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Effects of incidental and integral sadness on person memory

Clifford F. Miller
San Jose State University

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EFFECTS OF INCIDENTAL AND INTEGRAL SADNESS ON PERSON MEMORY

A Thesis

Presented to

**the Faculty of the Department of Psychology
San José State University**

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

Clifford F. Miller

August 1999

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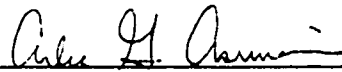
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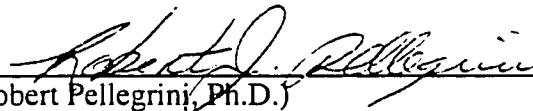
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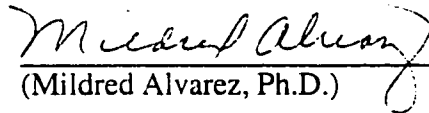
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Abstract

EFFECTS OF INCIDENTAL AND INTEGRAL SADNESS ON PERSON MEMORY

by Clifford F. Miller

Research on mood and person memory has consistently induced mood unrelated, or incidental, to the memory task. This study extended that research by also inducing mood related, or integral, to the task. Participants had one of four moods induced, were given a trait expectancy about a target person, were presented with a series of behaviors this person had performed, and then asked to recall these behaviors. Previous person memory research has typically shown that individuals in a neutral mood are more likely to recall information incongruent with an initial impression than impression-congruent information. Results of this study were consistent with that research. However, participants in both incidental and integral sad mood conditions failed to demonstrate a recall advantage for impression-incongruent information. This pattern of results is consistent with the idea that sad mood, whether incidental or integral to the task, reduces ability to engage in careful information processing.

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EFFECTS OF INCIDENTAL AND INTEGRAL SADNESS ON PERSON MEMORY

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Footnotes

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Abstract

Research on mood and person memory has consistently induced mood unrelated, or incidental, to the memory task. This study extended that research by also inducing mood related, or integral, to the task. Participants had one of four moods induced, were given a trait expectancy about a target person, were presented with a series of behaviors this person had performed, and then asked to recall these behaviors. Previous person memory research has typically shown that individuals in a neutral mood are more likely to recall information incongruent with an initial impression than impression-congruent information. Results of this study were consistent with that research. However, participants in both incidental and integral sad mood conditions failed to demonstrate a recall advantage for impression-incongruent information. This pattern of results is consistent with the idea that sad mood, whether incidental or integral to the task, reduces ability to engage in careful information processing.

Effects of Incidental and Integral Sadness on Person Memory

At present, there is a considerable amount of research attention concerning how affective states such as happiness and sadness influence information processing (Asuncion & Lam, 1995; Bower, 1981; Forgas, 1995; Isen, 1984; Mackie, Asuncion & Rosselli, 1992; Mackie & Worth, 1989). The findings of this research show that information processing varies depending upon the mood of the person. For example, the evidence to date regarding the information processing effects of happiness is relatively consistent: careful and deliberate processing of information is reduced when individuals are happy (Bower, 1981; Mackie & Worth, 1989). These findings demonstrate an increased reliance on heuristics, or general knowledge structures, when the individual is in a positive mood. Happy individuals engage in information processing that involves less effort and greater use of heuristic cues for decision making than individuals who are not in a good mood (Mackie & Worth, 1989; see also Mackie et al., 1992). However, the results of research involving sadness are much less consistent. They are, in fact, conflicting. Some evidence suggests that sadness decreases careful processing of information (Cohen, Weingartner, Smallberg, Pickar, & Murphy, 1982) whereas other studies indicate that sadness increases careful processing (Bless & Fiedler, 1995; Hildebrand-Saints & Weary, 1989).

What accounts for the effects of happiness and sadness on careful processing?

There are two theoretical explanations that have been postulated. The first of these is a cognitive approach, whereas the other is more motivational.

The Cognitive and Motivational Consequences of Mood

The cognitive explanation for the effects of mood on processing suggests that happiness and sadness interfere with careful processing because they deplete cognitive capacity. This would then reduce the ability of an individual to process carefully (Ellis & Ashbrook, 1988; Mackie et al., 1992; Mackie & Worth, 1989). Happiness disrupts careful

processing because it may increase the availability and number of both positive and more diverse associations in working memory. Both of these possibilities might interfere with an individual's ability to allocate the necessary attention to other simultaneous processing tasks. Sadness may also disrupt careful processing, but for different reasons. For example, sadness may induce individuals to devote cognitive capacity to thinking about their mood (Ellis & Ashbrook, 1988) or about how to change their mood by changing their circumstances (Schwarz, 1990). Thus, people in a sad mood will be unable to devote sufficient cognitive capacity to process information carefully.

In contrast to this cognitive explanation, other theorists have proposed that the effects of happiness and sadness on processing are explained more in terms of motivational factors. Schwarz (1990), for instance, suggests that positive affect informs people that their world is a safe and comfortable place. Under these conditions, happy individuals feel little motivation to engage in careful information processing and may engage in less effortful heuristic processing strategies instead (Bower, 1981; Cohen et al., 1982; Forgas, 1995; Mackie & Worth, 1989). In addition, it has also been suggested that individuals who are in a good mood may be motivated to avoid careful processing of information in order to maintain their positive mood (Isen, 1984). Both of these possibilities thus suggest that happiness may decrease people's desire to engage in careful information processing.

The motivational effects of sadness on processing may be different from those of happiness. Schwarz (1990) has suggested that negative affect, such as sadness, informs people that there is the threat of negative outcomes in the situation. Under these circumstances, individuals may be motivated to carefully assess the situation and analyze its causes in order to change the circumstances in which they find themselves. Unlike happiness, sadness may therefore increase people's motivation to engage in careful information processing (Bless & Fiedler, 1995; Hildebrand-Saints & Weary, 1989).

