POSITIVE AND NEUTRAL MOOD INDUCTION: TIES TO CREATIVITY

By

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ABSTRACT

Positive mood may broaden cognition, allowing for an increase in creativity. This study tested whether creativity could be increased when positive mood and creativity were induced through verbal instructions that directed participants to revisit memories that depicted positive mood and/or creative moments. This experiment had a 2(mood induction positive/neutral) X 2(creativity induction yes/no) design, and 112 participants in four conditions: 22 in the first, 33 in the second, 25 in the third, and 32 in the fourth. Mood and creativity inductions were autobiographical, as this method is the most effective technique for inducing mood. Scales used were the Torrance Tests of Creative Thinking and the Brief Mood Introspection Scale. Findings indicated that creativity can be increased when positive mood and creative thinking are induced in the same experimental condition versus inducing creativity or mood separately or not at all. This study has implications for understanding factors that produce creative thought.

DEDICATION

To my mother and father, friends and family who have supported me to no end, and who got me through all the stressful times, to my friends in the psychology department at UTC who endured and strived alongside me. Paul, Sara, Hadia, Kym, Emily, and Lindsey, you all inspired and supported me more than you will ever know. Spencer, Joe, and Dominick, thank you for all your work and help. To Chris Silver, who gave me opportunities for invaluable research experience. To my advisor Dr. David Ross and committee members Dr. Brian O'Leary and Dr. Michael Johnson who guided, pushed, and supported me through the whole process; even when I doubted myself and what I could do.

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ATTA, Abbreviated Torrance Test for Adults

BMIS, Brief Mood Introspection Scale

CHAPTER I

INFORMATION AND BACKGROUND

Positive and Neutral Mood Induction: Ties to Creativity

This study will focus on the relationship between positive mood and creativity as defined by the Torrance Creative Thinking Test, which defines creativity as cognitive fluency, flexibility, and originality (Torrance, 2000). The possibility of a relationship between mood and creativity has been posed by psychologists for years. One commonly studied theme in this domain has been the correlation between bipolar disorder and creativity. Many famous writers, poets, and other artists have been thought to have suffered from this mood disorder. The effects on bipolar disorder on creativity have been studied extensively because of the ability of the disorder to include a vast continuum of mood, ranging from manic highs to clinically depressed low stages of mood. In certain individuals with bipolar disorder, manic and hypomanic episodes have been shown to heighten fluidity of thought, originality of ideas, and the ability to relate divergent topics with greater ease than the average individual. These concepts are often grouped under the umbrella definition of creativity (Jamison, 1993, Kohanyi, 2009, Thomas & Duke, 2007).

Research in this area has found that the quality and activation of a mood is often related with creativity. For instance, many times when mood is described, it is has a hedonic tone meaning it is related to seeking pleasure. Another dimension to mood is activation which refers to the arousal or the drive behind the mood. A mood state with a positive hedonic tone may be high in activation, or low in activation. An example of this would be exuberance versus

contentment. Mood states with negative hedonic tone and high activation may be rage, versus negative tone and low activation, which could be melancholy. According to a meta-analysis performed by Baas, De Dreu, and Nijstad (2008), mood activation may play a role in creativity as well as hedonic tone of mood. The findings of the meta-analysis and other studies conclude that creativity is usually fostered by positive hedonic tone, and relatively high activation (Davis, 2009).

Currently mood questionnaires now utilize measures designed to tell the difference between the tone of the mood, and the level of activation. Another important factor is state versus trait manifestations of mood. Moods states tend to be more transient than mood traits. States may not last more than a couple of days, whereas traits can last for weeks or more. This can make a difference in the study of mood when one wishes to measure changes in mood in the same person over a period of time. It is also helpful in knowing whether or not the participant is in their normal mood status at the time of a study, or if they are experiencing an unusual mood for whatever particular reason (Baas et.al, 2008, Mayer & Gascheke, 1988).

