esteem is a likely candidate for activating a depressive episode, the possibility that unusually high neg-self, and the type of depression with which it is associated, are caused by a sudden drop in self-esteem would be worthy of investigation. -SC, on the other hand, appears to be associated with a depressive continuum, and unusually high -SC is indicative of someone who has operated for a long time from within a negative mode of cognition rather than someone who merely has a vulnerability for shifting into a negative mode of cognition. One might speculate, therefore, that unusually high -SC, and the type of depression with which it is associated, result from a motivation to maintain consistently low levels of self-esteem. Such an interpretation would be consistent with Linville's theorizing that high self-complexity is associated with decreased affective extremity, (i.e. greater mood consistency; Linville, 1987), as well as with data suggestive of a positive association between depression and self-complexity (Gara et al., 1993; Woolfolk et al., 1995).

In sum, we suspect that -SC, a measure of the degree of compartmentalization or

distinction between negative descriptions of the self, is associated with a different subcategory of depression than is neg-self, which is a measure of the degree of linking in cognition between negative concepts and the self. Based on our analysis of its pattern of correlation with BDI scores, -SC is associated with a subcategory of depression which is graded. That is, from the lowest degree of -SC to the highest, any increase in -SC will correspond to a proportional increase in depression. The pattern of correlation between neg-self and BDI scores implies that neg-self is associated with a depressive dichotomy, meaning that, for this subcategory of depression, there is no gradation or continuum between a depressive and a non-depressive state.

References

- Anderson, J. R. (1976). Language, memory, and thought. Hillsdale, NJ: Lawrence Erlbaum.
- Beck, A. T. (1967). Depression. New York, NY: Harper and Row.
- Beck, A. T., Steer, R. A., and Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical Psychology Review, 8, 77-100.
- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., and Erbaugh, J. (1961). An inventory for measuring depression. Archives of General Psychiatry, 4, 561-571.
- Bower, G. H. (1981). Mood and memory. American Psychologist, 36, 129-148.
- Bushman, B. J. (1996). Individual differences in the extent and development of aggressive cognitive-associative networks. Personality and Social Psychology Bulletin, 22, 811-819.
- Campbell, J. D., Chew, B., and Scratchley, L. S. (1991). Cognitive and emotional reactions to daily events: The effects of self-esteem and self-complexity. Journal of Personality, 59, 473-505.
- Carr, S. J., Teasdale, J. D., and Broadbent, D. (1991). Effects of induced elated and depressed mood on self-focused attention. British Journal of Clinical Psychology, 31, 273-275.
- Carver, C. S., and Glass, D. C. (1976). The Self-Consciousness Scale: A discriminant validity study. Journal of Personality Assessment, 40, 169-172.
- Chi, T. H., and Koeske, R. D. (1983). Network representation of a child's dinosaur knowledge. Developmental Psychology, 19, 29-39.
- Cooke, N. M. and Schvaneveldt, R. W. (1988). Effects of computer programming

experience on network representations of abstract programming concepts. International Journal of Man-Machine Studies, 29, 407-427.

Dixon, T. M., and Baumeister, R. F. (1991). Escaping the self: The moderating effect of self-complexity. Personality and Social Psychology Bulletin, 17, 363-368.

Fenigstein, A., Scheier, M. F., and Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. Journal of Consulting and Clinical Psychology, 43, 522-527.

Gammack, J. G. (1990). Expert conceptual structure: The stability of Pathfinder representations. In R. W. Schvaneveldt (Ed.). Pathfinder associative networks: Studies in knowledge organization, (pp. 213-226). Norwood, NJ: Ablex Publishing Corporation.

Gara, M. A., Woolfolk, R. L., Cohen, B. D., Goldston, R. B., Allen, L. A., and Novalany, J. (1993). Perception of self and other in major depression. Journal of Abnormal Psychology, 102, 93-100.

Gibbons, F. X. (1987). Mild depression and self-disclosure intimacy: Self and others' perceptions. Cognitive Therapy and Research, 11, 361-380.

Gotlib, I. H., and McCann, C. D. (1984). Construct accessibility and depression: An examination of cognitive and affective factors. Journal of Personality and Social Psychology, 47, 427-439.

Hedlund, S., and Rude, S. S. (1995). Evidence of latent depressive schemas in formerly depressed individuals. Journal of Abnormal Psychology, 104, 517-525.

Ingram, R. E. (1990). Self-focused attention in clinical disorders: Review and a conceptual model. Psychological Bulletin, 107, 156-176.

Ingram, R. E., Lumry, A. E., Cruet, D., and Sieber, W. (1987). Attentional processes in depressive disorders. Cognitive Therapy and Research, 11, 351-360.