Limitation of Past Mood Research

Although there has been much research on the effects of happiness and sadness on information processing, one of the limitations of this research is that it usually examines mood that is unrelated to the processing task. For example, Mackie and Worth (1989) induced a happy mood state by having individuals watch a comedy segment from a television show and then asked them to evaluate a persuasive message concerning handgun control. In this particular study, as well as in many others examining mood's effects on processing, participants' mood states were due to circumstances completely separate from the actual processing task.

But what about mood that is directly related to the processing task itself? For example, if students are unhappy about something that occurred at school, how would that mood state affect the way they process information presented during classes or the kinds of judgments they make about people they meet there. These questions are important to examine since many of our mood states are caused directly by information we may be dealing with at the time or by the people with whom we are interacting. However, not much is known about how these kinds of mood states influence information processing.

Integral vs. Incidental Mood

Recently though, Bodenhausen (1993) has suggested that a distinction be made between different types of affect people may experience. One type of mood state individuals may feel is called integral affect and it is a mood state that is produced by the social situation in which one finds oneself. In contrast, incidental affect is a mood induced by something other than the situation in which one finds oneself. The purpose of this thesis is to compare the effects of these two types of mood on information processing. It will focus specifically on the effects of sad mood as there are theoretical reasons to believe that processing may be influenced differently depending upon whether the sadness is

integral or incidental to the processing task.

As previously noted, Schwarz (1990) suggests that negative affect, such as sadness, informs people that there is something wrong in their environment and may induce sad individuals to engage in careful processing to try to alleviate the problem. However, engaging in careful processing to reduce the possible threat may only be functional for sad individuals when their mood state was caused directly from the situation in which they find themselves (i.e., integral sadness) rather than when it was due to circumstances other than their present situation (i.e., incidental sadness). On the other hand, if individuals' sadness is incidental, or unrelated to the situation in which they find themselves, then effortful processing with regard to the current task is unlikely to remedy the problem that produced their sadness. Thus, according to this analysis, integral sadness may increase individuals' motivation to engage in more careful information processing, whereas incidental sadness may not do so. In contrast, individuals who experience incidental sadness may not be as motivated to process information as carefully as people who experience integral sadness. This motivational view therefore predicts that sadness will influence careful processing differently depending on whether it is integral or incidental in nature.

However, cognitive explanations of mood effects on processing would predict integral and incidental sadness to influence careful processing similarly. As discussed earlier, these approaches suggest that sadness decreases people's ability to engage in careful processing because it depletes cognitive capacity. Thus, individuals experiencing either integral or incidental sadness should not process information very carefully. It is possible, though, that people who feel integral sadness may experience more processing difficulty than those who feel incidental sadness because their mood state stems directly from the processing situation itself.

Effects of Integral and Incidental Sadness on Person Memory

Because the motivational and cognitive explanations make different predictions regarding the effects of integral and incidental sadness on careful processing, the current study will attempt to determine what those effects are on a particular processing task: the encoding and recall of impression-congruent, incongruent, and irrelevant behavioral information. It is well established that individuals show a recall advantage for impression-incongruent information (Bargh & Thein, 1985; Hastie & Kumar, 1979; Hemsley & Marmurek, 1982; Srull, 1981; Srull & Wyer, 1989). Thus, information incongruent with an initial impression of a target person is recalled better than congruent or irrelevant information.

Hastie (1980) proposed a model, which was later extended by Srull (1981), to explain preferential recall of information incongruent with initial impression information. This model suggests that information about another individual is stored in memory in a network of nodes with links between nodes. (See Figure 1.) The nodes represent pieces of information about that individual. The links represent the relationship between the nodes. As a person acquires new information about the target individual, these items are linked to the initial impression of the target (the person node). Information items congruent with the initial impression form single links to that impression and are processed for a minimum amount of time. In contrast, information incongruent with the initial impression is processed more elaborately by being linked not only to the initial impression, but also to the congruent and other incongruent behaviors. As a result, all of the direct links between items in the network involve incongruent information. Thus, the processing for incongruent information is more elaborative and more links within memory are formed. The reason incongruent information is processed more elaboratively may involve the need to explain why these behaviors occurred in light of the initial impression. Therefore,

