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**RESPONSES TO AFFECT-ELICITING STIMULI:
THE ROLES OF ALEXITHYMIA AND NEGATIVE AFFECT**

**BY
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Abstract

This study examined the relationship between alexithymia, negative affect, and responses to affect-eliciting stimuli. Subjects were 224 college students. Alexithymia was measured using the Toronto Alexithymia Scale. Negative affect was measured using the Positive and Negative Affect Scales. The affect-eliciting stimuli were three filmclips from popular movies, selected to induce sadness, anger, and happiness in subjects. In one condition, the dependent variable was self-reported experience of emotions, and in the second condition the dependent variable was optimism of judgments after each clip. Alexithymics reported significantly more sadness and had significantly less optimistic judgments than nonalexithymics. In addition, there were interactions between alexithymia and negative affect for those responses. We believe our findings suggest that alexithymia is associated with (1) the amount of negative emotions experienced (2) a negative view of the world and (3) a cognitive-affective disturbance which is not limited to a problem with emotional expression.

Renewed interest within psychology in the relationship between internal states and behavior has led to a recent explosion in emotion research (Davidson & Cacioppo, 1992). Sifneos (1972) coined the term alexithymia, literally meaning a lack of words for mood, to describe individuals who have difficulty perceiving and expressing emotion. Alexithymia appears to be most clearly manifest in the individual's communicative style (Taylor, 1984). Alexithymics display markedly reduced symbolic thought and expression, which is less revealing of inner attitudes, feelings, wishes, and drives than normal (Taylor, 1984). In place of introspective thoughts, the individual often provides an extensive description of physical symptoms and elaborates trivial environmental details, which is termed "operative thinking", or "pensee operateire" (Apfel & Sifneos, 1979). Related to this, alexithymic individuals often do not discriminate between their affective states and physical sensations (Taylor, 1984).

There are other alexithymic characteristics which appear to be less typical. One is the alexithymic individual's clear absence of fantasy and reduced

reporting of dreams (Taylor, 1984). Also, alexithymic individuals tend to show a high degree of social conformity, live in a mechanical style, and have a limited capacity for empathy, which hinders their interpersonal relationships (Taylor, 1984). The latter characteristic makes sense because alexithymics have difficulty recognizing their own feelings (Taylor, 1984).

There are many questions about alexithymia which have not been answered in past research. For example, are alexithymics actually capable of experiencing a mood? Are they as aware of their emotions as nonalexithymics, but unable to express what they are feeling? Can alexithymics attend to their emotional state and use it in decision-making? It seems that alexithymic individuals deviate from nonalexithymic individuals at some level of emotional awareness. Our research will address the question of where in the individual's cognitive-affective functioning the deviation lies.

Alexithymia was initially observed in psychosomatic patients who did not benefit from therapy. Psychoanalysts suggested that these patients

were unable to recognize their affective states (Krystal, Giller & Cicchetti, 1986). Alexithymia, therefore, is not something about which the patient complains (Apfel & Sifneos, 1979).

Since its conceptualization, alexithymia has been observed in a wide variety of both psychiatric and medical pathologies, extending far beyond the classical psychosomatic disorders. The characteristics have been reported among patients suffering from depression, posttraumatic stress disorder, breast cancer, obesity, rheumatoid arthritis, and other pathologies (e.g. Fernandez, Sriram, Rajkumar, & Chandrasekar, 1989; Krystal et al. 1986; Legorreta, Bull, & Kiely, 1988; Todarello, La Pesa, Zaka, Martino, & Lattanzio, 1989; Wise, Jani, Kass, Sonnenschein, & Mann, 1988).

A possible connection between depression and alexithymia has received much attention. There are two hypotheses which explain how alexithymia and depression might be linked. One hypothesis is that alexithymia may function as a defense against emotional pain and distress in depressed patients (Haviland, Shaw, MacMurray, & Cummings, 1988). The other hypothesis suggests that alexithymia exists as a stable individual

difference and, in some cases, leads to disturbances such as depression (Wise et al. 1988).

The research which has attempted to clarify the relationship between alexithymia and depression has been unsuccessful. Wise et al. (1988), found a positive correlation between scores on alexithymia and depression scales in medically ill patients. The positive correlation offers evidence that alexithymia and depression are somehow related in the medically ill. While this study suggests that there is an association between alexithymia and depression, it is not capable of testing the two hypotheses described above, and therefore does not explain why the two are associated.

Haviland et al. (1988) found a moderate positive correlation between alexithymic characteristics and depression in substance abusers who were being treated at a medical center. More specifically, they found higher positive correlations between the inability to identify and describe emotions and depression, than between the degree of external thinking and depression. This study offers evidence that depression is more strongly associated with alexithymic characteristics

that describe deficits in emotional identification and expression than with other alexithymic characteristics. This study failed, however, to address the issue of causality in the relationship between alexithymia and depression.

