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Contextual Influences on Self-Schema Activation: Facilitated Processing of Positive Self-Referent Information by Individuals in an Ego-Involving Situation

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ABSTRACT

Contextual Influences on Self-Schema Activation: Facilitated Processing of Positive Self-Referent Information by Individuals in an Ego-Involving Situation

Andrew Howell

Research has revealed affect as an important determinant of self-schema activation. For example, a failure experience which induces a negative affect state will also lead to negative self-schema activation, as reflected in enhanced processing of negative self-relevant information. Our hypothesis was that positive self-schema activation may occur independent of positive affect for individuals placed in an ego-involving situation. Such activation may reflect processes of self-verification aimed at maintaining a stable, positive, self-image. Subjects were randomly assigned to either a test-anticipation or a no-test group. A manipulation check and an assessment of subjects' affect followed. Next, all subjects completed the depth-of-processing task, rating 48 adjectives according to phonemic, semantic, or self-referent cue questions. Incidental recall of the trait adjectives was then assessed. Next, subjects made favorability and self-descriptiveness ratings for each adjective, allowing the determination of an idiographic self-reference value for each word. Results indicated that test-anticipation subjects appraised their situation as more difficult

relative to control subjects, while they did not differ from controls on affect. Analyses on subjects' recall indicated that test-anticipation subjects recalled words of more positive self-reference than did no-test subjects. This difference was found only at the self-referent processing level, suggesting that test-anticipation subjects had active a positive self-schema. A significant effect for level of processing was also obtained, as in earlier studies. This pattern of findings is discussed in terms of the influence of ego-involvement on social information processing, and possible mediators of this effect such as the operation of dominant response patterns resulting from motivational arousal.

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This thesis is dedicated to my parents, who have always been and will continue to be a source of great inspiration for me.

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People possess a wealth of information about themselves. Each can report many past behaviors and general dispositions. In addition, people have many feelings and attitudes about themselves. Self-knowledge is acquired through experience, and the diversity of peoples' experience ensures the uniqueness of their self-conceptions.

The self-concept has been defined by Rosenberg (1979) as "the totality of the individual's thoughts and feelings having reference to himself as an object" (p. 7). An important aspect of the self-concept, as defined by Rosenberg (1979), is that it is available to conscious awareness. The self-concept is amenable to description and thus can be described verbally to others. Individual differences in self-concept and the implications of those differences for the processing of personal information have been studied by a number of investigators. For example, McGuire and colleagues (e.g., McGuire & McGuire, 1982) have investigated the contents of the self-concept by obtaining responses to the query, "Tell us about yourself." This open-ended probe has been shown to elicit responses representing the range and relative prominence of different categories of content in the self-concept. A different technique used to assess individual differences in content of the self-concept was employed by Markus and colleagues

(Markus, 1977; Markus, Crane, Berstein, & Siladi, 1982). These investigators acquired importance and self-descriptiveness ratings for a number of attributes from their subjects, such as independence. Extreme self-descriptiveness ratings on personally important dimensions identify critical differences in self-concept in the approach adopted by Markus and colleagues.

Certain aspects of the self may not be available to self-report. The self is that body of information a person has accumulated which has personal relevance. The self also includes mental processes such as selective attention, encoding, and retrieval. Such processes are not explicitly identified in self-concept. Markus and colleagues (Markus, 1977; Markus et al., 1982) have assessed such processes as an additional means of examining the self. Specifically, they have shown that information consistent with an individual's self-concept is judged as to its descriptiveness more quickly and retrieved from memory more efficiently than is information inconsistent with the self-concept.

The work of Markus and colleagues has indicated that there exists a congruency between self-report of one's self-concept and cognitive processes relevant to the self. Such a relationship supports the notion that both the content of the self as articulated in self-concept and the self as cognitive process require attention by investigators if the

self is to be fully understood. Thus, a comprehensive understanding of an individual's self would comprise an analysis of that information which is part of the individual's self-concept and of the mechanisms by which previously stored self-relevant information can influence the processing of incoming self-relevant material.

Theorists have acknowledged these multiple functions of the self by viewing the self as a cognitive structure that organizes, modifies, and integrates the processing of self-relevant information (Epstein, 1973; Kelly, 1955; Sarbin, 1968). Most recently, the concept of schema as derived from cognitive psychology has been used to merge the duality of the self as content and process into a single concept (Greenwald & Pratkanis, 1984). The term schema has been used by cognitive psychologists to refer to a collection of structured knowledge (see Alba & Hasher, 1983, for a review). According to Neisser (1976), schemata are the central cognitive units in the human information processing system. Schemata are viewed as memory structures of conceptually related elements that guide the processing of information. They are active in the categorization, interpretation, and comprehension of social events and behavior. Finally, schemata simplify the processing of otherwise overwhelming information, and can "fill in the gaps" when such information is lacking. In other words, a schema, as an organization and integration of past

knowledge, will be used in interpreting input.

Self-schemata are "cognitive generalizations about the self, derived from past experience, that organize and guide the processing of self-related information" (Markus, 1977 p.63). The self-schema is thus an organization of self-relevant information that determines how environmental information is processed, and which stored information is retrieved. The schema concept captures both the content of the self as well as those properties of the self involved in cognitive process. The notion of self-schema subsumes that of the self-concept in that the content of the self-schema is identified by means of verbal report of the self-concept. The self-schema also incorporates the self as cognitive process in terms of its function in the selective processing of self-relevant information.

The schema concept applied to the self makes the connection between self and memory explicit, although this connection is not new. The self has often been tied to memory (Greenwald, 1980; Greenwald & Pratkanis, 1984; Markus, 1980). The self-schema is a memory structure. Self-schemata can be thought of in terms of semantic network theories of long-term memory (e.g., Anderson, 1976). In such a representation, the structure and organization of schemata pertaining to the self are delineated in terms of cognitive networks of associated concepts and descriptive propositions. Previous self-related information and events

that have been encoded into memory are represented by these propositions. The self-schema is one of many schemata that an individual's memorial system may contain. An individual may also have, for example, a mother-schema or a best friend-schema. Each schema contains information about its subject matter, and each schema processes information relative to its domain.

The methodology employed in studying self-schema activity and measurement are derived from this view of the self-schema as a memory structure. Behavioral indicants of self-schema operation are memory for personally relevant information, and reaction time for making self-descriptiveness ratings. There is enhanced retrieval when the information processed is consistent with the content of the self-schema. The enhanced accessibility of retrieved information is thought to reflect the degree to which that information was encoded. Information is most readily retrieved when the elaboration it received at the encoding stage is rich (i.e., when the incoming information is fully incorporated into the pre-existing knowledge structure). Reaction time also provides an indication of self-schema content and activity in that decisions concerning the self-descriptiveness of information can be made faster when the material is similar to that represented in the self-schema.

The Depth-of-Processing Methodology

An experimental method for exploring the effects of

self-schemata on information processing is based on the depth-of-processing task. This methodology was originally developed by Craik and colleagues as a means to study the structure and function of human memory (Cermak & Craik, 1978; Craik & Lockhart, 1972; Craik & Tulving, 1975). The task, also termed the levels-of-processing or degree-of-elaboration task, is based on the supposition that information processing may take place on a variety of levels. Each level represents a cognitive structure or network composed of a number of associations or pathways linking different information units. In accord with semantic network theory, when information is processed at one of these levels, it is linked with the previously stored associations at that level. The strength of a memory trace is considered to be a function of the degree of semantic involvement. The extensiveness of the pre-existing knowledge structure with which the incoming material is integrated determines semantic involvement (Craik & Lockhart, 1972). Those cognitive levels having more elaborate pathways allow incoming information to be subjected to more extensive analysis. Subsequently, such information is more likely to be encoded in memory, and is thus more available for later recall.

In the laboratory, processing levels are examined by providing subjects with different orienting task questions for different stimulus words. The orienting questions may

involve decisions regarding the structural, phonemic, or semantic characteristics of the words. Incidental recall for the stimulus words provides a measure of depth of processing, with increased recall indicating deeper processing. For example, a subject might be asked to respond to the question "Rhymes with softball?" for the word "friendly". The adjective "friendly" would be encoded at the phonemic level of processing. As such encoding is thought to represent a relatively shallow level of processing, subsequent incidental recall of this adjective would indicate poor retention relative to words which receive more elaborate processing. Another subject might be asked to respond to the question "Means the same as amiable?" for the same word. For this second subject, the adjective "friendly" would be encoded at the relatively deep semantic level of processing, one which requires the meaning of the word to be determined before a response can be made. Facilitated recall of this adjective by the second subject would reflect this deeper level of processing.

The depth-of-processing paradigm was adopted and extended by Rogers, Kuiper, and Kirker (1977) to study the nature and function of an individual's self-schema. These authors constructed a novel orienting task question, one that would implicate the self in the processing of information. Thus, in addition to phonemic and semantic cue questions, subjects process adjectives with reference to the

question "Describes you?" If the self is represented in memory in terms of an elaborate set of associations based on prior experience and knowledge, one may expect, in comparison to words processed with respect to phonemic or semantic questions, enhanced recall for words processed with respect to the self-referent cue question. The advantage of self-referent processing over phonemic or semantic processing would emerge because of the deeper and more complex self-structure that it accesses.

The depth-of-processing model of memorial structure and function has been criticized on conceptual grounds. For example, Baddeley (1978) has argued that the model has not proved theoretically productive as an approach to the study of memory. Others have indicated alternative theoretical explanations for the depth-of-processing phenomenom. Tyler, Hertel, McCallum, and Ellis (1979), for example, posit that cognitive effort might account for the differential recall frequency associated with different levels of processing. Perhaps most importantly, no index of levels of processing independent of its very effect in memory has been forwarded. Thus, the only objective criterion for the depth-of-processing is its effect upon memory (Baddeley, 1978; Eysenck, 1978).

Notwithstanding its limitations as a model of memory and possible alternative explanations for the obtained effect, the depth-of-processing paradigm has been widely

employed as a method of assessing the relationship between encoding and retrieval of information. Furthermore, such use of the paradigm has not been restricted to cognitive psychology, the field by which the model was first introduced. The paradigm has been readily adopted by investigators working in both social and clinical psychology as a means of examining particular types of cognitive processing activity. It has proven successful in identifying differences in cognitive processing that reflect individual differences, situational manipulations, and manipulations of affective state. The depth-of-processing methodology allows the experimenter to control for duration of subjects' exposure to stimulus materials, permitting the evaluation of recall which is not confounded by differential durations of study. The assessment of recall as an index of the content of a subject's self-structure circumvents motivational biases involved in self-presentation. Concerns with social desirability and self-esteem motives bias self-report.

In the initial investigation designed to assess the mnemonic effects of self-referent processing, Rogers et al. (1977) examined recall of trait adjectives under different conditions of study. Subjects listened to an auditorily presented list of 48 trait adjectives. For each adjective, subjects indicated either whether the word was presented in small or capital letters (structural), whether

the word rhymed with another word (phonemic), whether the word meant the same as or opposite of another word (semantic), or whether the word described them (self-referent). Subjects responded either yes or no to each question. Incidental recall of the trait adjectives was then assessed. The results indicated that those adjectives which were processed with reference to the self were better recalled than those words processed with regard to their structural, phonemic, or semantic properties. Furthermore, of words which received self-referent processing, self-descriptive words were recalled to a greater degree than were words not considered self-descriptive. Thus, although the self-schema facilitated recall for both descriptive and nondescriptive self-referent words, those words that were consistent with the subjects' self-schema were associated with superior recall. It appears that self-referent judgments are mediated by a structure of knowledge about the self that contains the summarized and integrated past information about the self.

Subsequent research by Rogers and associates (Kuiper & Rogers, 1979; Rogers, Kuiper, & Rogers, 1979; Rogers, Rogers, & Kuiper, 1979) was conducted in order to further explicate the role of the self in social information processing. For example, evidence that the self is a cognitive structure was obtained by Rogers, Kuiper, and Rogers (1979), who showed that the time required to make

paired-comparison judgments of degree of self-reference of two adjectives is a linear function of the degree to which the two adjectives had previously received similar ratings of self-reference. Adjective pairs which had previously received similar self-referent ratings required longer decision latencies when the subject was asked to judge which of the two adjectives was most self-descriptive.

In a series of studies, Kuiper and Rogers (1979) sought further evidence for viewing the self as a cognitive schema. Subjects made both self-referent (describes you?) and other-referent (e.g., describes experimenter?) ratings of trait adjectives, in order to test the hypothesis that the superior recall for the self-reference task was due to the involvement of a person as the referent and that any rating task involving a person would produce superior recall. The findings indicated that self-referent processing facilitates recall of personal adjectives to a greater degree than does other-referent processing, but only if an unknown or relatively unknown other is used. Differences between self- and other-referent processing were not apparent when a familiar other was employed. Presumably, a cognitive structure of the familiar other existed which facilitated encoding and subsequent recall. Similar results have been obtained by Keenan and Baillet (1980) and by Bower and Gilligan (1979).

Two further lines of evidence which support the

involvement of a highly efficient and organized self-schema in self-referent processing resulted from the investigation by Kuiper and Rogers (1979). First, self-referent words which had received a "yes" rating were recalled to a greater degree than those which had received a "no" rating, suggesting that information which is congruent with an activated schema will be associated with superior recall (Rogers et al., 1977). Second, self-referent decisions were faster than other-referent decisions, and those self-referent words which were processed quickly were most likely to be recalled. Presumably, self-referent words which did describe the subject and were processed relatively quickly, were congruent with the individual's cognitive representation of the self. In contrast, words processed with regard to an unfamiliar other which had longer processing times were more likely to be recalled. Only other-referent words which received longer processing times were assimilated into memory, a finding which is consistent with the notion that elaborated material is more readily retrieved from memory. Elaboration appears to be a major determinant of memory in the absence of a well-articulated schema.

The work of Markus and colleagues (Markus, 1977, 1980; Markus & Sentis, 1982) has also revealed that self-relevant information may be represented in memory by means of a schema. Markus (1977) has studied individuals schematic or

aschematic on a particular personality dimension (e.g., dependence vs independence). Schematics are those individuals who habitually categorize and code their behavior along such a dimension, while aschematics lack a well-structured body of knowledge relevant to the domain. The degree to which schematic individuals evidence facilitated processing of schema-relevant material as compared to people who are aschematic for that dimension is taken to indicate the presence of a well-differentiated memory representation of such material. More specifically, Markus (1977) has asserted that if a person has a well-developed self-schema in a particular domain, evidence for such a structure would reveal that (1) memory should be best for information relevant to the particular domain, and (2) information about the self in the particular domain should be processed relatively quickly. The work by Rogers and colleagues reported above (Rogers et al., 1977; Kuiper & Rogers, 1979) as well as work by Markus (1977) has addressed the first of these assertions.

In a series of studies addressing the second of these two criteria, Markus (1977) classified subjects on the basis of self-reported descriptiveness and importance ratings into those who were schematic for a particular trait and those who were aschematic with respect to that personality dimension. The performance of these two groups was then compared on a number of cognitive tasks. For example,

people with schemata about independence and dependence were compared with individuals who were aschematic with respect to this domain on a task requiring subjects to respond "me" or "not-me" to a set of adjectives, some of which were associated with independence, and some of which were associated with dependence. The responses and response latencies were recorded for each subject. Schematics endorsed more schema-consistent adjectives and required less time to make their judgments than they required for those adjectives that were inconsistent with their schemata. Aschematics did not evidence a systematic difference in processing time for adjectives relevant and those not relevant to the domain in question.

Similar results to those of Markus (1977) have been obtained when individuals schematic and aschematic for creativity, body weight, and gender are compared on cognitive tasks requiring the processing of schema-relevant material (Markus, 1977; Markus & Sentis, 1982). The response latency results obtained by Markus and colleagues clearly corroborate results obtained by Kuiper and Rogers (1979).

Research by Rogers and colleagues and by Markus and colleagues has served to delineate the function of the self as a schema in processing personal information. The approaches adopted by these two researchers differ in that Rogers designates the self as a superordinate schema, while

Markus argues for self-schemata in several focal domains. For Markus, the union of these domain-specific self-schemata defines the self (Markus et al., 1982). These differing conceptualizations of the self-structure are not necessarily incompatible. In the studies conducted by Markus, one could assume that a significant and prominent aspect of individuals' superordinate self-schema was being assessed. Similarly, Rogers' findings, although indicating a general advantage for information processed with respect to the self, may be a result of the activation of numerous self-schemata, each of which facilitates recall for particular self-descriptive words.

Content of the Self-Schema

Although Markus has investigated the content of domain-specific self-schemata, the composition of individuals' superordinate self-schemata has received little empirical attention. In particular, the degree to which individuals' superordinate self-schemata are primarily positive or negative in content has not been of focal interest. For example, although Rogers et al. (1977) indicated superior recall for self-referent rated words, the positivity or negativity of these words was not determined. For the most part, evidence for the favorability of individuals' self-schemata has accrued indirectly, through clinical studies addressing the processing of self-relevant information by depressed individuals as compared to

nondepressed individuals. Such studies have generally revealed that nondepressed individuals' self-schemata are primarily comprised of positive content, while self-schemata of depressed individuals are primarily comprised of negative content. The content of both nondepressed and depressed individuals' self-schemata has thus been found to be consistent with their chronic affective states. However, the initial investigation of nondepressed and depressed individuals' self-schema processing failed to demonstrate such a parallel relationship between affect and self-schema content. Davis (1979) employed the depth-of-processing paradigm to investigate self-reference in clinically depressed patients. Depressed and nondepressed subjects made self-referent and semantic decisions for 48 adjectives of nondepressed content (e.g., extravagant, awful, successful). Enhanced recall for self-referent decisions was found only for nondepressed individuals, prompting Davis (1979) to conclude that a self-schema is not an active agent in the encoding of personal information in depression.