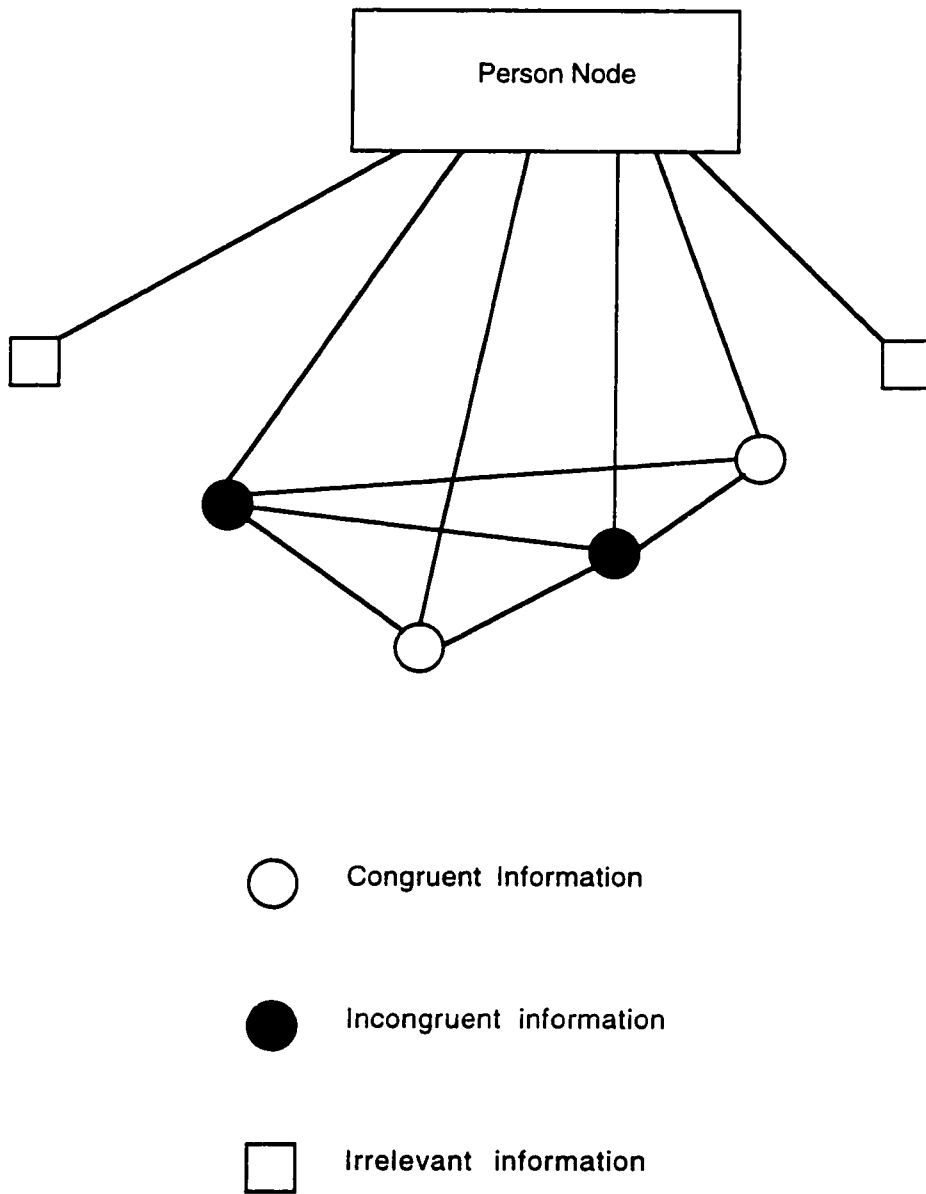


Figure 1. Hastie/Srull associative network model of person memory (after Asuncion & Lam, 1995).

incongruent information is more likely to be recalled because it was processed more elaboratively during encoding and is linked to more information about the target person.

Asuncion and Lam (1995) have demonstrated the effects of incidental sadness on person memory. In their study, individuals in whom an incidental sad, happy, or neutral mood was induced were presented with behavioral information that was congruent, incongruent, or irrelevant to their initial impression of a target person. After information presentation, participants were asked to recall as many of the behavioral items as they could. As expected, individuals in a neutral mood showed a recall advantage for impression-incongruent information, suggesting that they engaged in the type of careful elaborative processing underlying the incongruency effect. In contrast, neither happy nor sad participants showed evidence of the incongruency effect and were equally likely to recall congruent and incongruent information. The failure of both incidental happy and sad participants to show the recall advantage for incongruent information suggests that they did not process these types of behaviors as carefully or elaboratively as participants in a neutral mood.

Goal of Thesis Experiment

The present study extended the findings of Asuncion and Lam (1995) by attempting to determine the effects of integral sadness on person memory and to ascertain if there is a difference in the way people experiencing incidental sadness and integral sadness process information. To do so, participants were induced to experience either a sad or a neutral mood, which was either incidental or integral in nature. They were then presented with behavioral information about a target person and asked to form a clear, coherent impression of this individual. Participants were asked to read behavioral information about an individual which included items that were congruent, incongruent, and irrelevant to their initial expectancy of the target person. After information presentation, participants were

then asked to recall as many of the behavioral items as they could remember. The main dependent measure was the proportion of impression congruent, incongruent, and irrelevant items recalled.

Past person memory research has typically shown that individuals in a neutral mood consistently demonstrate the incongruency effect. Therefore, it was expected that participants in both the incidental and integral neutral mood conditions would show a recall advantage for impression-incongruent information.

In contrast, the anticipated results for those with induced sadness differ according to the motivational or cognitive approaches of moods' effects on processing. The motivational explanation indicates that incidental sadness might reduce individuals' desire to engage in careful information processing, whereas integral sadness might increase individuals' motivation to process information carefully. If this is the case, then participants in the incidental sadness condition should not demonstrate a recall advantage for incongruent information as they might be unwilling to engage in the type of elaborative processing necessary to produce this effect. However, participants in the integral sadness condition should be expected to demonstrate the incongruency effect as they might be more motivated to engage in elaborative processing of the information.

The cognitive approach to moods' effect on processing would predict a different pattern of results, however. According to a cognitive perspective, both incidental and integral sadness might reduce participants' ability to engage in the type of elaborative processing underlying the recall advantage for incongruent information. Therefore, neither the incidental nor integral sadness groups would demonstrate the incongruency effect. Instead, these participants are expected to be just as likely to recall impression-congruent as incongruent information.

Method

Participants and Design

One hundred sixty-three undergraduate students at San José State University participated in this experiment in partial fulfillment of the requirements for an introductory psychology course. Approximately equal numbers of male and female students participated in this study. Participants were randomly assigned to a 2 (incidental vs. integral mood) x 2 (neutral vs. sad mood) x 2 (intelligent vs. unintelligent trait impression) between-subjects factorial design and were run in groups of up to five.

Stimulus Material

Intelligent and unintelligent behavioral information. Lists of sentences describing intelligent, unintelligent, and irrelevant (neither intelligent nor unintelligent) behaviors were generated by the experimenters. These behavior descriptions were of approximately equal length. The lists were then pretested on a group of thirty additional participants who indicated whether the description reflected an intelligent, unintelligent, or neutral behavior by rating them on a nine-point Likert-type scale anchored by 1 = very unintelligent and 9 = very intelligent. From these ratings, 10 items describing intelligent behavior, 10 items describing unintelligent behavior, and 5 items describing neutral behavior were selected for the experiment. Overall, the behaviors reflecting intelligence were rated as more intelligent ($M = 6.75$) than the unintelligent behaviors ($M = 2.95$), $t(31) = 11.37$, $p < .001$, and the irrelevant behaviors ($M = 5.02$), $t(31) = -6.23$, $p < .001$. (A complete list of behaviors is included in Appendix B.)

