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A Study of the Undoing Hypothesis and Cognitive Processing

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Abstract

Research in the field of positive psychology has revealed many advantages of positive emotions. According to the undoing hypothesis (Fredrickson & Levenson, 1998), positive affect can undo the physiological effects of negative emotion. The present study examined whether positive emotions could undo the cognitive effects of negative emotion. A categorization task was used to measure changes in cognitive processing, as measured by reaction time and accuracy, of 69 college students who were induced into a positive, negative, or neutral affective state by viewing various film clips. The results of this study did not support the extension of the undoing hypothesis to cognitive processing.

A Study of the Undoing Hypothesis and Cognitive Processing

In the past, psychology has focused on mental illnesses and other factors that may contribute to discomfort and prevent individuals from fulfilling their necessary roles in life (Seligman, Steen, Park, & Peterson, 2005). The newly founded field of positive psychology has taken a different view and seeks to understand the factors that increase happiness and allow individuals to flourish. Where negative emotions have been the focus of previous research, the field of positive psychology has sought to better understand the role that positive emotions play in human functioning (Frederickson, 2001).

Negative Emotion

Negative emotions such as fear, anxiety, and anger have been shown to have physiological that prepare an individual to deal with threatening situations. These negative emotions are associated with the *fight or flight* response, which prepares the body and mind to follow a narrow set of action tendencies, allowing the individual to attack in anger or flee in fear (Bradley, Codispoti, Cuthbert, & Lang, 2001). Fredrickson and Levenson (1998) noted significant physiological changes in participants who were induced into an anxious mood, including increased heart rate and blood pressure.

New research has also found that negative emotion has a narrowing effect on individual's cognition and perception, including a narrowing of the perceived visual field (Fredrickson & Branigan, 2005; Brandt, Derryberry, & Reed, 1992). Researchers have used a global-local processing task to assess attentional focus. After viewing a stimulus figure (e.g., triangles arranged in the shape of a square), respondents were asked which comparison figure is more similar. Participants in a negative mood are more likely to focus on the details and select the

comparison stimulus comprised of similar detail elements (i.e., triangles arranged in a square configuration). In contrast, persons in a positive mood take a broader view selecting the comparison stimulus similar in global configuration (i.e., squares configured in the shape of a triangle) (Fredrickson & Branigan, 2005; Gasper & Clore, 2002; Rowe, et al., 2007).

Negative emotion has also been found to affect an individual's creativity. Rowe, Hirsch, & Anderson, (2007) conducted a study where participants were asked to find a word that connects three distantly associated words (e.g., MOWER, ATOMIC, and FOREIGN, with the solution being POWER). Performance on this task indicates the breadth of an individual's cognition, and more specifically the breadth of the access to his or her semantic knowledge. The researchers found that individuals induced into a negative mood came up with fewer responses to this task, known as the Remote Associations Task (RAT).

Negative emotion also impacts problem solving. Lyubomirsky, Tucker, Caldwell, and Berg (1999) found that the internally-focused, ruminative style that accompanies depression impedes problem solving. The internal focus of rumination is consistent with negative affect's narrowing effects on cognition, where individuals focus on their internal feelings as opposed to other stimuli. New research suggests that self-identified unhappy individuals induced into a negative mood experienced a similar cognitive interference when completing questions from the reading comprehension section of the Graduate Record Exam (GRE) (Lyubomirsky, Kasri, Zehm, & Dickerhoof, 2007). In summary, the research indicates that negative affect has a narrowing effect on cognition, affecting several different cognitive processes including visual processing, creativity, and problem-solving.

Positive Emotion

Previous models created to explain negative emotions were not well suited to explain the role and significance of positive emotions. Unlike negative emotions, positive emotions have few physiological markers, and often do not lead to a specific physiological reaction (Fredrickson, 1998). Fredrickson (1998) proposed the broaden-and-build theory to explain the role and purpose of positive emotions. Positive emotions have long-term advantages that allow individuals to build mental, physical, social, and emotional resources to handle future threats (Fredrickson, 1998, 2001, 2003; Fredrickson & Joiner, 2002). The broaden-and-build theory states that unlike negative emotions, which narrow an individual's action tendencies and cognitive processes, positive emotions broaden an individual's repertoire of thoughts and actions (Fredrickson, 1998).

