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The Effects of Positive Emotions on Theory of Mind: Positive Emotions May Increase both Accurate Perceptions of Others and Cooperation

A thesis submitted in partial fulfillment of the requirements for the degree of

Bachelor of Arts, Psychology

By

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be accepted in partial fulfillment of the requirements for the degree of

Bachelor of Arts, Psychology

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May 2013
Abstract

The function of positive emotions is an emerging field in psychology. The purpose of this study was to increase knowledge of the functions of positive emotions. The first hypothesis is that positive emotions increase theory of mind; the second hypothesis is that positive emotions increase cooperation. These hypotheses were influenced by previous research that found positive emotions increase empathy, external attention, and mindfulness of others’ mental states.

Participants were tested on their empathy, theory of mind, and cooperation. The positive emotion group was predicted to score higher than the neutral emotion group on the theory of mind and cooperation assessments. Positive emotions did not have a significant relationship with theory of mind; but positive emotions significantly increased cooperation.
Acknowledgements

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The Effects of Positive Emotions on Theory of Mind: Positive Emotions May Increase both Accurate Perceptions of Others and Cooperation

Positive Psychology is an emerging field in the social sciences that studies the qualities that promote individuals to lead fulfilling lives (Seligman, 2002, p. 3). Positive Psychology grew out of both Humanistic Psychology and Clinical Psychology. Clinical Psychology used to focus solely on psychological disorders and treatments. Seligman and Csikszentmihalyi (2000) realized that psychologists were telling patients to change for the better, but “better” was never defined. Also, Gillham and Seligman (1999) argued that the focus of psychology on the negative aspects of human nature stunted human development. Thus, Martin Seligman initiated the 1998 Positive Psychology Movement (Seligman, 2000, p. 3). The Positive Psychology Movement does not refer to a specific scientific hypothesis, rather it refers to the growing trend of psychologists to study the positive aspects of human nature. Positive psychologists urge individuals to live a better life by achieving fulfillment; fulfillment is obtained when an individual excels in a talent, acquires self-determination, reaches subjective well-being, and increases experiences of positive emotions such as happiness and optimism (Seligman & Csikszentmihalyi, 2000). The main goal of Positive Psychology is to take on a scientific approach to create effective interventions that help individuals, families, and communities to lead fulfilling lives (Seligman & Csikszentmihalyi, 2000).

The present study seeks to partake in the Positive Psychology Movement by studying the functions of positive emotions. Postive emotions are characterized as emotions that increase motivational engagement; they include: attachment, enthusiasm, nurturant love, awe, and amusement (Shiota, Neufeld, Yeung, Moser, & Perea, 2011). The purpose of the present study is to test whether or not positive emotions increase theory of mind. Theory of mind does not refer
to a theory, rather this term refers to the ability to identify the mental processes that govern an individual’s behavior (Lundy, 2013). In order to provide a comprehensible rationale that positive emotions may increase theory of mind, this thesis provides an overview of Positive Psychology, states the functions of positive emotions, explains how social relating increases positive emotions, and explains how positive emotions increase cooperation. Specific experiments are provided that suggest positive emotions increase theory of mind. In order to test the hypothesis, participants were induced to experience either positive emotions or neutral emotions. Then they completed a theory of mind assessment. The researchers predicted that the positive emotion group would score higher on the theory of mind test. This study is applicable for clinical psychologists who wish to use positive emotions to treat their patients. The overall goal of this study is to leave an impact on the field of Positive Psychology and to help individuals lead more fulfilling lives.

**Introduction to Positive Psychology.** Though much work has been done on defining what promotes mental health (Garland, Fredrickson, Kring, Johnson, Meyer, & Penn, 2010; Fredrickson, Tugade, Waugh, & Larkin, 2003; Fuller, Emrick, Sadilek, Scheur, & Catterall, 2010; Fredrickson & Branigan, 2005; Biss & Hasher, 2011; Fredrickson, 1998), a number of unanswered questions remain. One void that persists is the explanation of why positive emotions increase cooperation. Positive emotions have been empirically proven to increase cooperation (Isen, 1970); yet, no one has been able to explain why. Theory of mind, which is the ability to understand others’ mental states, may be the intervening factor. Multiple empirical studies (Nelson, 2009; Sallquist, Eisenberg, Spinrad, Eggum, & Gaertner, 2009; Carver, 2003; Mellers, Haselhuhn, Tetlock, Silva, & Isen, 2010; Batson, 1991) support the conjecture that positive
emotions may increase theory of mind, which then increases cooperation. These Positive Psychology studies will be investigated later in the thesis.