Situational or trait mood intensity can impact factors, such as problem solving ability, that are often thought to be related to creativity. There is some evidence, for example, to suggest that high positive and active mood states create lower scores on learning tasks versus positive mood coupled with low mood. When compared with negative mood conditions, the exact opposite occurs. High negative affective intensity was shown to bring about better results on the learning task when in the context of negative mood, while lower affective intensity was shown to yield lower learning task scores (Basso, Schefft, and Hoffman, 1994) .

This could be an interesting contrast with regards to creativity, where higher mood intensities or activation levels tend to result in higher creativity scores, the results are decreased

learning and cognitive skills. This could be because positive or intense moods tend to result in cognitive fluidity and flexibility. This results in greater convergent and divergent thinking.. However there is a trade-off to these abilities. Typically problem solving abilities are not associated with positive or intense moods exactly because of the inability to focus and narrow in on a specific task. (Basso, Schefft, & Hoffman, 1994, Hirt, Devers, and McCrea, 2008).

Additional research suggests that positive mood may increase our ability to remember information that would be considered irrelevant in memory tasks. This is in contrast to neutral mood, which does not result in higher memory of irrelevant information. This supports Broaden and Build's theory that positive mood facilitates greater cognitive flexibility and divergent thinking. This phenomenon may appear to be distractibility when it is actually the ability to pull out things from the environment that others may not (Biss, R.K., Hasher, L., 2011, Fredrickson, R., 2001).

Creativity and Positive Mood States: An Evolutionary Connection?

There has always been one major problem with studying creativity. In order to study a concept, the concept under investigation must have an actual definition. For many years this has been a problem with creativity. We are able to identify the products of creativity; the average layperson is able to engage in it every day when they read a poem, interpret a great work of art, or play a musical instrument. We are able to identify "creativity" when we see it, but when asked what creativity actually is, we cannot say for sure. It is also possible to identify which areas of our brain are stimulated when we are engaging in a creative task. The most common definitions for creativity are generally some form of divergent or original thought, process of fluidity, or

some sort of process of expression through art, such as music, painting, or perhaps poetry (Dietrich and Kanso, 2010).

Researchers have attempted to define and understand creativity and all its products and characteristics. Much like intelligence, there is a large amount of controversy about what creativity actually *is*. Though it has been difficult to find one complete definition of creativity, mood has often been associated with it (Jamison, 1993). When studying traits most associated with the creative process, which are cognitive flexibility, the ability to group seemingly unrelated topics or objects together, and various forms of problem solving, mood was found to be the best predictor of performance. Research has shown that different types of mood extract different forms of creative expression. Positive mood tends to exaggerate cognitive elasticity and fluidity, as well as inventiveness, while negative moods facilitate better performance on tasks that require mentally strenuous problem solving abilities. Although creativity may be defined or emphasized in different ways, mood is still a major component of creative performance (Hirt, et al, 2008, Schlinger, 2003)

A study conducted by Haller and Courvoisier (2010) sought to learn about creative personality traits as defined by the NEO-FFI (Costa and McCrae, 1992) and heuristic styles as defined by the Heuristic Questionnaire (Groner and Groner, 1990). They reached the conclusion that different personality traits and the ability to use heuristics can differ depending on the type of creativity one type of artist expresses compared to another type of artist or a social scientist. When comparing musicians, psychology students, and visual arts majors, they found that visual art students scored higher Introversion, Neuroticism, Openness, and lower on Agreeableness and higher scores for heuristic thinking than psychology students. Music students scored higher on

Extraversion and Agreeableness than visual arts students, and more likely to use heuristics than psychology students.

Participants also differed in the amount of complexity that was expressed in their scores. The variable of complexity was defined by the amount of variability shown in how the participants scored in personality differences versus thinking styles. High complexity meant that one may score high on some items for a particular domain, while simultaneously scoring low on other item representing the same domain. Visual arts students had higher complexity in the Conscientiousness domain than either music or psychology students, or higher complexity in general than psychology students (Haller & Courvoisier, 2010).