Research indicates that positive affect has a broadening effect on cognition, including a broadening of one's attention. As noted earlier, those induced into a positive mood had a global-bias (i.e., they were more likely to attend to the holistic larger picture, rather than the details) in a visual-spatial task (Fredrickson & Branigan, 2005; Gasper & Clore, 2002). Positive emotion has been found to decrease attention to detail (Bless, Clore, Schwartz, Golisano, Rabe, and Wolk, 1996). Bless et al. (1996) found that people induced into a positive mood appeared to rely on mental heuristics or social scripts when asked to recall details about a couple going to a restaurant. The reliance on heuristics resulted in more recall errors than persons induced into a negative mood who tended to recall more accurate details from the story presented. The broadened thinking that accompanies positive emotion may lead to the use of heuristics. When

details are not attended to while in a positive mood, it becomes necessary to fill in the missing information with what an individual expects to happen.

Individuals induced into a positive mood have also shown more creativity (Hirt, Melton, McDonald, & Harackiewicz, 1996; Isen, Daubman & Nowicki, 1987; Rowe et al., 2007). Isen et al. (1987) induced participants into a positive mood and had them perform the Duncker Candle task, in which they were asked to use a candle, a book of matches, and a box thumbtacks to secure the candle to a wall. To successfully complete this task participants must use creative problem solving, thus better performance on this task is indicative of greater creativity. They found that individuals induced into a positive mood performed better at this task than a control group. The participants also completed the RAT and the positive mood group performed significantly better at this task as well, indicating an increase in creative thinking on two separate tasks.

Finally, positive emotion impacts the way an individual categorizes information. Isen and Daubman (1984) found that individuals induced into a positive mood used more inclusive categories on a word rating task. Participants were asked to sort words according to certain categories such as "clothing" or "vehicle." Those who were induced into a positive mood were more likely to include weak exemplars of those categories (i.e., a wheelchair or feet as a vehicle). This broadened thinking that accompanies positive emotion has implications for the way in which emotion impacts cognition.

The Undoing Hypothesis

According to Fredrickson's broaden-and-build model, positive emotions should build physical as well as mental resources (Fredrickson, 1998, 2001, 2003; Fredrickson & Joiner,

2002). Fredrickson and Levenson (1998) proposed the undoing hypothesis, which suggests that the physiological effects of positive emotion may only be noticeable in the presence of negative emotions. This means that rather than creating a specific physiological reaction, positive emotions can undo the effects that negative emotions have on an individual's physiology, such as increased heart rate and blood pressure. When participants were induced into an anxious mood, those who were subsequently induced into a positive mood returned back to their physiological baseline faster than those who were induced into a negative or neutral mood (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan, & Tugade, 2000). In addition, positive affect has been found to enhance immune response and decrease stress hormones in response to disease and crisis (Pressman & Cohen, 2005).

The Current Study

If positive emotions can undo the physiological effects of negative emotion, it is likely that positive emotions would have a similar effect on an individual's cognitive abilities. The goal of the current study was to measure the effects of negative and positive mood on an individual's cognitive functioning as measured by reaction time and accuracy on a categorization task. If the undoing hypothesis applies to cognitive functioning, the effects of negative affect on reaction time and accuracy will be reversed by subsequent induction of a positive emotion, but not by induction of another negative or neutral emotional state.

Method

Participants

Sixty-seven participants, 66% of which were females and 34% were males, between the ages of 18 and 40 with a mean age of 19 (SD = 2.98), participated in this study. Approximately

84% of the participants were Caucasian, 4 % African American, 7% Hispanic, 9% Asian or Pacific Islander, and 9% defined themselves as "Other." All participants were undergraduate students from a small, public, liberal arts college in the mid-Atlantic region. Participants were enrolled in a general psychology course and received partial credit toward a course requirement. All participants were treated according to APA ethical guidelines (APA, 2001).