Derry and Kuiper (1981) reinterpreted the findings of Davis (1979) in terms of the content-specificity of the self-schemata of depressives. These authors posited that the appropriate test for schema-based processing in depressives would be a test that used adjectives with depressed content. Evidence for a depressive self-schema resulted when clinically depressed patients, nondepressed

psychiatric patients, and normal nondepressed individuals rated 60 previously normed depressed and nondepressed personal adjectives for structural, semantic, and self-referent attributes. On subsequent incidental recall, depressed individuals showed recall superiority only for depressed adjectives receiving a self-reference yes rating. The two nondepressed groups, on the other hand, each revealed higher self-referent yes recall for nondepressed content, when compared with depressives. The self-schema, it would appear, facilitates recall only when the content of the processed information is consistent with that already comprising the self-structure. This is consistent with the results obtained by Rogers et al. (1977).

A subsequent study revealed that mildly depressed individuals fail to recall a preponderance of either negative or positive self-referent adjectives (Kuiper & McDonald, 1982). The processing of self-referent material by mildly depressed college students was compared with that of nondepressed subjects. On the incidental recall following the depth-of-processing task, the mildly depressed group was found to recall both positive and negative words which received a self-referent yes rating. The self-schema for mildly depressed individuals thus appeared to be in a state of transition, suggesting that such a psychological state may be marked by a period of uncertainty or ambiguity surrounding one's view of self. Normal subjects, in

contrast, evidenced the operation of a positive self-schema. Once again, the words recalled by normal individuals tended to be self-descriptive, favorable characteristics suggesting that nondepressed individuals have active a positive self-schema when personally relevant information is being processed.

These results have been replicated in a recent study by Hammen, Myklowitz, and Dyck (1986). The performance of two samples of nondepressed and depressed individuals were compared on a number of cognitive and behavioral tasks, including the depth-of-processing task. The latter included the list of 60 depressed and nondepressed content adjectives derived by Derry and Kuiper (1981). For half of the words, subjects made self-referent decisions, while the remaining words received structural (Is this word long?) decisions. At the end of the task, participants were unexpectedly asked to recall and write down as many of the words as they could remember during a 4-minute period. Results virtually identical to those outlined above for nondepressed subjects were obtained. Specifically, for nondepressed subjects in both samples, recall of positive self-reference words was significantly greater than of negative trait words. The nondepressed subjects showed a robust content-specific recall effect for positive content. Conversely, mildly depressed individuals evidenced a mixed-content self-schema, recalling equal numbers of positive and negative

self-descriptive words, while moderately depressed indiyiduals displayed a negative-content self-schema, but only for one of the samples. The second sample of moderately depressed individuals did not recall primarily negative self-descriptive words, recalling instead equal numbers of positive and negative self-descriptors.

Context, Affect, and Self-Schema Activation

The content-specific self-schema model of Kuiper and colleagues (Derry & Kuiper, 1981; Kuiper & MacDonald, 1982) assumes that normal individuals have developed a positive self-schema which facilitates the processing of congruent information. An alternative interpretation which emphasizes contextual influence rather than intra-individual stability has been advanced by Ingram and colleagues (Ingram, 1984; Ingram, Smith, & Brehm, 1983) as well as by Nasby (1986). Ingram and Nasby have suggested that nondepressed individuals articulate and elaborate a variety of context-specific self-schemata. Thus, an individual may, in a particularly happy situation, have active a "self-when-elated" memorial structure. Alternatively, in a sombre occasion, the same individual may have manifest a representation of the self characterised as "self-when-depressed." A similar idea has been forwarded by Kihlstrom (1981) who stated that "it is possible that the self is not a monolithic cognitive structure but that there are many 'selves', and thus many self-schemata,

corresponding to different roles or social situations, represented in the cognitive system" (p. 136).

Evidence for the notion of context-specific self-schemata was obtained by manipulating success and failure feedback on a bogus social perception task which preceded a depth-of-processing task (Ingram et al., 1983). Following the receipt of either success or failure feedback, nondepressed and depressed subjects completed an affect questionnaire, and then made structural, phonemic, semantic, and self-referent ratings for 48 trait adjectives. An incidental recall of the adjectives followed. Finally, in order to assess the idiographic self-reference value of each of the trait words used in the depth-of-processing task, subjects rated each word as to its favorability and to its descriptiveness in regard to self. The favorability and descriptiveness ratings for each word were multiplied, resulting in a subject-specific self-reference value for each word. Results indicated that nondepressed subjects who received success feedback experienced more positive affect and recalled adjectives of more positive self-reference than did those who were given failure feedback. The difference in recall was evident only for those words which had been processed with respect to the self. Nondepressed subjects thus appeared to have active a positive self-schema subsequent to the receipt of success feedback. Neither success nor failure feedback influenced the subsequent

encoding and recall of adjectives which were not processed with relevance to the self. Thus, differential recall of positive and negative words as a function of feedback was specific to that information that had received self-referent processing, and did not generalize to processing that did not involve the self. Finally, depressed individuals failed to show differential recall at the self-referent level as a function of the previous feedback manipulation. Presumably, the negative self-schema that was active for depressed individuals was so entrenched as to be unresponsive to the feedback manipulation. The persistent negativity of recall in the depression group is also suggested by the fact that the feedback manipulation did not influence the affect of these subjects. The results obtained by Ingram et al. (1983) pertaining to the effects of manipulation of success and failure on information processing by nondepressed individuals have been replicated by Hull, Van Treuren, Ashford, Propsom, and Andrus (1986).

A subsequent study by Ingram (1984) sought to investigate the effects of affect and performance feedback favorability on the cognitive processing of personally relevant information. Subjects, who were all nondepressed, were first exposed to a manipulation of success or failure. A third group received no such information. The affective state of subjects in each group was then assessed. Next, subjects were given either favorable or unfavorable bogus

personality feedback for which incidental recall was assessed. Results indicated that subjects who first received a failure experience and then unfavorable feedback recalled more of the feedback than subjects in the success and control groups who had received the same unfavorable feedback. A failure experience, which was associated with an increase in negative affect, appeared to prime individuals to most effectively process congruent negative, self-relevant feedback. However, no comparable differences were found for subjects exposed to the success manipulation, a finding which likely results from the marginal increase in positive affect for subjects receiving the success manipulation over those in the control group.

Ingram and colleagues (Ingram, 1984; Ingram et al., 1983) posit that manipulations of success and failure influence affect which, in turn, influence self-schema activation. While this may be the case, these studies do not allow a distinction to be drawn between the influence of affect and the influence of contexts which are associated with certain affective states. Cognitive priming, for example, could be responsible for the congruency obtained between manipulation of success and failure and activation of self-schemata. Cognitive priming is the process whereby cognitions elicited by an emotion-producing event semantically cue other items in memory that are associated with them. Such processes may not require affect as a

mediating variable.

Manipulations of success and failure are not necessary for affect-related self-schema activation to occur. A recent study investigated the effect of positive, negative, and neutral affect induction on the encoding of depressed and nondepressed content adjectives by nondepressed individuals (Nasby, 1986). Subjects were first induced into a positive, negative, or neutral affective state by means of the Velten (1968) technique. While experiencing the induced affective states, subjects made self-referent (Does the following adjective describe you?) and other-referent (Does the following adjective describe your mother?) ratings for the 60 depressed and nondepressed content adjectives employed by Derry and Kuiper (1981). A filler task ensued in order to allow encoding affect to wane. Finally, while all subjects were experiencing a neutral affective state, incidental recall for the 60 adjectives was assessed. The results indicated that subjects who experienced positive affect during encoding recalled more nondepressed content personal adjectives that described the self than subjects who experienced neutral affect. Conversely, subjects who experienced negative affect during encoding recalled more depressed content personal adjectives that described the self than subjects who experienced neutral affect. These results remained when differential endorsement rates of depressed and nondepressed content adjectives by positive,

negative, and neutral affect subjects were statistically controlled by means of covariance analyses. Finally, subjects' affect at encoding had no effect upon subsequent recall of other-referent words. Thus, selective encoding of information about the other, whether congruent or incongruent with current affect, did not occur. Once again, selective encoding only emerged from recall of trait adjectives that had required self-reference. In sum, affective states appear to selectively bias the encoding of self-referent information in that happy affect is associated with positive self-schema activation whereas sad affect is associated with negative self-schema activation. A study by Bradley and Mathews (1983) yielded virtually identical results to those of Nasby (1986) when subjects experiencing naturally occurring depressed and non-depressed mood states recalled words which had previously been rated for self- or other-reference.

Finally, previous research not employing the depth-of-processing methodology has documented that nondepressed individuals will selectively attend more to positive or to negative self-relevant information depending upon the current situation. The receipt of success feedback following an intelligence test led subjects to selectively attend more to positive personal information than did subjects who received negative or no feedback (Mischel, Ebbesen, & Zeiss, 1973). It may be that such attentional

selectivity was mediated by a positive self-structure that was associated with the receipt of success feedback. Subjects who received failure feedback selectively attended to more negative personal information than did success feedback subjects, but did not differ from no-feedback subjects.

As previously indicated, research suggests that there often exists a consistent relation between current affective state or situational context and self-schema activation. The consistency between affective state and self-schema activation is supported by research reviewed above with respect to the content-specificity of nondepressed and depressed individuals' self-schemata. Nondepressed individuals' self-schemata are primarily positive in content, while depressed individuals' self-schemata are primarily negative in content. Research conducted by investigators who posit that individuals have numerous context-specific self-schemata has also documented such congruency effects.

Thus, particular situations and affective states may selectively activate positive or negative networks of concepts about the self. Nondepressed and depressed individuals may differ not with respect to the content of their respective self-schemata, but rather with respect to which of a number of context-specific schemata is active to process congruent self-relevant information. Note that this

notion of multiple self-schemata is similar to that of Markus (1977) in that no superordinate knowledge structure is posited to represent all self-relevant information. The conception of Markus (1977) argues for multiple content-specific self-schemata, each of which organizes information about a personally important domain. Ingram and Nasby, on the other hand, argue for multiple context-specific self-schemata, each of which organizes information pertinent to a self which is tied to a particular situation or affective state. Perhaps particular content-specific self-schemata may be associated with particular affective states and particular social contexts. For example, an individual's self-schema for independence may be closely related with feelings of competence and may also be associated with situations in which independence plays an important role.

Situational Context and Activation of Self-Schemata

Manipulation of affective state, either through the receipt of success or failure feedback (e.g., Ingram, 1984; Ingram et al., 1983), or through a direct induction of affect (e.g., Nasby, 1986), is an important determinant of self-schema activation. In addition, the particular self-schema which is activated is that which is congruent with the affective state. For example, to the extent that an individual is experiencing positive affect, there seems to be concomitant activation of a positive self-schema.

Conversely, a dysphoric individual would likely have active a negative self-schema. Self-schemata incongruent with current affect are likely represented in memory for this person, but his or her current affective state precludes the activation of such structures. Thus, the relationship between current affect and self-schema activation has been shown to be one of congruency. The situation influences which cognitive structure is active and past research has indicated that a self-structure congruent with the situation is that which is made active.

It has been suggested that context may be a major factor in activating one self-schema rather than another (Fiske & Taylor, 1984). Few studies have investigated the influence of contextual factors on schema activation outside of the affective realm, however. The provision of a positive or negative experience has been shown to effect subsequent self-schema activation in nondepressed individuals. Beyond this context, however, differential activation of positive or negative aspects of the self has not been explored. In particular, little work has accrued which demonstrates that different self-schemata can be activated as a function of differing environmental situations. This lacuna is surprising given the likelihood that individuals selectively activate and attend to portions of their self-knowledge according to their current environment. As Showers and Cantor (1985) have stated,

"Perhaps the ultimate example of the responsiveness of an individual to situations is the flexibility with which he attends to, alters, or ignores aspects of his self-concept. To some degree, an individual constructs his current self-concept from the features of his total self-knowledge that are most useful or informative in the present situation" (p. 293).

The degree to which certain aspects of one's self-structure are attended to rather than others may be particularly evident in those situations which might be called ego-involving. The term ego-involving has been used to describe the role of self in behavior directed towards important goals (Greenwald, 1982). Used here in a descriptive fashion, ego-involving refers to tasks which provide a basis for self-evaluation. The degree to which a given task is self-evaluative will vary according to the degree of importance the task holds for a given individual. For example, students usually place great importance on their intellectual achievement. Students will likely become highly ego-involved when engaged in any task that reflects upon their scholastic merit. An examination would therefore be ego-involving for such individuals, as would a social exchange which revolved around academic achievement. Another determinant of ego-involvement may be the extent to which a given activity pertains to an individual's social role. An examination may be a salient situation for most

college students that would readily elicit ego-involvement, since successful performance on such a task would be an event central to their student social role.

Because they implicate the self, ego-involving situations may serve to activate self-schemata. Just as affect and the receipt of success or failure feedback can activate self-schemata, certain aspects of our self-structure may be made active according to the degree to which one is engaged in an ego-involving task. This latter situation may result in self-schema activation which is not consistent with the immediate environment, but rather is consistent with the individual's self-view. For example, an individual who values greatly his or her independence is likely to have active a self-representation which is consistent with this self-conception in situations where independence is focal, even if the situation is in conflict with this view. Likewise, an examination situation may, for college students, serve to elicit a self-schema which is congruent with their self-view of being good students. In this latter situation, an activated positive self-schema may be incongruent with some reactions to the environmental context, such as feelings of threat, but would be consistent with most students' conceptions of themselves as intelligent, competent individuals.

Ego-involving situations may elicit self-knowledge which is congruent with an individual's self-view as a means

of self-verification. Self-verification processes are those which allow people to sustain their self-conceptions (Swann, 1983). Research demonstrates that people are motivated to maintain consistent conceptions of themselves. Self-verification processes operate primarily when a person's self-concept is threatened, and this is likely to occur in ego-involving situations. For example, a person who perceives him- or herself as unfriendly will tend to self-verify this conception when they are perceived by others as friendly (Swann & Read, 1981b). This may involve the presentation of behavior which is consistent with the self-view of unfriendliness, even though such behavior is perhaps inconsistent with that suggested by the environmental context. The process of self-verification has also been shown to involve attentional and memorial factors. Swann and Read (1981a), for example, have demonstrated that individuals seek social feedback that confirms their self-conceptions and that they regard self-confirmatory information as highly informative and diagnostic. A second series of studies by these same authors has indicated that individuals will present themselves to others in ways which elicit self-confirmatory feedback, that they will attend more closely to information which they expect will confirm their self-conceptions, and that they demonstrate enhanced recall for self-confirmatory statements (Swann & Read, 1981b).

By enabling people to create a social reality that verifies and confirms their self-conceptions, self-verification processes ensure the predictability and consistency of the social environment (Swann, 1983). When environmental information is predictable and consistent with peoples' expectations, their self-concepts remain stable. The process of self-verification thus involves a selectivity by which certain self-relevant information is attended to, while other self-relevant information, such as that which is more damaging to the self-concept, is ignored or reacted against. There has been some suggestion that self-schema activation may serve such self-verifying purposes (Nisbett & Ross, 1980). Individuals may mobilize positive self-schemata in order to maintain prediction and consistency with regard to their environments.

To summarize, self-schema activation may be a process of self-verification. Such action will ensure that an individual's self-view is preserved. Tasks which provide a basis for self-evaluation may be most likely to elicit self-verification processes. Individuals may, in the face of an ego-involving task, selectively process positive self-relevant information as a result of self-schema activation.

The current study examined self-schema activation as a function of involvement in a self-evaluative task. Subjects anticipating a difficult test of creative intelligence and those not anticipating such a test were compared on an index

of information processing, the depth-of-processing task. It was hypothesized that subjects anticipating a difficult test would recall words of higher positive self-reference value than would subjects not anticipating such a task. However, these differences on recall should only accrue for those words processed with reference to the self. The processing of information that does not involve the self should not be affected by the differing situations. The depth-of-processing task allows the examination of differences between experimental conditions on information processed with respect to the self and that which is not. Positive self-referent recall by test anticipation subjects would indicate that such subjects had actived a positive self-schema with which to process self-relevant information. Such self-schema activity is considered to serve the goal of self-verification.

An elaborate cover story was employed so that subjects would not be aware of the true nature of the study. Specifically, it was essential that subjects not be aware that the true purpose of the study was to investigate how test anticipation would influence information processing. To this effect, the depth-of-processing task was presented as a task peripheral to the main purpose of the study. The study was purportedly investigating the relationship between right brain hemisphere activation and performance on a test of creative intelligence, while the depth-of-processing task

would serve to reduce any activation of the left brain hemisphere. Some subjects completed the depth-of-processing task while awaiting a difficult test of creative intelligence while others completed the depth-of-processing task in the absence of test anticipation.

In order to determine differences in self-schema content between test anticipation subjects and those not anticipating a test, subjects rated how favorable and self-descriptive were each of the adjectives used in the depth-of-processing task. These favorability and descriptiveness ratings ensured that the idiographic positivity or negativity of words recalled could be determined. People differ in their conceptions of what constitutes a positive self-image. The extent to which a given trait is valued will vary across individuals. Obtaining idiographic ratings of the adjectives also leads to the expectation that, for all subjects, the favorability and descriptiveness value of words should influence the recall of self-referent words more than words which do not receive self-referent processing. Of recalled words, those processed with respect to the self should have higher positive ratings on these dimensions than those which received processing at other levels.

Several additional measures were also obtained. A manipulation check was devised in order to ensure that subjects anticipating the intelligence test construed their

situation as more difficult and involving than those not expecting to complete such a task. Various emotional states were also assessed, some presumed to be related to subjects' current situation and some considered stable. Subjects' current affect was assessed to determine if affect differed as a function of experimental condition and if subjects' affect was related to their activated self-schemata. Previous studies have indicated that the test anticipation situation employed in the present study does not influence subjects' affective state relative to subjects not anticipating the test (Conway & Howell, 1987). Thus, differences in recall were expected as a function of ego-involvement in the absence of any differences in affect. A measure of chronic test anxiety was obta[illegible] from each subject in order to assess whether test [illegible]iety may relate to self-schema activation. Previous research on such a relation has been equivocal (Mueller & Thompson, 1984). Finally, subjects' chronic depression levels were assessed. This latter measure could thus be taken into account when subjects' recall was assessed, as research indicates that depression can influence the recall of self-relevant information (e.g., Derry & Kuiper, 1981).