Ingram, R. E., and Smith, T. W. (1984). Depression and internal versus external focus of attention. Cognitive Therapy and Research, 8, 139-152.

Jordan, A., and Cole, D. A. (1996). Relation of depressive symptoms to the structure of self-knowledge in childhood. Journal of Abnormal Psychology, 105, 530-540.

Krantz, S., and Hammen C. L. (1979). Assessment of cognitive bias in depression. Journal of Abnormal Psychology, 88, 611-619.

Larsen, R. J., and Cowan, G. S. (1988). Internal focus of attention and depression: A study of daily experience. Motivation and Emotion, 12, 237-249.

Linville, P. W. (1987). Self-complexity as a cognitive buffer against stress-related illness and depression. Journal of Personality and Social Psychology, 52, 663-676.

Lyubomirsky, S., and Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. Journal of Personality and Social Psychology, 69, 176-190.

Malle, B. F., and Horowitz, M. (1995). The puzzle of negative self-views: An explanation using the schema concept. Journal of Personality and Social Psychology, 68, 470-484.

Musson, R. F., and Alloy, L. B. (1988). Depression and self-directed attention. In L. B. Alloy (Ed.), Cognitive processes in depression. (pp. 193-222). New York, NY: Guilford.

Nolen-Hoeksema, S., and Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. Journal of Personality and Social Psychology, 61, 115-121.

Nolen-Hoeksema, S., Morrow, J., and Fredrickson, B. L. (1993). Response styles and the duration of episodes of depressed mood. Journal of Abnormal Psychology, 102, 20-28.

Peabody, D. (1987). Selecting representative trait adjectives. Journal of Personality and Social Psychology, 52, 59-71.

Pyszczynski, T., and Greenberg, J. (1987). Self-regulatory perseveration and the depressive self-focusing style: A self-awareness theory of reactive depression. Psychological Bulletin, 102, 122-138.

Pyszczynski, T., Greenberg, J., and Holt, K. (1987). Depression, self-focused attention, and expectancies for positive and negative future life events for self and other. Journal of Personality and Social Psychology, 52, 994-1001.

Pyszczynski, T., Hamilton, J. C., Herring, F. H., and Greenberg, J. (1989). Depression, self-focused attention, and the negative memory bias. Journal of Personality and Social Psychology, 57, 351-357.

Salovey, P. (1992). Mood-induced self-focused attention. Journal of Personality and Social Psychology, 62, 699-707.

Salovey, P., and Rodin, J. (1985). Cognitions about the self: Connecting feeling states to social behavior. Review of Personality and Social Psychology, 6, 143-166.

Schvaneveldt, R. W. (1985). Measuring the structure of expertise. International Journal of Man-Machine Studies, 23, 699-728.

Schvaneveldt, R. W. (1990). Pathfinder associative networks: Studies in knowledge organization. Norwood, NJ: Ablex.

Segal, Z. V. (1988). Appraisal of the self-schema construct in cognitive models of

depression. Psychological Bulletin, 103, 147-162.

Segal, Z. V., Hood, J. E., Shaw, B. F., and Higgins, E. T. (1988). A structural analysis of the self-schema construct in major depression. Cognitive Therapy and Research, 12, 471-485.

Segal, Z. V., Truchon, C., Horowitz, L. M., Gemar, M., and Guirguis, M. (1995). A priming methodology for studying self-representation in major depressive disorder. Journal of Abnormal Psychology, 104, 205-213.

Segal, Z. V., and Vella, D. D. (1990). Self-schema in major depression: Replication and extension of a priming methodology. Cognitive Therapy and Research, 14, 161-176.

Smith, T. W., and Greenberg, J. (1981). Depression and self-focused attention. Motivation and Emotion, 5, 323-331.

Smith, T. W., Ingram, R. E., and Roth, D. L. (1985). Self-focused attention and depression: Self-evaluation, affect, and life stress. Motivation and Emotion, 9, 381-189.

Stroop, J. R. (1935). Studies of interference in serial verbal reactions. Journal of Experimental Psychology, 18, 643-662.

Tanaka-Matsumi, J., and Kameoka, V. A. (1986). Reliabilities and concurrent validities of popular self-report measures of depression, anxiety, and social desirability. Journal of Consulting and Clinical Psychology, 54, 328-333.

Turner, R. G., Carver, C. S., Scheier, M. F., and Ickes, W. (1978). Correlates of self-consciousness. Journal of Personality Assessment, 42, 285-289.

Wood, J. V., Saltzberg, J. A., and Goldsamt, L. A. (1990). Does affect induce self-focused attention. Journal of Personality and Social Psychology, 58, 899-908.

Wood, J. V., Saltzberg, J. A., Neale, J. M. Stone, A. A., and Rachmiel, T. B. (1990).