Eysenck's (1995) definition of the personality trait of psychoticism was meant to determine underlying personality traits associated with psychotic disorders. Those who scored high in psychoticism were thought to be more antisocial, aggressive, and cold in nature. This definition has been criticized however; as there was no evidence found that individuals who scored higher on Eysenck's psychoticism scale were any more at risk for a psychotic disorder than the normal population. They were shown to be at higher risk for antisocial behavior in the future, however. There has been evidence that there may be a link between Eysenck's psychoticism scale and creativity when defined as originality of thought (Fink, Slamar-Halbedl, Unterrainer, and Weiss, 2012).

Fink, Slamar-Halbedl, Unterrainer, & Weiss (2012) found that originality of thought may be a trait shared between creative people and those who suffer from mental disorders. When studying the personality traits extraversion, psychoticism, and neuroticism, as coined by Eysenck (1995) they found a correlation between psychoticism as a personality trait, and originality of thought and cognitive fluency. When comparing actors, alcoholics, and addicts dependent of

various drugs, they found that actors and the polydrug dependents (nine of whom were also diagnosed with borderline personality disorder) both groups scored high in psychoticism and originality of ideas.

Many researchers have tried to answer the question of how different levels of mood influence creativity and why they impact creativity. One predominant theory is that positive mood generates a broadening of cognitive flexibility. This means that when one experiences a positive mood state, they are able to more fully experience divergent thinking, originality of thought, and the ability to elaborate on a construct. These are the qualities most associated with artistic creativity (Fredrickson, 2001).

A possible evolutionary explanation exists for this theory, and it claims that positive mood states are associated with not having to worry about immediate danger. This in turn gives one the freedom and leisure to be able to engage in thinking patterns associated with cognitive flexibility because there is no immediate need to focus that cognitive energy on escaping to safety from predators or other imperative actions that would have went into insuring survival. Negative mood states are associated with distress experienced in survival situations. As a result, the narrowing of cognitive flexibility is associated with utilizing greater problem solving abilities to insure survival (Fredrickson, 2001, Hirt, et. al., 2008).

Zabelina and Robinson (2010) claim that not only does cognitive flexibility play the main role in highly creative individuals; it is the ability to control one's own cognitive flexibility across the board. Creative individuals are capable of adjusting their capacity for cognitive flexibility with respect to the task at hand. If the task calls for cognitive flexibility, the individual is able to oblige to the task. If the task requires a type of response more associated with the problem solving braches of creativity, they are able to accommodate for this as well.

There is also the question of whether creativity is a practiced skill that can be mastered, or an innate ability. Creativity is often thought of as a spontaneous and intuitive occurrence; not as a sort of expertise that can be mastered over time (Glăveanu, 2012). Habit is usually not associated with creativity; in fact, Western society often views habit and creativity as being opposites of one another (2012).

One model explains creativity as being innovative, improvisational, and habitual. According to the model, each subset of creativity is embedded within one another. Innovative creativity is set within improvisational creativity, and improvisational is in habitual creativity. Habitual creativity is the foundation, which then builds up to improvisational and innovative creativity (Glăuveanu, 2012).

With habitual creativity, one must learn to use an instrument in order to play, and certain drills and practices must be learned to make the instrument make the desired notes. These drill and practices become habitual. Once habitual creativity is achieved, it becomes possible for improvisational creativity to occur. Improvisational creativity is creativity that is able to perform spontaneously or in response to an unexpected circumstance. Improvisational jazz artists perform spontaneously by having a sense of empathy that allows them to decipher what type of music would be best for the situation. Because the jazz artists have experience playing their instruments, and have habituated certain methods for playing, they are able to successfully engage in improvisational creativity. They have followed certain rules and roles, and this allows them to improvise successfully. Innovative creativity is a novel response to a problem, and has been the subject of the bulk of research on creativity. Innovative creativity does not only seek to solve a problem, it solves it in an original and unique way (Glăveanu, 2012).