Method

Subjects

Subjects were 119 Champlain College students, 71 female and 46 male[1], who volunteered to participate in the study during class time. Three of the sessions involved students enrolled in a research methods course, while the fourth session involved students in a course of abnormal psychology. Ages ranged from 17 to 21 years, with a mean of 17.3.

Procedure

Overview. The study purportedly concerned the relationship between brain activation and creativity. Half of the subjects would be required to take a test of creative intelligence, while the remaining participants would not be required to take such a test. Following a random assignment of subjects to either the take-test or the no-test control condition, subjects were asked to sign, if they chose, an informed consent form. This form was subsequently collected and kept separate from all other materials. A more detailed description of the test of creative intelligence was then read to all subjects, after which subjects completed the appraisal questionnaire, followed by the mood assessment. Next, all subjects completed the depth-of-processing task. The experimenter read the task instructions to the subjects,

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[1]Two subjects neglected to indicate their gender on the experimental materials.

who followed along with their own copies. Following the task, incidental recall of words heard during the task was assessed. Subjects were then debriefed. Following the debriefing, four additional measures were obtained from each subject. Subjects made favorability and descriptiveness ratings for each of the adjectives used in the depth-of-processing task. All subjects then completed the Achievement Anxiety Test (Alpert & Haber, 1960), as well as the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Following the completion of these post-debriefing measures, subjects were thanked for their participation and dismissed.

Materials

Introduction. Subjects each received a copy of the introduction; the experimenter then read this introduction aloud. The introduction presented a cover story which stated that the study involved examining the relationship between brain activation and creativity (see Appendix A). The purpose of the study, according to the cover story, was to examine how activation of the right brain hemisphere prior to performing a creative task would affect peoples' task performance. The cover story presented the study as a 2 (activation vs no activation) X 2 (creative task vs no creative task) experimental design. Some participants would undergo right hemisphere activation and some would not. Music of "complex and interwoven themes" was to be employed

in order to induce right hemisphere activation in the activation conditions. In addition, some participants in each of the activation and no-activation conditions engaged in a creative task and some did not. The inclusion of each of these four experimental conditions presumably allowed comparisons to be made between all groups of participants on some questionnaires that all participants would complete. To provide a context for the depth-of-processing task, one final aspect of the cover story informed subjects that only the direct effects of music on creativity were of interest in the present study. Thus, to control for indirect music effects (e.g., engaging in visual imagery related to the music), participants in the activation conditions concentrated on something else while they listened to music. That is, in the music condition, while people listened to music they also worked on a task that didn't involve activation of the right brain hemisphere. "Standard judgment tasks" (actually the depth-of-processing task) were being used to control for indirect music effects. To keep conditions the same except for the music and test taking, the cover story informed subjects that all participants in the study were to complete the standard judgment tasks. Finally, the "standard judgment tasks" were described. These tasks involved the rating of adjectives according to different questions. Presumably, such tasks had been shown to increase activity in the left brain hemisphere, with

virtually no effects on the right hemisphere.

The cover story continued by informing subjects that their class had been assigned to the no-music conditions, whereas other classes listened to music in order to activate their right brain hemispheres. Next, subjects were informed that some of them would complete a test of creative intelligence. It was explained that half of the participants would be randomly assigned to take the test, while the other half would not take the test but would simply fill out some other questionnaires.

A fictitious test of creative intelligence, the Cross Analogies Test (CAT), was then introduced. Subjects were told that the test was becoming very widely used in the last few years. Presumably, personnel staff, professional schools, governmental agencies, and private organizations had begun to make use of the test. The reason for its wide use was a general agreement that creative intelligence is one of the most important components of intellectual ability. Finally, subjects were told that performance feedback would be given to those who had been assigned to take the test immediately following the testing period. Each subject would be given their own score and the average score of people in the class.

The final page of the introduction handout also included the random assignment to either the take-test or the no-test condition. Thus, half of the introductions

included the statement, "You have been assigned to write the CAT test. You will be writing the test", while the other half stated, "You have been assigned to not write the CAT test. You will not be writing the test."

Subjects then completed an informed consent form prior to being read a detailed description of the CAT test. This consent form was immediately collected by the experimenter in order to ensure the anonymity and confidentiality of all subsequent responses.

Description of the CAT test. The test of creative intelligence was described to all subjects, in order to make the study more true to life for those people taking the test, "since people generally know what a test is about before taking it," and "to keep things constant for everybody" (see Appendix B).

The Cross Analogies Test was described as a written test involving the identification of analogies. Each item of the test consisted of a pair of related words. The pair is followed by five other pairs of words. To answer each item, a person selects the pair out of the five possible answers that best represents a relation similar to the one expressed in the original pair. It was emphasized that the test was not a measure of vocabulary, but rather that it measured creative abilities; that is, the ability to conceptualize abstract relationships.

Subjects were then provided with what were presumably

the first two items of the test. Each subject received a copy of the two items. These questions were provided as examples, and people would skip them when taking the test. Both examples were read aloud by the experimenter, who also indicated the correct answer to each analogy. The two example items were extremely difficult. The experimenter then collected the example sheet from each subject.

Dependent Measures

Manipulation check. A questionnaire was devised for the purpose of assessing subjects' thoughts and feelings regarding the tasks they were anticipating in the present study (see Appendix C). This questionnaire thus served as a manipulation check of whether subjects expecting to take a test construed their situation as difficult and involving, relative to control subjects. To minimize suspicion as to the true nature of the study, the questionnaire was presented as a "general questionnaire that is always used in a new study in the Psychology Department"; it did not make explicit reference to any of the features of the current study, and it was of a different print color than all other questionnaires. Subjects were asked how difficult they construed their tasks, how important it was for them to do well, how enjoyable they thought their tasks would be, how enjoyable they found participating in studies where they might learn about themselves, the degree to which the study related to issues of importance to them, and whether or not

they thought they might learn something about themselves by participating in the study. For each of these dimensions, subjects indicated their response on a 9-point scale with endpoints labelled 1 (not at all) and 9 (very much).

Current affect. An affect questionnaire was devised to assess subjects' present affective state (see Appendix D). Adjectives were drawn from the Profile of Mood States, developed by McNair, Lorr, and Droppleman (1971). Items were selected to represent various affective states previously identified by factor analysis (Lorr, McNair, & Fisher, 1982). In the selection, a preference was given to those adjectives which also appear in the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970) or in the Multiple Affect Adjective Checklist (Zuckerman, Lubin, Vogel, & Valerius, 1964). In total, 32 adjectives were culled, 18 of positive valence (e.g., pleased, refreshed, efficient) and 14 of negative valence (e.g., anxious, angry, helpless). For each adjective, subjects indicated the degree to which the word described their present feelings by circling a number on a 9-point scale, with endpoints labelled 1 (not at all) and 9 (extremely).

Depth-of-processing task and incidental recall. This task required all subjects to judge 48 adjectives, presented at 5 sec. intervals on audio-tape (see Appendix E). The recording was four minutes long. Adjectives were selected from lists employed by Ingram et al. (1983) and Rogers et

al. (1977). Of the 48 adjectives, 27 were of positive valence and 21 were of negative valence. The number of positive words used is in line with previous research employing this task with non-depressive populations (e.g., Rogers et al., 1977). Examples of positive adjectives included are brilliant, capable, and friendly. Examples of negative adjectives included are unkind, forgetful, and worried.

Subjects each received a copy of the task instructions. Each subject was also provided with an adjective rating sheet comprised of 48 rating questions. There was one question for each adjective on the recording. Questions were numbered to match the numbers that preceded each word on the recording.

The experimenter read the instructions aloud. The task requirements were first outlined. Next, the four types of rating questions were described: Rhymes with _____? (corresponding to the phonemic level of processing), Means the same as [opposite of] _____? (semantic level), Describes you? (self-referent level), and You like to feel? This latter rating question requires subjects to make <u>affective</u> self-referent judgments; that is, judgments pertaining to subjects' desired affective state.

Following the description of the rating questions, instructions for the depth-of-processing task continued as follows: "Listen for the number on the tape, read the

question with the same number, and then answer the question for the word you hear. One word will be read every five seconds. This should allow you plenty of time to answer each question. Please do not skip any words."

Four lists of rating questions were constructed such that each adjective was rated with equal frequency on each of the four rating questions across subjects. Thus, by presenting each rating question once every four rating questions, each adjective was rated under each rating question across lists.

To ensure an equal number of yes and no responses on the phonemic and semantic tasks, the four lists were counterbalanced for yes and no responses. Therefore, a total of eight rating task lists were required in order for each word to be rated by each question across subjects with equal frequency as well as to ensure that yes and no responses were counterbalanced for the phonemic and semantic questions. The self-referent tasks could not be counterbalanced for yes and no responses as such responses are based on subjects' self-descriptions.

Following the 48 rating trials, subjects were given three minutes to "write down on the back of your question sheet all the words you can remember from the tape recording." Spelling and the order in which recalled words were written were specifically de-emphasized. In order to control for primacy and recency effects in recall, the

initial and final four adjectives heard on the tape were excluded from all subsequent scoring.

Because the affective self-referent rating question is novel, and because it is not clear what differential predictions could be made to distinguish this level of processing with the (Describes you?) self-referent question, the Like to feel? question was not included in the analyses reported here. Thus, three processing levels (phonemic, semantic, and self-referent) which have been used extensively in previous depth-of-processing research were of interest in the present study.

Favorability and descriptiveness ratings. Subjects were asked to rate each of the 48 adjectives that were presented in the depth-of-processing task along two dimensions (see Appendix F). Subjects first judged each word according to its favorability on a 7-point scale with endpoints labelled -3 (very negative) and 3 (very positive). Next, subjects judged each word according to how accurately it described them on a 7-point scale with endpoints labelled -3 (very untrue) and 3 (very true).

Achievement Anxiety Test (AAT). This measure includes two scales: a facilitating anxiety scale of nine items and a debilitating anxiety scale of ten items (see Appendix G). The facilitating and debilitating scales measure anxiety that tends to help an individual do better on examinations and anxiety that hinders performance in testing situations,

respectively (Alpert & Haber, 1960). Acceptable levels of reliability have been reported for both scales by Alpert and Haber (1960), who have also shown a significant correlation between the debilitating anxiety scale and another measure of test anxiety, the Test Anxiety Scale (Mandler & Sarason, 1952).

An example of an item comprising the facilitating anxiety scale is "I work most effectively under pressure, as when the task is very important," while an item found on the debilitating anxiety scale is "The more important the examination, the less well I seem to do." Subjects answer each question on a 5-point scale, indicating the degree to which the item applies to them. Subjects' responses to items within each scale are summed and averaged to yield a score for each scale. On each scale, larger numbers represent greater levels of anxiety (i.e., greater facilitating or debilitating anxiety).

Beck Depression Inventory (BDI). The BDI is a 21-item self-report instrument designed to measure the cognitive, affective, motivational, and subjective physiological manifestations of depression (Beck et al., 1961; see Appendix H). Scores on this instrument can range from 0 to 63, with acceptable levels of reliability being reported by several investigators (Beck et al., 1961; Beck & Beamesderfer, 1974). Further work indicates that the BDI is a valid measure for use with college or university

populations (Bumberry, Oliver, & McClure, 1978; Lips & Ng, 1985).

The BDI consists of 21 groups of statements, each group referring to a symptom characteristic of depressed people. Within the groups, one statement is neutral with respect to the symptom (e.g., "I do not feel sad"), followed by three to five other statements that are ordered by increasing severity (e.g., "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 quite painful", "I am so sad or unhappy that I can't stand it"). After reading instructions asking them to "indicate those statements that describe how you feel about yourself," subjects selected the one statement from each of the groups of statements that best described themselves by circling the number (e.g., 0, 1, 2 or 3) corresponding to that statement. The circled numbers are summed across groups of statements in order to determine an individual's total BDI score. High BDI scores indicate high levels of depression.

Results

Individual Difference Measures

Initial analyses for possible gender differences were conducted on the individual difference measures. Men and women did not significantly differ on measures of depression and debilitating anxiety, while men (M = 2.72, SD = .42) reported a greater degree of facilitating anxiety than women (M = 2.47, SD = .50; $t(116) = 2.58$, $p < .02$).[2] No significant Anticipation x Gender interactions emerged for any of the individual difference measures. Thus, gender was not included as an additional factor in the following analyses.

No differences between take-test and no-test subjects were found for depression, facilitating anxiety, and debilitating anxiety. Depression among take-test subjects (M = 10.15, SD = 7.38) and no-test subjects (M = 12.30, SD = 7.11) did not significantly differ, $t(114) = -1.68$, $p > .11$. Similarly, take-test subjects (M = 2.62, SD = .44) did not differ from no-test subjects (M = 2.51, SD = .51) on facilitating anxiety, $t(117) = 1.23$, $p > .22$. Finally, no differences emerged on debilitating anxiety between take-test (M = 2.88, SD = .64) and no-test subjects (M = 3.00, SD = .52; $t(116) = -1.05$, $p > .29$).

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[2]All statistical tests in the Results section are two-tailed.

Manipulation Check

The manipulation check served to assess whether take-test subjects construed their anticipated upcoming tasks differently from no-test subjects. Initial analyses revealed that no gender differences emerged on the individual items or on the overall manipulation check index. In addition, no significant Anticipation x Gender interactions emerged for any of these variables. Gender is, thus excluded from the analyses reported below on the manipulation check items.

Because all of the manipulation check items were significantly, positively, intercorrelated, a Hotelling's T2 test was performed to compare the two groups on the composite manipulation check index. Take-test subjects considered their upcoming tasks as more involving and difficult than no-test subjects, $F(6,112) = 2.85$, $p < .01$. Three of the individual manipulation check items revealed significant differences between take-test and no-test subjects. Take-test subjects ($M = 5.04$, $SD = 1.67$) felt that they would learn more about themselves in the study than did no-test subjects ($M = 4.33$, $SD = 1.64$; $t(117) = 2.43$, $p < .02$). In addition, take-test subjects ($M = 4.39$, $SD = 1.79$), relative to no-test subjects ($M = 3.69$, $SD = 2.06$) believed that what they had been asked to do in the study related more to issues of importance to them, $t(117) = 1.94$, $p < .05$. Finally, take-test subjects ($M = 2.85$, $SD =$

1.79) found their upcoming tasks more difficult than did no-test subjects (M = 1.83, SD = 1.24; $t(117) = 3.61$, $p < .001$).

Affect

Structure analyses were conducted on the ratings made by all subjects for the 32 affect adjectives. All negative affect adjectives except tired were first subjected to a $\log_{10}$ transformation to correct for significant positive skew. An initial principal factors analysis (PFA) indicated four multivariate outliers (i.e., those subjects having excessive Mahalanobis distances; in this case, outliers were those subjects with a χ^2/d.f. value > 1.67), while a subsequent PFA with these four outliers removed indicated one additional outlier. With all five outliers excluded, a principal components analysis (PCA) was conducted in order to determine the probable number and nature of the underlying affect factors (Tabachnick & Fidell, 1983). Four factors were indicated for PCA using Cattell's (1978) scree test. A PFA on the same data identified four factors having eigenvalues greater than 1, and a scree test suggested limiting the rotation to four factors. Finally, limiting the PFA to four factors produced a residual correlation matrix with 92% of the entries being less than .10. Thus, the presence of four affect factors amongst the 32 affect adjectives was once again suggested.

Using orthogonal rotation and limiting the PFA analysis

to four factors yielded affect factors that together accounted for 76.6% of the variance in the affect adjective ratings. The adjectives which loaded above .5 on these factors are (see Table 1): (a) Well-being: efficient, satisfied, relaxed, agreeable, calm, happy, composed, peaceful, helpful, and alert; (b) Dysphoria: miserable, discouraged, sad, unworthy, annoyed, guilty, and lonely; (c) Vigor: refreshed, energetic, lively, and the negatively loaded adjective tired; and (d) Anxiety: anxious, nervous, and helpless. Loadings of these adjectives on their respective factors are presented in Table 1. Factor scores were estimated by averaging responses to adjectives that loaded highly on the same factor, with larger numbers representing greater intensity of the affective state (e.g., more well-being or more anxiety). When deriving the factors, log transformed ratings were first multiplied by 8.3836 and the result incremented by one to maintain the range of the original 9-point scale. In all, 24 of the 32 adjectives were included in the four affect factors. Those adjectives that did not load highly on any of the four factors were restless, bewildered, pleased, confused, desparate, angry, listless, and uneasy.

Initial analyses conducted for possible gender differences on affect indicated that men and women did not differ on any of the affect factors, and no gender differences emerged on an overall affect measure derived by

Table 1

Factors, variables, and variable loadings resulting from PFA on affect adjectives.

Factor One: Well-being

Variable	Loading
Efficient	.719
Satisfied	.634
Relaxed	.605
Agreeable	.600
Calm	.586
Happy	.576
Composed	.561
Peaceful	.530
Helpful	.511
Alert	.500

Variance accounted for by Factor One: 40.7%

Factor Two: Dysphoria

Variable	Loading
Miserable	.701
Discouraged	.688
Sad	.683
Unworthy	.663
Annoyed	.592
Guilty	.531
Lonely	.506

Variance accounted for by Factor Two: 19.8%

Factor Three: Vigor

Variable	Loading
Refreshed	.727
Energetic	.649
Lively	.619
Tired	-.541

Variance accounted for by Factor Three: 10.2%

Factor Four: Anxiety

Variable	Loading
Anxious	.585
Nervous	.571
Helpless	.527

Variance accounted for by Factor Four: 5.9%

Total variance accounted for: 76.6%

summing each subject's positive affect factor scores and subtracting from this sum scores from the two negative affect factors. No significant Anticipation x Gender interactions were found for any of the affect factors or for the overall affect index. Gender was not included as a factor in analyses of variance reported below.