At some level, alexithymics are less aware of their emotions than nonalexithymics, suggesting that alexithymics' cognitive and affective processes deviate from those of nonalexithymics. Theories about the way emotion and cognition work together to guide behavior may be used as tools to study alexithymia. Emotion and cognition have traditionally been viewed as separate, even antagonistic psychological components. For example, individuals are sometimes described as emotional when they seem to be sensitive, driven by their feelings, or impulsive. Conversely, people are described as unemotional when they seem to be more controlled, organized, and driven by reason. Sammers (1981) challenged this view, suggesting a relationship between level of emotional responsiveness and degree of cognitive organization and ability. This challenge implies that affect and cognition might even be interdependent and that emotional awareness could be

conceptualized as a cognitive skill. Like any cognitive skill, emotional awareness would have to be acquired in a developmental process.

Lane and Schwartz (1987) offered a cognitive-developmental theory of emotional awareness which has implications for alexithymia. They suggest that there are individual differences in knowledge of emotion and that this influences emotional experience. This knowledge is structurally organized and is reflected in the way individuals verbalize their emotions. The cognitive-developmental theory suggests that alexithymics do not learn to differentiate emotional experience because their environment did not promote emotional awareness. The analogy Lane and Schwartz (1987) give is that of the child growing up in Florida who does not learn the many different words for snow with which Eskimo children are familiar. To such individuals, "the terrain is perceived and experienced as undifferentiated. The undifferentiated nature of emotional experience is self-perpetuating to the extent that the alexithymic individual avoids reflecting on and generating symbolic representations of experience(p. 140)."

Several researchers have investigated the effect of mood states on cognitive processes. Because alexithymics may not attend to their moods, they might differ from nonalexithymics in how their cognitive processes are affected by mood. Experiments derived from Schwarz and Clore's (1983) mood-as-information theory might aid the efforts of determining alexithymics' level of emotional awareness. The mood-as-information theory arose in response to the attention given to Isen's work with schema activation (e.g. Isen, Shalke, Clark, & Karp, 1978, p.2) and offered an alternative view of mood's effect on cognition.

Isen proposed that mood influences the accessibility of cognitions. More specifically, she suggested that "a person in a good mood is more likely to retrieve positive than negative material from memory and that this improved access to positive material affects the decision-making process with regard to behavior" (Isen et al. 1978). Isen examines the affect-cognition relationship through the concepts of schema activation and, more specifically, mood congruency retrieval.

Isen suggests that mood can serve as a cue, with good moods facilitating the retrieval of positive thoughts, and bad moods facilitating the retrieval of negative thoughts. This is part of what Isen et al. (1978) termed a cognitive "loop". To illustrate, a good mood cues pleasant material in memory, which maintains the mood state. The good mood leads to an improved likelihood of positive behavior such as helping. The "loop" hypothesis was supported by Isen and Levin's (1972) finding that helping behavior increased when a good mood was induced in subjects. In one study, the mood state was induced by giving cookies to adults in a library and in another, by having individuals find a dime in the coin return of a public telephone while making a call. The dependent variable of helping behavior was measured in the first study by the experimenter approaching the subject and asking him or her to act as a confederate in a psychology experiment. In the second study, the dependent measure was whether the subject helped a young woman pick up papers she had dropped. Both of these studies found that subjects in the "good mood" condition were more

likely to engage in helping behaviors, which supports the cognitive "loop" hypothesis.

While Isen's mood congruency model may be employed to explain some of the empirical evidence linking emotion and cognition, it has been suggested that the model's usefulness has been overemphasized (Schwarz & Clore, 1988). Alternatively, the effect of mood on cognitive processes may be due to the informational value of a mood state rather than its associations and priming ability. Schwarz and Clore (1983) suggest that "people may use their momentary affective state as information relevant to making various kinds of judgements, including evaluations of the quality of their lives or their attraction to another person" (p. 513).

The results of Isen's research can be viewed as supportive of the mood-as-information theory. For example, when an opportunity to help another person arises, one might refer to one's mood and make the decision to help based on the evaluation of the mood. Therefore, two possibilities exist. As Isen suggests, moods may serve as a cue, priming similarly valenced cognitions, and leading to positive or negative

judgements, depending on the valence of the mood. In contrast, moods may be attended to by the individual and serve as information for making evaluative judgements.

Insert Figure 1 about here

The goal of our research was to examine the alexithymic's awareness of his or her emotional state and to determine whether the alexithymic differs from the nonalexithymic in how he or she uses mood in making judgements. We chose to apply Schwarz and Clore's (1983) mood-as-information theory to the pursuit of this goal.

The mood-as-information theory rests on the assumption that the individual is functioning with a certain level of emotional awareness. Thus, an individual who is unaware of his or her affective state would lack the information the mood provides, as suggested by Schwarz and Clore. Therefore, comparing alexithymics' with nonalexithymics' use of mood as information may provide insight to the alexithymic's level of emotional awareness. If alexithymia is a

condition that disables individuals from recognizing their mood, alexithymics might behave as if no mood was induced. It might be possible to determine whether the alexithymic is less aware of his or her emotions or simply unable to verbalize them. This could be determined through evaluations of the judgements alexithymics make. The subjects would not be required to verbalize their mood, but the judgements they make would indicate whether the subjects were experiencing a mood.