Ivcevic (2009) argues that creativity is often domain-specific, and has identified several different categories of creativity. Included in those domains are types of creativity associated with lifestyle and hobbies, artistic creativity, and intellectual creativity. Lifestyle creativity involves creativity in interpersonal interactions, or self-expression. Artistic creativity is often linked with divergent or original thought, a process of fluidity, which tends to be expressed through music, painting or sketching, or writing. Intellectual creativity is academically based. An inspiring scholarly article or a creative technological advance would be examples of intellectual creativity (Dietrich &Kanso, 2010).

Ivcevic also argues that in order to study creativity each study must have a set definition used to identify which aspect of creativity that is to be studied. She has developed a model to demonstrate creative potential and behavior based on several factors. One deciding factor is the implicit situation, or cultural norms and individual definitions for creativity. Situational elements are based on the aspects of creativity that are assessed by a particular measurement. Social groups depend on what aspects of creativity a specific group or environment may encourage, such as an organization that encourages creativity in a certain project. Another example would be an art class that encourages painting in a creative way. Interactions with the environment could refer to how one interacts with material or tools they are given, such as an artist with paint and a canvas, or a sculptor with clay. Individual traits and beliefs are defined by an individual's creative potential or creative characteristics, such as original thinking. Finally, biological dispositions are genetic traits that allow one to be creative. An example of this would be Openness to new experience, as measure on the Big Five Personality Inventory (SITE). A high rating of Openness has been linked to divergent and original thinking, two traits most often associated with creativity (2009).

Ivcevic also made the distinction between creative potential and creative behavior. Creative potential refers to characteristics that render creativity possible, such as creative traits or skills. Creative behavior refers to creativity that has generated an actual product, such as a painting or a work of writing. Ivcevic stated that one must have clear definition and specific characteristics in mind when studying creativity. The distinction between creative potential and creative behavior must especially be taken into account when researching creativity (2009).

Much like intelligence, there is controversy about what creativity actually *is*. However unlike intelligence, there has been less effort in studying creativity because there typically has not been as much a need to be able to label the concept as there has been with intelligence. The demand for intelligence tests and building tools is very large in schools and universities, and therefore has a large industry. Creativity has usually not had as large of a demand as intelligence and has been more likely to be neglected. The concepts of interest will be the sub-dimensions of creativity typically associated with artistic expression, namely divergent thinking, elaboration, or the ability to expand upon the object or concept of focus in detail, and originality of thought, and how this definition of creativity is associated with positive or negative mood. (Hirt, et al, 2008, Schlinger, 2003)?

The Present Study

The measure of creativity administered in the present study was The Torrance Test of Creative Thinking (2000). The Torrance has been quite controversial, one side says that it is the best measure of creativity that currently exists, and the other side says that because it is a domain general test, it cannot adequately measure creativity. The Torrance operates from the stance that creativity is a mindset and a way of thinking. Instead of concentrating on the product of

creativity to determine how creative it is, the Torrance measures traits associated with creativity such as cognitive fluidity, originality of thought, and fluency.

Hypotheses

If the mood induction process works correctly, then the conditions where positive mood will be induced will have significantly higher mood than conditions in which neutral mood will be induced. If creativity is able to be induced the same way mood is, then the two conditions in which creativity is induced will score significantly higher on the ATTA then conditions with no creativity induction. If positive mood and creativity have a strong relationship, then the condition where positive mood and creativity both will be induced will have the most significant results of the four conditions; and the condition with only neutral mood induction will have the least significant results of the four conditions. Both positive and neutral mood inductions will be performed as instructed by Becker and Leinenger (2011).

This study will further understanding of the nature of positive mood, activation, and how it impacts creativity. Is there a relationship among positive mood, activation, and creativity? Participants were split into four conditions. In the first condition participants went through a positive mood induction and a creativity induction. In the second condition they went through a positive mood induction and no creativity induction. In the third neutral mood and creativity was induced, and in the fourth condition only neutral mood was induced.