Mood induction videotapes. Materials for the mood manipulation were four videotape segments. Each was approximately 5 minutes long. The video clip designed to induce an incidental sad mood was about children with cancer and the one designed to induce an incidental neutral mood was about proper horse grooming. These clips have

been used in previous research (Asuncion & Lam, 1995) to induce the desired moods.

The video segment for the integral neutral mood and that for the integral sad mood were developed specifically for this experiment. The one designed to induce an integral neutral mood was of a student describing a typical day in his life. The video clip designed to induce an integral sad mood was one of a student telling about the death of his father. The moods induced by these video clips were intended to be integral because the person on the videotape was the same person about whom participants formed an impression later in the experiment. These video segments were chosen on the basis of pretests done on a group of additional participants who were not in the actual experiment. Pretest participants were asked to indicate their mood subsequent to watching the videotapes. These mood ratings were made on two 9-point Likert-type scales and asked how participants felt (where 1 = sad and 9 = happy) as well as what their mood was at the present time (where 1 = bad and 9 = good). When these two questions were combined to form a single index of mood (Cronbach's alpha = .73), analysis indicated that pretest participants felt sadder after watching the sad video ($M = 3.67$) than the neutral video clip ($M = 5.75$), $F(1, 27) = 5.55$, $p < .05$.

Procedure

Mood manipulation. Participants were told initially that they would be taking part in two separate studies during the experimental session. In the "first" study, participants were asked to help evaluate some video materials to be used in a future experiment. In fact, the video materials were those designed to elicit either the incidental neutral, integral neutral, incidental sad, or integral sad moods. Subsequent to watching the videotape, participants completed a questionnaire designed to assess their mood. Among the items included in the questionnaire, participants indicated on nine-point Likert-type scales how the video made them feel (1 = sad, 9 = happy) and how they feel at the present time (1 =

bad, 9 = good). The completed questionnaire was collected and participants were thanked for their help.

Trait impression manipulation. Participants were then informed that the "second" study was concerned with how impressions are formed of other people. They were then told their task was to form an impression of an individual named "Tim". In the integral neutral and integral sad mood conditions, participants were told that Tim was the person they saw on the videotape, whereas students in the incidental neutral and sad mood conditions were not told this. This instruction was particularly important to include in the integral sad and integral neutral mood conditions in order to ensure that participants' sadness stemmed directly from the person about whom they would be forming an impression.

To help participants form their impressions, they first read a short description about Tim to create an initial impression about his personality. Some people learned that Tim was intelligent, whereas others learned that he was unintelligent. The reason for this trait manipulation was to ensure that our results did not depend on the valence of the trait impression provided to participants. People given the "intelligent" trait impression read the following description: "Tim tends to be much more intelligent and bright than the average person. He tends to enjoy challenging his mind, thinking hard about issues, and he generally values clever ideas and complex activities." Participants given the unintelligent trait impression read: "Tim tends to be much less intelligent and bright than the average person. He tends not to enjoy challenging his mind, nor thinking hard about issues, and he generally does not value clever ideas and complex activities." Both descriptions were taken from Srull (1981) and have been used successfully to manipulate participants' trait impressions.

Presentation of congruent, incongruent, and irrelevant behavioral information.

After reading the descriptive paragraph, each participant then read 20 sentences describing behaviors that Tim performed. Each behavioral sentence was typed and centered on a sheet of paper. Of the 20 items participants read, 10 behaviors were congruent with the trait impression conveyed in the paragraph, 5 were incongruent, and 5 were irrelevant behaviors. Participants were asked to form a clear, coherent impression of Tim as they read the behaviors. Behaviors were presented randomly with the constraint that the first and last items were always congruent items. Participants were given 5 seconds to read each behavioral statement, which previous research (Asuncion & Lam, 1995) has shown to be enough time to process each statement once.

Dependent Measures

After they finished reading the behaviors, participants were given a three-minute filler task to eliminate the effects of short-term memory and to prevent rehearsal of the behaviors. Participants were then provided with blank paper and asked to recall as many of the behaviors as they were able. They were given 3 minutes to do so. The instructions for this task were "Write as many of Tim's behaviors as you are able. You do not need to write them word for word. Just do your best to recall as many of the behaviors as you can." The main dependent measure was the proportion of impression-congruent, impression-incongruent, and irrelevant items recalled by each participant.

Results

Manipulation Checks

Mood Manipulation. Participants' responses to four items assessing mood after watching the videotapes were averaged to create a single mood index (Cronbach's alpha = .71). The four items were nine-point Likert-type items and included "What mood are you in at this time?" anchored by 1 = sad and 9 = happy, "In general, what is your present

mood?" anchored by 1 = very bad and 9 = very good, "How do you feel right now?" anchored by 1 = sad and 9 = happy, and "What is your mood at this time?" anchored by 1 = very bad and 9 = very good. This index was analyzed using a 2 (incidental or integral mood) x 2 (neutral or sad mood) x 2 (intelligent or unintelligent trait impression) between-subjects analysis of variance (ANOVA). Results indicated that as intended, participants who watched the sad videotapes reported being sadder ($M = 4.91$) than people who watched the neutral videotapes ($M = 5.35$), $F(1, 155) = 7.76$, $p < .01$. The source of participants' mood (i.e., whether it was incidental or integral) did not interact with their reported mood state, $F(1, 155) = 3.16$, $p < .08$. That is, people in the incidental sad condition reported feeling just as sad ($M = 4.87$) as people in the integral sad condition ($M = 4.97$). Similarly, people in the incidental neutral condition reported feeling about the same ($M = 5.59$) as people in the integral neutral condition ($M = 5.13$). Presentation of the videotapes therefore successfully induced either a sad or neutral mood.