Materials

Mood Induction. The study used film clips to induce an initial negative mood state and then one of three subsequent mood states, all of which are meant to be transient; lasting no more than a few minutes. A brief section of *The Champ* (171 seconds), where a son sees his father die after a boxing match, was used to initially induce negative affect. For the second mood induction one of three film clips were used to induce either a positive, negative, or neutral mood. A humorous 149 second clip of a man and woman talking in a restaurant from the movie *When Harry Met Sally* was used to induce a positive mood. Negative mood was induced by showing a scene from *An Officer and a Gentleman* (101 seconds) in which a friend is found dead by a couple. Finally, a 65 second segment of two men talking in a courtroom from the film *All the President's Men* was used to induce a neutral mood. These films have been used by other researchers and have been shown to be effective at inducing the respective mood states (Hewig, Hagemann, Seifert, Gollwitzer, Naumann, & Bartussek, 2005). In addition, research has also suggested that the use of film clips is a reliable form of mood induction (Martin, 1990; Gross & Levenson, 1995; Fredrickson & Branigan, 2005).

Cognitive Processing. A categorization time task was produced using the computer program PEAK (St. James, Schneider, & Eschman, 2005). A task that required categorization

was selected because previous research has suggested that categorization is impacted by different affective states (Isen & Daubman, 1984). Participants were presented with statements such as “A daisy is a flower” and “Cake is a condiment” and were asked to indicate whether these statements were true or false by pressing the appropriate key on the keyboard. A full list of the statements used is available in Appendix A.

Subjective Happiness. Previous researchers have also found that it is important to distinguish the difference between state and trait mood (Rosenberg, 1998; Steyer, Ferring, & Schmitt, 1992). Trait mood refers to stable characteristics of individuals and generally refers to how an individual typically behaves; however, state mood refers to temporary changes in mood levels in response to a particular situation. This study examined the effects of temporary changes in mood state in response to different film clips. The Subjective Happiness Scale (SHS, Appendix B) was given to participants in order to determine if the trait subjective happiness would affect the effectiveness of the mood induction procedure.

The SHS assesses a participants' subjective sense of global happiness by averaging four items (e.g., Compared to my peers, I consider myself :) rated on a seven-point scale (e.g., from less happy to more happy). This measure has been shown to have a test-retest reliability of .72 and an internal consistency of .86 (Lyubomirsky & Lepper, 1999).

Manipulation Check. Participants were given an Emotion Report Form (ERF), which was adapted from Fredrickson et al. (2000). The ERF consists of nine different emotions such as “happiness” and “sadness” (Appendix C). Participants rated their mood state in response to the films they watched on a 9-point scale ranging from 0 (*none)* to 8 (*a great deal*).

Procedure

Participants were randomly assigned into one of three mood conditions. Twenty-three participants were assigned to the positive condition and 21 participants were assigned to the negative and 19 were assigned to the neutral condition. Participants first completed a practice trial on the cognitive processing task so that they could get used to the task. They then completed the first experimental trial of the task in order to obtain a baseline. All participants then viewed a clip from the film *The Champ* (Hewig et al., 2005) to induce a negative mood. Immediately afterwards, participants completed the categorization task a second time to measure the impact of the negative mood induced by the film on reaction time. Participants then viewed either the positive (*When Harry Met Sally*), negative (*Officer and a Gentleman*), or neutral (*All the President's Men*) film clip. Following this second mood induction procedure, all participants completed the categorization task a third time to measure the extent to which the three different moods induced by the films assisted in the recovery of the changes in reaction time due to the initial induction of a sad mood. Finally, all participants completed a survey that consisted of a demographic survey, the two ERFs, and the SHS after the final categorization task. Following completion, participants were debriefed, given course credit, and released.

