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Effects of Mood on Using Analogies to Solve Problems and Reduce Conflict

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Abstract

Past research has shown that analogies and metaphors can be useful tools in problem solving tasks (e.g., Gick & Holyoak, 1980). In addition, mood has been shown to have an effect on a person's ability to generate solutions to problems (Abele, 1992). The present study was designed to investigate how mood affects analogical problem solving, especially in relation to conflict resolution. I examined whether mood has the same effect on the use of analogies to solve interpersonal conflict problems as it does on the use of analogies to solve cognitive problems. In this experiment, participants began by writing about an especially happy or sad personal experience. After this mood induction, participants were presented with one solved interpersonal conflict problem and then its unsolved analogical problem as well as one solved cognitive problem and then its unsolved analogical problem. The participants were then instructed to type all possible solutions to the unsolved problems they read. Results showed that mood did not affect average analogy scores across both problems nor that mood differentially affected cognitive versus interpersonal problems. However, participants in a positive mood showed greater overall average solution efficacy scores, suggesting better overall problem solving abilities. In addition, participants had a more difficult time coming up with analogical solutions for the interpersonal problem as compared to the cognitive problem, but that they had a more difficult time coming up with alternative solutions for the cognitive problem as compared to the interpersonal problem. Implications as well as limitations of this study are discussed.

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Problem solving is an important part of the conflict resolution process (Carnevale, & Isen, 1986). Past research has shown that the use of analogies and metaphors is particularly useful in problem solving (e.g., Gick & Holyoak, 1980). In fact, one counseling technique involves using metaphors to help people solve personal problems (Leseho, 2001). When individuals are told stories in which the protagonist deals with similar situations but is able to resolve his or her problems, the individual is more likely to discover new options for resolving his or her own problems that were not apparent to him or her before the analogy. In other words, the individual uses the solution from the protagonist's situation as a model for the solution to his or her own problem.

This type of counseling technique is a specific type of problem solving strategy known as analogical problem solving. A classic experiment demonstrating this strategy was conducted by Gick and Holyoak in 1980. They presented participants with a solved "story problem," which was followed by another unsolved problem. Participants were required to talk through this second problem in order to generate their own solutions to it. The two problems were actually analogous problems from two different domains. This means that the solution to the first problem could be used as the analogous solution to the second problem. One of three different types of solutions followed the first story problem, and Gick and Holyoak (1980) found that participants did indeed use the corresponding solution from the first problem to generate a solution for the second. Depending on the solution presented, between 70 and 100% of participants generated a solution consistent with the analogous solution provided.

Analogical problem solving, mentioned above, reflects a cognitive process similar to the processes shown to be influenced by mood. Mood is defined as a temporary and subjective state and can be differentiated from emotion by the fact that it is usually of lower grade intensity (Morris, 1989). Mood interacts with cognitive processing such that positive and negative moods can be linked to different cognitive styles (Isen, 1999). For instance, positive mood has been shown to broaden attentional scope and has been associated with global processing, while negative mood has been associated with local processing and may lead to focal memory enhancements (Fredrickson & Branigan, 2005; Kensinger, 2009). In addition, people in positive moods use more heuristics than individuals in negative moods (Fredrickson & Branigan, 2005). Individuals in positive moods also engage in more relational processing; that is, positive affect increases the ability to see relations among stimuli. One study showed that individuals induced into positive affective states tended to group more stimuli together and saw more items as related or as members of a category than did control subjects (Isen, Daubmann, & Nowicki, 1987).

Positive mood has also been linked with many processes that aid in problem solving. For example, there is evidence that positive moods increase flexibility in cognition and the flow of ideas (Abele, 1992). People in positive moods also make use of a large and diverse range of information and are able to produce new information beyond the information given to them (Derryberry & Tucker, 1994). They also tend to exhibit greater creativity and generate more novel ideas. For instance, in an experiment conducted by Isen, Johnson, Mertz, and Robinson (1985), participants induced into positive moods gave more unusual and diverse word associations to any given word

presented than did controls. In addition, positive mood has also been shown to enhance transfer effects, which occurs when a person is able to recall knowledge from a previous scenario and use it in a current situation (Brand & Opwise, 2007).