Trait impression manipulation. Effectiveness of the trait impression manipulation was determined by assessing participants' responses to an item asking how intelligent they believed Tim to be. The item was a nine-point Likert-type scale anchored by 1 = not at all intelligent and 9 = very intelligent. This item was asked after participants recalled the behavioral items about Tim. A 2 (incidental or integral mood) x 2 (neutral or sad mood) x 2 (intelligent or unintelligent trait impression) between-subjects ANOVA indicated that participants who initially learned that Tim was intelligent reported him to be more intelligent ($M = 6.83$) than those participants who initially learned that he was unintelligent ($M = 5.26$), $F(1, 155) = 32.20$, $p < .001$, as intended. In addition, sad participants reported Tim to be more intelligent ($M = 6.37$) than those in a neutral mood ($M = 5.85$), $F(1, 155) = 4.45$, $p < .04$. Most importantly, however, the initial trait impression about Tim was successful in creating different expectancies about his personality.

Recall of Congruent, Incongruent, and Irrelevant Items

First, the total number of behavioral items people recalled was calculated to determine whether overall recall was influenced by the independent variables. Analysis of participants' recall scores did not yield any significant differences. Specifically, sad participants seemed to recall just as many behaviors ($M = 6.76$) as participants in a neutral mood ($M = 6.93$), $F(1, 155) < 1$. These results seem to suggest that participants' mood state did not influence the total number of behavioral items recalled.

The recall analysis of primary interest, however, concerns the differential recall of congruent, incongruent, and irrelevant behaviors. It was anticipated that the typical person memory findings would be replicated in the neutral mood conditions. That is, participants in the neutral mood conditions were expected to demonstrate a recall advantage for impression-incongruent information.

In contrast, results for participants with induced sadness were anticipated to differ depending upon the motivational or cognitive consequences of their mood for processing. If motivational factors are at work, participants in the incidental sadness condition should not demonstrate a recall advantage for incongruent information as they might be unwilling to engage in the type of elaborative processing necessary to produce the effect. In contrast, participants in the integral sadness condition should be expected to demonstrate the incongruency effect as they might be more motivated to engage in elaborative processing of the information.

If cognitive factors influence processing, however, a different pattern of results might be found. According to a cognitive approach, neither the incidental nor integral sadness groups would be expected to demonstrate the incongruency effect. Instead, these participants were expected to be just as likely to recall impression-congruent as incongruent information as they would have a decreased cognitive capacity and would be unable to

process information elaboratively.

To test these hypotheses, the proportion of congruent, incongruent, and irrelevant items recalled by each participant was calculated. These scores were then analyzed in a 2 (incidental or integral mood) x 2 (neutral or sad mood) x 2 (intelligent or unintelligent trait impression) x 3 (congruent, incongruent, or irrelevant item type) mixed ANOVA with repeated measures on the last factor. This overall analysis yielded two significant two-way interactions. One of these interactions involved the kind of trait impression given to participants and item type recalled, $F(2, 310) = 3.41, p < .04$. This interaction showed that people who learned that Tim was intelligent recalled a greater proportion of irrelevant behaviors ($M = .45$) than incongruent ($M = .37$), $F(1, 164) = 7.88, p < .006$, or congruent behaviors ($M = .28$), $F(1, 164) = 37.33, p < .0001$. In contrast, participants who learned that Tim was unintelligent were less likely to recall impression-congruent behaviors ($M = .31$) than either incongruent ($M = .37$) or irrelevant behaviors ($M = .37$), both $F_s(1, 146) = 4.38, p < .04$. Recall of incongruent and irrelevant behaviors did not differ.

More importantly for the predictions, however, was the significant two-way interaction found between the valence of participants' mood and the type of item recalled, $F(2, 310) = 3.78, p < .02$. To explore this interaction more fully and to directly test the hypotheses, the proportion of impression-congruent, incongruent, and irrelevant items recalled by each individual were again calculated and then analyzed separately for participants in the neutral and sad mood conditions. These scores were analyzed in a 2 (incidental or integral mood) x 2 (intelligent or unintelligent trait impression) x 3 (congruent, incongruent, or irrelevant item type) mixed ANOVA with repeated measures on the last factor.

Neutral mood condition. It was expected that the typical recall advantage for impression-incongruent information found in previous person memory research would be

replicated in the neutral mood condition, regardless of the source of this mood. As expected, both incidental and integral neutral mood participants recalled a greater proportion of incongruent behaviors ($M = .40$) than congruent ones ($M = .29$), $F(1, 170) = 17.45$, $p < .0001$. Further post-hoc analyses showed that neutral mood participants were also more likely to recall irrelevant ($M = .40$) than congruent behaviors, ($M = .29$), $F(1, 170) = 16.74$, $p < .0001$, but recall of incongruent and irrelevant items did not differ, $F < 1$. (See figure 2 for individual means.)