There were no significant mean differences between take-test and no-test subjects for any of the four affect factors. Take-test and no-test subjects, respectively, did not differ on vigor (M = 4.50, SD = 1.69 and M = 4.11, SD = 1.76; $t(114) = 1.22$, $p > .22$), well-being (M = 5.29, SD = 1.37 and M = 4.98, SD = 1.25; $t(114) = 1.25$, $p > .21$), anxiety (M = 3.84, SD = 1.66 and M = 3.87, SD = 1.95; $t(114) = .07$, $p > .94$), or dysphoria (M = 2.61, SD = 1.43 and M = 3.03, SD = 1.77; $t(114) = -1.43$, $p > .15$). An overall affect index was computed for each subject by summing scores for the two positive affect scales, and subtracting from the resulting value the scores from the two negative affect scales. A comparison between take-test (M = 3.34, SD = 4.08) and no-test subjects (M = 2.19, SD = 4.60) indicated that the two groups did not significantly differ on this overall index of affect, $t(117) = 1.44$, $p > .15$.

Recall

As the major dependent variable, subjects' recall of trait adjectives following the depth-of-processing task was coded in a number of ways. For each of the following

analyses, gender was added as an additional factor. No gender differences emerged on any of the recall indices, nor did any Anticipation x Gender interactions result. Gender was not included as a factor in the analyses of variance reported below.

The principle approach adopted for analysing recall was the idiographic method employed by Ingram et al. (1983). A measure of the favorability of self-reference that each adjective represented was obtained for each subject. For each subject, a self-reference score was computed for each of the 40 adjectives by multiplying the trait's favorability rating by its descriptiveness rating. Thus, an adjective rated as favorable and self-descriptive obtained a positive self-reference value. An unfavorable characteristic not considered descriptive would also obtain a positive self-reference value. Alternatively, an adjective rated as favorable and not self-descriptive obtained a negative self-reference value, as did an unfavorable characteristic considered to be self-descriptive. As the favorability and descriptiveness ratings were made on scales with endpoints -3 (very negative or very untrue) and 3 (very positive or very true), the resulting self-reference scores range from -9 (strongly negative self-reference) to 9 (strongly positive self-reference).

Once the self-reference value of each word was determined for each subject, the self-reference values for

all adjectives were averaged for each subject. This mean self-reference rating would serve as a covariate in later analyses. That is, to ensure that differences in the self-reference of recalled adjectives were not due to differences in the overall ratings of all adjectives, subjects' mean self-reference rating would be statistically controlled by means of a covariate analysis.

The principle dependent measure of recall consisted of the average self-reference index for words recalled within each orienting task. A self-reference index was thus determined for those words recalled by each subject on the incidental recall task for each processing level. This was determined by averaging the self-reference score for each word recalled within each level of processing (i.e., phonemic, semantic, and self-referent). The mean of this self-reference index for recalled words across all subjects was 2.05 (SD = 2.11). This mean value, based on a scale ranging from -9 to 9, represents slightly positive self-reference.

A 2 (take-test vs no-test) X 3 (processing level) mixed analysis of variance (ANOVA) was performed on the average self-referent indices for recalled words.[3] Tests for normality, homogeneity of variance, and sphericity revealed

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[3]Two subjects, one from each condition, failed to complete the favorability and self-descriptiveness ratings of the adjectives used in the depth-of-processing task. Their data were excluded from this analysis.

that these assumptions were not violated. Results indicated a significant main effect for condition, $F(1,115) = 11.03$, $p < .001$, such that take-test subjects recalled adjectives of greater self-reference value ($M = 2.67$, $SD = 2.26$) than those recalled by no-test subjects ($M = 1.42$, $SD = 1.76$). The results of the analysis are represented in Figure 1. Tukey post-hoc tests identified the processing levels that significantly differed between take-test and no-test subjects on the self-reference value of recalled words. We expected that differences would be found only at the self-referent level of processing, since only this level is expected to be sensitive to the positivity or negativity of an individuals' currently active self-schema. As expected, take-test subjects ($M = 3.28$, $SD = 3.27$) recalled words of more positive self-reference value that had received self-referent processing than did no-test subjects ($M = 1.84$, $SD = 3.36$), $p < .05$. A marginal difference was also found for those recalled words which had been processed at the semantic level, however. Thus, take-test subjects ($M = 2.75$, $SD = 3.29$) recalled semantic words of more positive value than no-test subjects ($M = 1.51$, $SD = 3.31$), $p < .06$. Those recalled words processed at the phonemic level also tended to be more positive for take-test subjects ($M = 1.97$, $SD = 2.93$) than for no-test subjects ($M = .91$, $SD = 1.74$), $p < .09$.

A main effect for level of processing also emerged,

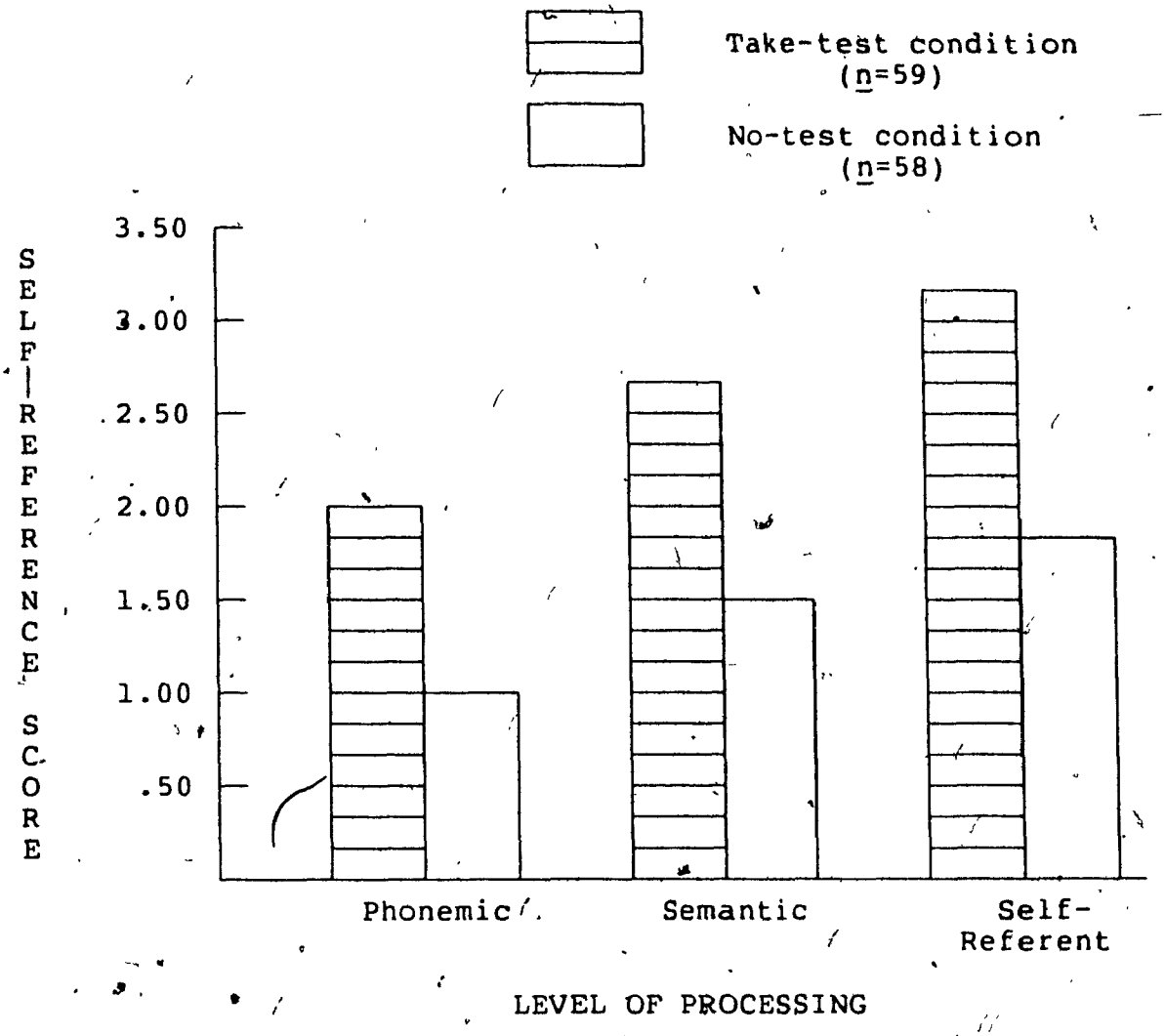

Figure 1. Mean self-reference scores of recalled words for take-test and no-test subjects as a function of processing level.

Note: Higher self-reference scores denote words of greater positive self-reference.

$F(2,230) = 4.89$, $p < .01$. A Scheffé post-hoc test indicated that the self-reference of recalled words was greater at the self-referent processing level ($M = 2.57$, $SD = 3.38$) than at the average of the phonemic ($M = 1.44$, $SD = 2.46$) and semantic ($M = 2.13$, $SD = 3.35$) processing levels, $p < .05$. Thus, as expected, those recalled words which had been processed with reference to the self had higher self-reference values than did those recalled words which had only received processing with regard to rhyme or meaning. At the self-referent processing level, those words which received high self-reference values (i.e., those words which were positively self-referent) were more available in memory than those which had lower self-reference values. Finally, no Anticipation x Processing Level interaction emerged.

A similar analysis on the average self-reference index for words recalled at each level was conducted with subjects' mean self-referent scores for all adjectives included as the covariate. The mean value of this covariate across all subjects was 2.69 ($SD = 1.39$), which reflects the overall positivity of all the adjectives used in the depth-of-processing task. A difference emerged when take-test subjects ($M = 2.94$, $SD = 1.47$) were compared with no-test subjects ($M = 2.39$, $SD = 1.32$) on the mean self-reference score for all adjectives, $t(115) = 2.12$, $p < .05$. Thus, take-test subjects rated the 40 adjectives as more positively self-referent, on average, than did no-test

subjects. This mean self-reference score was employed as a covariate to control for the differences in reference favorability ratings that were present between take-test and no-test subjects. The 2 (take-test vs no-test) X 3 (processing level) mixed analysis of covariance (ANCOVA), with normality, homogeneity of variance, and sphericity assumptions upheld, yielded virtually identical results as the ANOVA presented above.[4]

A significant effect for condition emerged, $F(1,114) = 6.62$, $p < .02$, indicating again that take-test subjects ($M = 2.42$, $SD = 2.26$) recalled adjectives having a more positive self-reference value than did no-test subjects ($M = 1.68$, $SD = 1.76$). The results of the analysis are represented in Figure 2. Tukey's post-hoc tests were conducted on the adjusted means in order to delineate the processing levels at which take-test and no-test subjects' recall differed. At the self-referent processing level, take-test subjects ($M = 3.04$, $SD = 3.27$) recalled adjectives of more positive value than did no-test subjects ($M = 2.10$, $SD = 3.36$), $p < .06$. Significant differences were not obtained between take-test subjects ($M = 1.72$, $SD = 2.93$ and $M = 2.50$, $SD = 3.29$) and no-test subjects ($M = 1.16$, $SD = 1.74$ and $M = 1.78$, $SD = 3.31$) for either the phonemic or semantic processing levels, respectively, $ps > .1$. Thus, the

[4]Once again, the data of two subjects, one from each condition, were excluded from this analysis because of missing favorability and self-descriptiveness ratings.

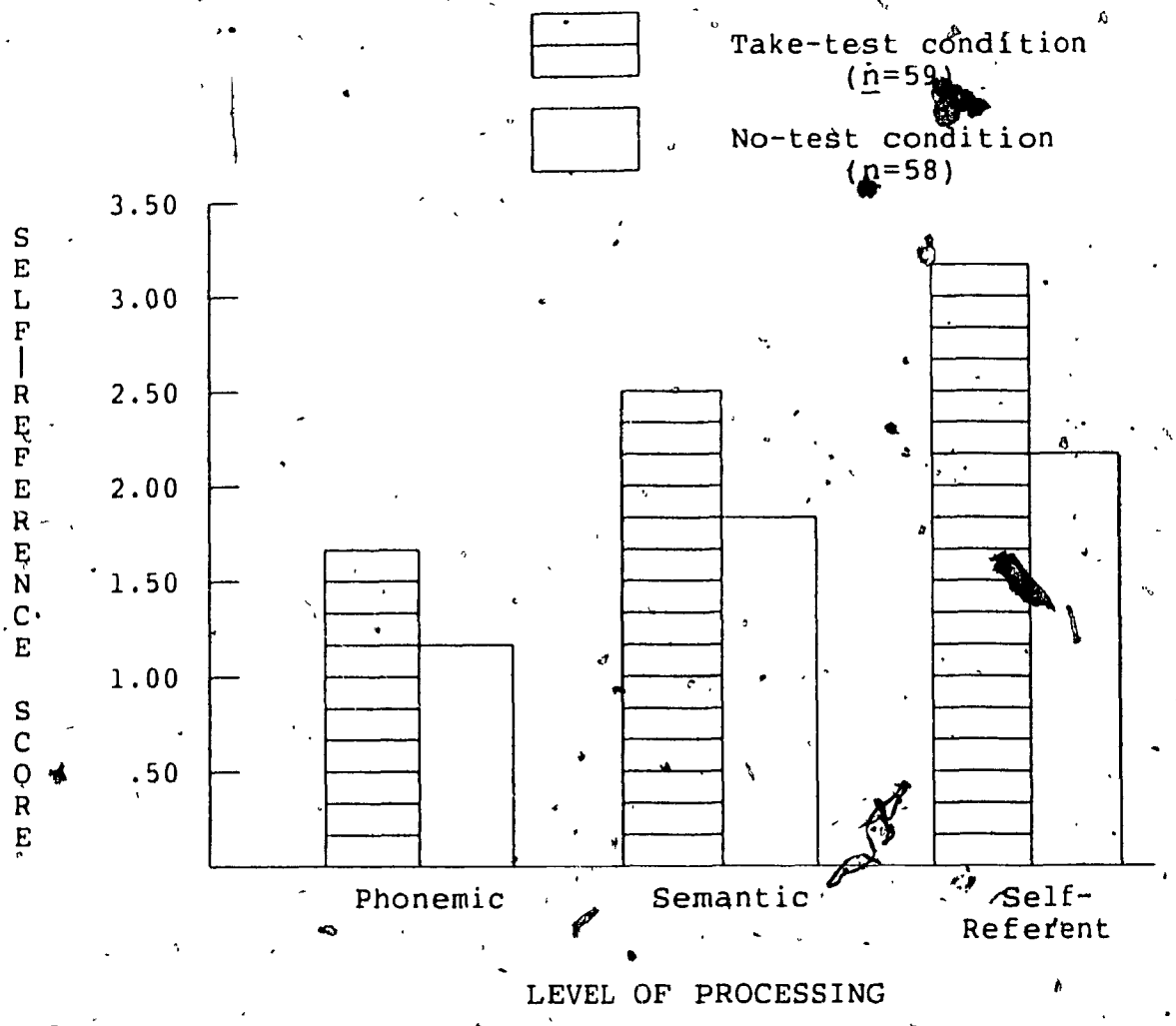

Figure 2. Adjusted mean self-reference scores of recalled words for take-test and no-test subjects as a function of processing level. Means are adjusted for subjects' average self-reference rating of all adjectives.

Note: Higher self-reference scores denote words of greater positive self-reference.

inclusion of subjects' overall rating of the 40 adjectives as a covariate resulted in significant differences being obtained between take-test and no-test subjects only at the self-referent level of processing.

Because it is not affected by the between-groups covariate, the levels of processing repeated measures effect for this analysis remained identical to that presented above, as did the Scheffé post-hoc comparisons between the repeated measures depth-of-processing levels. Finally, no Anticipation x Processing Level interaction emerged.

A second approach used for analysing subjects' recall of words following the depth-of-processing task was to code each word as to its positivity or negativity. The number of positive and negative words recalled by subjects was determined in order to address an alternative interpretation of the self-reference findings described above. Recall of words having high self-reference value by take-test subjects may be due to take-test subjects recalling words of more positive valence than no-test subjects. Indeed, most positive words are considered both self-descriptive and favorable by most individuals and will thus have high self-reference values.

The positivity or negativity of each word was determined by the author. Subsequent ratings by two graduate students indicated 100% reliability for classification of the words as positive or negative. For

each subject, the number of positive words recalled within each processing level was calculated. Across processing levels, the mean number of positive words recalled by subjects in both conditions was .79 (SD = .52). Likewise, the number of negative words recalled for each subject within each processing level was calculated. Across processing levels, the mean number of negative words recalled by subjects in both conditions was .49 (SD = .34). The results are presented for positive and negative words separately.