Not only has positive mood been associated with cognitive processes that increase problem solving abilities, but negative mood has been shown to be related to processes that could impair problem solving abilities as well. People in negative moods show an increase in cognitive processes that are unrelated to the task at hand, which can lead to a decrease in task performance (Corson & Verrier, 2007). They are also less likely to see conceptual relations than individuals in neutral or positive moods (Ellis, Varner, Becker, & Ottoway, 1995). In addition, in contrast with the creative and flexible cognitive style of individuals in positive moods, people in negative moods show a more careful and controlled cognitive style (Fiedler, 2001).

Given these past research findings that positive mood is associated with broader attentional scope, cognitive flexibility, and creativity, while negative mood has been linked with an increase in processes unrelated to the task at hand as well as an inflexible and careful cognitive style, one would predict that individuals in a positive mood would show greater problem solving abilities than individuals in negative moods. In addition, because individuals in positive moods show increased relational processing, it might be more likely that that they will see the relationship between an analogy and its problem and therefore be able to solve the problem. Thus, I predicted that participants induced into a positive mood in my experiment would be more likely to use a given analogical solution to solve a problem than would participants induced into a negative mood. In addition, past research has shown that problem solving abilities may vary across the type

of problem that is being solved (Camp, Doherty, Moody-Thomas & Denney, 1989). In fact, one study found that participants' abilities to solve interpersonal, extrapersonal, and intrapersonal problems differed significantly across problem type (Lockland, 1995). Therefore, I was also interested in investigating whether mood affects one's ability to solve cognitive problems differently than it affects one's ability to solve interpersonal problems. The objective of this research is to further our understanding of how interpersonal conflict resolution is related to cognitive problem solving and how mood can facilitate or hinder the conflict resolution process.

Method

Participants

Sixty six students (73% female) were recruited from lower level psychology courses at Butler University. Students received extra credit at the discretion of the professors of each course or were paid $7 for their participation. There were no restrictions based on race, ethnicity, or gender. Participants were randomly assigned to one of two mood conditions: 30 in a positive mood (happy) condition and 33 in a negative mood (sad) condition.

Design

A 2 x 2 mixed factorial experimental design was used, with mood (positive vs. negative) as the between-participants factor and type of problem solving task (interpersonal conflict vs. cognitive problem) as the within-participants factor. The dependent variables were the average score for analogous solutions, the average score for alternative solutions that did not qualify as analogous solutions, and an overall average solution efficacy score in which average analogy scores were combined with average other solutions scores. Scores were based on two different five point scales (see

Appendix A). Further explanation of these scores is provided in the Solution Coding Scale section below.

Materials

Mood Manipulation Check. After each type of problem, participants were given a mood manipulation check questionnaire created by the researcher. This questionnaire helped to determine the extent to which the mood induction was successful. Participants answered questions about how they felt in a number of general life situations and about their personality as well as questions addressing how they felt at the present time (see Appendix B).

Cognitive Problems. The cognitive problem and its analogical scenario were adapted from Gick and Holyoak (1980). The solved problem (the problem presented with its solution, which was the analogous solution to the unsolved problem) was a situation involving an army general and his attack strategy. The unsolved problem was a medical problem that required participants to come up with an appropriate "procedure" as a solution. See appendix C for the actual problems.

Interpersonal Conflict Problems. The interpersonal problem and its analogical scenario were created by the experimenter based on the techniques used by Gick and Holyoak (1980). The solved problem was an interpersonal conflict between two roommates, while the unsolved problem was an interpersonal problem between two partners involved in a group project. See appendix C for the actual problems.