Self-focused attention, coping responses, and distressed mood in everyday life. Journal of Personality and Social Psychology, 58, 1027-1036.

Woolfolk, R. L., Novalany, J., Polino, M., Gara, M. A., and Allen, L. A. (1995). Self-complexity, self-evaluation, and depression: An examination of form and content within the self-schema. Journal of Personality and Social Psychology, 68, 1108-1120.

Wyman, B. G., and Randel, J. M. (1988). The relation of knowledge organization to performance of a complex cognitive task. Applied Cognitive Psychology, 12, 251-264.

Appendix A

Positively Valenced Adjectives for the Pathfinder Task

independent

intelligent

friendly

trustful

responsible

Negatively Valenced Adjectives for the Pathfinder Task

lazy

gullible

tense

temperamental

irritable

First Person Pronouns for the Pathfinder Task

I

me

myself

Positively Valenced Adjectives for the Card Sort Task

independent

intelligent

friendly

trustful

responsible

polite

good-natured

sociable

honest

kind

unselfish

hardworking

self-confident

moral

cautious

Negatively Valenced Adjectives for the Card Sort Task

lazy

gullible

tense

temperamental

irritable

timid

disorganized

impulsive

secretive

silent

careless

quarrelsome

submissive

conforming

unsociable

Appendix B

Directions for the Pathfinder Task

We are interested in your first, most immediate impression of the extent to which certain concepts have similar meanings. Your task in this experiment will involve judging the relatedness of pairs of concepts. In making these types of judgements, there are several ways to think about the items being judged. For instance, two concepts might be related because they share common features or because they frequently occur together. While this kind of detailed analysis is possible, our concern is to obtain your own initial impression of "overall relatedness." Therefore, please base your ratings on your own first impression of relatedness.

You will be presented with 78 pairs of concepts, one pair at a time. Each pair of concepts will be presented on the screen along with a "relatedness" scale. You are to indicate your judgement of relatedness for each pair by pressing a key on the keyboard. If you feel that the concepts are not related at all, press "1" on the keyboard. If you feel the concepts are highly related, then pressing an "8" or a "9" is appropriate. You can think of these numbers as points along a "relatedness" scale, with higher numbers representing greater relatedness. Upon responding, a bar marker will move directly above the number you have pressed. If you wish to change your response, simply press another number. When you are satisfied with the rating you have given, press the SPACE BAR to enter your response. Following this, the next pair of items to be rated will be displayed.

Several pairs of concepts will be shown. If at any time you feel like taking a break, tell the experimenter you are doing so and leave the machine running.

Now the complete list of concepts will be presented. This is done to give you a general

idea of the scope of the concepts you will be rating.

Directions for the Card Sort Task

In this study we are interested in how you describe yourself. In front of you are 30 cards and two recording sheets. I'll let you look through the cards when I finish giving the instructions. Each card contains the name of a trait or characteristic. Your task is to form groups of traits that go together, where each group of traits describes an aspect of you or your life. You may sort the traits into groups on any meaningful basis--but remember to think about yourself while doing this. Each group of traits might represent a different aspect of yourself. Form as many or as few groups as you desire. Continue forming groups until you feel that you have formed the important ones. I realize that this task could be endless, but we want only what you feel is meaningful to you. When you feel that you are straining to form more groups, it is probably a good time to stop.

Each group may contain as few or as many traits as you wish. You do not have to use every trait, only those that you feel are descriptive of you. Also, each trait may be used in more than one group; so you may keep reusing traits as many times as you like. For example, you may find that you want to use the trait "relaxed" in several groups. If you wish to use a trait in more than one group, you may use one of these blank cards on the desk. Simply write the trait on a blank card and then proceed to use it as you would the other cards.

The sheet with the columns is your recording sheet. Use the recording sheet to indicate which traits you have put together. Each column will correspond to one of your groups. In each column, place the names of the traits that form a group. A natural way to perform this task is to form one or several groups and record them, then mix up the cards and see if there are other

groups that you wish to form and then record them. Repeat this procedure until you feel that you have formed the groups that are important to you. Remember to use the blank cards if you wish to use the same trait in more than one group. You have an extra recording sheet if you need it. The order in which you record the groups is not important, nor is the order of the traits within a group. We are only interested in which traits you put together. It is not necessary to label the groups unless you wish to. Do not put your name on the recording sheet. Your responses are strictly confidential. So be as honest as you can. As you are doing the task, I'd like you to keep a few things in mind. Remember that you are describing yourself in this task, not people in general. You do not have to use all of the traits, and you may reuse a trait in several groups. Take as much time as you like on the task. You may look over the traits and let me know if you need a clarification of the meaning of any traits. When you are finished sorting and recording the traits, please let me know.