Alexithymia is still a relatively new concept with many questions left to be answered. The identification of the alexithymic's level of emotional awareness is the issue our research addressed. Alexithymics have difficulty describing and/or identifying their emotions. The questions our research attempted to answer are the following: (1) Do alexithymics differ from nonalexithymics in the degree of their emotional expression?; (2) Do alexithymics differ from nonalexithymics in the specificity of their emotional expression?; (3) Do alexithymics and nonalexithymics differ in the optimism of their judgments?; and (4) Do alexithymics and nonalexithymics differ in how much a

mood-induction influences the optimism of their judgments? We are asking the first two questions because we want to know if there are differences in emotional expression between alexithymics and nonalexithymics. We are asking the second two questions because we believe examining alexithymics' and nonalexithymics' judgments will indicate whether there are differences in how the two groups experience emotion. Schwarz and Clore (1983) have shown that judgment is influenced by an individual's referring to his or her emotional state. Hence, we believe that individuals who differ in the experience of their emotional state will also differ in the judgments they make after a mood-induction. The underlying question that our research attempted to answer is the following: Where is the deviation in cognitive-affective functioning in alexithymics? Our research also addressed the role of negative affect and its interaction with alexithymia in the issues described above.

Method

Subjects and Design

The subjects were 115 women and 109 men from introductory psychology classes at the University of Illinois. They received partial course credit for participating in the experiment.

There were two dependent variable conditions, one in which a measure of mood was given to subjects and one in which a measure of judgment was administered. The condition in which a measure of mood was given will be referred to as the affect condition. The condition in which a measure of judgment was given will be referred to as the judgment condition. Except for the different measures given, the conditions were identical.

Alexithymia and Negative Affect Measures

A shortened version of the Toronto Alexithymia Scale (TAS; Taylor et al. 1989) was used to measure alexithymia. The TAS is a 26-item self-report test. The shortened version consisted of two of the measure's subscales, designed to measure the ability to identify one's emotions and the ability to communicate one's emotions. The scale's items include statements such as

"When I am upset, I don't know whether I am sad, frightened, or angry," and "People tell me to express myself more." Subjects indicated on five-point scales the extent to which they agree with the statements (1 = "strongly disagree", 5 = "strongly agree"). We chose to focus on the scale which measured the identification of emotion because Berenbaum and Prince (1992) found that deficits in the identification of emotion were more strongly associated with the interpretation of emotion-relevant information than were deficits in the communication of emotion.

In order to measure negative affect, subjects completed the negative affect scale of the Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988). The negative affect scale consists of 10 words that describe various negative feelings and emotions, such as "downhearted", "distressed", and "hostile". Subjects indicated on five-point scales the extent they generally experienced such feelings (1 = "very slightly or not at all", 5 = "extremely").

Group Assignment

Subjects were divided into alexithymics and nonalexithymics. Subjects who had TAS scores in the

highest quartile were placed in the alexithymic group, while subjects who had TAS scores in the lowest quartile were placed in the nonalexithymic group. We divided subjects this way because there is only limited information available concerning the distribution of scores on the TAS, and it is not clear how to interpret different scores. Selecting subjects with the lowest and highest alexithymia scores allowed us to be more confident that we were correctly labelling subjects as alexithymics and nonalexithymics than we would have been had we simply used a median split to divide subjects into alexithymics and nonalexithymics. Nonalexithymic subjects had TAS scores ranging from 7 to 10, and alexithymic subjects had scores ranging from 19 to 28. Subjects were also divided into those reporting high negative affect and those reporting low negative affect. The median negative affect score was 20. Subjects scoring at or below the median were placed in the low negative affect group while subjects scoring above the median were placed in the high negative affect group. The PANAS is a much more reliable measure than the TAS, so we decided to divide

subjects at the median in order to maximize the number of subjects.

Dividing subjects by alexithymia score and negative affect score yielded four groups of subjects for each condition. In the affect condition, 23 subjects were in the nonalexithymic, low negative affect group (11 males, 12 females); seven subjects were in the nonalexithymic, high negative affect group (5 males, 2 females); eight subjects were in the alexithymic, low negative affect group (3 males, 5 females); and 18 subjects were in the alexithymic, high negative affect group (7 males, 11 females). In the judgment condition, 18 subjects were in the nonalexithymic, low negative affect group (12 males, 6 females); seven subjects were in the nonalexithymic, high negative affect group (3 males, 4 females); eleven subjects were in the alexithymic, low negative affect group (4 males, 7 females); and 27 subjects were in the alexithymic, high negative affect group (16 males, 11 females).