CHAPTER II

METHOD

Participants

The sample for this study consisted of 112 participants, with 22 in the mood and creativity induction condition, 25 in the positive mood only condition, 33 in the neutral mood and creativity induction condition, and 32 in the neutral mood only condition. The sample pool will consisted of students at UTC enrolled in various psychology courses. The range of ages in the sample was approximately 18 and 23.

Materials

Abbreviated Torrance Test for Adults

Participants were given the Abbreviated Torrance Test for Adults, or the ATTA (Goff and Torrance, 2002), and the Brief Mood Introspection Scale (Mayer, J. D., Gascheke, Y. N., 1988), or the BMIS. For each activity in the ATTA, participants were asked to open to the first second or third activity and read the instructions along with the scale administrator. Participants were then being informed that they had three minutes to complete the activity, and not to continue on to the next one until instructed to do so. Once three minutes passed, the participants were instructed to stop, and then continue on to the next activity until all three were completed. The mood and creativity inductions were also scripted and used the same script for mood

induction as instructed by Becker and Leinenger (2011). The mood inductions were split into positive and neutral mood.

Autobiographical Mood Induction

In the positive mood induction, participants were asked to think back to a time in their lives where they were very happy, and remembering that episode continues to make them feel happy today. They will be asked to remember their surroundings during that time as clearly as possible, to remember the people and objects that were around them, and to think and feel the same thoughts and feelings they had at that time. Participants were then told to write as many descriptive details about the memory as possible. Journaling was aloud for four minutes. The neutral mood induction was somewhat simpler. Participants will be asked to remember the route they took to arrive at the site of the experiment (2011).

The ATTA measures four norm-referenced abilities: Fluency, originality, elaboration, and flexibility. Fluency is defined as being able to generate ideas that are relevant to the required task. Originality refers to the ability to generate novel or unique ideas. Elaboration is the ability to flesh ideas out and give them nuance and detail. Finally, flexibility is the ability to perceive the same stimulus in different ways. The aforementioned subscales were added together to form a total creativity score which served as the primary dependent variable in the present study. The scale was scored so that higher scores indicate greater creativity.

The ATTA is comprised of three word-based exercises. The exercises require that the participant analyze the pictures and then interpret different possible meanings or uses for the objects or people portrayed in the pictures. The test is meant for adults and is designed to take 9-15 minutes to administer (Goff & Torrance, 2002).

Each ATTA (2002) test booklet has a scoring work sheet at the end. In scoring the norm-referenced portion of the scale, the scores for each activity are recorded on a 4x4 table on the top left side of the work sheet, titled Norm Referenced Measures. The raw score of each norm-referenced measure (fluency, elaboration, originality, and flexibility) is recorded under each activity, and then added up for a raw total score in each measure. Three independent judges were used to score the test booklets using the scoring criteria outlined in the ATTA manual. An inter-rater reliability of .90 was achieved.

Brief Mood Introspection Scale

The Brief Mood Introspection Scale (Mayer, Gascheke, 1988) has been shown to be adequate for easily and briefly measuring different aspects of mood. The BMIS has 16 items (drowsy, lively, sad, tired, caring, active, etc.) and takes under 5 minutes to complete. The BMIS is made of four subscales: the Pleasant - Unpleasant scale, the Arousal - Calm scale, and the Negative – Relaxed scale. According to Mayer and Gascheke (1988) the fact that the BMIS is so easy makes it more accurate in measuring mood before it can change while taking the scale. The aforementioned subscales were added together to form a total mood score that was used as a dependent measure in the present study. The scale was coded so that higher scores indicate more positive mood.

The mood and creativity inductions came from scripts and were modeled after Becker and Leinenger's (2011) script for positive and negative mood induction. Like Becker's study, the participants were asked to imagine the way they came to school for the neutral mood induction. Creativity was induced by adapting the script as close to the script for positive mood induction as possible.

Procedure

Data was collected in a class room environment. The study had four conditions. The first condition induced positive mood and creative thinking in participants and examined their performance on a mood measure scale and a creativity measure. The second condition acted as a control for the first condition and will induce neutral mood and creative thinking in participants, with the same measure administered at the same time. The third condition induced positive mood but not creative thinking, and the fourth and last acted as a control condition for the third condition and induced neutral mood but not creative thinking (Mayer & Gascheke, 1988, Torrance, 2001).