Results

Preliminary Analyses

Initial emotion induction. A series of dependent *t*-tests were performed to determine if participants reported feeling more sadness than any other emotion on the ERF after viewing *The Champ*. To control for the inflation of the Type I error rate, an alpha of 0.006 was used. Participants reported significantly more sadness ($M = 5.53$, $SD = 2.24$) compared to each of the

other 8 emotions on the Emotion Report Form ($p < .001$). Means and standard deviations of all emotions reported can be found in Table 1.

Second emotion induction. ANOVAs were conducted to determine if the emotions reported by participants differed by emotion induction condition (i.e., positive, negative, and neutral). All analyses were conducted at the 0.006 level to control inflation of the Type I error rate due to multiple analyses. There were no differences among the emotion conditions for serenity. However, the ANOVAs were significant for the remaining eight emotions so post-hoc Tukey tests were conducted. Individuals in the positive emotion condition reported significantly higher levels of amusement and happiness than both the neutral and negative emotion conditions; they also experienced more contentment than individuals in the negative emotion condition. Participants in the negative affect group felt significantly more anger, disgust, fear and sadness than both the positive and neutral groups, and more anxiety than the neutral group. The means can be found in Table 2.

Reaction Time

Reaction time was measured in milliseconds. All reaction time data were cleaned through the following steps: Inaccurate cases were excluded from the calculation of the mean reaction times for each participant, as is customary when analyzing reaction time data. The speed with which individuals respond incorrectly to stimuli is not meaningful, and therefore, not analyzed. . Outliers were then identified in each trial as any individual's response to a stimulus sentence that was more than two standard deviations from the mean. Individual responses identified as outliers were removed for each participant. Outliers were calculated separately for each trial. For trials 1 and 2, outliers were calculated on the entire group, because all participants were

treated the same until this point. Outliers for the third trial were determined separately based on the mean for each mood condition to avoid diluting the effect of the different moods on reaction time. Thus, each participant's reaction time was based only on their correct responses that were not identified as outliers.

A 3 (trial) x 3 (mood) mixed ANOVA was performed on the cleaned data to determine whether there were differences in reaction time across trial and mood condition. There was a statistically significant main effect of trial, $F(2, 63) = 3.14$, $p = 0.046$. The main effect of emotion condition, $F(2, 63) = 2.31$ $p = 0.11$, and the interaction, $F(4, 126) = 1.15$, $p = 0.34$, were not significant. See Figure 1 for a graph of these results.

To follow up the significant main effect of trial, pairwise comparisons were conducted with a Bonferroni correction to account for the inflation of the Type I error rate due to multiple comparisons. Reaction times on Trial 1 were significantly slower than reaction times at Trial 2 ($p = 0.045$). The difference in reaction times between Trial 2 and Trial 3 ($p > 0.999$) and between Trial 1 and Trial 3 ($p = 0.283$) were not significant.

Accuracy

A 3 (trial) x 3 (mood) mixed ANOVA was performed to determine whether there were differences in accuracy across trial and mood conditions. All cases were included in the analyses for accuracy, that is, no inaccurate cases were removed as they were for the reaction time analyses. There was a significant main effect of trial, $F(2, 63) = 45.29$, $p < 0.001$. The main effect of mood, $F(2, 63) = 1.11$, $p = 0.34$, and the interaction, $F(2, 126) = 0.55$, $p = 0.70$, were not statistically significant. See Figure 2 for a graph of these results.

To follow up the main effect of trial, pairwise comparisons were conducted with a Bonferroni correction to account for the inflation of the Type I error rate due to multiple comparisons. Participants were significantly less accurate on Trial 1 than on Trial 2 ($p < 0.001$) and on Trial 3 ($p < 0.001$). There was no significant difference in accuracy between Trials 2 and 3 ($p = 0.71$).

Subjective Happiness

An ANOVA was performed to determine whether there was a difference in subjective happiness between the three mood conditions. The Levene's test was significant ($p = 0.039$), indicating that the assumption of homogeneity of variance had been violated. Therefore, a Kruskal-Wallis test, which is the non-parametric equivalent of an ANOVA, was performed. There was a significant difference in subjective happiness between the three mood conditions, $\chi^2(2, N= 67) = 7.83, p = 0.020$.