Stimulus Materials and Dependent Variable Measures

We attempted to induce three different moods in subjects. The affect-eliciting stimuli consisted of

three videotaped excerpts from popular movies. The filmclips were between two and two-and-a-half minutes long and were chosen to elicit happiness (a scene from Stripes), sadness (a scene from An Officer and a Gentleman), and anger (a scene from Witness).

In the affect condition, a "Film Rating" questionnaire was used in order to measure mood. It consisted of nine words describing emotions or feelings. Happiness was measured using the words "happy", "joyful", and "amused". Sadness was measured using the words "blue/depressed", "sad", and "unhappy". Anger was measured using the words "irritable", "angry", and "hostile". After each filmclip, subjects indicated on seven-point scales the degree to which they felt each emotion (1 "not at all", 7 "extremely").

In the judgment condition, the Social-and-Political-Views Survey (SAPVS) was used to measure judgment. The SAPVS was constructed by the experimenters, and consists of 60 items describing events related to some social or political issue (e.g. "The number of homeless people in the U.S. increasing"). Subjects are asked to estimate the

probability of each event happening (a percent out of 100). We decided to focus on subjects' responses to the negatively-keyed items after pilot testing the survey and finding that these items were highly correlated with each other, and thus form a reliable measure of judgment. Because the negatively-keyed items describe positive events (e.g. "The number of homeless people in Champaign-Urbana decreasing"), the SAPVS scores will henceforth be referred to as "optimism scores".

Procedure

Subjects were run in groups of between four and eleven individuals. They were told that the purpose of the study was to examine the relationship between personality and movie preferences. They were told that they would be required to fill out two personality questionnaires, which were the TAS and PANAS, and to watch three filmclips. Whether the subjects completed the TAS and PANAS before or after viewing the filmclips was counterbalanced and determined randomly by group. The order in which the filmclips were shown was also counterbalanced and randomized by group.

Before each filmclip was shown, the experimenter gave the subjects a brief description of the film, including when it was made, the names of the director and actors, a synopsis of the plot and of the sequence being presented. This was done to convince the subjects that the study indeed involved the relationship between personality and movie preference.

Subjects were placed randomly in either the affect condition or the judgment condition and were not told that the other condition existed. All subjects were told there would be a five-minute break between each clip. Subjects in the affect condition were told that they would complete "Film Rating" sheets during breaks and the subjects in the judgment condition were told that they would complete the SAPVS during breaks. Subjects were told that the SAPVS was being administered as a favor to a colleague in the political science department. Thus, subjects were not told that the SAPVS was part of the psychology experiment. The 60 items on the SAPVS were split into three sections with 20 items each. Subjects completed one section after each filmclip. The order in which each group

received the sections was randomized and counterbalanced.

After the subjects had seen all three filmclips and completed the proper materials, they were given a sheet which asked them to describe their reactions to each filmclip. These responses were not examined in this report. The subjects were also asked to indicate whether they thought the experiment was worth conducting and to indicate if any part of the experiment seemed strange. This question was included to help determine whether our cover story was adequate. Most subjects stated that they thought the relationship between personality and movie preferences was worth studying. Out of 224 subjects, only six found anything strange in the experiment. Of these, five wondered why it was necessary to complete the SAPVS during the experiment and one suggested that the SAPVS could be used as a measure of response to affect-eliciting stimuli. These findings suggested that the deception had worked.

Results

The data from the two dependent variable conditions, affect measure and judgment measure, were analyzed separately.

Affect condition

Our first set of analyses addressed the following questions: (1) Do alexithymics differ from nonalexithymics in the degree to which they reported different emotions after different film clips?; (2) Do high negative affect subjects differ from low negative affect subjects in the degree to which they reported different emotions after different film clips?; (3) Do negative affect and alexithymia interact to produce differences in reported emotion?; and (4) Do these group differences in reported emotion remain constant or do they change as a function of the film type, i.e. the emotion being elicited?

In order to answer the questions listed above, 2 (alexithymia: alexithymic vs. nonalexithymic) x 2 (NA: high vs. low) x 3 (film type: happy vs. sad vs. angry) repeated measures, multivariate analyses of variance were performed for each reported emotion. Thus, there were three separate ANOVA's, one for reported sadness,

one for reported anger, and one for reported happiness. There were significant main effects for film type in all three ANOVA's ($p < .001$ in all three cases). Table 1 shows subjects' reported emotion after the angry film. Table 2 shows subjects' reported emotion after the happy film. Table 3 shows subjects' reported emotion after the sad film. As can be seen in Tables 1, 2, and 3, reported anger was highest after the angry film, reported happiness was highest after the happy film, and reported sadness was highest after the sad film. These findings suggest that the films were successful in inducing the intended mood.