Mood and creativity inductions were administered using the autobiographical method for induction. This method is believed to be the best technique for mood induction (Becker, Leinenger, 2011). Autobiographical mood induction involves having the participant remember an event or time in which they felt the mood which the experimenter wants to induce. The participant is then asked to write down what they remember in as much detail as possible. This is shown to be a reliable and valid technique for mood induction (Baas, et. al, 2008).

Participants were asked to take a mood measure scale known as the Brief Mood Introspection Scale (Mayer, Gascheke, 1998) upon beginning the study. All four conditions had this scale. Each condition received its specific mood and/or creativity-inducing method, followed by an administration of the BMIS to measure effect on mood, as well as the Torrance Creativity Scale to measure impact on creativity from the inductions. Participants were asked to fill out the BMIS as truthfully as possible. All conditions required participants to fill out the BMIS and

Torrance at the same stage in each condition. The BMIS took approximately three minutes to administer (Torrance, Mayer and Gascheke, 1998).

In Condition One, after taking the first administration of the BMIS, participants will be asked to imagine a time when they were creative and it had a positive effect on their mood. Upon imagining, they will be asked to remember the moment and to write down as many specific details as possible. The memory of creativity will not need to have delivered output, only to have made the participant feel creative. After this process, participants will be asked to retake the BMIS along with the Torrance.

In Condition Two, participants will be taken through the same autobiographical procedure as Condition One, only instead of positive mood induction, neutral mood will be induced. Participants will be asked to remember how they got to UTC and the room the experiment is being held in, and write down as many details as possible. After this, they will be asked to remember a time they were creative in as much detail as possible while writing down the details. (Jallais, Gilet, 2010). After the combined induction, participants will finish the study the same as for Condition One (Jallais & Gilet, 2010).

For Condition Three, participants will go through the same positive mood induction procedure as for Condition One, only the creativity induction will not be administered. Participants will be asked to think back to a time when they had a positive mood. They will be asked to remember this event in as much detail as possible while writing the details down. Except for the omission of the creativity induction Condition Three will be the same as Condition One.

Condition Four will be the last condition. In this condition participants will go through the same neutral mood induction procedure as Condition Two in that they will be asked to

remember the way they got to the place the experiment will take place, while writing down as much detail as possible. Condition Four will not have a creativity induction however.

CHAPTER III

RESULTS

A 2 (Creativity induction: Yes / No) x 2 (Mood Induction: Positive or Neutral) ANOVA was performed on participants' total creativity scores. The main effect for the creativity induction $F(1, 108) = 2.3$, $p = .12$, and the mood induction were not significant $F(1, 108) = .68$, $p = .41$. However, the creativity induction x mood induction interaction was statistically significant $F(1, 108) = 8.82$, $p = .004$. As predicted, participants in the creativity induction with mood induction condition, scored higher on total creativity as compared with participants in the other three experimental conditions. The means and standard deviations for this analysis are presented in Table 1.

Table 1 Descriptive Statistics of Participants' Torrance Creativity Scores by Conditions

Variable		*M*	*SD*	*n*
Mood	*Creativity*			
Positive	Yes	17.00	5.48	22
Positive	No	13.12	2.74	25
Neutral	Yes	13.73	3.66	33
Neutral	No	14.97	5.52	32

*Obtained range of response: 0 to 32

As an experimental mood manipulation check, a (creativity induction: Yes / No) x 2 (mood induction: Positive or Neutral) ANOVA was performed on the total mood score. The results indicate that the main effect for creativity induction $F(1, 109) = .25$, $p = .61$, and the mood induction were not statistically significant $F(1,109) = .73$, $p = .395$. However, the creativity induction x mood induction interaction was marginally significant $F(1, 109) = .3.4$, $p = .067$. As seen in Table 2, participants in the creativity without mood induction condition scored higher (e.g. had more positive mood) compared with participants in the other three experimental conditions.