To follow-up on the significant results on the Kruskal-Wallis test, a series of Mann-Whitney U tests were conducted to evaluate pairwise differences in subjective happiness among the three mood conditions at a corrected alpha level of 0.02. The results from these tests indicated that the positive group had a significantly higher score on the SHS than both the negative and neutral groups ($p = 0.008$). There was not a significant difference in subjective happiness between the negative ($p = 0.038$) and neutral groups ($p = 0.545$).

Discussion

The results from the current study did not support the extension of the undoing hypothesis to the cognitive realm on this categorization task. The only significant results were a decrease in reaction time between Trial 1 and Trial 2, and an increase in accuracy from Trial 1 to

Trials 2 and 3, both of which could be accounted for by a practice effect. Future studies should include a control group that is shown only neutral film clips to assess what the practice effect for the task is. The inclusion of a longer practice trial or more than one practice trial may be able to eliminate or minimize the practice effect in future studies.

While not reaching statistical significance, the neutral group was slower than both the positive and negative mood conditions across all three trials. The reaction times at Trial 1 (the baseline) and Trial 2 (after the initial negative mood induction) should have been the same across all three mood conditions, because all three groups were treated the same until Trial 3. Although participants were randomly assigned to mood condition, the overall slower reaction time for the neutral group may be due to sampling error.

There was also a statistically significant difference in subjective happiness between the three mood conditions. Random assignment should have equally distributed individuals high and low in happiness across all three mood conditions, but as was indicated by the Kruskal-Wallis test, there were more happy individuals in the positive mood condition. This difference in subjective happiness may have had an impact on the effectiveness of the mood induction procedure and subsequently the results of this study. Lyubomirsky et al. (2007) found that trait happiness impacted the effectiveness of the mood induction, and thus impacted participants' performance on GRE questions.

This difference in subjective happiness may have been a result of administering the SHS at the end of the study. The placement of this scale was purposefully placed at the end of the study because it is more likely that the positive statements in the scale would impact the transient emotional states induced through the mood induction as opposed to a transient mood impacting

an individual's trait happiness (Pavot & Diener, 1993). A pilot study done in a previous study on the application of the undoing hypothesis to cognitive processing found that a measure of trait optimism was not affected by a mood induction procedure (Falkenstern, Schiffrin, Nelson, Keyser, & Ford, in press).

In addition to differences in subjective happiness, there may have been a confound within the task. During the practice trial, participants were told whether they were correct or incorrect after each stimulus sentence. While the experimenters indicated that this initial practice trial was not a part of the experiment and was only for them to get accustomed to the task, this feedback may have inadvertently caused participants to ruminate about their performance on the task. As Lyubormirsky et al. (2007) found, this ruminative thinking may have had an effect on individual's reaction time.

Because of these sampling errors and potential confounds, further research should be conducted to investigate whether the undoing hypothesis can be applied to an individual's cognitive processing. A replication of this study, controlling for trait happiness and eliminating the feedback component of the practice trial, may yield different results.

Future research should also investigate the effects of mood on a series of different tasks. One area that would be particularly interesting and useful to look into would be the typicality effect. Isen and Daubman (1984) suggested that individuals in a positive mood were more likely to include weak exemplars of a category when completing a word sorting task. Future research should manipulate the strength of the exemplar, as stronger results may be found. Previous research has found that a positive or negative mood can either be detrimental or beneficial depending on the task at hand. For instance, the narrowed, detail-oriented focus that

accompanies negative emotional states is beneficial for completing tasks such as income taxes, but can be detrimental when trying to brain-storm ideas for an essay (Seligman, 2002). Likewise, the cognitive effects of positive emotional states can be an advantage or disadvantage depending on the situation. It is important for future researchers to investigate how the undoing hypothesis may be applied to several different tasks because of this phenomenon.

While the current study did not find conclusive results due to error and other limitations, further research should be conducted to determine whether the undoing hypothesis can be applied to an individual's cognitive processing. Such research may contribute to understanding the ways that positive emotions can not only lead an individual to flourish under normal circumstances, but also aid an individual in recovering from the cognitive impact of negative emotions.