Insert Tables 1, 2, and 3 about here

The ANOVA examining sadness revealed significant main effects for, and interactions with, alexithymia and negative affect. A significant main effect for alexithymia was found, $F(1, 46) = 4.10, p < .05$. As can be seen in Table 3, the alexithymics reported more sadness across the three films than did the nonalexithymics. In addition to the main effect for alexithymia, there was a significant interaction

between alexithymia and negative affect, $F(1, 46) = 4.79, p < .05$. As can be seen Table 3, among low negative affect subjects, alexithymics reported more sadness than nonalexithymics across the three films; in contrast, among high negative affect subjects, whether alexithymics reported more or less sadness than nonalexithymics depended on the film type. Follow-up alexithymia by film ANOVA's conducted separately for the low and high negative affect groups revealed a significant main effect for alexithymia only among the low NA group, $F(1, 27) = 13.27, p < .01$.

In addition, there was a significant three-way interaction between alexithymia, NA, and film type, $F(2, 45) = 3.21, p < .05$. The reason for the three-way interaction is that the two-way interaction between alexithymia and negative affect only occurred in response to the sad film. We did separate follow-up alexithymia by negative affect ANOVA's for each of the three films. These ANOVA's revealed a significant interaction between alexithymia and negative affect for the sad film, $F(1,2) = 9.85, p < .01$, but did not reveal significant interactions between alexithymia and negative affect for the other two films. Among

subjects who had low negative affect, alexithymics reported more sadness in response to the sad film than nonalexithymics. Among subjects who had high negative affect, alexithymics reported slightly less sadness in response to the sad film than nonalexithymics.

The ANOVA's examining reported anger and happiness revealed no significant main effects for, or interactions with, alexithymia and negative affect. However, as can be seen in Tables 1 and 3, the same trend which exists for reported sadness after the sad film, exists to a lesser degree for reported anger after the angry film. There is a slight opposite trend for reported happiness after the happy film.

The analyses described above examined how much subjects experienced each emotion, but they did not address the issue of emotional specificity. In this study, the term "emotional specificity" refers to the degree to which subjects reported the intended negative emotion more than the unintended negative emotion. In order to examine group differences in emotional specificity, we calculated "specificity" scores. For the angry film, the score was calculated by subtracting subjects' reported sadness scores from their reported

anger scores. For the sad film, the score was calculated by subtracting subjects' reported anger scores from their reported sadness scores. Thus, we would expect the value of all the specificity scores to be positive, showing that anger is reported more than sadness after the angry film, and that sadness is reported more than anger after the sad film. As can be seen in Table 4, the mean scores of each group were indeed positive. The greater the value of the scores for the angry film, the more the subjects reported anger than sadness. The greater the value of the scores for the sad film, the more the subjects reported sadness than anger.

Insert Table 4 about here

With the specificity scores as the dependent variables, we performed a 2 (alexithymia: alexithymic vs. nonalexithymic) x 2 (NA: high vs. low) x 2 (film type: angry vs. sad film) repeated measures ANOVA. A significant main effect for film type was found, $F(1, 46) = 7.29, p < .05$. As can be seen in Table 4, the

specificity scores were greater for the sad film than for the angry film.

In addition to the main effect for film type, there was a significant interaction between alexithymia and negative affect, $F(1, 46) = 5.03, p < .05$. As can be seen in the left half of Table 4, among low negative affect subjects, alexithymics had a higher specificity score than nonalexithymics for both films. Among high negative affect subjects, however, an opposite trend occurred. As can be seen in the right half of Table 4, among high negative affect subjects, nonalexithymics had a higher specificity score than alexithymics for both films. Separate follow-up analyses were performed for the low and high negative affect subjects. The analyses were 2 (alexithymia: alexithymic vs. nonalexithymic) x 2 (film type: angry vs. sad) ANOVA's. Trends for main effects for alexithymia were found for the low negative affect subjects, $F(1, 27) = 2.92, p < .10$, and the high negative affect subjects, $F(1, 19) = 3.28, p < .10$, with the trends being in opposite directions among the low and high negative affect subjects.

Judgment condition

The analyses of the optimism scores attempted to answer the following questions: (1) Do alexithymics differ from nonalexithymics in the optimism of their judgments after viewing affect-eliciting filmclips?; (2) Do high negative affect subjects differ from low negative affect subjects in the optimism of their judgments after viewing affect-eliciting film clips?; (3) Do negative affect and alexithymia interact to produce differences in the optimism of judgments?; and (4) Do these groups' differences in optimism remain constant or do they change as a function of the film type, i.e. the emotion being elicited? As mentioned earlier, our judgment measure focused on the negatively-keyed items (e.g. "The number of homeless people in Champaign-Urbana decreasing.") Therefore, the higher the judgment measure score is, the more optimistic the judgments are. We will call the judgment measure score the "optimism" score.

In order to answer the questions listed above, a 2 (alexithymia: alexithymic vs. nonalexithymic) x 2 (NA: high vs. low) x 3 (film type: angry vs. sad vs. happy) repeated measures, multivariate ANOVA was conducted. A

trend for a main effect for alexithymia was found, $F(1, 59) = 6.72, p < .10$. As can be seen in Table 5, alexithymics tended to give less optimistic judgments than nonalexithymics. In addition to the main effect for alexithymia, the ANOVA also revealed a trend for an interaction between negative affect and the film type $F(2, 58) = 2.41, p < .10$. Finally, there was also a trend for a three-way interaction between alexithymia, NA, and film type $F(2, 58) = 2.91, p < .10$.