Table 2 Descriptive Statistics of Participants' Mood Scores by Conditions

Variable		*M*	*SD*	*n*
Mood	*Creativity*			
Positive	Yes	2.77	0.09	22
Positive	No	2.98	0.09	25
Neutral	Yes	2.86	0.08	33
Neutral	No	2.74	0.08	32

* Higher scores indicate more positive mood, range of response

CHAPTER IV

DISCUSSION

In the present study creativity scores were increased through combining the induction of creativity and mood within the same experimental condition. Creativity scores did not increase when the creativity or the mood induction was used in isolation without the other. Additionally, the same pattern was observed in regard to the impact of the experimental manipulation on mood. Specifically, combining the induction of creativity and mood within the same condition produced an increase in positive mood as compared with the other three experimental conditions.

The present study has several strengths. First, the present study is that it is the first to use an autobiographical method for creativity induction. In past research the autobiographical method has been used solely for mood induction. Thus this study is unique in the development of autobiographical induction method for creativity and combining it with mood. Thus future research can employ this methodology to study and manipulate creativity scores. This finding has a practical implication because the methodology used in the present study could be used by educators to enhance creativity among students.

Another of this study's strengths was the fact that the creativity measure was scored with strong inter-rater reliability. Three individuals were involved in scoring the creativity measure. Each individual was trained in scoring protocol and was compared to the other two in order to insure reliability. An inter-rater reliability of .89 was produced in order to score the measure as accurately and consistently as possible.

Each condition in the study was carried out using a standardized script that was posted on a projector in the room in which the experiment was taking place. Each script incorporated uniform roles for the mood and creativity inductions, as well as instructions on how to perform on the scales. These standardized procedures decreased the risks of various mistakes or varying factors which could have affected the outcome of each condition. The moderator in each condition was careful to not deviate from the script throughout any of the conditions.

The results of this study also revealed a similar pattern when looking at effects of mood scores and creativity scores on conditions with both the creativity and mood inductions. Conditions with both inductions had a significant effect on creativity scores, and a marginally significant effect on participants' mood scores. The fact that these two variables parallel each other is another one of the study's strengths. Neither mood induction nor creativity induction had an effect on mood and creativity scores individually, but both inductions together did have a noticeable impact.

The findings of this study suggest that it is indeed possible to induce creativity as long as both mood and creativity are manipulated at once. If the nature of creativity is able to be further understood, then it is possible to facilitate it in society. This could have tremendous benefits because every field could benefit from greater creativity. Art would be a very obvious field that would benefit from a more creative society, with more individuals being drawn to the field and a more enhanced ability to appreciate art from the greater society. The sciences would benefit from being able to generate even more original ideas, theories, and research studies that would improve our world. The field of education would benefit from being able to teach and encourage creativity as is done with intelligence. The findings of this study could be applicable to corporate environments where creative and original ideas are needed and valuable. Furthermore, these

findings will also bring the scientific community closer to developing a more holistic definition of "creativity".

Society could benefit greatly from having more creative people. A more creative population could lead to an overall healthier society. Creativity can be a powerful tool for self-expression, and if people are able to express and communicate their thoughts in more original, elaborate, flexible, and fluent ways, this could lead to greater advances in the arts such as music, cinema, writing, etc. If it is possible to facilitate these traits in others, the potential impact could be huge. The fostering of intelligence in society has been exponential, and it would be interesting to discover if creativity training could parallel the same pattern.

One limitation of this study could be the fact that it took place on a college campus. Future research could test whether the findings also apply to the general populations as opposed to an academic environment. Future studies and experiments could take place in a lab setting as opposed to a classroom. Future studies could also obtain higher power and determine if there would be a difference in findings or of strength in findings.

The results of this study will contribute to the study of creativity and will offer more pieces to aid in solving the puzzle of creativity. It has been shown that creativity scores are higher when both creativity and positive mood are induced, and this strongly indicates that creativity as defined as original, elaborate, flexible, and fluent thought, is able to go hand-in-hand with positive mood.