However, the results also showed that participants in incidental and integral neutral moods were more likely to show this incongruency effect when they learned that Tim was unintelligent than when they learned that he was intelligent, $F(2, 170) = 6.06$, $p < .003$. (See Figure 3 for means.) Specifically, neutral mood participants who initially learned that Tim was unintelligent recalled a higher proportion of incongruent behaviors ($M = .40$) than congruent ($M = .30$), $F(1, 80) = 5.73$, $p < .02$, or irrelevant behaviors ($M = .32$), $F(1, 80) = 3.86$, $p < .05$. Recall of congruent and irrelevant items did not differ from one another, $F < 1$. This pattern of recall replicates the typical incongruency effect found in previous person memory research and is consistent with the idea that neutral mood participants apparently engaged in the type of elaborative processing contributing to the incongruency effect. In contrast, although neutral mood participants who learned that Tim was intelligent also recalled a higher proportion of incongruent behaviors ($M = .41$) than congruent ones ($M = .28$), $F(1, 90) = 12.21$, $p < .0007$, they recalled a higher proportion of irrelevant behaviors ($M = .47$) than either incongruent or congruent items, $F(1, 90) = 3.16$, $p < .08$ and $F(1, 90) = 27.79$, $p < .0001$ respectively. Therefore, the analyses seem to indicate that both incidental and integral neutral mood participants showed a recall advantage for impression-incongruent over congruent information. However, the effect was relatively stronger for people who were given the unintelligent rather than the intelligent trait

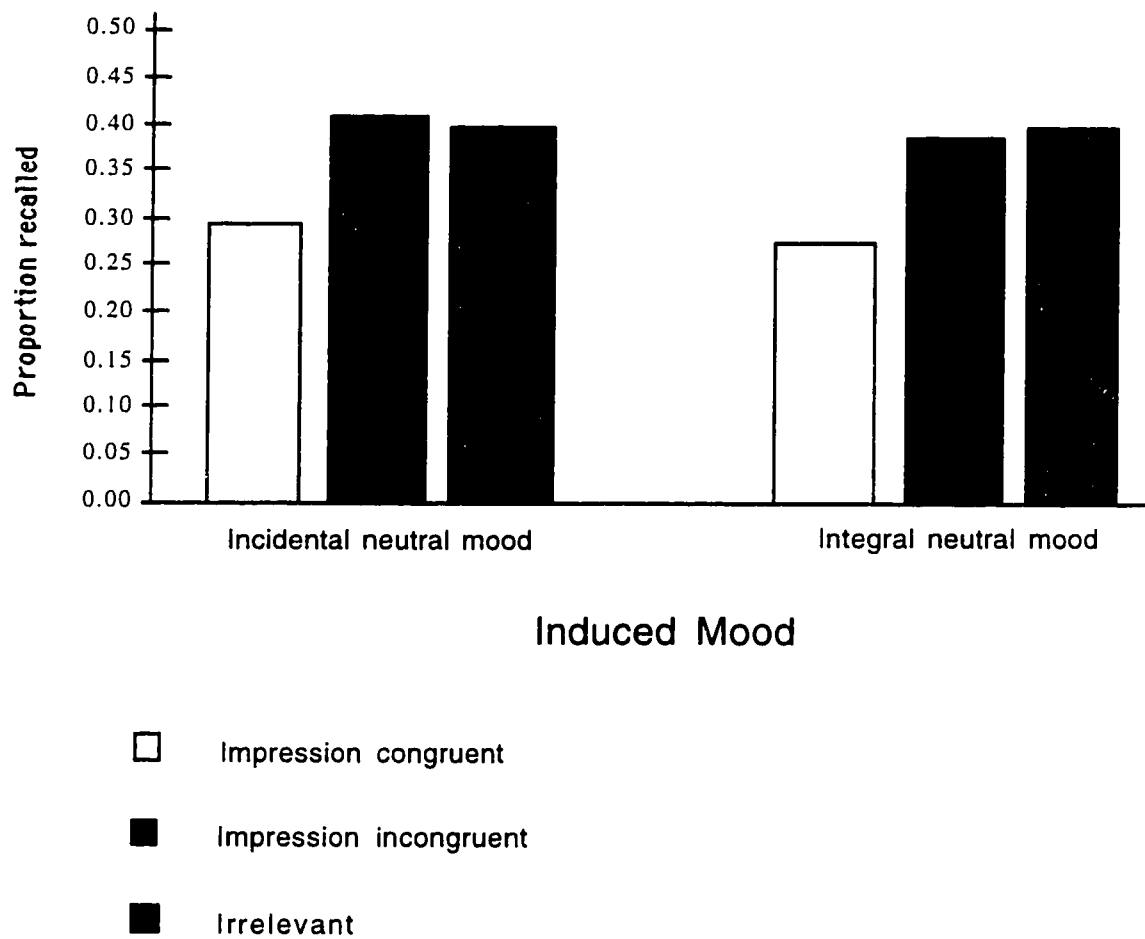


Figure 2. Proportion of impression congruent, incongruent, and irrelevant information recalled under neutral mood conditions.



Figure 3. Proportion of impression congruent, incongruent, and irrelevant information recalled under neutral mood conditions as a function of trait expectancy.

impression.

Sad mood condition. In the sad mood conditions, different patterns of results were expected depending on whether motivational or cognitive factors affected participants' processing. Analyses yielded a significant main effect of the type of item recalled, $F(2, 140) = 10.15, p < .0001$. This main effect revealed that regardless of the source of their mood, sad participants failed to show evidence of the recall advantage for impression-incongruent information. Both incidental and integral sad mood participants were just as likely to recall incongruent ($M = .33$) as congruent behaviors ($M = .30$), $p < .23$. In fact, sad participants had a greater probability of recalling irrelevant behaviors ($M = .43$) than either incongruent, $F(1, 140) = 9.83, p < .002$, or congruent ones, $F(1, 140) = 18.87, p < .0001$. The failure of participants in both the incidental and integral sad mood conditions to show a recall advantage for incongruent information is more consistent with the idea that sadness would decrease participants' cognitive capacity that is necessary to engage in the type of careful elaborative processing contributing to the incongruency effect. In contrast, the analyses did not reveal any evidence that motivational factors affected sad participants' processing since the two-way interaction between the source of participants' mood and the type of item recalled failed to reach significance, $F < 1$. (See Figure 4 for means.)

Discussion

The purpose of this study was to extend research findings on mood and person memory. As previous research has consistently induced mood which is unrelated, or incidental, to the memory task, the current study extended that research by also inducing mood which is integral, or related to, the task.