Insert Table 5 about here

The reason for the three-way interaction is that the difference in optimism between alexithymics and nonalexithymics occurred primarily for the high negative affect subjects, and was much stronger for the sad and happy films than for the angry film. Among high negative affect subjects, alexithymics tended to make less optimistic judgments than nonalexithymics. We performed separate follow-up t-tests examining the difference between alexithymics and nonalexithymics among high and low negative affect subjects for each film. These t-tests revealed that, following the sad

film, there were significant differences in optimism of judgments between alexithymics and nonalexithymics among high negative affect subjects only, $t(32) = 2.08$, $p < .05$. A similar effect was found for the happy film. Significant differences in optimism of judgments between alexithymics and nonalexithymics were found for high negative affect subjects only, $t(32) = 2.20$, $p < .05$. For the angry film, however, there were no significant differences in optimism between alexithymics and nonalexithymics among either high or low negative affect subjects.

Discussion

The purpose of this study was to more precisely understand the nature of alexithymia by examining its relationship to responses to affect-eliciting stimuli. A clear finding of this study is that to understand the behavior of alexithymics, their degree of negative affect must be considered. The differences between alexithymics and nonalexithymics regarding responses to affect-eliciting stimuli vary with level of negative affect.

Alexithymia has been said to describe individuals who have difficulty identifying and/or expressing their

emotions. Based on this knowledge, we expected alexithymics to report less emotion than nonalexithymics after viewing the affect-eliciting filmclips. This study, however, found that alexithymics reported as much emotion and, in some cases, more emotion than nonalexithymics. For example, collapsing across levels of negative affect and film type, alexithymics reported more sadness than nonalexithymics. This contradicts the existing definition of alexithymia, which states that alexithymics do not express their emotions as much as nonalexithymics. We have two possible explanations for this unusual finding. We will propose that (1) alexithymics are more confused about what they are feeling than nonalexithymics; and (2) alexithymics experience more negative emotion than nonalexithymics.

One explanation is that alexithymics, being more confused about their feelings, might be more likely to display demand characteristics than nonalexithymics. Completing the closed-ended items on the affect measure is a simple way to express one's emotions. Alexithymics might not be experiencing more emotion than nonalexithymics, but might give emotional

responses based on their beliefs of how they are expected to respond. We developed this hypothesis after observing that low negative affect, nonalexithymics reported less sadness after the sad filmclip than the other three groups. We believe that high negative affect subjects might be more sensitive to the sad film than low negative affect subjects, and therefore report more sadness. Our findings support this idea, but only if the low negative affect subjects were also nonalexithymic. We hypothesize that the low negative affect subjects who were alexithymic were confused about their emotions, but reported a high degree of sadness because they believed such a response was expected.

Another explanation, which does not necessarily contradict the first, is that alexithymics experience more negative feelings than nonalexithymics, but are rarely able to express such feelings in a simple manner. Our measure of affect is a simple way to express one's feelings. The film rating sheet asks subjects how much each of nine emotions were experienced, three of which clearly describe happiness, three of which clearly describe sadness, and three of

which clearly describe anger. Rating the films might allow alexithymics a simple way to express their negative emotions. This hypothesis is supported by our findings that the tendency for alexithymics to report more emotion than nonalexithymics is much stronger for the negative emotions than it is for happiness.

Some researchers suggest that alexithymics feel more discomfort with emotions than nonalexithymics (Berenbaum & James, 1992). If this is true, alexithymics could view the task of rating the films as a way to express their emotions without feeling discomfort. Thus, our affect measure might not only allow emotion to be reported simply, but also painlessly.

Future research could test our hypotheses by measuring alexithymics' emotional responses with more open-ended items. Alexithymics might not be as willing or able to verbalize or write about their emotions as they are to choose a number to express them. We plan to further investigate the relationship of alexithymia and reported emotion by coding the answers to the questionnaire given at the end of the experiment, which

asks the subjects to describe their reactions to each filmclip.

Besides problems with emotional expression, alexithymics are also said to have difficulty discriminating between negative emotions such as sadness and anger. Our study suggests that the validity of this facet of alexithymia's definition very much depends on the individual's level of negative affect. We found an interaction between alexithymia and negative affect for specificity scores. Our explanation of this finding supports the two points made above: (1) alexithymics are more confused about what they are feeling; and (2) alexithymics experience more negative emotion than nonalexithymics.

Among high negative affect subjects, nonalexithymics report more sadness after the sad clip and more anger after the angry clip than alexithymics. They also report less anger after the sad film and less sadness after the angry film than alexithymics. Thus, among high negative affect subjects, alexithymics do not differentiate between feelings of anger and sadness as much as nonalexithymics do.