Solution Coding Scale. A blind coder was hired and trained to code participants' solutions in order to see if they were consistent with the analogies provided and to rate the efficacy of other alternative solutions that did not match the analogy criteria. Three

scales were created: one for rating the analogical solutions for the cognitive problem, one for rating the analogical solutions for the interpersonal problem, and one for rating the efficacy of alternative solutions for both problems (see Appendix A). For a given participant, all analogical solution scores for the cognitive problem were combined and then averaged, as were all analogical solution scores for the interpersonal problem. Alternative solution scores for the cognitive problem were combined and averaged, and the alternative solution scores for the interpersonal problem were combined and averaged, leaving us with separate alternative solution scores for each type of problem. Standardization of scores was not necessary given that all solutions were scored on a five point scale.

Procedure

Participants first completed the informed consent agreement. The researcher informed the participant that all directions for the experiment would be given on the computer. This was done to avoid the possibility that interacting with the researcher during the experiment would cancel the effects of the induced mood (Erber, Wegner, & Therriault, 1996).

The basic procedure of this experiment followed Experiment 1 by Gick and Holyoak (1980) with the added component of mood induction. However, one important change was made to the measurement of proposed solutions. While Gick and Holyoak tape recorded their participants as they talked through possible solutions, participants in our experiment were instructed to type all possible solutions to the problems on the computer in front of them.

The experiment began with a brief overview of the procedure. The participant was then instructed to retrieve the packet lying in a folder next to him or her and turn to page one. The directions on this page instructed participants to write about an especially happy or sad personal experience for ten minutes, at which time a bell would ring to let them know to continue with the rest of the experiment. The participants were told that one purpose of the study was to investigate the relationship between language and problem solving and that this required a writing sample from them; however, the real purpose of this step was to induce the participants into a positive (happy) or negative (sad) mood.

After the bell, participants were told that they would be presented with two problems and that after reading each problem, they would either be given its solution or be asked to generate their own solution. Participants were randomly assigned to receive either the interpersonal or cognitive problem first, but the solved problem was always presented first. After reading the analogy problem, participants were presented with its solution, which unbeknownst to them was the analogous solution to the next problem they were about to read. Next, participants were presented with either the corresponding interpersonal conflict or cognitive problem, which was unsolved. The participants were then instructed to type all possible solutions to the problem they had just read on the computer on the computer screen in front of them. After the completion of the first round of problems, participants were instructed to turn to the second page in their packet, which was supposedly a personality questionnaire but in reality was a mood manipulation check questionnaire. This questionnaire was used to determine if the mood was properly induced.

Following the mood questionnaire, participants were instructed to turn to page three of the packet to continue writing about their especially happy or sad experience for another ten minutes, at which time a bell rang once again. The purpose of this step was to reactivate the induced mood. After the second mood induction, participants were presented with whichever problem, interpersonal or cognitive, that they were not presented with already. They read the analogy problem, were given its solution, were presented with the unsolved problem, and were once again asked to type all possible solutions to this problem. After the completion of the second round of problems, participants were instructed to turn to the next page in their packet, which was the second mood manipulation check questionnaire. After completion of this questionnaire, participants were instructed to turn to the final page of their packet and complete a short demographics questionnaire. Finally, participants were instructed to notify the researcher, who began the debriefing process in which the researcher explained the true purpose of the experiment and assured the participant that the story he or she wrote would not be analyzed for content at any time. In addition, participants were given a handout with the researcher's and researcher advisor's contact information as well as contact information for the Butler University Counseling Center.

Results

Exclusion Criteria

Three participants were excluded from data analyses because they were more than two standard deviations from their group's average mood rating, indicating that they may not have been properly induced into their assigned mood.