Results of this experiment were generally in agreement with what was expected. As predicted, participants in both incidental and integral neutral moods demonstrated greater recall of impression-incongruent information compared to impression-congruent

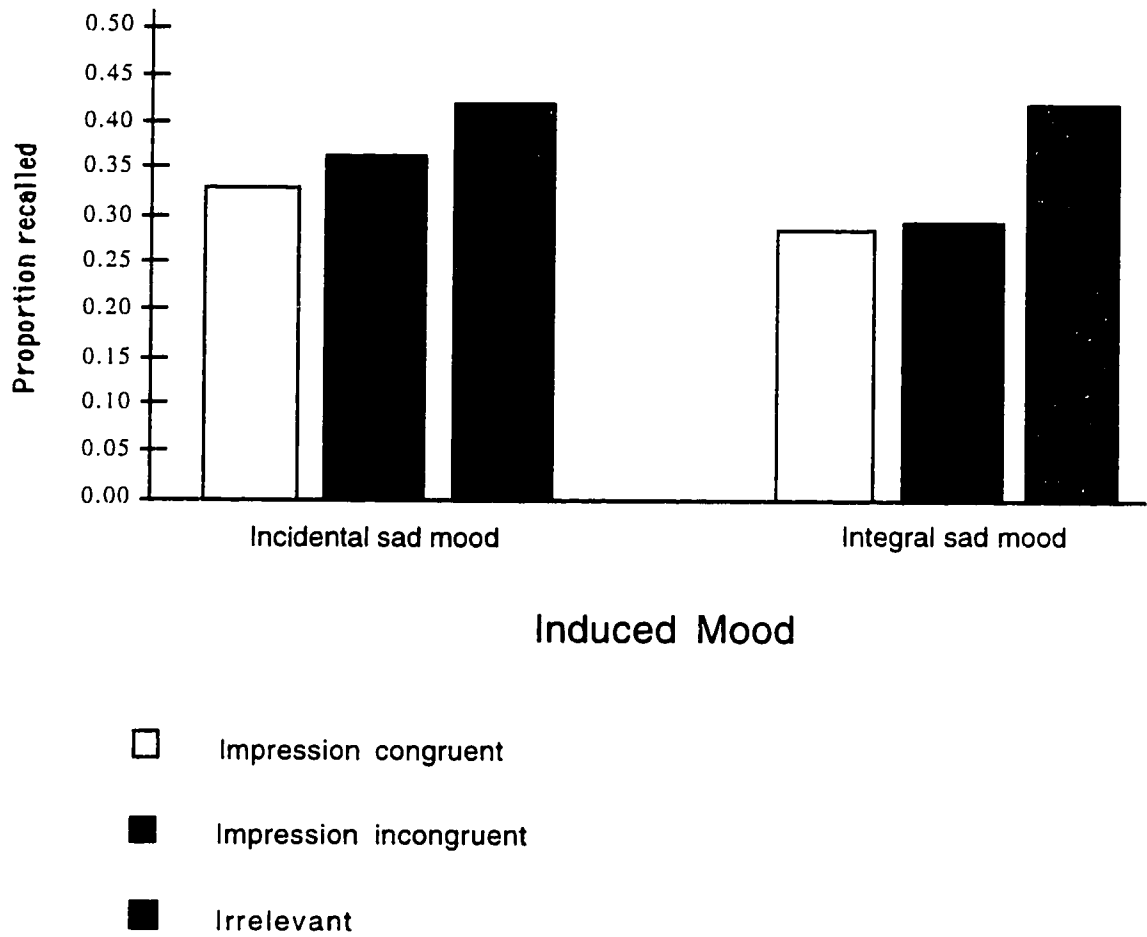


Figure 4. Proportion of impression congruent, incongruent, and irrelevant information recalled under sad mood conditions.

information. This is consistent with previous person memory research and indicates those in neutral moods processed information carefully. However, the results of the neutral mood conditions did not perfectly match the typical incongruency effect of greatest recall of incongruent behaviors followed by congruent behaviors and least recall of irrelevant behaviors. In this study, those participants in a neutral mood given an intelligent trait impression recalled a higher proportion of irrelevant behaviors than either congruent or incongruent items. Other researchers (Belmore & Hubbard, 1987, experiment 2) have also found greater recall of irrelevant items under some conditions. One possible reason for these somewhat unusual results is that because of the initial impression set of Tim as intelligent, those behaviors that were considered as neutral for intelligence when they were pretested, were not necessarily considered irrelevant by participants in the experiment. It could be that these behaviors, such as "Likes a cup of coffee and a donut every morning for breakfast." or "Had a cheeseburger and fries for lunch in a fast food restaurant.", were considered as incongruent with the intelligent impression set, as participants may have thought that intelligent people should have a healthier diet, one that does not include such high-fat foods as donuts, cheeseburgers, and french fries. Therefore, these behaviors were processed more carefully than might be expected in an attempt to reconcile them with the intelligent trait impression. The suggestion that neutral information may be interpreted as relevant to a schema has been proposed by Taylor and Crocker (1981). The difference in recall between those participants in a neutral mood given the intelligent as compared to the unintelligent impression set indicates that this particular impression set may also have been particularly salient to college students or influenced the results in some other, as yet unknown, way. Additional research should be conducted using a different impression set to explore this possibility.

The results for those in the sad mood conditions were more consistent than those in

the neutral conditions. Both people in whom an integral and an incidental sad mood was induced did not demonstrate the typical person memory incongruency effect. This pattern of results is more consistent with the view that a sad mood reduces the ability of participants to engage in careful processing of information. Further, the results of those in a sad mood are theoretically supported by the Resource Allocation Model (Ellis & Ashbrook, 1988) which indicates that the amount of cognitive capacity available for task-relevant processing is reduced if a person is in a sad or depressed mood. This reduction in capacity will therefore reduce the careful, elaborative processing that produces the incongruency effect.