Among low negative affect subjects, alexithymics have higher specificity scores than nonalexithymics, but not because they are expressing less inappropriate emotion. In fact, alexithymics report more of the inappropriate negative emotion after both negative films than do nonalexithymics (i.e. anger after the sad film and sadness after the angry film). Alexithymics have higher specificity scores than nonalexithymics because alexithymics report much more sadness in response to the sad film and more anger in response to the angry film than nonalexithymics. This can be explained by either or both of the two hypotheses presented earlier: Alexithymics could be more likely to display demand characteristics and/or they could be experiencing more negative emotion.

Previous research has found that alexithymia is associated with interpreting emotional information negatively rather than positively (Borenbaum & Prince, 1992). This finding might suggest that alexithymics have a more negative view of the world than nonalexithymics. For example, it is possible that alexithymics interpret others' behavior as more hostile and outside events as more negative than do

nonalexithymics. This interpretation bias could be the result of growing up in a hostile environment.

Berenbaum and James (1992) found that increased levels of alexithymia were associated with feelings of being emotionally and physically unsafe and insecure while growing up. Our study supports the hypothesis that alexithymics have a more negative view of the world than nonalexithymics. Alexithymics tended to give less optimistic judgments than nonalexithymics.

In addition to examining level of optimism across filmclips, we also examined how much subjects' optimism changed as a function of the filmclip viewed. According to Schwarz and Clore's (1983) mood-as-information theory, subjects must be experiencing and referring to a mood state for it to influence evaluative judgments. Alexithymics have been said to have difficulty identifying their emotional states. If alexithymics do not experience or refer to a mood state, the optimism of their judgments should not change after different filmclips. Comparing the influence of the filmclips on optimism, we again found that level of negative affect must be considered when describing differences between alexithymics and

nonalexithymics. Among subjects who experience high negative affect, our study shows that nonalexithymics' level of optimism is more dependent upon the type of filmclip than is alexithymics' level of optimism. Thus, we believe that nonalexithymics might be referring to their emotional states after the filmclips more than alexithymics. This finding suggests that alexithymia cannot be explained as solely a problem in the communication of emotion, at least for subjects who have high negative affect. Unfortunately, our study still cannot determine whether alexithymics are simply not attending to their emotional states or whether they are actually incapable of experiencing an emotional state.

Among subjects who experience low negative affect, our study shows that optimism of judgments is not related to alexithymia. This finding is evidence for the hypothesis that alexithymics are more likely to display demand characteristics. According to the reported sadness scores, alexithymics are experiencing much more sadness after the sad film than nonalexithymics. The groups' judgments, however,

suggest that there is only a slight difference in the groups' emotional experience following the sad film.

With respect to the influence of the filmclips on optimism, the confidence of our interpretations of the results is lowered by the fact that we did not find a main effect for filmclip on optimism. Without confidence that subjects' judgments are being influenced by the affect-eliciting stimuli, it is risky to consider those judgments as indicative of emotional awareness. Future research which takes a similar approach to studying alexithymia should use measures of judgment which have already been found to be sensitive to an individual's affective state.

The present study leads us to draw the following conclusions: (1) An individual's level of negative affect must be considered when describing the influence of alexithymia on responses to affect-eliciting stimuli; (2) alexithymics are probably more confused about what they are feeling than are nonalexithymics; (3) alexithymics probably experience more negative emotion than nonalexithymics; (4) alexithymics probably have a more negative view of the world than nonalexithymics; and (5) alexithymia seems to describe

a deficit in cognitive-affective functioning which is not limited to a problem in emotional expression.

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Table 1

FILM	ANGRY SCORE			
	LOW NA		HIGH NA	
	ALEXITHYMIA		ALEXITHYMIA	
	LOW	HIGH	LOW	HIGH
ANGRY	8.1 (3.9)	10.8 (1.0)	10.1 (4.2)	9.6 (3.2)
SAD	4.7 (3.3)	5.0 (3.7)	4.7 (3.2)	6.6 (3.6)
HAPPY	2.0 (.0)	2.5 (1.4)	2.0 (.0)	3.1 (2.3)

Table 2

FILM	HAPPY SCORE			
	LOW NA		HIGH NA	
	ALEXITHYMIA		ALEXITHYMIA	
	LOW	HIGH	LOW	HIGH
ANGRY	4.9 (2.8)	4.4 (1.5)	4.3 (1.9)	5.8 (4.0)
SAD	3.3 (1.5)	3.0 (.0)	3.0 (.0)	3.3 (1.0)
HAPPY	16.4 (3.5)	16.5 (14.7)	14.7 (4.3)	15.7 (4.0)

Table 3

FILM	SAD SCORE			
	LOW NA		HIGH NA	
	ALEXITHYMIA		ALEXITHYMIA	
	LOW	HIGH	LOW	HIGH
ANGRY	8.1 (4.4)	10.1 (2.4)	9.2 (2.5)	9.9 (4.5)
SAD	13.9 (4.7)	19.5 (1.5)	19.0 (3.3)	17.4 (2.5)
HAPPY	3.0 (.0)	4.5 (3.5)	3.0 (.0)	4.5 (3.1)