Upon initial glance, Positive Psychology studies appear to be a simple self-help guide to happiness. However, Positive Psychology studies are much more than popular paperback books that claim to help readers find happiness in ten days or less. This field of scientific study does not depend upon extraordinary advertisements or propaganda to sell its techniques for well-being. Rather, Positive Psychology studies are grounded in the scientific method and arduous academic research (Seligman & Csikszentmihalyi, 2000). The purpose of Positive Psychology is to foster more fulfilling lives by ameliorating both physical and mental health (Seligman & Csikszentmihalyi, 2000).

The area of Positive Psychology that focuses on physical health has found that positive emotions increase immune system functioning. When participants were asked to keep track of their mood and provide saliva samples, there was a high positive correlation between positive mood and immunoglobin A, an important antibody ($F (1, 28)= 9.92, p < .01$) (Stone, Cox, Valdimarsdottir, Jandorf, & Neale, 1987). This experiment provides evidence that the immune system functions better when an individual is experiencing positive emotions.

Positive emotions also shorten the time it takes for cardiovascular activity to return to baseline levels after cardiovascular arousal. Fredrickson and Levenson (1998) asked participants to view a film that elicits fear, which is a negative emotion and increases cardiovascular activity. The participants then watched a second film that elicited either a positive emotion, sadness, or a neutral emotional state. The participants who viewed the secondary positive emotion films returned quicker to baseline cardiovascular activity than those who viewed the secondary neutral
and sad films \((r(56) = 2.43, p < .05)\); thus, positive emotions undo the effects that negative emotions have on the cardiovascular system.

Positive emotions have also been found to increase longevity of life and decrease symptoms of pain (Pressman & Cohen, 2005). Positive affect, which is a mood characterized with positive emotions, decreases the severity of symptoms experienced by human immunodeficiency virus (HIV) patients (Billings, Folkman, Acree, & Moskowitz, 2000). The above studies exemplify how positive emotions increase immune system functioning, quicken cardiovascular recovery, extend longevity, and decrease symptoms of pain. The list of experiments that demonstrate how positive emotions increase physical health is limitless.

In addition to positive emotions increasing physical health, positive emotions also increase mental health. When patients increase their experience of positive emotions, their brains undergo neuroplasticity that makes them respond quicker and more prominently to stimuli that elicit positive emotions (Garland, Fredrickson, Kring, Johnson, Meyer, & Penn, 2010). In other words, positive emotions have a positive feedback loop; present experiences of positive emotions increase the number and severity of future experiences of positive emotions.

Fredrickson, Tugade, Waugh, and Larkin (2003) find that positive emotions increase the ability to cope. Participants completed assessments that measured their affect, resilience, and depressive symptoms. The assessments were given both before and after the terror attacks of September 11, 2001. The researchers find that positive affect increased resilience and decreased depressive symptoms. There are a multitude of studies (Fuller, Emrick, Sadilek, Scheur, & Catterall, 2010; Fredrickson & Branigan, 2005; Biss & Hasher, 2011) that demonstrate other ways in which positive emotions increase mental health.
One important theory that stems from Positive Psychology is the Broaden-and-Build Theory, which deserves great recognition because multiple theories of Positive Psychology are influenced by this theory. The Broaden-and-Build Theory, created by Barbara Fredrickson (1998), argues that positive emotions broaden an individual’s awareness and encourage various novel thoughts and actions. The Broaden-and-Build Theory provides an explanation for many experimental findings in Positive Psychology. For example, positive emotions have been discovered to increase cooperation (Isen, 1970), creativity (Isen, Daubman, & Nowicki, 1987), external attention (Isen, 1970) and the ability to integrate facts to formulate an answer (Isen, Rosenzweig, & Young, 1991). The above correlations are explained by the Broaden-and-Build Theory (Fredrickson 1998); when individuals experience positive emotions, they are able to expand their consciousness to other stimuli, which then increases their cooperation, creativity, external attention, and ability to formulate answers.

**Functions of positive emotions.** Not many people are aware that emotions play an important role in evolution. The common misconception is that emotions are simply a byproduct, or an incidental product, of a an individual’s present situation. For example, the uninformed person wrongfully believes that fear is a simple byproduct to a situation in which a person is threatened. On the contrary, empirical studies (Fuller et al., 2010; Nesse, 1990) provide evidence that fear serves an evolutionary purpose. Fear increases the release of epinephrine and norepinephrine to prepare the body for the fight-or-flight response, in which the individual makes a quick decision to either fight or run from the fear-eliciting stimulus (Fuller et al., 2010). Like fear, other emotions have made humans socially intellectual. Humans increase their survival by coordinating the physiological, cognitive, motivational, behavioral, and subjective responses in situations that reoccur over evolutionary time (Nesse, 1990). In more
simple terms, emotions prime human bodies to execute actions that increase their survival and vitality.