A 2 (take-test vs no-test) X 3 (processing level) mixed ANOVA was conducted on the number of positive words recalled. Normality, homogeneity of variance, and sphericity assumptions were not violated. The analysis revealed a significant main effect for condition, $F(1,116) = 9.36$, $p < .002$, such that take-test subjects ($M = .94$) recalled a greater number of positive words than did no-test subjects ($M = .65$). The results of the analysis are represented in Figure 3. Tukey post-hoc tests indicated that the main effect for condition was due solely to the effect found at the semantic level of processing. At this level, take-test subjects ($M = 1.10$, $SD = 1.05$) recalled a greater number of positive words than did no-test subjects ($M = .55$, $SD = .68$), $p < .01$. Differences were not found at either the phonemic or self-referent processing levels between take-test ($M = .52$, $SD = .75$ and $M = 1.00$, $SD = .95$)

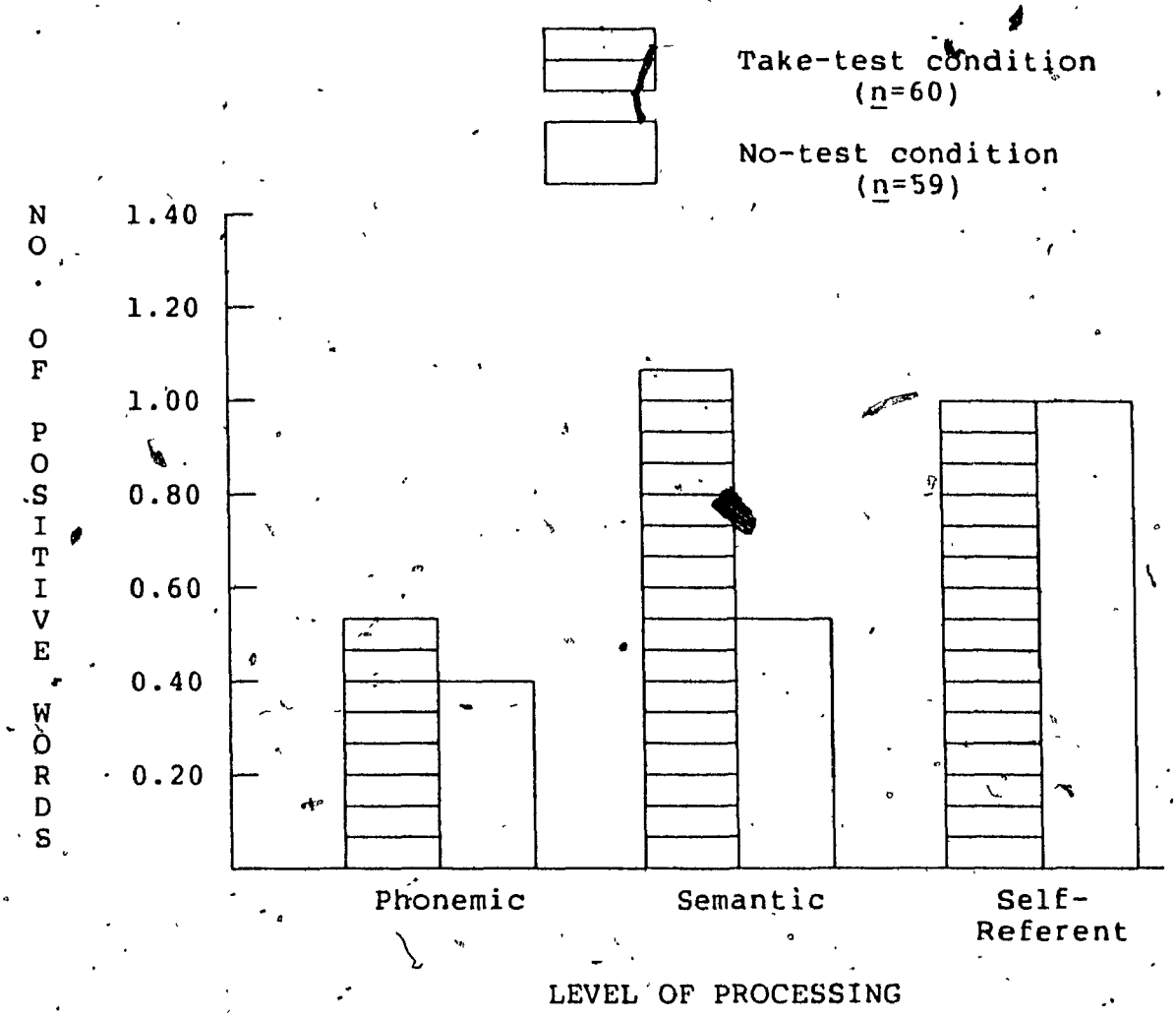

Figure 3. Mean number of positive words recalled by take-test and no-test subjects as a function of processing level.

and no-test subjects (M = .38, SD = .62 and M = 1.03, SD = 1.07), respectively, $ps > .10$.

A main effect for levels of processing also emerged, $F(2,232) = 19.35$, $p < .001$. A Scheffé post-hoc contrast on this repeated measures effect indicated that a higher number of positive words processed at the self-referent level (M = 1.12, SD = 1.00) were recalled than at the remaining two processing levels (M = .45, SD = .69 and M = .83, SD = .93 for phonemic and semantic processing levels, respectively), $p < .05$. Again, self-referent processing appears to have increased the availability of certain adjectives, when compared to semantic or phonemic processing. The activation and operation of a self-schema appears to have facilitated recall for those words receiving self-referent processing. No Anticipation x Processing Level interaction emerged.

A 2 (take-test vs no-test) X 3 (processing level) mixed ANOVA was also conducted on the number of negative words recalled within each processing level. Normality, homogeneity of variance, and sphericity assumptions were upheld. This analysis failed to indicate a significant condition main effect, with take-test (M = .50, SD = .37) and no-test subjects (M = .47, SD = .31) not differing with respect to the number of negative words recalled, $F(1,116)$ = .10, ns. The results of the analysis are represented in Figure 4. A levels of processing effect was obtained, $F(2,232) = 10.28$, $p < .0001$. A Scheffé contrast between the

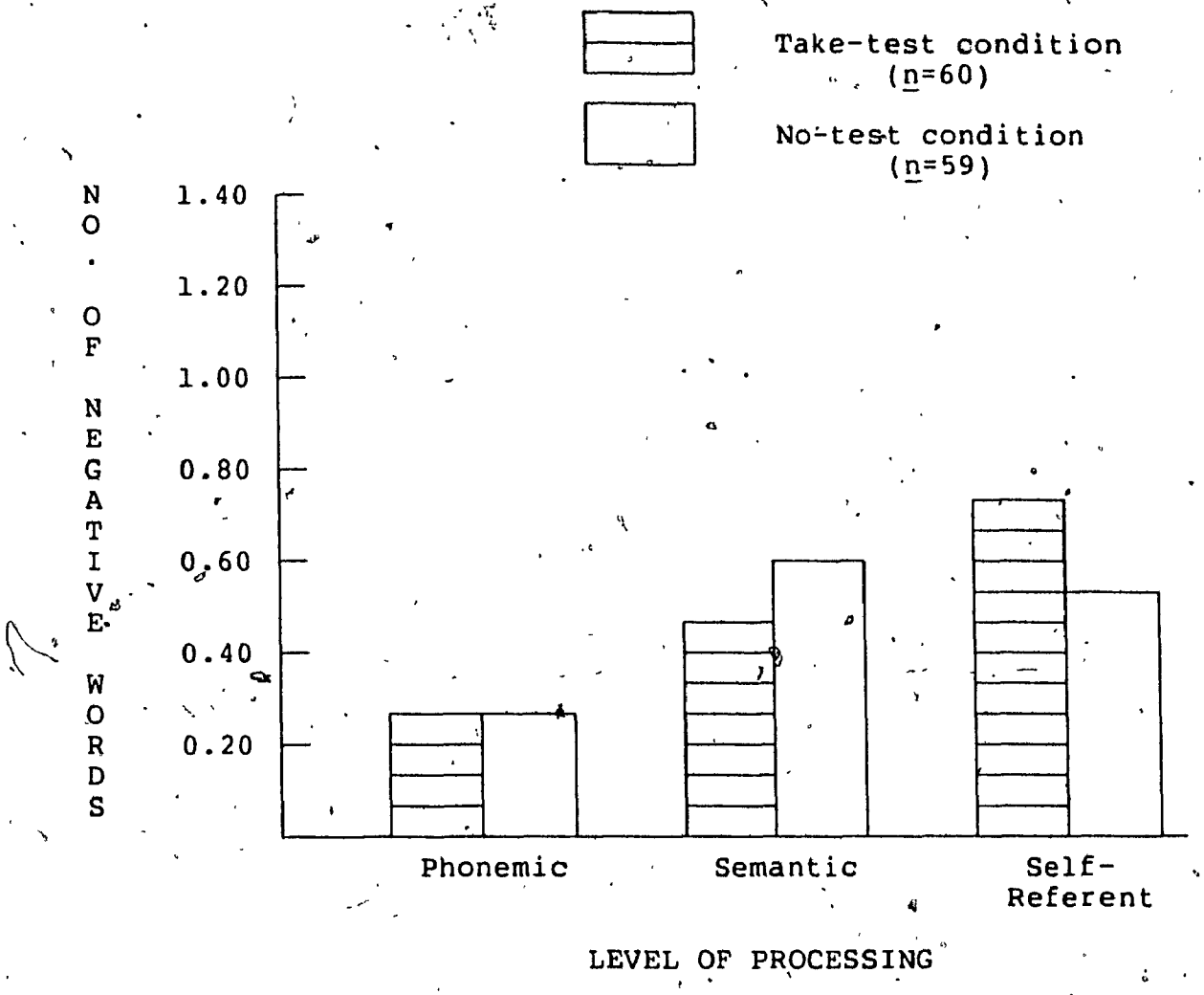

Figure 4. Mean number of negative words recalled by take-test and no-test subjects as a function of processing level.

self-referent (M = .65, SD = .72) and both the phonemic (M = .27, SD = .50) and semantic (M = .55, SD = .69) processing levels again indicated facilitated recall for material processed with respect to the self, $p < .05$. No Anticipation x Processing Level interaction emerged.

Because differences emerged between take-test and no-test subjects on the self-reference indices and on the number of positive words recalled, it is possible that the recall of words having a high self-reference value by take-test subjects relative to no-test subjects simply reflects recall differences for positive word recall. Words of high self-reference value also tend to be of positive valence. In order to determine whether the effect on the self-reference value of recalled words was independent of differences obtained on the recall of positive words, a 2 (take-test vs no-test) X 3 (processing level) ANCOVA was performed on the self-referent indices of recalled words, with the covariate being the number of positive words recalled. The covariate varied as a function of processing level; for example, the number of positive words recalled which had been semantically processed was statistically controlled when differences between take-test and no-test subjects were computed on the self-reference value of words processed with respect to meaning. Similar covariates were included for the self-reference value of phonemic and self-referent recalled words. This analysis yielded

virtually identical results to the ANOVA on the self-reference value of recalled words, as presented previously. Most significantly, the condition main effect remained, $F(1,113) = 6.48$, $p < .02$, with post-hoc tests indicating that the effect was present at the self-referent processing level. Thus, the effect of the number of positive words recalled did not exert a significant impact on the self-reference value of recalled words.

Finally, analyses for all of the recall indices described above were conducted controlling for the individual difference measures of depression, facilitating anxiety, and debilitating anxiety. Subjects' affect, as indicated by their scores on each of the four affect factors, was also included as a covariate. The results of these covariate analyses on the self-reference of recalled words, and on the number of positive and negative words recalled were virtually identical to the corresponding analyses which excluded these covariates. Overall, as none of the additional covariates reached significance, these ANCOVAs converge on the conclusion that neither individual differences nor affect exerted significant impact on recall for the present sample of subjects.

Discussion

The results of the present study indicate that context, in the form of test anticipation, can influence the activation of individuals' self-schemata. Employing idiographic indices of the personal favorability of words used in the depth-of-processing task, it was determined that subjects anticipating a test recalled words which were more positively self-referent than those recalled by subjects not anticipating such a test. Furthermore, differences in recall were obtained most clearly for those words processed with relevance to the self. Subjects anticipating and those not anticipating a difficult test did not significantly differ on recall for words which received phonemic or semantic encoding on the depth-of-processing task. Conversely, a difference was obtained for words receiving self-referent processing, indicating a greater degree of positive self-referent recall for subjects expecting a test relative to control subjects. The anticipation of a difficult, ego-involving task seems to have served to activate a self-structure which facilitated the processing of positively self-referent material. That the context of test anticipation was salient to participants in the present study was evident from the more extreme ratings of task difficulty, task importance, and task self-relevance made by test anticipation subjects relative to those subjects not anticipating a difficult test. Such task appraisal

differences accrued in the absence of differences between the two groups on the affect factor scores. Subjects anticipating and those not anticipating a test experienced similar levels of anxiety, well-being, dysphoria, and vigor.

Internal analyses on the self-reference value of recalled words were conducted in order to determine whether the findings of the present study were consistant with the type of recall associated with self-schema activation. Previous research has indicated that self-schemata facilitate the recall of both descriptive and non-descriptive self-relevant information. For words processed with respect to the self, separate analyses were conducted for words receiving "yes" ratings and words receiving "no" ratings. The results indicated that test anticipation subjects recalled words of more positive self-reference relative to control subjects, and this recall consisted equally of words that had previously received "yes" and "no" ratings. Thus, test anticipation subjects recalled words of high self-reference value, regardless of whether the words actually described them or not. A second analysis examined favorability and descriptiveness values separately for recalled words. For words which had been processed with reference to the self and had received a "yes" rating, test anticipation subjects recalled those which had received higher favorability ratings than did subjects not

anticipating a subsequent difficult task. No differences emerged between test anticipation and control subjects on the self-descriptiveness ratings of recalled words. In addition, no differences emerged between test anticipation and control subjects on either the favorability or descriptiveness values of words receiving "no" ratings. It would appear that test anticipation subjects processed "yes" rated words which they found highly favorable to a greater extent than did control subjects. The idiosyncratic favorability of the words led these subjects to recall them to a greater extent than did subjects not in such a situation.

Differences between subjects anticipating a test and those not anticipating a test were also obtained on the favorability and self-descriptiveness ratings of the words used in the depth-of-processing task. Overall, test anticipation subjects rated the words as more personally favorable and descriptive relative to control subjects. This finding might suggest that those subjects who anticipated the test were continuing to have active a positive self-structure even subsequent to debriefing, the time at which these ratings were obtained. Most importantly, however, differences in recall still obtained when groups were equated for the favorability and descriptiveness ratings. That is, subjects anticipating a test retrieved from memory words which were more positively

self-referent than did control subjects, notwithstanding their initially higher ratings of these words. Once again, such findings would suggest that test anticipation subjects had active a more positive self-schema with which to process the adjectives relative to those subjects not anticipating such a task.

Overall, the self-reference value of words recalled differed as a function of the processing which the words received. Recalled words which had received self-referent processing had higher self-reference values than did recalled words processed with respect to rhyme or meaning. This suggests that the self-reference value of words used in the depth-of-processing task was important in influencing the recall of words which had previously received self-referent processing. Such findings were obtained by Ingram et al. (1983), who also made use of subjects' idiographic ratings of each adjective's favorability and self-descriptiveness when analyzing recall. The increased self-reference value of words receiving self-referent encoding in the current study suggests that all subjects had active relatively positive self-schemata which served to facilitate the processing of congruent information.

Finally, analyses conducted on the self-reference value of recalled words also revealed that the individual difference measures of facilitating and debilitating anxiety, as well as depression, did not exert any

significant impact on recall scores. Furthermore, subjects' recall was not dependent upon their current affective state. Nevertheless, the self-reference value of recalled words did differ as a function of experimental condition. Test anticipation subjects construed their upcoming task in a way that led to their focusing on words of higher self-reference value, even though their affective state did not systematically differ from that of control subjects.

Some additional means of examining recall were also presented. In particular, recalled words were analyzed according to nomothetic ratings of positivity or negativity. Test anticipation subjects recalled a greater number of positive words than did subjects not anticipating a test, but this difference was found solely at the semantic level of processing. This finding suggests that a self-reference set during exposure is not necessary for context to exert an influence on recall of trait words. The situation of test anticipation led those subjects to effectively process positive words when such words were processed with respect to their meaning. Such a finding suggests that processes other than positive self-schema activation are occurring which nevertheless led test anticipation subjects to focus on positive adjectives. One such process is indicated by the correlation obtained between the number of positive semantic words recalled by take-test subjects and their anxiety, $r(61) = .33$, $p < .01$. The more test anticipation

subjects felt anxious, the more they recalled positive semantic words. This association, significantly different from that obtained by no-test subjects ($r(58) = .03$, ns; $z = 1.98$, $p < .05$), indicates that test anticipation subjects may have been regulating their anxiety by recalling positive semantic words. Finally, the analysis on number of positive words recalled demonstrated the advantage of self-referent processing over less elaborate forms of encoding. A greater number of positive words were recalled that had received self-referent processing when compared to those that received nonself-referent processing.

The number of negative words recalled by subjects did not differ as a function of test anticipation. However, a larger number of negative words processed with respect to the self were recalled than were negative words processed with respect to rhyme or meaning, thereby replicating the levels-of-processing effect.

Because test anticipation subjects differed from those subjects not anticipating such a task on the number of positive words recalled, an additional analysis on the self-reference value of recalled words was conducted controlling for positive word recall. The results of this analysis indicated that test anticipation subjects' enhanced recall of words having high positive self-reference values relative to subjects not anticipating a test was not due to an indiscriminate recall of positive words. Test anticipation

subjects, rather than recalling a preponderance of positive words in general, instead recalled words which they themselves found positively self-referent. This finding suggests that test anticipation subjects' recall was influenced by positive self-schemata activation to a greater degree than was that of subjects not anticipating such a task. The individual difference measures and mood failed to emerge as significant covariates for these additional analyses of subjects' recall. Recall was not associated with current affect, depression, or facilitating and debilitating test anxiety.

Overall, findings clearly in support of the notion that test anticipation may lead to positive self-schema activation were found for the analysis that employed idiographic indicants of the self-reference positivity of the trait words. When subject-specific favorability and descriptiveness ratings were employed to assess trait positivity, clear differences emerged between subjects anticipating and those not anticipating a difficult test. Test anticipation subjects recalled words of more personally favorable quality that had been processed with a self-reference set. Such a finding suggests that these subjects had active a self-schema which was more positive than that of control subjects. Presumably, positive self-schema activation occurred as a result of the context of test anticipation exerting an influence on the processing

of personal information.

Facilitated recall of words having high self-reference values by test anticipation subjects relative to subjects not anticipating such a task has been construed as reflecting differences in self-schema activation for subjects within each group. Recent research, however, has questioned whether a structure of knowledge about the self needs to be implicated in interpreting certain results obtained using the depth-of-processing methodology. In particular, it has been shown that self-referent (Describes you?) processing facilitates recall not because of the more elaborate encoding it provides, but rather because it serves as an organizational aid (Klein & Kihlstrom, 1986). Self-referent processing groups words into those that are descriptive of the individual and those that are not. Such processing thus results in enhanced recall of words when compared with phonemic or semantic encoding, for example, which do not provide a similar basis for organization.

It remains unclear, however, why test anticipation subjects in the current study better organized, and thus showed facilitated recall for, words of high self-reference value relative to control subjects. If the basis for enhanced recall of self-referent material lies in the organization provided by the Describes you? question, there is no reason to expect processing differences to emerge as a function of situational differences. In addition,

previously demonstrated differences in self-referent processing associated with individual differences (e.g., depression) and differences in social context (e.g., manipulations of success and failure) would not have been expected if contrasting groups are equally able to organize self-referent information into descriptive and non-descriptive categories. These demonstrated self-reference effects, and those of the current study, appear to require an explanation that is tied to group differences, such as differences in self-schema activation. Finally, self-referent processing within the depth-of-processing methodology has been shown to reflect chronic individual differences in self-focus (Hull, Van Treuren, Ashford, Propsom, & Andrus, 1986). The ecological validity of the self-schema as assessed using the depth-of-processing methodology is thus supported.