Table 4

FILM	SPECIFICITY SCORE			
	LOW NA		HIGH NA	
	ALEXITHYMIA		ALEXITHYMIA	
	LOW	HIGH	LOW	HIGH
ANGRY	1.2 (2.4)	2.0 (1.2)	2.3 (1.7)	1.6 (1.2)
SAD	2.3 (2.1)	3.7 (1.8)	3.8 (2.1)	2.5 (1.5)

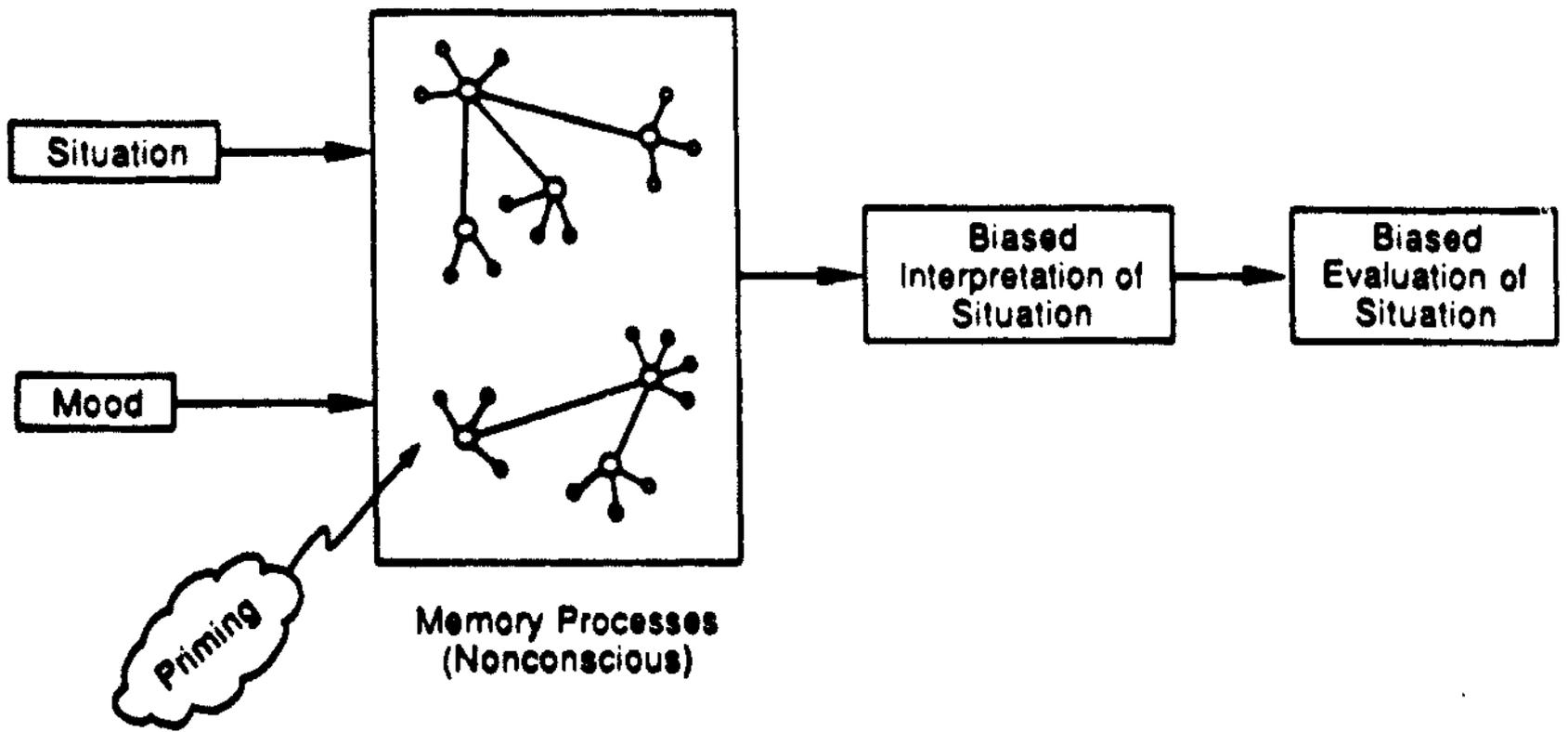
Table 5

FILM	OPTIMISM SCORE			
	LOW NA		HIGH NA	
	ALEXITHYMIA		ALEXITHYMIA	
	LOW	HIGH	LOW	HIGH
ANGRY	.40 (.71)	.14 (1.1)	.15 (1.2)	-.07 (1.1)
SAD	.16 (.91)	.23 (.96)	1.1 (1.2)	-.04 (.98)
HAPPY	.26 (.86)	.16 (1.2)	.69 (.95)	-.21 (.97)

Figure Captions

Figure 1. Priming and mood-as-information theories of mood's influence on cognition (Clore & Parrott, 1991).

PRIMING



INFORMATION