While negative emotions prime individuals to perform specific tasks, positive emotions prepare individuals to perform a wide array of tasks. Negative emotions elicit individuals to narrow an individual’s thought-action repertoire, which is the range of thoughts and actions that an individual is ready to execute (Fredrickson & Branigan, 2005). As mentioned above, fear elicits an individual to either fight or flee a stimulus. On the other hand, positive emotions broaden an individual’s thought-action repertoire. When experiencing positive emotions, individuals’ minds are open to more thoughts, thus are more open to perform various tasks (Fredrickson & Branigan, 2005). Hence, it is difficult to pinpoint a specific action that a positive emotion primes individuals to perform. Instead of claiming that positive emotions cause individuals to perform specific tasks, researchers are finding the areas of aptitude that positive emotions broaden.

Positive emotions have helped humans socially evolve by increasing cooperation, creativity, external attention and the ability to integrate facts to formulate an answer. Isen, Daubman, and Nowicki (1987) provide evidence that positive emotions increase creativity. Participants who were elicited to experience positive emotions were more successful than the control group in completing a creativity task, \( t(83) = 3.40, p < .01 \).

Positive emotions have also been found to increase external attention. Participants elicited to experience positive emotions recalled more information that was irrelevant to their task than the control group recalled (Biss & Hasher, 2011). Participants were shown pictures with overlapping words, and instructed to pay attention to the pictures and ignore the words. If positive emotions increase external attention, then the positive emotion group should recall more
of the words that they were instructed to ignore. This prediction was realized; the positive emotion group recalled more words than the neutral emotion group \((t(46) = 2.06, p < .05)\); hence, positive emotions increase external attention.

In addition to increasing cooperation, creativity, and external attention, researchers have found that positive emotions also increase efficiency (Isen & Means, 1983) and the ability to integrate facts to formulate an answer (Isen, Rosenzweig, & Young, 1991). Positive emotions surely come with many benefits.

**Social relating can increase positive emotions.** The purpose of Positive Psychology is to increase the experience of positive emotions, so that individuals can live more fulfilling lives (Seligman & Csikszentmihalyi, 2000). Individuals can increase their experience of positive emotions by creating and nurturing close relationships with each other. Creating meaningful relationships requires social relating, which is the ability to empathically engage with others. Studies of social relating, which is the ability to create meaningful bonds with others, are central to Positive Psychology because social relating has been found to increase well-being (Lyvomirsky & Layous, 2013), mental health (Vaillant, 2012), happiness of an individual (Vaillant, 2012), and the happiness of social networks (Fowler & Christakis, 2008).

One model for increasing well-being is the Positive-Activity Model, which claims that performing positive activities increases well-being (Lyvomirsky & Layous, 2013). Positive activities are expressions of gratitude and acts of kindness. A lifestyle that is rich in positive activities increases personal resources, fosters the ability to construe life events more positively, and prompts spontaneous behavior that elicits positive emotions (Lyvomirsky & Layous, 2013). These increases of personal and social resources thus provides more opportunities for an
individual to experience more positive emotions. The positive feedback hypothesis of positive emotions supports the Positive-Activity Model. The positive feedback hypothesis of positive emotions states that present experiences of positive emotions increase the experiences of future positive emotions (Garland, Fredrickson, Kring, Johnson, Meyer, & Penn, 2010). Furthermore, Diener (2000) compared the effects that material gain and positive activities have on well-being. He finds that performances of positive activities increase well-being more successfully than material gains.

Another study identifies that positive actions increase well-being. Vaillant (2012) argues that the dominance of positive emotions is important for achieving mental health. In other words, an individual can increase his or her mental health by experiencing positive emotions more intensely and more often than negative emotions. Vaillant indicates eight positive emotions that have the greatest effect on well-being: love, hope, joy, forgiveness, compassion, faith, awe, and gratitude. Each one of these emotions are displayed during social relating; hence, social relating is imperative to an individual’s mental health.