Mood Manipulation

The mood manipulation was effective. The average mood rating for the sad group was 2.94 while the average mood rating for happy group was 3.19, t (59)= -2.19, $p < .05$. We also analyzed the two mood questionnaire scores separately, with each mood questionnaire matched with the type of problem that preceded it. The mood ratings following the cognitive problems showed that the average mood rating for the sad group was once again lower (M=2.94) than the mood rating for the happy group (M=3.15), t (59)= -1.71, $p < .05$. The mood ratings following the interpersonal problems showed the same results pattern (M_{sad} = 2.94, M_{happy} = 3.23), t (59)= -2.29, $p < .05$. Table 1 includes mean scores as well as standard deviations.

Solution Ratings

A 2 (problem type: interpersonal vs. cognitive) x 2 (mood: sad vs. happy) ANOVA revealed that when average analogy scores were combined with average other solutions scores for overall average solution efficacy, there was a main effect of mood such that average solution efficacy was higher in the happy mood condition (M=1.74) than in the sad mood (M=1.44) condition, F (1, 30) = 3.87, p = .029, one-tailed. There was no main effect of problem type on overall average solution efficacy, F (1, 30) = .201, p = .657. There was also no problem type x mood interaction on overall average solution efficacy, F (1, 30) = .307, p = .584. Table 2 displays the cell and marginal means and standard deviations for mood and problem type on overall average solution score.

Another 2 (problem type: interpersonal vs. cognitive) x 2 (mood: sad vs. happy) ANOVA revealed that there was no main effect of mood on average analogy scores, F (1, 57) = 1.740, p = .192. However, there was a main effect of problem type on average analogy scores; participants had higher average analogy scores for the cognitive problem

(*M*=2.06) compared to the interpersonal problem (*M*=1.67), *F* (1, 57) = 6.141, *p* < .05. The problem type x mood interaction was not significant, *F* (1, 57) = 0.80, *p* = .375. Table 3 displays the cell and marginal means and standard deviations for mood and problem type on average analogy score.

A third 2 (problem type: interpersonal vs. cognitive) x 2 (mood: sad vs. happy) ANOVA revealed that, although there was no main effect of mood on average other solutions scores [F (1, 31) = 2.782, p = .105]. There was also a significant main effect of problem type on the average other solutions scores; participants had higher average other solution scores for the interpersonal problem (*M*=1.51) compared to the cognitive problem (*M*=1.02), *F* (1,31) = 14.923, *p* < .001. The problem type x mood interaction on average other solution scores was not significant, *F* (1, 31) = 0.79, *p* = .382. Although the interaction was not statistically significant, mood did differentially affect the cognitive and interpersonal problems. For the cognitive problem, there was no statistically significant difference between happy and sad mood conditions, *t* (58) = .293, *p* = .770. However, for the interpersonal problems, the average other solutions scores were higher in the happy mood condition (*M*=1.73) than in the sad mood (*M*=1.30) condition [*t* (1, 31) = -2.073, *p* = .047]. Table 4 displays the cell and marginal means and standard deviations for mood and problem type on average other solutions score.

Discussion

Past research has shown that positive moods increase cognitive flexibility and the flow of ideas, two processes that are important in problem solving (Abele, 1992). Consistent with these findings, our research indicates that mood was a factor in overall problem solving abilities, such that participants in a positive mood showed greater

average solution efficacy when average analogy and other solution scores were combined. Participants in a happy mood also showed greater problem solving abilities when coming up with alternative solutions for the interpersonal problem but not the cognitive problem as compared to people in a sad mood. This could be because of the fact that there were many more possible alternative solutions for the interpersonal problem than for the cognitive problem and that participants in the happy mood group were able to use cognitive flexibility to generate these many possible alternative solutions, while people in the sad group could not. There was no evidence of a problem type x mood interaction on any of the dependent variables. It does not appear that that mood differentially affects one's ability to solve cognitive problems versus interpersonal problems.