The results of this study also indicate that participants in a sad mood were more likely to recall irrelevant behaviors than either impression-congruent or incongruent information. One possible reason for this is that the neutral behaviors were much more common occurrences than either the intelligent or unintelligent behaviors, and hence were memorable, and required little elaborative processing because of their commonness. Post-hoc testing of the behaviors revealed that the irrelevant behaviors were judged more common ($M = 6.81$) than the intelligent behaviors ($M = 3.84$), $t(17) = 8.66$, $p < .0001$, and also more common than the unintelligent behaviors ($M = 4.11$), $t(17) = 8.40$, $p < .0001$. There was no difference in the commonness of the intelligent and unintelligent behaviors, $t(17) < 1$, n.s. The Resource Allocation Model (Ellis & Ashbrook, 1988) predicts that information that is very familiar will require less cognitive capacity for processing and hence will be impaired to a lesser extent.

As with all research, some questions are answered, but others appear. First of all, what was the reason the incongruency effect was stronger for neutral mood participants given the unintelligent impression set compared to the intelligent impression set? Was it because the intelligent impression set was particularly salient to the participants, university

students, and so they focused on different behaviors? This study should be conducted again using a different impression set in order to determine if the intelligent/unintelligent one used herein unduly influenced the results. Also careful analysis of the behavior items used as irrelevant should be tested in conjunction with the impression set to determine if there is some interaction between them.

A second question that comes to mind is that of other negative affective states. Would anxiety or anger produce similar results and interfere with elaborative processing? Answering this question seems particularly important as many people find themselves in situations in which they are either anxious or angry. Wilder & Shapiro (1989) found that anxious research participants recalled less correct information about target people than did participants who were not anxious. They may, therefore, be unable to process information carefully in these situations and hence rely more on heuristic clues. Would these anxious people also fail to show the incongruity effect? Anger might also produce a reduction in elaborative processing and hence interfere with the recall of information that is incongruent with an impression previously formed of an individual. Angry people might therefore rely more on stereotypes than on actual behaviors when they remember an interaction with an individual.

Thirdly, this study seems to indicate that cognitive capacity is reduced when participants engaged in either an incidental or integral task. However, would the nature of the mood, whether it is incidental or integral to the task have any effect on processing if the person is angry or anxious? These are questions for which answers would be helpful for better understanding what influences person memory.

The practical applications of this research are many. One important application is within the school setting. Here, students are required daily to process information. If these students are in a sad mood, for whatever reason, they may be unable to process

information carefully and elaboratively due to a reduction in cognitive capacity. Ideally, students under these circumstances should receive counseling or other help to alleviate their sad mood as rapidly as possible to restore cognitive capacity for the processing tasks necessary. Another application for the results on mood and memory is in a court of law. Here, again, a sad mood might reduce the ability of jurors to process information carefully. They may, therefore, be more likely to rely on heuristics such as race, general appearance, or other cues to form judgments rather than think carefully about and weigh the evidence presented.

In conclusion, this research explored whether a task integral to the source of a sad mood produced processing that was different from processing when the task was incidental to the mood source. In both situations participants failed to show a recall advantage for impression-incongruent information. This lends support to the idea that a sad mood results in a reduction in careful, elaborative processing of information and possibly greater reliance on heuristics. The results also support the idea that the reduction in elaborative processing may be due to a reduction in cognitive capacity available for information processing.

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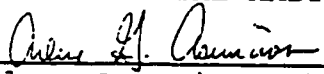
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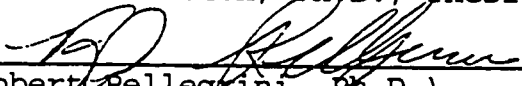
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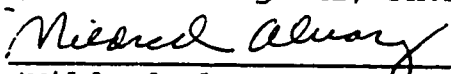
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FROM: Serena W. Stanford *Serena W. Stanford*
AVP, Graduate Studies & Research

DATE: February 12, 1998

The Human Subjects-Institutional Review Board has approved your request to use human subjects in the study entitled:

"Effects of Incidental and Integral Sadness on Person Memory"

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The Board's approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Serena Stanford, Ph.D., immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information.

Please also be advised that all subjects need to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

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Appendix B

Behaviors Used to Describe the Target Person

Intelligent Behaviors

1. Solved a complicated computer problem in his spare time.
2. Can solve every Sunday morning crossword puzzle.
3. Taught himself to speak three foreign languages fluently.
4. Graduated valedictorian of his high school class.
5. Remembers most of the lines from Shakespeare's "Romeo and Juliet."
6. Explained the lecture to those students who did not understand it.
7. Impressed his professor by asking perceptive questions.
8. Has a reputation for being an exceptional chess player.
9. Likes to watch the documentaries on the educational channels.
10. Was called on the phone and asked to join an honor society.

Unintelligent Behaviors

1. Sleeps through most of the class lectures then wonders why he scores poorly on exams.
2. Accidentally deleted all of his wordprocessing files on his computer.
3. Failed his written drivers test for the fourth time.
4. Mailed his letters in the trash can next to the mailbox on the street by mistake.
5. Couldn't figure out why everyone was laughing at the comic strip.
6. Had to repeat the same introductory sociology course two times.
7. Couldn't remember where he parked his car when he got back to the parking lot.
8. Made the same multiplication mistake three times in a row.
9. Was easily conned into investing money in a nonexistent company.

(appendix continues)

Appendix B. (continued)

10. Got lost several times taking the bus to work.

Irrelevant (neither intelligent nor unintelligent) Behaviors

1. Waters the flower beds and mows the lawn every weekend.
2. Washed and waxed his car last Sunday.
3. Went down to the corner grocery store to get the newspaper.
4. Likes a cup of coffee and a donut every morning for breakfast.
5. Had a cheeseburger and fries for lunch in a fast food restaurant.