Activation of a positive self-schema by test anticipation subjects in the current study is construed as a process directed at self-verification. Test anticipation subjects were verifying their self-conceptions of being intelligent, competent college students by selectively attending to self-enhancing information about themselves during the depth-of-processing task. A positive self-schema is thought to have mediated such selective attention for these subjects. Activated self-schemata influenced the attentional processes through which subjects processed only

particular types of self-relevant information.

It may be that ego-involving situations elicit increased attention to positive aspects of the self. That is, benign reactions to the self might be a common consequence of involvement in a self-relevant task. Mischel et al. (1973), for example, have demonstrated such benign self-reactions in subjects who received success feedback with regard to their performance on an intelligence test. Success feedback subjects attended more to positive personal information than did failure feedback subjects or subjects who received no feedback. It may be that selective attention to positive self-relevant material will occur even prior to any feedback regarding success on the self-relevant task. Such attention to positive aspects of the self may be a dominant response which is elicited by ego-involvement. Some recent theorizing and empirical investigation supports this contention.

Paulhus and Levitt (1987) have demonstrated increased endorsement of positive self-relevant information in individuals exposed to threatening stimuli. These investigators found that the number of positive traits claimed to be self-descriptive by subjects increased when threatening stimuli were presented as distractor words simultaneously with the adjectives. It was argued that arousal associated with the threatening stimuli had an energizing effect on behavior (Paulhus & Levitt, 1987). The

arousal facilitates dominant, or high probability, responses. This response potentiation effect means that socially desirable responding is increased, since the latter behaviors are believed to be dominant for most individuals. The study by Paulhus and Levitt (1987) indicates that an egotistic style of information processing results as a response to a general category of threatening events. In the current study, the threat of a difficult test may have increased test anticipation subjects' arousal which facilitated egotistical or self-enhancing information processing during the depth-of-processing task. These subjects thus recalled words of more positive self-reference value as part of the process of desirable social responding.

A second recent investigation also suggests that arousal may mediate dominant responding such as the activation of positive self-schemata for test anticipation subjects in the present study. Hill, Fultz, and Biner (1985) posited that the anticipation of a difficult task produces a high level of motivational arousal. This motivational energization can be understood as an attempt to prepare for the upcoming task. The high arousal facilitates dominant responses such as the learning of incidental materials that are easy to learn. Hill et al. (1985) demonstrated enhanced incidental learning of familiar relative to unfamiliar names when subjects anticipated a difficult task. This motivational energization process

might have led test anticipation subjects in the present study to recall positively self-referent words if it can be assumed that such words are easier to learn than words of less positive self-reference. This appears to be a reasonable assumption since self-descriptive words are retrieved more easily from memory than are words not considered self-descriptive (e.g., Rogers et al., 1977).

The assertion that test anticipation subjects in the present study evidenced positive self-schema activity as a result of an arousal-elicited dominant response potentiation requires that these subjects also must have experienced enhanced arousal. As no measure of arousal was obtained in the current study, it cannot be determined whether differences in arousal mediated differences in self-schema activation. However, the factor analysis on the affect questionnaire items did yield a factor relevant to arousal (i.e., the factor labelled vigor), and there is evidence that self-reported affect measures do correspond to measures of physiological response (Wright, 1984). Subjects in the two experimental conditions of the present study did not evidence differences on this affect factor score. Such a finding suggests that differences in arousal were not present between test anticipation and control subjects and that such an affective state did not mediate positive self-schema activation by test anticipation subjects as a dominant response.

The present study successfully demonstrated context-specific self-schema activation. We might query whether the negative self-schemata of depressed individuals would be responsive to such contexts. Depressives' superordinate self-schemata are believed to be content-specific, stable aspects of the depressive condition (e.g., Derry & Kuiper, 1981). Such a self-structure may not be sensitive to changes in environmental context. Indeed, at least one study has indicated that depressed individuals are unresponsive to manipulations of success and failure, a manipulation which did activate positive and negative self-schemata, respectively, in nondepressed individuals (Ingram et al., 1983). It would appear that depressed individuals do not respond to situational changes which might otherwise have activated a self-structure different from that of a negative self-schema. This lack of response may initially have triggered, and may presently be maintaining, their depressed condition. On the other hand, it is also possible that depressed individuals fail to activate a positive self-schema due to processes of self-verification. Depressed individuals may self-verify their negative self-conceptions by attending to negative personal information and ignoring positive self-referent material. This process would serve to enhance prediction and control of the environment. By remaining impervious to changes in the social situation, depressed individuals can maintain their

negative self-conceptions and avoid the threat associated with self-concept inconsistency. The current study included chronic depression in the analyses conducted on subjects' recall. Depression was not found to be a significant covariate in these analyses, which suggests that depression was unrelated to self-schema activation. Test anticipation subjects with high and low depression scores alike appeared to have active positive self-schemata. Future research is needed to more closely address the effects of depression in context-specific self-schema activation.

Future studies might also further pursue self-schema activation for nondepressed individuals in ego-involving situations. First, the degree to which the anticipated task must be difficult and involving could be pursued. This might be addressed by varying the anticipated task along these dimensions. It may be that positive self-schema activation will not result when the anticipated task is relatively easy or when it is not relevant to the individual's self-concept. Alternatively, perhaps even the simplest and least self-relevant of tasks would serve to elicit positive self-structure activation. Second, alternative indicators of positive self-schema activation could be investigated for the test anticipation situation currently employed. One such measure which has proven useful in assessing self-schema activation has been that of rating time (e.g., MacDonald & Kuiper, 1985). Subjects with

an activated positive self-schema should respond more quickly to positively self-referent information relative to other information. Measures of rating time which correspond to measures of self-referent recall would provide converging evidence for the results of the present study. Finally, in order to more fully understand the processes observed in the present study one could assess subjects' beliefs about the determinants of their recall. Self-schema activity and, more generally, selective attention to self-relevant stimuli, is construed as an automatic process (e.g., Bargh, 1982; MacDonald & Kuiper, 1985). Test anticipation subjects are thus presumably unaware of their differential recall of positive self-referent words and could not report the reasons for such recall. The ability of subjects to accurately report the determinants of their recall would suggest a volitional process which could not readily be explained by self-schema activity.

References

Alba, J.W., & Hasher, L. (1983). Is memory schematic? Psychological Bulletin, 93, 203-231.

Allport, G.W. (1943). The ego in contemporary psychology. Psychological Review, 50, 451-478.

Alpert, R., & Haber, R.N. (1960). Anxiety in academic achievement situations. Journal of Abnormal and Social Psychology, 61, 207-215.

Anderson, J.R. (1976). Language, memory, and thought. Hillsdale, NJ: Erlbaum.

Baddeley, A.D. (1978). The trouble with levels: A reexamination of Craik and Lockhart's framework for memory research. Psychological Review, 85, 139-152.

Bargh, J.A. (1982). Attention and automaticity in the processing of self-relevant information. Journal of Personality and Social Psychology, 43, 425-436.

Beck, A.T., & Beamesderfer, A. (1974). Assessment of depression: The depression inventory. In P. Pichot (Ed.), Psychological measurements in psychopharmacology and modern pharmacopsychiatry. Basel, Switzerland: Kerger.

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., & Erbaugh, J. (1960). An inventory for measuring depression. Archives of General Psychiatry, 4, 561-571.

Bower, G.H., & Gilligan, S.G. (1979). Remembering information related to oneself. Journal of Research in Personality, 13, 420-432.

Bradley, B., & Matthews, A. (1983). Negative self-schemata in clinical depression. British Journal of Clinical Psychology, 22, 173-181.

Bumberry, W., Oliver, J.M., & McClure, J.N. (1978). Validation of the Beck Depression Inventory in a university population using psychiatric estimate as the criterion. Journal of Consulting and Clinical Psychology, 46, 150-155.

Cattell, R. (1978). The scientific use of factor analysis in behavioral and life sciences. New york: Plenum.

Cermak, L.S., & Craik, F.I.M. (1978). Levels of processing

in human memory. Hillsdale, NJ: Erlbaum.

Conway, M., & Howell, A. (1987). On recall serving the self-regulation of current emotion. Unpublished manuscript, Concordia University.

Craik, F.I.M., & Lockhart, R.S. (1972). Levels of processing: A framework for memory research. Journal of Verbal Learning and Verbal Behavior, 11, 671-684.

Craik, F.I.M., & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. Journal of Experimental Psychology: General, 104, 268-294.

Davis, H. (1979). Self-reference and the encoding of personal information in depression. Cognitive Therapy and Research, 3, 97-110.

Derry, P.A., & Kuiper, N.A. (1981). Schematic processing and self-reference in clinical depression. Journal of Abnormal Psychology, 90, 286-297.

Epstein, S. (1973). The self-concept revisted, or a theory of a theory. American Psychologist, 28, 404-416.

Eysenck, M.W. (1978). Levels of processing: A critique. British Journal of Psychology, 69, 157-169.

Fiske, S.T., & Taylor, S.E. (1984). Social cognition. Reading, Mass.: Addison-Wesley.

Greenwald, A.G. (1980). The totalitarian ego: Fabrication and revision of personal history. American Psychologist, 35, 603-618.

Greenwald, A.G. (1982). Ego task analysis: An integration of research on ego-inolvement and self-awareness. In A. Hastorf & A.M. Isen (Eds.), Cognitive social psychology. New York: Elsevier North Holland.

Greenwald, A.G., & Pratkanis, A.R. (1984). The self. In R.S. Wyer & T.D. Srull (Eds.), Handbook of social cognition. Hillsdale, NJ: Erlbaum.

Hammen, C., Miklowitz, D.J., & Dyck, D.G. (1986). Stability and severity parameters of depressive self-schema responding. Journal of Social and Clinical Psychology, 4, 23-45.

Hill, T., Fultz, J., & Biner, P.M. (1985). Incidental learning as a function of task difficulty. Motivation

and Emotion, 9, 71-85.

Hull, J.G., Van Treuren, R.R., Ashford, S.J., Propsom, P., & Andrus, B.W. (1986). Exploring the connections between self, cognition, and behavior. Presented at the Meeting of the American Psychological Association, Washington, D.C.

Ingram, R.E. (1984). Information processing and feedback: Effects of mood and information favorability on the cognitive processing of personally relevant information. Cognitive Therapy and Research, 8, 371-386.

Ingram, R.E., Smith, T.W., & Brehm, S.S. (1983). Depression and information processing: Self-schemata and the encoding of self-referent information. Journal of Personality and Social Psychology, 45, 412-420.

Keenan, J.M., & Baillet, S.D. (1980). Memory for personally and socially significant events. In R.S. Nickerson (Ed.), Attention and performance VIII. Hillsdale, NJ: Erlbaum.

Kelly, G.A. (1955). The psychology of personal constructs. New York: Norton.

Kihlstrom, J.F. (1981). On personality and memory. In N. Cantor & J.F. Kihlstrom (Eds.), Personality, cognition, and social interaction. Hillsdale, NJ: Erlbaum.

Klein, S.B., & Kihlstrom, J.F. (1986). Elaboration, organization, and the self-reference effect in memory. Journal of Experimental Psychology: General, 115, 26-38.

Kuiper, N.A., & MacDonald, M.R. (1982). Self and other perception in mild depressives. Social Cognition, 1, 223-239.

Kuiper, N.A., & Rogers, R.B. (1979). Encoding of personal information: Self-other differences. Journal of Personality and Social Psychology, 37, 499-512.

Lips, H.M., & Ng, N. (1985). Use of the Beck Depression Inventory with three non-clinical populations. Canadian Journal of Behavioral Science, 18, 62-74.

MacDonald, M.R., & Kuiper, N.A. (1985). Efficiency and automaticity of self-schema processing in clinical

depressives. Motivation and Emotion, 9, 171-184.

Mandler, G., & Sarason, S.B. (1952). A study of anxiety and learning. Journal of Abnormal and Social Psychology, 47, 166-173.

Markus, H. (1977). Self-schemata and processing information about the self. Journal of Personality and Social Psychology, 35, 63-78.

Markus, H. (1980). The self in thought and memory. In D.M. Wegner & R.R. Vallacher (Eds.), The self in social psychology. New York: Oxford Press.

Markus, H., Crane, M., Berstein, S., & Siladi, M. (1982). Self-schemas and gender. Journal of Personality and Social Psychology, 42, 38-50.

Markus, H., & Sentis, K. (1982). The self in information processing. In J. Suls (Ed.), Psychological perspectives on the self (Vol. 1). Hillsdale, NJ: Erlbaum.

McGuire, W.J., & McGuire, C.V. (1982). Significant others in self-space: Sex differences and developmental trends in the social self. In J. Suls (Ed.), Psychological perspectives on the self (Vol. 1). Hillsdale, NJ: Erlbaum.

McNair, D.M., Lorr, M., & Droppleman, L.F. (1971). Manual: Profile of Mood States. San Diego, CA: Educational and Industrial Testing Service.

Mischel, W., Ebbesen, E.B., & Zeiss, A.R. (1973). Selective attention to the self: Situational and dispositional determinants. Journal of Personality and Social Psychology, 27, 129-142.

Mischel, W., Ebbesen, E.B., & Zeiss, A.R. (1976). Determinants of selective memory about the self. Journal of Consulting and Clinical Psychology, 44, 92-103.

Mueller, J.H., & Thompson, W.B. (1984). Test anxiety and distinctiveness of personal information. In H.M. van der Ploeg, R. Schwarzer, & C.D. Spielberger (Eds.), Advances in Test Anxiety Research (Vol. 3). Hillsdale, NJ: Erlbaum.

Nasby, W. (1986). Induced moods and selective encoding of information about the self. Unpublished manuscript, Boston College.

Neisser, U. (1976). Cognition and reality. New York: Appleton-Century-Crofts.

Nisbett, R.E., & Ross, L. (1980). Human inference: Strategies and shortcomings in social judgment. Englewood Cliffs, NJ: Prentice-Hall.

Paulhus, D.L., & Levitt, K. (1987). Desirable responding triggered by affect: Automatic egotism? Journal of Personality and Social Psychology, 52, 245-259.

Rogers, T.B., Kuiper, N.A., & Kirker, W.S. (1977). Self-reference and the encoding of personal information. Journal of Personality and Social Psychology, 35, 677-688.

Rogers, T.B., Kuiper, N.A., & Rogers, P.J. (1979). Symbolic distance and congruity effects for paired comparison judgments of degree of self-reference. Journal of Research in Personality, 13, 433-449.

Rogers, T.B., Rogers, P.J., & Kuiper, N.A. (1979). Evidence for the self as a cognitive prototype: The "false alarms effect." Personality and Social Psychology Bulletin, 5, 53-56.

Rosenberg, M. (1979). Conceiving the self. New York: Basic Books

Sarbin, T.R. (1952). A preface to a psychological analysis of the self. Psychological Review, 59, 11-22.

Showers, C., & Cantor, N. (1985). Social cognition: A look at motivated strategies. Annual Review of Psychology, 36, 275-305.

Spielberger, C.D., Gorsuch, R.L., & Lushene, R.E. (1970). The State-Trait Anxiety Inventory (STAI) Test Manual for Form X. Palo Alto, CA: Consulting Psychologists Press.

Swann, W.B. (1983). Self-verification: Bringing social reality into harmony with the self. In J. Suls and A.G. Greenwald (Eds.), Psychological perspectives on the self (Vol. 2). Hillsdale, NJ: Erlbaum.

Swann, W.B. & Read, S.J. (1981). Acquiring self-knowledge: The search for feedback that fits. Journal of Personality and Social Psychology, 41, 1119-1128. (a)

Swann, W.B., & Read, S.J. (1981). Self-verification processes: How we sustain our self-conceptions. Journal of Experimental Social Psychology, 18, 68-88. (b)

Tabachnick, B.G., & Fidell, L.S. (1983). Using multivariate statistics. New York: Harper & Row.

Tyler, S.W., Hertel, P.T., McCullum, M.C., & Ellis, H.C. (1979). Cognitive effort and memory. Journal of Experimental Psychology: Human Learning and Memory, 5, 607-617.

Velten, E. (1968). A laboratory task for induction of mood states. Behavioral Research and Therapy, 6, 473-482.

Wright, R. A. (1984). Motivation, anxiety, and the difficulty of avoidant control. Journal of Personality and Social Psychology, 46, 1376-1388.

Zuckerman, M., Lubin, B., Vogel, L., & Valerius, E. (1964). Measurement of experimentally induced affects. Journal of Consulting Psychology, 28, 418-425.

Appendix A

Introduction of Study for Experimental and Control Subjects

Appendix A

Introduction of Study for Experimental and Control Subjects

In this study, we are interested in better understanding the relation between brain activation and creativity. Creative thinking seems to originate in a particular area of the brain. The brain has two hemispheres, and some researchers have argued and provided evidence that creative thought occurs primarily in the right brain hemisphere. There is, however, controversy in this area of research. It is unclear what kind of activation occurs in the right hemisphere, and whether it always occurs in the right hemisphere. Nevertheless, when people are asked to engage in problem-solving tasks that require creative thought, brain activity generally increases in regions of the right hemisphere. It is reasonable to assume that creative thought is localized for most people in the right brain hemisphere.

We have been studying the factors that influence the activity level of the right brain hemisphere. Our main purpose is to examine how activation of the right hemisphere just before engaging in a task that demands creativity affects people's performance on the task. We have used various stimuli to activate participant's right brain hemispheres, including specific visual displays. In this study, we are using music. Some people will listen for a

set period of time to a piece of music that has relatively complex and interwoven themes. We have found that listening to this music increases activity in the right brain hemisphere. Since we have identified this music effect on brain activation in earlier research, we are not measuring people's brain activation in this study.

In this study, classes are randomly assigned to either listen to music, or not to listen to music. This class will not listen to music.