Social relating affects not only the individual level, but it also affects entire social networks. In a social network, happiness spreads from one individual to the next. A longitudinal study conducted between 1983 and 2003 finds that happy people tend to cluster together and unhappy people tend to cluster together (Fowler & Christakis, 2008). The result of these clusters is not due to the parable birds of a feather flock together; happy individuals do not spontaneously attract each other and form social networks. Rather, the emotional affect of a network influences the affect of the individual; a happy individual spreads his or her happiness to another person. A person with a negative affect could gain a positive affect if he or she joins a social network.
entrenched in happiness. Social relating plays a strong role in well-being, mental health, and happiness.

**Positive emotions increase cooperation.** The first hypothesis of this thesis is that positive emotions increase theory of mind. This hypothesis was influenced by the findings that positive emotions increase cooperation (Johnson & Ahlgren, 1976; Bierhoff & Muller, 1999; Isen, 1970; Johnson, 1971; DeSteno, Bartlett, Bauman, Williams, & Dickens, 2010); hence it is imperative to verify that positive emotions increase cooperation. In order to establish this causal relationship between positive emotions and cooperation, this thesis investigates whether positive emotions and cooperation co-vary, share a time-order sequence, and rule out confounding variables.

There is a large difference between correlation and causation. Correlation refers to two variables changing at the same direction and rate, but neither variable is affected by the other. On the other hand, causation refers to one variable’s value depending on another variable’s value. For decades, researchers have identified a correlation between positive emotions and cooperation. Johnson and Ahlgren (1976) administered the Minnesota School Affect Assessment (MSAA) to over 6,000 students in the Midwestern school district. They found that students who held positive emotions towards school also cooperated more with other students. Another study (Bierhoff & Muller, 1999) randomly divided 150 undergraduate students into 39 groups to work on a research project. Participants who experienced more positive emotions and a more positive group atmosphere were more cooperative with fellow group members. The above experiments exhibit a correlation between positive emotions and cooperation; but which came first, the chicken or the egg, the positive emotions or cooperation?
Fortunately, researchers have found the directionality of the relationship between positive emotions and cooperation. Positive emotions precede cooperation. Isen (1970) randomized participants into three groups: positive emotion, negative emotion, and neutral emotion. During the experiment, a confederate walked by the participant and dropped her books. The positive emotion group helped the confederate more often than both the negative emotion group ($U = 19$, $p < .01$) and neutral emotion group ($U = 26$, $p < .05$). Isen concluded that positive emotions increase cooperation. Johnson (1971) also conducted an experiment to exhibit directionality between positive emotions and cooperation. In her experiment, participants played a game against a confederate. The confederate either does or does not display warm and understanding emotions towards the participant. When the confederate exerted warmth towards the participant, the confederate was more successful in making an agreement ($F = 3.93$, $p < 0.05$). In other words, the participants were more likely to cooperate if the confederate displayed positive emotions. Isen (1970) and Johnson’s (1971) experiments provide directionality in the positive emotion and cooperation relationship; positive emotions precede cooperation.

Now that causation has been established between positive emotions and cooperation, confounding variables need to be addressed. A possible confounding variable is the reciprocity norm. The reciprocity norm refers to individuals feeling obligated to perform a positive action for an individual who performed a positive action for them. DeSteno, Bartlett, Baumann, Williams, and Dickens (2010) conducted an experiment to assure that positive emotions, not the reciprocity norm, increase cooperation. While a participant was completing a task on a computer, the computer was stimulated to suddenly appear dysfunctional. A confederate either helped the participant fix the computer, or did not help. Afterwards, the participant played an economic-token game with either a stranger or the confederate. The participants were given an
opportunity to allocate any number of tokens to their competitor. The participants who received help fixing their computers allocated more money to their competitor ($r_{\text{gratitude}} = .29, p < .01; r_{\text{positive}} = .21, p < .06$); this correlation provides evidence that positive emotions increase cooperation. If the reciprocity norm affected cooperation, then the participants would have allocated more tokens to the confederate who helped them than to the stranger. The participants did not allocate more tokens to the confederate than to the stranger ($F(1, 81) = 5.20, \text{NS}$); hence, positive emotions, not the reciprocity norm, increases cooperation.