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Table 1

Means, Standard Deviations, and t-scores of ERF for first mood induction

Emotion	Mean (SD)	*t* - score (*df*)
Amusement	1.20 (1.69)	12.55 (66)
Anger	1.70 (1.84)	12.87 (66)
Anxiety	2.96 (2.07)	10.46 (66)
Contentment	1.25 (1.70)	12.16 (66)
Disgust	2.00 (2.05)	10.08 (66)
Fear	2.20 (2.09)	13.63 (65)
Happiness	0.31 (0.67)	17.89 (66)
Serenity	1.38 (1.80)	13.85 (66)
Sadness	5.53 (2.24)	

All significantly different from sadness at the $p < 0.001$ level

Table 2

Means, standard deviations, p *values, and* F *scores of ERF by affect condition for second mood induction*

	Mood Condition				
Emotion	Positive (n = 32)	Neutral (n = 27)	Negative (n = 27)	*F*	*p*
Amusement	5.95 (1.50)	0.73 (1.52) [a]	1.17 (1.95) [a]	66.55	< .001 *
Anger	0.09 (0.29) [b]	0.55 (1.37)	2.04 (2.58)	8.03	.001*
Anxiety	1.45 (1.87)	0.91 (1.51) [b]	2.83 (2.46)	5.55	.006*
Contentment	2.91 (2.11)	1.86 (1.78)	0.70 (1.36) [a]	9.05	< .001 *
Disgust	0.91 (1.51) [b]	0.09 (0.29) [b]	3.83 (2.90)	23.76	< .001 *
Fear	0.32 (1.09) [b]	0.32 (0.65) [b]	2.30 (2.05)	15.08	< .001 *
Happiness	4.32 (2.28)	1.18 (1.53) [a]	0.39 (0.94) [a]	34.65	< .001 *
Sadness	0.09 (0.30) [b]	0.14 (0.47) [b]	4.96 (2.48)	80.20	< .001 *
Serenity	1.64 (1.73)	1.82 (1.87)	0.83 (1.44)	2.23	.116

[a] This emotion was reported significantly less than in the positive film condition.

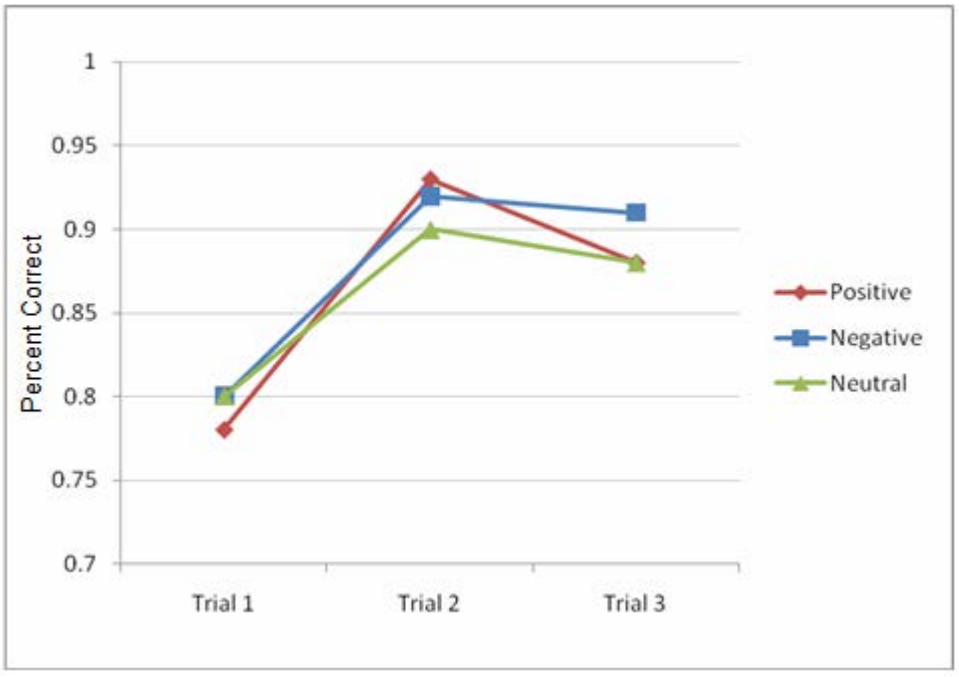
[b] This emotion was reported significantly less than in the negative film condition.