Now, in order to examine the effect of brain activation on creative performance, some participants in this study are asked to complete a test that measures creative intelligence. Other people are not asked to complete this test. We will be randomly assigning half of you to take the test of creative intelligence, while the other half will not. The reason we assign some people to not write the test is so we can assess the effects of music on some questionnaires that all participants in the study are asked to complete. People in the music condition and all of you here will be asked to fill out these questionnaires. Again, half of you will be randomly assigned to take the test, half of you will not take the test, and all of you will fill out some other questionnaires. In these other questionnaires you are simply asked for your opinion on a number of issues. So these other questionnaires are not tests.

Half of you will be taking the test of creative

intelligence. The test that measures creative intelligence is called the Cross Analogies Test, or CAT for short. It has been in use for a number of years. Recently, it has become very important to understand performance on this test because it is becoming very widely used. It is being used by personnel staff who screen job applicants, as well as by professional schools to select their applicants. It is also being used within various governmental agencies and private organizations when decisions are made concerning staff promotions. This test of creative intelligence is being used on such a large scale because there is general agreement in the professional community that creative intelligence is one of the most important components of intellectual ability. In line with Concordia University regulations, we will give performance feedback for the CAT test to those who take it, immediately following the testing period. Those who take the test will get their own score and the average score of people in the class.

Let me summarize the study. There are four conditions. Half of the participants in this study listen to music, half will not. This class will not listen to music, whereas other classes will. Half of the people in this class will write the CAT test. The other half will not write the CAT test and will only fill out some opinion questionnaires.

There is one more aspect to this study. In this study,

we want to only assess the direct effects of music on creativity. We don't want people to engage in visual imagery related to the music while they listen to music, because this in itself may stimulate their right hemispheres. To control for indirect effects, we have people concentrate on something else while they listen to music. So, in the music condition, while people are listening to music, they also work on a non-creative task that doesn't involve activation of the right brain hemisphere.

To control ~~for~~ indirect music effects in this study, we are using standard judgment tasks that are often used in laboratory research. The tasks all involve rating adjectives according to different questions. These judgment tasks have been shown to increase activity in the left brain hemisphere, with virtually no effects on the right hemisphere. Thus, they will prevent indirect music effects, and will not activate the right hemisphere.

Because we want all conditions to be the same, except for the music and for taking the test as opposed to not taking the test, all participants in this study are asked to complete the standard judgment tasks. Half of you will write the CAT intelligence test, but everybody in this room will complete the standard judgment tasks.

YOU HAVE BEEN ASSIGNED TO NOT WRITE THE CAT TEST

YOU WILL NOT BE WRITING THE INTELLIGENCE TEST

Appendix B

Description of the Cross Analogies Test

Appendix B

Description of the Cross Analogies Test

As a standard part of the procedure, I'll now describe the CAT test and give you a few examples. This is to make our study more true to life for people taking the test, because people generally know what a test is about before they actually take it. I also describe it for people who won't take the test to be consistent with everyone.

The Cross Analogies Test is a written test that consists of identifying analogies. Each item in the test consists of a pair of words that are related to each other in some way. For example, apple and seed. The pair is followed by five other pairs of words, such as rock-cliff or yarn-sweater. When taking the test a person has to select the pair out of the five possible answers that best expresses a relationship similar to the one expressed in the original pair. At first glance, you might get the impression that one or more answers are correct. However, if you take the test you should think about the analogy carefully, and select the best answer. The best answer is the one that fits best with the first pair. On the test, people only get points for correct answers, and there is only one correct answer for each analogy. The words used in the test are familiar words, so the test is not a measure of vocabulary. Rather, it measures creative abilities; that

is, the ability to conceptualize abstract relationships.

Let's go over the first two items of the test. People will skip them when taking the test. In the first one, the pair of words that are related to each other is: vaccum and matter. When taking the test, a person would have to select one of the next five pairs that best expresses a relationship similar to the one between vacuum and matter. The five pairs are: universe-stars, divorce-spouse, perfection-fault, vacancy-applicant, and quorum-votes. The answer is the third pair: perfection-fault. In the second example, the pair of words that are related to each other is: plagiarize and copy. The five pairs to chose from are: smuggle-convey, cheat-imitate, steal-embezzle, kill-annihilate, and forge-issue. The answer is the first pair: smuggle and convey. Hopefully you now have a better idea of what the test is about.

Appendix C

Manipulation Check

Appendix C

Manipulation Check

Department of Psychology -- Concordia University

Participant Questionnaire Form C

Because a new procedure is being used in conducting this study, we would like you to answer some general questions. These questions are about how you perceive the different aspects of the study.

Answer each question by circling the number on the scale that best represents how you feel. Your responses are anonymous and confidential.

For example,

DO YOU FEEL HUNGRY?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much

---

1. Do you feel you might learn something about yourself in this study?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much

2. Does what you have been asked to do in this study relate to issues that are of importance to you?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much

3. Do you enjoy participating in studies where you learn more about your own skills and characteristics?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much

4. How enjoyable do you find what you have been asked to do in this study?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much

5. Overall, how difficult do you find what you have been asked to do in this study?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much

6. How personally important is it for you to do well on your tasks in this study?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much

Appendix D

Affect Assessment

Appendix D

Affect Assessment

We would like you to indicate how you are now feeling at this very moment. Please indicate your present feelings by circling a number on each of the scales. The scales are like this one:

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

Beside each scale, there is a word that describes certain feelings. For each word, decide the degree to which the word describes your present feelings. To answer, circle the appropriate number on the scale.

For example, if the word beside a scale was "hungry" and you felt hungry, you would circle a number toward the right of the scale. If you did not feel hungry you would circle a number toward the left of the scale.

Please be frank. Your responses will remain anonymous and confidential. Please turn to the next page and begin.

I NOW FEEL...

ANNOYED

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

GUILTY

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

RESTLESS

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

CONFUSED

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

PLEASED

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

DISCOURAGED

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

COMPOSED

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

LISTLESS

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

ALERT

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

SAD

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

I NOW FEEL...

UNWORTHY

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

RELAXED

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

AGREEABLE

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

TIRED

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

UNEASY

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

MISERABLE

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

HAPPY

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

EFFICIENT

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

CALM

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

LONELY

1 2 3 4 5 6 7 8 9
not at all a little moderately quite extremely

I NOW FEEL...

DESPARATE

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

LIVELY

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

ANGRY

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

NERVOUS

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

ANXIOUS

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

BEWILDERED

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

ENERGETIC

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

HELPFUL

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

SATISFIED

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

HELPLESS

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

I NOW FEEL...

PEACEFUL

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

REFRESHED

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite		extremely

Appendix E

Depth-of-Processing Task Instructions and Rating Sheets

Appendix E

Depth-of-Processing Task Instructions and Rating Sheets

Standard Judgment Task

In this task, you will hear 48 words on a tape recording. Before each word, you will hear a number. On the following page is a question sheet with 48 questions, one for each word.

The task is to read a question, listen for the corresponding word on the tape, and then answer the question according to the word you hear. The questions you will see on the following page are as follows:

Rhymes with _____ ? Answer the question according to whether the word on the tape rhymes with, or does not rhyme with the word on the question sheet. For example,
Rhymes with pear?
If you heard the word BEAR you would answer Yes.
If you heard the word APPLE, you would answer No.

Means the same as _____ ? Answer the question according to whether the word on the tape generally means the same as the word on the question sheet. For example,
Means the same as glad?
If you heard the word HAPPY, you would answer Yes.
If you heard the word SAD, you would answer No.

Means the opposite of _____ ? Answer the question according to whether the word on the tape generally means the opposite of the word on the answer sheet. For example,
Means the opposite of glad?
If you heard the word SAD, you would answer Yes.
If you heard the word HAPPY, you would answer No.

Describes you ? This refers to how you describe yourself; if the word on the tape generally describes you, answer Yes; if the word generally doesn't describe you, answer No.

You like to feel? This refers to how you would like to feel at this very moment. If the word on the tape describes how you would like to feel at this very moment, answer Yes. If the word does not describe how you would like to feel at this very moment, answer No.

Each question is numbered. For question number 1,

listen for word 1. For question number 2, listen for word 2, and so on. Each question can be answered by circling either Y for Yes or N for No beside each question.

This is what you do for each question. Listen for the number on the tape, read the question with the same number, and then answer the question for the word you hear. One word will be read every 5 seconds. This should allow you plenty of time to answer each question. Please do not skip any words.

	YES	NO
1. Rhymes with elephant?	Y	N
2. You like to feel?	Y	N
3. Describes you?	Y	N
4. Same as cruel?	Y	N
5. You like to feel?	Y	N
6. Opposite of incompetent?	Y	N
7. Describes you?	Y	N
8. Rhymes with catch?	Y	N
9. Opposite of nice?	Y	N
10. Describes you?	Y	N
11. You like to feel?	Y	N
12. Rhymes with playful?	Y	N
13. Rhymes with playful?	Y	N
14. Same as kindly?	Y	N
15. You like to feel?	Y	N
16. Describes you?	Y	N
17. Describes you?	Y	N
18. Opposite of insecure?	Y	N
19. You like to feel?	Y	N
20. Rhymes with table?	Y	N
21. Rhymes with table?	Y	N
22. Same as stupid?	Y	N
23. You like to feel?	Y	N
24. Describes you?	Y	N
25. Describes you?	Y	N
26. Opposite of sad?	Y	N
27. Rhymes with happy?	Y	N
28. You like to feel?	Y	N
29. Describes you?	Y	N
30. You like to feel?	Y	N
31. Same as truthful?	Y	N
32. Rhymes with room?	Y	N
33. Same as unfocused?	Y	N
34. You like to feel?	Y	N
35. Describes you?	Y	N
36. Rhymes with disposed?	Y	N
37. Describes you?	Y	N
38. Opposite of tense?	Y	N
39. Rhymes with kitchen?	Y	N
40. You like to feel?	Y	N
41. Opposite of withdrawn?	Y	N
42. Describes you?	Y	N
43. You like to feel?	Y	N
44. Rhymes with herd?	Y	N
45. Describes you?	Y	N
46. You like to feel?	Y	N
47. Rhymes with book?	Y	N
48. Same as unattentive?	Y	N

	YES	NO
1. Rhymes with throw?	Y	N
2. You like to feel?	Y	N
3. Describes you?	Y	N
4. Opposite of cruel?	Y	N
5. You like to feel?	Y	N
6. Same as incompetent?	Y	N
7. Describes you?	Y	N
8. Rhymes with find?	Y	N
9. Same as nice?	Y	N
10. Describes you?	Y	N
11. You like to feel?	Y	N
12. Rhymes with softball?	Y	N
13. Rhymes with mystified?	Y	N
14. Opposite of kindly?	Y	N
15. You like to feel?	Y	N
16. Describes you?	Y	N
17. Describes you?	Y	N
18. Same as insecure?	Y	N
19. You like to feel?	Y	N
20. Rhymes with table?	Y	N
21. Rhymes with trivial?	Y	N
22. Opposite of stupid?	Y	N
23. You like to feel?	Y	N
24. Describes you?	Y	N
25. Describes you?	Y	N
26. Same as sad?	Y	N
27. Rhymes with catch?	Y	N
28. You like to feel?	Y	N
29. Describes you?	Y	N
30. You like to feel?	Y	N
31. Opposite of truthful?	Y	N
32. Rhymes with willfull?	Y	N
33. Opposite of unfocused?	Y	N
34. You like to feel?	Y	N
35. Describes you?	Y	N
36. Rhymes with kitchen?	Y	N
37. Describes you?	Y	N
38. Same as tense?	Y	N
39. Rhymes with competent?	Y	N
40. You like to feel?	Y	N
41. Same as withdrawn?	Y	N
42. Describes you?	Y	N
43. You like to feel?	Y	N
44. Rhymes with book?	Y	N
45. Describes you?	Y	N
46. You like to feel?	Y	N
47. Rhymes with meek?	Y	N
48. Opposite of unattentive?	Y	N

	YES	NO
1. Same as stupid?	Y	N
2. Rhymes with shirt?	Y	N
3. You like to feel?	Y	N
4. Describes you?	Y	N
5. Rhymes with catch?	Y	N
6. Describes you?	Y	N
7. You like to feel?	Y	N
8. Opposite of calm?	Y	N
9. Describes you?	Y	N
10. You like to feel?	Y	N
11. Rhymes with throw?	Y	N
12. Same as absentminded?	Y	N
13. Opposite of absorbed?	Y	N
14. Describes you?	Y	N
15. Rhymes with softball?	Y	N
16. You like to feel?	Y	N
17. You like to feel?	Y	N
18. Describes you?	Y	N
19. Rhymes with savorly?	Y	N
20. Opposite of concerned?	Y	N
21. Opposite of downcast?	Y	N
22. Describes you?	Y	N
23. Rhymes with table?	Y	N
24. You like to feel?	Y	N
25. You like to feel?	Y	N
26. Describes you?	Y	N
27. Same as cheerful?	Y	N
28. Rhymes with homeless?	Y	N
29. You like to feel?	Y	N
30. Rhymes with kitchen?	Y	N
31. Describes you?	Y	N
32. Same as untrained?	Y	N
33. Describes you?	Y	N
34. Rhymes with methodical?	Y	N
35. You like to feel?	Y	N
36. Same as restrained?	Y	N
37. You like to feel?	Y	N
38. Describes you?	Y	N
39. Opposite of assured?	Y	N
40. Rhymes with book?	Y	N
41. Describes you?	Y	N
42. You like to feel?	Y	N
43. Rhymes with taxed?	Y	N
44. Same as unconfident?	Y	N
45. You like to feel?	Y	N
46. Rhymes with spell?	Y	N
47. Opposite of hopeful?	Y	N
48. Describes you?	Y	N

	YES	NO
1. Opposite of stupid?	Y	N
2. Rhymes with book?	Y	N
3. You like to feel?	Y	N
4. Describes you?	Y	N
5. Rhymes with unmistakable?	Y	N
6. Describes you?	Y	N
7. You like to feel?	Y	N
8. Same as calm?	Y	N
9. Describes you?	Y	N
10. You like to feel?	Y	N
11. Rhymes with kitchen?	Y	N
12. Opposite of absentminded?	Y	N
13. Same as absorbed?	Y	N
14. Describes you?	Y	N
15. Rhymes with national?	Y	N
16. You like to feel?	Y	N
17. You like to feel?	Y	N
18. Describes you?	Y	N
19. Rhymes with throw?	Y	N
20. Same as concerned?	Y	N
21. Same as downcast?	Y	N
22. Describes you?	Y	N
23. Rhymes with suggestive?	Y	N
24. You like to feel?	Y	N
25. You like to feel?	Y	N
26. Describes you?	Y	N
27. Opposite of cheerful?	Y	N
28. Rhymes with plan?	Y	N
29. You like to feel?	Y	N
30. Rhymes with excited?	Y	N
31. Describes you?	Y	N
32. Opposite of untrained?	Y	N
33. Describes you?	Y	N
34. Rhymes with catch?	Y	N
35. You like to feel?	Y	N
36. Opposite of restrained?	Y	N
37. You like to feel?	Y	N
38. Describes you?	Y	N
39. Same as assured?	Y	N
40. Rhymes with skull?	Y	N
41. Describes you?	Y	N
42. You like to feel?	Y	N
43. Rhymes with desk?	Y	N
44. Opposite of unconfident?	Y	N
45. You like to feel?	Y	N
46. Rhymes with undaunted?	Y	N
47. Same as hopeful?	Y	N
48. Describes you?	Y	N

	YES	NO		YES	NO
1. Describes you?	Y	N	25. Rhymes with dense?	Y	N
2. Opposite of sleepy?	Y	N	26. You like to feel?	Y	N
3. Rhymes with cure?	Y	N	27. Describes you?	Y	N
4. You like to feel?	Y	N	28. Same as useful?	Y	N
5. Same as hated?	Y	N	29. Rhymes with book?	Y	N
6. You like to feel?	Y	N	30. Opposite of unsure?	Y	N
7. Rhymes with kitchen?	Y	N	31. You like to feel?	Y	N
8. Describes you?	Y	N	32. Describes you?	Y	N
9. You like to feel?	Y	N	33. You like to feel?	Y	N
10. Rhymes with socialized?	Y	N	34. Same as rational?	Y	N
11. Same as down?	Y	N	35. Rhymes with only?	Y	N
12. Describes you?	Y	N	36. Describes you?	Y	N
13. Describes you?	Y	N	37. Rhymes with softball?	Y	N
14. You like to feel?	Y	N	38. You like to feel?	Y	N
15. Opposite of logical?	Y	N	39. Describes you?	Y	N
16. Rhymes with table?	Y	N	40. Opposite of smart?	Y	N
17. Rhymes with uneventful?	Y	N	41. You like to feel?	Y	N
18. You like to feel?	Y	N	42. Rhymes with scurried?	Y	N
19. Same as amiable?	Y	N	43. Opposite of calm?	Y	N
20. Describes you?	Y	N	44. Describes you?	Y	N
21. Describes you?	Y	N	45. Rhymes with desk?	Y	N
22. You like to feel?	Y	N	46. Same as shunned?	Y	N
23. Opposite of distractable?	Y	N	47. Describes you?	Y	N
24. Rhymes with catch?	Y	N	48. You like to feel?	Y	N

	YES	NO
1. Describes you?	Y	N
2. Same as sleepy?	Y	N
3. Rhymes with book?	Y	N
4. You like to feel?	Y	N
5. Opposite of hated?	Y	N
6. You like to feel?	Y	N
7. Rhymes with stable?	Y	N
8. Describes you?	Y	N
9. You like to feel?	Y	N
10. Rhymes with catch?	Y	N
11. Opposite of down?	Y	N
12. Describes you?	Y	N
13. Describes you?	Y	N
14. You like to feel?	Y	N
15. Same as logical?	Y	N
16. Rhymes with light?	Y	N
17. Rhymes with kitchen?	Y	N
18. You like to feel?	Y	N
19. Opposite of amiable?	Y	N
20. Describes you?	Y	N
21. Describes you?	Y	N
22. You like to feel?	Y	N
23. Same as distractable?	Y	N
24. Rhymes with dreaded?	Y	N
25. Rhymes with door?	Y	N
26. You like to feel?	Y	N
27. Describes you?	Y	N
28. Opposite of useful?	Y	N
29. Rhymes with deductive?	Y	N
30. Same as unsure?	Y	N
31. You like to feel?	Y	N
32. Describes you?	Y	N
33. You like to feel?	Y	N
34. Opposite of rational?	Y	N
35. Rhymes with softball?	Y	N
36. Describes you?	Y	N
37. Rhymes with dormant?	Y	N
38. You like to feel?	Y	N
39. Describes you?	Y	N
40. Same as smart?	Y	N
41. You like to feel?	Y	N
42. Rhymes with seat?	Y	N
43. Same as calm?	Y	N
44. Describes you?	Y	N
45. Rhymes with eatery?	Y	N
46. Opposite of shunned?	Y	N
47. Describes you?	Y	N
48. You like to feel?	Y	N