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APPENDIX A

INFORMED CONSENT

INTERACTION BETWEEN AFFECT AND CONGNITION

Please read this consent document carefully before you decide to participate in this study. This research has been approved by the University Institutional Review Board.

Purpose of the research study:

The purpose of this study is to examine the interaction between affect and cognitive processes.

What you will be asked to do in the study:

Following a brief focusing exercise, you will be asked to fill out two brief surveys. Completion of the surveys should take 15 minutes total.

Time required:

25 minutes

Risks and Benefits:

Your hand may develop minor writing cramps. Your voluntary participation will help lead to further academic and scientific discovery.

Compensation:

It is up to your instructor to decide whether or not you receive compensation, and how much you receive.

Confidentiality:

This study will be anonymous. This form will not be attached to your designated packet, and will therefore have no way of linking you name with your data.

Voluntary participation:

Your participation in this study is completely voluntary. There is no penalty for not participating.

Right to withdraw from the study:

You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have questions about the study:

PLEASE TURN TO OTHER SIDE OF SHEET
Stephanie Wilson: lhh159@mocs.utc.edu (Principal investigator)
Dr. David Ross: david-ross@utc.edu

Agreement:

I have read the procedure described above. I voluntarily agree to participate in the procedure and I have received a copy of this description.

Participant: _____ Date: _____

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Bart Weathington, Chair of the Institutional Review Board, at 423-425-4289. Additional contact information is available at www.utc.edu/irb

APPENDIX B

DEMOGRAPHICS QUESTIONNAIRE

Sex: M F

Classification

Age

Which class are you taking/did you take when you participated in this survey?

What is your current GPA?

What is your current major?

What is your current minor?

APPENDIX C

IRB APPROVAL

MEMORANDUM

TO: K. Stephanie Wilson **IRB # 12-009**

Dr. David Ross

FROM: Lindsay Pardue, Director of Research Integrity

Dr. Bart Weathington, IRB Committee Chair

DATE: September 21, 2012

SUBJECT: IRB #:12-009: Positive and neutral mood induction: Ties to creativity

The Institutional Review Board has reviewed and approved the following changes for the IRB project listed above:

- David Ross will now serve as advisor on this project instead of Richard Metzger
- A different creativity scale will be used: The Abbreviated Torrance Test for Adults, or ATTA (Goff, K; Torrance, E. P., 2002). The scale will be shorter and will take around nine minutes to administer as opposed to 45 like the previous version of the Torrance.
- Change in project title: Positive and neutral mood induction: Ties to creativity

.

You must include the following approval statement on research materials seen by participants and used in research reports:

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project # 12-009.

Please remember that you must complete a Certification for Changes, Annual Review, or Project Termination/Completion Form when the project is completed or provide an annual report if the project takes over one year to complete. The IRB Committee will make every effort to remind you prior to your anniversary date; however, it is your responsibility to ensure that this additional step is satisfied.

Please remember to contact the IRB Committee immediately and submit a new project proposal for review if significant changes occur in your research design or in any instruments used in conducting the

study. You should also contact the IRB Committee immediately if you encounter any adverse effects during your project that pose a risk to your subjects.

For any additional information, please consult our web page http://www.utc.edu/irb or email instrb@utc.edu

Best wishes for a successful research project.

VITA

Stephanie Wilson was born in East Ridge, TN to Luke and Sherry Wilson and is an only child. Stephanie completed a BA in Psychology from Lee University in Cleveland, TN in 2009. She took a year off from school and then decided to return to earn her MS. She earned a MS in Research Psychology from the University of Tennessee at Chattanooga in December of 2012. Her area of focus is Positive Mood and Creativity, and her research interests include: mood and creativity induction, positive psychology, mood disorders, and patterns of rape myth acceptance on college campuses. Stephanie currently teaches Intro to Psychology at the University of Tennessee at Chattanooga. Stephanie plans to continue her education and earn her PhD in Research Psychology.