Appendix C

Beck Depression Inventory

Below are 21 groups of statements. For each group, make a check mark next to the statement that seems to fit you the best at the present time.

1. I do not feel sad.
I feel blue or sad.
I am blue or sad all the time and I can't snap out of it.
I am so sad or unhappy that it is very painful.
I am so sad or unhappy that I can't stand it.
2. I am not particularly pessimistic or discouraged about the future.
I feel discouraged about the future.
I feel I have nothing to look forward to.
I feel that I won't ever get over my troubles.
I feel that the future is hopeless and that things won't improve.
3. I do not feel like a failure.
I feel I have failed more than the average person.
I feel I have accomplished very little that is worthwhile or that means anything.
As I look back on my life all I can see is a lot of failures
I feel I am a complete failure as a person (parent, husband, wife).
4. I am not particularly dissatisfied.
I feel bored most of the time.
I don't enjoy things the way I used to.
I don't get satisfaction out of anything anymore.
I am dissatisfied with everything.
5. I don't feel particularly guilty.
I feel bad or unworthy a good part of the time.
I feel quite guilty.
I feel bad or unworthy practically all the time now.
I feel as though I am very bad or worthless.
6. I don't feel I am being punished.
I have a feeling that something bad may happen to me.
I feel I am being punished or will be punished.
I feel I deserve to be punished.
I want to be punished.

7. I don't feel disappointed in myself.
I am disappointed in myself.
I don't like myself.
I am disgusted with myself.
I hate myself.
8. I don't feel I am any worse than anybody else.
I am very critical of myself for my weaknesses or mistakes.
I blame myself for everything that goes wrong.
I feel I have many bad faults.
9. I don't have any thoughts of harming myself.
I have thoughts of harming myself but I would not carry them out.
I feel I would be better off dead.
I have definite plans about committing suicide.
I feel my family would be better off if I were dead.
I would kill myself if I could.
10. I don't cry any more than usual.
I cry more now than I used to.
I cry all the time now. I can't stop it.
I used to be able to cry but now I can't cry at all even though I want to.
11. I am no more irritated now than I ever am.
I get annoyed or irritated more easily than I used to.
I feel irritated all the time.
I don't get irritated at all at the things that used to irritate me.
12. I have not lost interest in other people.
I am less interested in other people now than I used to be.
I have lost most of my interest in other people and have little feeling for them.
I have lost all my interest in other people and don't care about them at all.
13. I make decisions about as well as ever.
I am less sure of myself now and try to put off making decisions.
I can't make decisions any more without help.
I can't make any decisions at all anymore.
14. I don't feel I look any worse than I used to.
I am worried that I am looking old or unattractive.
I feel that there are permanent changes in my appearance and they make me look unattractive.
I feel that I am ugly or repulsive looking.

15. I can work about as well as before.
It takes extra effort to get started at doing something.
I don't work as well as I used to.
I have to push myself very hard to do anything.
I can't do any work at all.
16. I can sleep as well as usual.
I wake up more tired in the morning than I used to.
I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
I wake up early every day and can't get more than 5 hours sleep.
17. I don't get any more tired than usual.
I get tired more easily than I used to.
I get tired from doing anything.
I get too tired to do anything.
18. My appetite is no worse than usual.
My appetite is not as good as it used to be.
My appetite is much worse now.
I have no appetite at all any more.
19. I haven't lost much weight, if any, lately.
I have lost more than 5 pounds.
I have lost more than 10 pounds.
I have lost more than 15 pounds.
20. I am no more concerned about my health than usual.
I am concerned about aches and pains or upset stomach or constipation or other unpleasant feelings in my body.
I am so concerned with how I feel or what I feel that it's hard to think of much else.
I am completely absorbed in what I feel.
21. I have not noticed any recent change in my interest in sex.
I am less interested in sex than I used to be.
I am much less interested in sex now.
I have lost interest in sex completely.

Private Self-Consciousness Scale

Please indicate how characteristic each of the following statements is of you by circling one of the numbers from 0 (extremely uncharacteristic) to 4 (extremely characteristic).

1. I'm always trying to figure myself out.
0 1 2 3 4
2. Generally, I'm not very aware of myself.
0 1 2 3 4
3. I reflect about myself a lot.
0 1 2 3 4
4. I'm often the subject of my own fantasies.
0 1 2 3 4
5. I never scrutinize myself.
0 1 2 3 4
6. I'm generally attentive to my inner feelings.
0 1 2 3 4
7. I'm constantly examining my motives.
0 1 2 3 4
8. I sometimes have the feeling that I'm off somewhere watching myself.
0 1 2 3 4
9. I'm alert to changes in my mood.
0 1 2 3 4
10. I'm aware of the way my mind works when I work through a problem.
0 1 2 3 4