Even though overall problem solving ability and other solutions for the interpersonal problem were affected by mood, we did not find evidence to suggest that mood affects analogical problem solving abilities, as indicated by the fact that there were no differences between happy and sad participants in average analogy scores. One explanation for this finding could be that mood affects memory for an analogical solution differently than it affects the application of such a solution. Participants may be perceiving or remembering analogical information differently but may still be applying this information in the same way. For instance, as stated earlier, some research indicates that negative moods lead to focal memory enhancements and improved attention to details (Kensinger, 2009). Thus, people in a sad mood may have enhanced memory of the details of the analogy while people in a happy mood have increased cognitive flexibility and are more likely to see relations among stimuli (Isen, Daubmann, &

Nowicki, 1987), both of which may lead to the application of the analogical solution despite the fact that the processes for coming up with the solution vary. Future research should focus on examining the processing of analogical solutions before their application to investigate if different mood groups process these solutions differently but are still applying them in a similar way.

The main effect of problem type on average analogy scores showed a pattern opposite that of the main effect of problem type on average other solution scores. The opposite main effects of problem type on average analogy scores and on average other solution scores may account for the lack of main effect of problem type on overall average solution efficacy when these two types of scores are combined. We found evidence that participants had a more difficult time coming up with analogical solutions for the interpersonal problem as compared to the cognitive problem, but that they had a more difficult time coming up with alternative solutions for the cognitive problem as compared to the interpersonal problem. These results indicate that analogical problem solving may be strictly a cognitive phenomenon. In addition, past experiences and societal norms for solving interpersonal problems may influence how participants solved the interpersonal problem. Thus, they may be more likely to stray from the given analogical solution for the interpersonal problem and come up with their own solution. It is also possible that there simply were not as many alternative solutions to the cognitive problem, causing participants to generate more solutions that were similar to the given analogical solution.

In addition to the investigation of how different mood groups process analogical solutions differently but may apply them in a similar way, future research should focus

on a replication of this experiment using a different interpersonal problem. One limitation of this study is that in the interpersonal scenario given, participants tried to solve a problem involving others, but they themselves were not active participants in the problem. A scenario that cast participants as a character in the interpersonal problem or a problem that was experimentally created in the lab may affect how participants respond to the interpersonal problem based on their mood.

Another limitation in this experiment is the fact that participants were not given any hints about the analogous nature of the solution provided in the previous problem. Some past analogical problem solving experiments, including Gick & Holyoak (1980), instructed participants to use the analogous solution as a guideline for their own solution. This may be one reason the results were not consistent with our predictions.

In addition, for the dependent variable of average other solution scores, it was noted that while the problem type x mood interaction was not statistically significant, a t-test showed that mood did differentially affect the cognitive and interpersonal problems such that scores were higher in the happy mood condition than in the sad mood condition for the interpersonal problem. Because the interaction was not significant, following up with a t-test is potentially controversial. Therefore, these results should be interpreted with caution.

A final limitation of this study lies in the inability of our chosen design to detect the unique effects of positive versus negative moods. Although some mood effects were found, it remains unclear whether the differences we see are driven by the effects of positive affect, the effects negative affect, or the effects of both. In the future, this

limitation could be addressed with a neutral affect condition, which would allow us to detect the unique effects of each mood condition.

In conclusion, people induced into happy moods had better overall problem solving ability and higher averages for other solutions scores for the interpersonal problem. However, we did not find evidence to suggest that mood affects analogical problem solving or that that mood differentially affects one's ability to solve cognitive problems versus interpersonal problems. We found evidence that participants had a more difficult time coming up with analogical solutions for the interpersonal problem as compared to the cognitive problem, but that they had a more difficult time coming up with alternative solutions for the cognitive problem as compared to the interpersonal problem. Future research should focus on how mood might affect memory for an analogical solution differently than it affects the application of such a solution and on a replication of this study using a different interpersonal problem, as well as giving the participants hints about the analogous nature of the solution provided in the previous problem.