	YES	NO
1. Describes you?	Y	N
2. Same as sleepy?	Y	N
3. Rhymes with book?	Y	N
4. You like to feel?	Y	N
5. Opposite of hated?	Y	N
6. You like to feel?	Y	N
7. Rhymes with stable?	Y	N
8. Describes you?	Y	N
9. You like to feel?	Y	N
10. Rhymes with catch?	Y	N
11. Opposite of down?	Y	N
12. Describes you?	Y	N
13. Describes you?	Y	N
14. You like to feel?	Y	N
15. Same as logical?	Y	N
16. Rhymes with light?	Y	N
17. Rhymes with kitchen?	Y	N
18. You like to feel?	Y	N
19. Opposite of amiable?	Y	N
20. Describes you?	Y	N
21. Describes you?	Y	N
22. You like to feel?	Y	N
23. Same as distractable?	Y	N
24. Rhymes with dreaded?	Y	N
25. Rhymes with door?	Y	N
26. You like to feel?	Y	N
27. Describes you?	Y	N
28. Opposite of useful?	Y	N
29. Rhymes with deductive?	Y	N
30. Same as unsure?	Y	N
31. You like to feel?	Y	N
32. Describes you?	Y	N
33. You like to feel?	Y	N
34. Opposite of rational?	Y	N
35. Rhymes with softball?	Y	N
36. Describes you?	Y	N
37. Rhymes with dormant?	Y	N
38. You like to feel?	Y	N
39. Describes you?	Y	N
40. Same as smart?	Y	N
41. You like to feel?	Y	N
42. Rhymes with seat?	Y	N
43. Same as calm?	Y	N
44. Describes you?	Y	N
45. Rhymes with eatery?	Y	N
46. Opposite of shunned?	Y	N
47. Describes you?	Y	N
48. You like to feel?	Y	N

	YES	NO
1. You like to feel?	Y	N
2. Describes you?	Y	N
3. Same as vulnerable?	Y	N
4. Rhymes with bind?	Y	N
5. Describes you?	Y	N
6. Rhymes with person?	Y	N
7. Opposite of qualified?	Y	N
8. You like to feel?	Y	N
9. Rhymes with bind?	Y	N
10. Opposite of messy?	Y	N
11. Describes you?	Y	N
12. You like to feel?	Y	N
13. You like to feel?	Y	N
14. Rhymes with door?	Y	N
15. Describes you?	Y	N
16. Same as stupid?	Y	N
17. Opposite of prosperous?	Y	N
18. Rhymes with dominant?	Y	N
19. Describes you?	Y	N
20. You like to feel?	Y	N
21. You like to feel?	Y	N
22. Rhymes with kitchen?	Y	N
23. Describes you?	Y	N
24. Same as intolerant?	Y	N
25. Same as anxious?	Y	N
26. Rhymes with compressed?	Y	N
27. You like to feel?	Y	N
28. Describes you?	Y	N
29. Opposite of lazy?	Y	N
30. Describes you?	Y	N
31. Rhymes with softball?	Y	N
32. You like to feel?	Y	N
33. Rhymes with contracted?	Y	N
34. Describes you?	Y	N
35. Opposite of popular?	Y	N
36. You like to feel?	Y	N
37. Same as able bodied?	Y	N
38. Rhymes with table?	Y	N
39. You like to feel?	Y	N
40. Describes you?	Y	N
41. Rhymes with tractable?	Y	N
42. Opposite of rushed?	Y	N
43. Describes you?	Y	N
44. You like to feel?	Y	N
45. Same as calm?	Y	N
46. Describes you?	Y	N
47. You like to feel?	Y	N
48. Rhymes with name?	Y	N

	YES	NO
1. You like to feel?	Y	N
2. Describes you?	Y	N
3. Opposite of vulnerable?	Y	N
4. Rhymes with kitchen?	Y	N
5. Describes you?	Y	N
6. Rhymes with tractable?	Y	N
7. Same as qualified?	Y	N
8. You like to feel?	Y	N
9. Rhymes with door?	Y	N
10. Same as messy?	Y	N
11. Describes you?	Y	N
12. You like to feel?	Y	N
13. You like to feel?	Y	N
14. Rhymes with mule?	Y	N
15. Describes you?	Y	N
16. Opposite of stupid?	Y	N
17. Same as prosperous?	Y	N
18. Rhymes with table?	Y	N
19. Describes you?	Y	N
20. You like to feel?	Y	N
21. You like to feel?	Y	N
22. Rhymes with acquitted?	Y	N
23. Describes you?	Y	N
24. Opposite of intolerant?	Y	N
25. Opposite of anxious?	Y	N
26. Rhymes with softball?	Y	N
27. You like to feel?	Y	N
28. Describes you?	Y	N
29. Same as lazy?	Y	N
30. Describes you?	Y	N
31. Rhymes with ear?	Y	N
32. You like to feel?	Y	N
33. Rhymes with book?	Y	N
34. Describes you?	Y	N
35. Same as popular?	Y	N
36. You like to feel?	Y	N
37. Opposite of able bodied?	Y	N
38. Rhymes with light?	Y	N
39. You like to feel?	Y	N
40. Describes you?	Y	N
41. Rhymes with ordinary?	Y	N
42. Same as rushed?	Y	N
43. Describes you?	Y	N
44. You like to feel?	Y	N
45. Opposite of calm?	Y	N
46. Describes you?	Y	N
47. You like to feel?	Y	N
48. Rhymes with servant?	Y	N

Appendix F

Favorability and Descriptiveness Rating Sheets

Appendix F

Favorablity and Descriptiveness Rating Sheets

INSTRUCTIONS: Please rate each of the following words according to how favorable you find them. We would like you to use the following scale:

-3	-2	-1	0	1	2	3
very negative	quite negative	slightly negative	neutral	slightly positive	quite positive	very positive

For each word, circle one number on the scale to indicate how favorable you find that word. Your responses are anonymous and confidential.

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brilliant	-3	-2	-1	0	1	2	3	tense	-3	-2	-1	0	1	2	3
alert	-3	-2	-1	0	1	2	3	depressed	-3	-2	-1	0	1	2	3
insecure	-3	-2	-1	0	1	2	3	happy	-3	-2	-1	0	1	2	3
unkind	-3	-2	-1	0	1	2	3	useless	-3	-2	-1	0	1	2	3
likable	-3	-2	-1	0	1	2	3	productive	-3	-2	-1	0	1	2	3
capable	-3	-2	-1	0	1	2	3	undecided	-3	-2	-1	0	1	2	3
able	-3	-2	-1	0	1	2	3	sincere	-3	-2	-1	0	1	2	3
nervous	-3	-2	-1	0	1	2	3	skillful	-3	-2	-1	0	1	2	3
kind	-3	-2	-1	0	1	2	3	distracted	-3	-2	-1	0	1	2	3
organized	-3	-2	-1	0	1	2	3	illogical	-3	-2	-1	0	1	2	3
low	-3	-2	-1	0	1	2	3	lonely	-3	-2	-1	0	1	2	3
forgetful	-3	-2	-1	0	1	2	3	composed	-3	-2	-1	0	1	2	3
preoccupied	-3	-2	-1	0	1	2	3	competent	-3	-2	-1	0	1	2	3
cruel	-3	-2	-1	0	1	2	3	uptight	-3	-2	-1	0	1	2	3
rational	-3	-2	-1	0	1	2	3	self-confident	-3	-2	-1	0	1	2	3
bright	-3	-2	-1	0	1	2	3	dull	-3	-2	-1	0	1	2	3
successful	-3	-2	-1	0	1	2	3	sociable	-3	-2	-1	0	1	2	3
confident	-3	-2	-1	0	1	2	3	hurried	-3	-2	-1	0	1	2	3

friendly	-3	-2	-1	0	1	2	3	relaxed	-3	-2	-1	0	1	2	3
worried	-3	-2	-1	0	1	2	3	self-assured	-3	-2	-1	0	1	2	3
jovial	-3	-2	-1	0	1	2	3	jittery	-3	-2	-1	0	1	2	3
sharp-witted	-3	-2	-1	0	1	2	3	unwanted	-3	-2	-1	0	1	2	3
attentive	-3	-2	-1	0	1	2	3	bleak	-3	-2	-1	0	1	2	3
cool-headed	-3	-2	-1	0	1	2	3	observant	-3	-2	-1	0	1	2	3

INSTRUCTIONS: Please rate each of the following words according to how accurately they describe you. We would like you to use the following scale:

-3	-2	-1	0	1	2	3
very untrue	quite untrue	slightly untrue	not sure	slightly true	quite true	very true

For each word, circle one number on the scale to indicate how the word describes you. Your responses are anonymous and confidential.

brilliant	-3	-2	-1	0	1	2	3	tense	-3	-2	-1	0	1	2	3
alert	-3	-2	-1	0	1	2	3	depressed	-3	-2	-1	0	1	2	3
insecure	-3	-2	-1	0	1	2	3	happy	-3	-2	-1	0	1	2	3
unkind	-3	-2	-1	0	1	2	3	useless	-3	-2	-1	0	1	2	3
likable	-3	-2	-1	0	1	2	3	productive	-3	-2	-1	0	1	2	3
capable	-3	-2	-1	0	1	2	3	undecided	-3	-2	-1	0	1	2	3
able	-3	-2	-1	0	1	2	3	sincere	-3	-2	-1	0	1	2	3
nervous	-3	-2	-1	0	1	2	3	skillful	-3	-2	-1	0	1	2	3
kind	-3	-2	-1	0	1	2	3	distracted	-3	-2	-1	0	1	2	3
organized	-3	-2	-1	0	1	2	3	illogical	-3	-2	-1	0	1	2	3
low	-3	-2	-1	0	1	2	3	lonely	-3	-2	-1	0	1	2	3
forgetful	-3	-2	-1	0	1	2	3	composed	-3	-2	-1	0	1	2	3
preoccupied	-3	-2	-1	0	1	2	3	competent	-3	-2	-1	0	1	2	3
cruel	-3	-2	-1	0	1	2	3	uptight	-3	-2	-1	0	1	2	3
rational	-3	-2	-1	0	1	2	3	self-confident	-3	-2	-1	0	1	2	3
bright	-3	-2	-1	0	1	2	3	dull	-3	-2	-1	0	1	2	3
successful	-3	-2	-1	0	1	2	3	sociable	-3	-2	-1	0	1	2	3
confident	-3	-2	-1	0	1	2	3	hurried	-3	-2	-1	0	1	2	3
friendly	-3	-2	-1	0	1	2	3	relaxed	-3	-2	-1	0	1	2	3
worried	-3	-2	-1	0	1	2	3	self-assured	-3	-2	-1	0	1	2	3
jovial	-3	-2	-1	0	1	2	3	jittery	-3	-2	-1	0	1	2	3

sharp-witted	-3	-2	-1	0	1	2	3	unwanted	-3	-2	-1	0	1	2	3
attentive	-3	-2	-1	0	1	2	3	bleak	-3	-2	-1	0	1	2	3
cool-headed	-3	-2	-1	0	1	2	3	observant	-3	-2	-1	0	1	2	3

Appendix G

Achievement Anxiety Test

Appendix G

Achievement Anxiety Test

This questionnaire will help us better understand the results of our study, because people with different personalities may react differently to the situation you were in.

Please fill it out. It is anonymous and confidential. Don't put your name on it.

1. During exams or tests, I block on questions to which I know the answers, even though I might remember them as soon as the exam is over.

1	2	3	4	5
always		sometimes		never

2. In courses in which the total grade is based mainly on one exam, I seem to do better than other people.

1	2	3	4	5
never		sometimes		always

3. When I start a test, nothing is able to distract me.

1	2	3	4	5
always		sometimes		never

4. When I am poorly prepared for an exam or test, I get upset, and do less well than even my restricted knowledge should allow.

1	2	3	4	5
never		sometimes		always

5. While I may (or may not) be nervous before taking an exam, once I start, I seem to forget to be nervous.

1	2	3	4	5
always		sometimes		never

6. I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function.

1	2	3	4	5
always		sometimes		never

7. I work most effectively under pressure, as when the task is very important.

1	2	3	4	5
always		sometimes		never

8. In a course where I have been doing poorly, my fear of a bad grade cuts down my efficiency.

1	2	3	4	5
never		sometimes		always

9. I look foward to exams.

1	2	3	4	5
never		sometimes		always

10. I enjoy taking a difficult exam more than an easy one.

1	2	3	4	5
always		sometimes		never

11. Nervousness while taking an exam or test hinders me from doing well.

1	2	3	4	5
always		sometimes		never

12. I find myself reading exam questions without understanding them, and I must go back over them so that they will make sense.

1	2	3	4	5
never		sometimes		always

13. The more important the examination, the less well I seem to do.

1	2	3	4	5
always		sometimes		never

14. Although "cramming" under pre-examination tension is not effective for most people, I find that if the need arises, I can learn material immediately before an exam, even under considerable pressure, and successfully retain it to use on the exam.

1	2	3	4	5
always		sometimes		never

15. Nervousness while taking a test helps me do better.

1	2	3	4	5
never		sometimes		always

16. Time pressure on an exam causes me to do worse than the rest of the group under similar conditions.

1	2	3	4	5
always		sometimes		never

17. The more important the exam or test, the better I seem to do.

1	2	3	4	5
this is true of me		this is sometimes true of me		this is not true of me

18. I am so tired about worrying about an exam, that I find I almost don't care how well I do by the time I start the test.

1	2	3	4	5
never		sometimes		always

19. When I don't do well on a difficult item at the beginning of an exam, it tends to upset me so that I block on even easy questions later on.

1	2	3	4	5
never		sometimes		always

Appendix H

Beck Depression Inventory

Appendix H

Beck Depression Inventory

B Scale

In this questionnaire we would like you to read a number of statements and to indicate those that describe how you feel about yourself. The statements are presented in groups (Group A, B, C, etc...). For each group circle the number in front of the one statement that best represents how you feel about yourself. So, circle one statement in group A, one in group B, and so on. Please be honest. Your responses will be anonymous and confidential.

A.
0 I do not feel sad.
1 I feel blue or sad.
2a I am blue or sad all the time and I can't snap out of it.
2b I am so sad or unhappy that it is quite painful.
3 I am so sad or unhappy that I can't stand it.

B.
0 I am not particularly pessimistic or discouraged about the future.
1a I feel discouraged about the future.
2a I feel I have nothing to look forward to.
2b I feel that I won't ever get over my troubles.
3 I feel that the future is hopeless and that things cannot improve.

C.
0 I do not feel like a failure.
1 I feel I have failed more than the average person.
2a I feel I have accomplished very little that is worthwhile or that means anything.
2b As I look back on my life all I can see is a lot of failures.
3 I feel I am a complete failure as a person (parent, husband, wife).

D.
0 I am not particularly dissatisfied.
1a I feel bored most of the time.
1b I don't enjoy things the way I used to.
2 I don't get satisfaction out of anything any more.
3 I am dissatisfied with everything.

E.
0 I don't feel particularly guilty.

1 I feel bad or unworthy a good part of the time.
2a I feel quite guilty.
2b I feel bad or unworthy practically all the time now.
3 I feel as though I am very bad or worthless.

F. 0 I don't feel I am being punished.
1 I have a feeling that something bad may happen to me.
2 I feel I am being punished or will be punished.
3a I feel I deserve to be punished.
3b I want to be punished.

G. 0 I don't feel disappointed in myself.
1a I am disappointed in myself.
1b I don't like myself.
2 I am disgusted with myself.
3 I hate myself.

H. 0 I don't feel I am worse than anybody else.
2 I am critical of myself for my weaknesses or mistakes.
2 I blame myself for my faults.
3 I blame myself for everything bad that happens.

I. 0 I don't have any thoughts of harming myself.
1 I have thoughts of harming myself but I would not carry them out.
2a I feel I would be better off dead.
2b I feel my family would be better off if I were dead.
3a I have definite plans about committing suicide.
3b I would kill myself if I could.

J. 0 I don't cry any more than usual.
1 I cry more now than I used to.
2 I feel irritated all the time.
3 I used to be able to cry but now I can't cry at all even though I want to.

K. 0 I am no more irritated now than I ever am.
1 I get annoyed or irritated more easily than I used to.
2 I feel irritated all the time.
3 I don't get irritated at all at the things that used to irritate me.

L. 0 I have not lost interest in other people.
1 I am less interested in other people now than I used to be.
2 I have lost most of my interest in other people and have little feeling for them.
3 I have lost all my interest in other people and don't care about them at all.

M. 0 I make decisions about as well as ever.
1 I try to put off making decisions.
2 I have great difficulty in making decisions.
3 I can't make decisions at all anymore.

N. 0 I don't feel I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel that there are permanent changes in my appearance and they make me look unattractive.
3 I feel that I am ugly or repulsive looking.

O. 0 I can work about as well as before.
1a It takes extra effort to get started at doing something.
1b I don't work as well as I used to.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.

P. 0 I can sleep as well as usual.
1 I wake up more tired in the morning than I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up early every day and can't get more than 5 hours sleep.

Q. 0 I don't get any more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing anything.
3 I get too tired to do anything.

R. 0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all any more.

S. 0 I haven't lost much weight, if any, lately.
1 I have lost more than 5 pounds.

2 I have lost more than 10 pounds.
3 I have lost more than 15 pounds.

T. 0 I am no more concerned about my health than usual.
1 I am concerned about aches and pains OR upset stomach OR constipation.
2 I am so concerned with how I feel or what I feel that it's hard to think of much else.
3 I am completely absorbed in what I feel.

U. 0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.