Figure Captions

Figure 1. Mean reaction times of mood conditions at each trial.

Figure 2. Percent correct for each trial by mood.


Reaction time (milliseconds)
1800
1700
1600
1500
1400
1300
Trial 1
Trial 2
Trial 3
Positive
Negative
Neutral


1
0.95
0.9
0.85
0.8
0.75
0.7
Percent Correct
Trial 1
Trial 2
Trial 3
Positive
Negative
Neutral

Appendix A

True / False Categorization Statements

Practice:

AN APPLE IS A FRUIT

UMW IS A SCHOOL

A MOUSE IS A REPTILE

A CARROT IS A TREE

A SKYSCRAPER IS A BUILDING

Trial 1:

COTTON IS A FABRIC

A DAISY IS A FLOWER

AIR IS AN ELEMENT

A TABLE IS FURNITURE

COAL IS A FUEL

SODA IS A FOOD

WATER IS A SOLID

COLD IS AN EMOTION

A PURSE IS AN ACCESSORY

A WHEELCHAIR IS A VEHICLE

SINGING IS A SPORT

A HONDA IS A BICYCLE

A FORK IS A DISH

SCISSORS ARE A TOOL

A CHIHUAHUA IS A DOG

Trial 2:

AN ARM IS A LIMB

CALCIUM IS A VITAMIN

WHITE IS A COLOR

A CHIMPANZEE IS A PRIMATE

KINDERGARTEN IS A GRADE

A POND IS A BODY OF WATER

A BANANA IS A FRUIT

A HORSE IS A PLANT

SHOES ARE FURNITURE

THE FLU IS A MEDICINE

CAKE IS A CONDIMENT

STEAK IS A COCKTAIL

A SNAKE IS CLOTHING

A COLLANDER IS A CONTAINER

A BRIDGE IS A BUILDING

Trial 3:

DENIM IS A TEXTILE

AN EMERALD IS A ROCK

BRUNCH IS A MEAL

GLASSES ARE AN ACCESSORY

ASPIRIN IS A DRUG

FRENCH IS A ROMANCE LANGUAGE

THE SUN IS A STAR

HOCKEY IS A SPORT

PAINT IS A TOOL

A BANK IS A STORE

PASTA IS A FUEL

HOT IS A COLOR

A MOAT IS A BUILDING

A SHEPHERD IS A CAT

AN AXEL IS A TOY

Appendix B

Subjective Happiness Scale

For each of the following statements and/or questions, please circle the point on the scale that you feel is most appropriate in describing you.

1. In general, I consider myself:

1	2	3	4	5	6	7
not a very happy person						a very happy person

2. Compared to most of my peers, I consider myself:

1	2	3	4	5	6	7
less happy						more happy

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

1	2	3	4	5	6	7
not at all					a great deal	

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

1	2	3	4	5	6	7
not at all					a great deal	

Appendix C

Emotion Report Form

Please indicate the greatest amount of each of the following emotions felt while you were watching the [First, Second] film clip.

Amusement	0 None	1	2	3	4	5	6	7	8 A great deal
Anger	0 None	1	2	3	4	5	6	7	8 A great deal
Anxiety	0 None	1	2	3	4	5	6	7	8 A great deal
Contentment	0 None	1	2	3	4	5	6	7	8 A great deal
Disgust	0 None	1	2	3	4	5	6	7	8 A great deal
Fear	0 None	1	2	3	4	5	6	7	8 A great deal
Happiness	0 None	1	2	3	4	5	6	7	8 A great deal
Sadness	0 None	1	2	3	4	5	6	7	8 A great deal
Serenity	0 None	1	2	3	4	5	6	7	8 A great deal