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Appendix A: Solutions Coding Scale

Analogy Ratings-Cognitive:

1 pt=many rays
1 pt=low intensity rays
1 pt=from different directions
1 pt=simultaneously
1 pt=all of them together

Analogy Ratings-Interpersonal

1 pt=go to a neutral third party
1 pt=go to a neutral third party that is an authority figure
1 pt=work towards a compromise with adjustments by one person
1 pt=work towards a compromise with adjustments for both people (both have to make concession/change what they are doing)
1 pt=all of them together

Total Solutions Ratings:

0=Definitely Would Not Solve the Problem
1=Probably Would Not Solve the Problem
2=May or May Not Solve the Problem
3=Probably Would Solve the Problem
4=Definitely Would Solve the Problem

Appendix B: Mood Manipulation Check

Mood Questionnaire #1

1. When I think about Spring break, I feel excited.

Strongly Disagree Disagree Agree Strongly Agree

2. At the present time, I feel pleasant.

Not at all Slightly Moderately Very

3. I am worried about final exams.

Not at all Slightly Moderately Very

4. I am usually tired.

Not at all Slightly Moderately Very

5. I am feeling happy right now.

Strongly Disagree Disagree Agree Strongly Agree

6. I often feel a sense of pride.

Strongly Disagree Disagree Agree Strongly Agree

7. If I imagine myself traveling abroad, I feel anxious.

Not at all Slightly Moderately Very

8. Right now, I am feeling negative.

Strongly Disagree Disagree Agree Strongly Agree

9. In general, I am a relaxed individual.

Strongly Disagree Disagree Agree Strongly Agree

10. I am low spirited at this moment.

Not at all Slightly Moderately Very

Mood Questionnaire #2

1. Right now, I feel unpleasant.

Not at all Slightly Moderately Very

2. I am a cautious person.

Strongly Disagree Disagree Agree Strongly Agree

3. At the present moment, I feel unhappy.

Strongly Disagree Disagree Agree Strongly Agree

4. I am content when I spend time with friends.

Strongly Disagree Disagree Agree Strongly Agree

5. I feel relieved when I complete an important assignment.

Not at all Slightly Moderately Very

6. I am feeling high spirited.

Not at all Slightly Moderately Very

7. I often feel guilty.

Not at all Slightly Moderately Very

8. In class, I am an alert student.

Strongly Disagree Disagree Agree Strongly Agree

9. I am in a positive mood right now.

Strongly Disagree Disagree Agree Strongly Agree

10. I view myself as an unhealthy person.

Not at all Slightly Moderately Very

Appendix C: Problem Scenarios

Conflict Problem

A conflict has developed between two members of a team working together on a group project. Each member of the team brings unique skills to the project and their work needs to be carefully coordinated so that the project can run smoothly. Recently, a conflict has arisen between Jane and Susie in regards to the progress of the project. Susie complains that Jane is not collecting data for the project quickly enough, which hurts Susie's ability to complete her part of the project. Jane argues that the participants she is collecting data from are busy so she sometimes has to contact them several times before getting the information she needs from them and that Susie's constant nagging does nothing to help the situation. The argument has led to great tension and has wasted valuable work time for both.

Conflict Problem Analogy and Solution

A problem has arisen between a pair of roommates living together in a dorm room. Each roommate has a different lifestyle but because they live together they need to harmonize so that their living situation can be as enjoyable as possible. A short time ago, a conflict arose between the two roommates, Kathy and Lisa, because of their different sleeping habits. Kathy has become annoyed that her roommate Lisa stays up late into the night to study, which impairs Kathy's ability to get to sleep at an early hour so that she can get up early. Lisa says that those hours are some of the only times she has time to study because of her busy schedule and that Kathy's early rising disrupts her sleep as well. This disagreement has made their living situation very unpleasant and has added unneeded stress to the lives of both roommates.

Kathy and Lisa have decided it is time for their Residential Assistant to intervene. They go to her in hopes that a she will be able to help them come up with a solution that is satisfying to both of them. After hearing each person's perspectives, the RA helps Kathy and Lisa work toward a compromise. Lisa agrees to study elsewhere at night so that she does not bother Kathy. Kathy says that she will prepare her things for the morning ahead of time in order to lessen the chance of disturbing Lisa.

Cognitive Problem

Suppose you are a doctor faced with a patient who has a malignant tumor in his stomach. It is impossible to operate on the patient, but unless the tumor is destroyed the patient will die. There is a kind of ray that can be used to destroy the tumor. If the rays reach the tumor all at once at a sufficiently high intensity, the tumor will be destroyed. Unfortunately, at this intensity the healthy tissue that the rays pass through on the way to the tumor will also be destroyed. At lower intensities the rays are harmless to healthy tissue but they will not affect the tumor either. What type of procedure might be used to destroy the tumor with the rays, and at the same time avoid destroying the healthy tissue?

Cognitive Problem Analogy and Solution

A small country fell under the iron rule of a dictator. The dictator ruled the country from a strong fortress. The fortress was situated in the middle of the country, surrounded by farms and villages. Many roads radiated outward from the fortress like spokes on a

wheel. A great general arose who raised a large army at the border and vowed to capture the fortress and free the country of the dictator. The general knew that if his entire army could attack the fortress at once it could be captured. His troops were poised at the head of one of the roads leading to the fortress, ready to attack. However, a spy brought the general a disturbing report. The ruthless dictator had planted mines on each of the roads. The mines were set so that small bodies of men could pass over them safely, since the dictator needed to be able to move troops and workers to and from the fortress. However, any large force would detonate the mines. Not only would this blow up the road and render it impassable, but the dictator would then destroy many villages in retaliation. A full-scale direct attack on the fortress therefore appeared impossible.

The general, however, was undaunted. He divided his army up into small groups and dispatched each group to the head of a different road. When all was ready he gave the signal, and each group charged own a different road. All of the small groups passed safely over the mines, and the army then attacked the fortress in full strength. In this way, the general was able to capture the fortress and overthrow the dictator.

Table 1

Average Mood Manipulation Scores

	Happy Group	Sad Group
Average Mood Rating	3.19 (.44)*	2.94 (.44)*
Average Analogy Scores	3.15 (.49)*	2.94 (.45)*
Average Other Solutions Scores	3.23 (.43)*	2.94 (.55)*

Note: Standard deviations are in parentheses.
*p<.05

Table 2

Means and Standard Deviations for Mood & Problem Type on Overall Average Solution Efficacy Scores

Group	N	Mean	Standard Deviation
Mood			
Happy	14	1.74*	.12
Sad	18	1.44*	.10
Problem Type			
Cognitive	32	1.62	.12
Interpersonal	32	1.56	.17
Mood x Problem Type			
Happy, Cognitive	14	1.80	.18
Happy, Interpersonal	14	1.68	.11
Sad, Cognitive	18	1.43	.15
Sad, Interpersonal	18	1.44	.10

*$p<.05$

Table 3

Means and Standard Deviations for Mood & Problem Type on Average Analogy Scores

Group	N	Mean	Standard Deviation
Mood			
Happy	28	1.98	.13
Sad	31	1.75	.12
Problem Type			
Cognitive	59	2.06*	.15
Interpersonal	59	1.67*	.07
Mood x Problem Type			
Happy, Cognitive	28	2.25	.22
Happy, Interpersonal	28	1.72	.10
Sad, Cognitive	31	1.88	.21
Sad, Interpersonal	31	1.63	.09

*p<.05

Table 4

Means and Standard Deviations for Mood & Problem Type on Average Other Solutions Scores

Group	N	Mean	Standard Deviation
Mood			
Happy	15	1.42	.14
Sad	18	1.11	.13
Problem Type			
Cognitive	33	1.02*	.12
Interpersonal	33	1.51*	.10
Mood x Problem Type			
Happy, Cognitive	15	1.12	.18
Happy, Interpersonal	15	1.73	.15
Sad, Cognitive	18	0.92	.17
Sad, Interpersonal	18	1.30	.14

*$p<.05$