Another confounding variable between positive emotions and cooperation is the negative-state relief. Negative-state relief refers to individuals experiencing negative emotions when witnessing another person’s suffering and thus help the suffing person in order to relieve his or her own negative emotions (Batson, et al., 1989). Researchers Cialdini et al. (as cited in Batson, 1991, p. 163) argue that cooperation is the result of the negative-state relief, not positive emotions. Batson (1991, p. 172) argues that positive emotions, not the negative-state relief, affects cooperation. Batson provided his participants an opportunity to help a confederate in need. Half of his participants were instructed that if they chose not to help, then they would watch a video that would elicit strong positive emotions; the purpose of the video was to reduce the negative emotions that the participants felt towards the confederate. The other half of participants were instructed that if they chose not to help, then they would watch a video that would not elicit any particular emotion; in this condition, the participants’ negative emotions towards the confederate would not be relieved. If negative-state relief increases cooperation, then the participants who were offered to watch the negative-state relief video would have helped the confederate less. In actuality, the participants who were offered to view the negative-state relief video were not less likely to help the confederate. Batson concludes that the negative-state
relief is not the driving force of cooperation. Alas, covariation, time-order sequence, and confounding variables have been ruled out to demonstrate that positive emotions increase cooperation. This question remains: how do positive emotions increase cooperation?

**Positive emotions may increase theory of mind.** Although positive emotions have been empirically tested to increase cooperation (Johnson & Ahlgren, 1976; Bierhoff & Muller, 1999; Isen, 1970; Johnson, 1971; DeSteno, Bartlett, Bauman, Williams, & Dickens, 2010), research has yet to explain why. The hypothesis that positive emotions increase theory of mind may explain why positive emotions increase cooperation. Hence, the purpose of this thesis is to study whether positive emotions increase theory of mind. Studies have shown that positive emotions increase empathy (Nelson, 2009; Sallquist, Eisenberg, Spinrad, Eggum, & Gaertner, 2009); studies also demonstrate that empathy increases cooperation (Batson, 1991, p. 171), attention towards other people (Carver, 2003), and mindfulness of others’ mental states (Mellers, et al., 2010). Together, these studies indicate that positive emotions may increase theory of mind.

Previous studies have shown that positive emotions increase empathy (Nelson, 2009; Sallquist, Eisenberg, Spinrad, Eggum, & Gaertner, 2009). Nelson’s (2009) participants were divided into three groups: positive emotion, negative emotion, and neutral emotion. Participants read vignettes of characters who were experiencing interpersonal distress. The positive emotion group empathized more with the characters than the neutral emotion and negative emotion groups ($t(38) = -5.727, p < 0.001$). Nelson (2009) concludes that positive emotions increase empathy. Empathy is a subset of theory of mind. While theory of mind is the ability to attribute the general mental states of others, empathy is the ability to attribute emotional states, which is a specific type of mental state. Since empathy is a subset of theory of mind, this thesis expands
Nelson’s and Sallquist et al.’s experiment by finding the effects that positive emotions have on attributing others’ mental states in general, not just emotional states.

Empathy has also been found to increase cooperation. In a book entitled *The Altruism Question: Towards a Psychological Answer*, Batson (1991) demonstrates that empathic concern is a perpetrator of prosocial behavior. He argues that when individuals experience empathy, they are more likely to help others. Batson’s participants were given a choice to allow themselves or a colleague to receive an electric shock. The participants who reported a higher rate of empathy, were more likely to volunteer to receive the electric shocks, ($\chi^2(1, N=40)=3.91, p < .05$) (Batson, 1991, p.171). Batson’s conclusion that the ability to perceive others’ mental states increases cooperation is similar to this thesis’ conjecture that theory of mind increases cooperation.

Carver (2003) conducted a study that strengthens the academic support for the hypothesis that positive emotions increase theory of mind. Carver proposed a Cruise Control Model, which claims that positive emotions signal to the individual’s brain that his or her current situation is better than necessary; hence, he or she should pay less attention to himself or herself and pay more attention to external stimuli and people. By paying more attention to others, the individual’s ability to identify others’ goals, knowledge, and intentions increases. Hence, positive emotions may increase theory of mind.

Another study (Mellers et al., 2010) that strengthens the hypothesis of this thesis demonstrates that when individuals experience positive emotions, they are more mindful of others’ mental states. As participants in the positive emotion group allocated more tokens to their playmate, their level of pleasure increased. This study suggests that individuals pay more attention to others’ mental states when they are experiencing positive emotions. Hence the
experiment conducted by Mellers et al. provides evidence that positive emotions may increase theory of mind.

This thesis, however, did more than simply find whether or not positive emotions increase theory of mind. Remember that this thesis was influenced by the findings that positive emotions increase cooperation (Johnson & Ahlgren, 1976; Bierhoff & Muller, 1999; Isen, 1970; Johnson, 1971; DeSteno, Bartlett, Bauman, Williams, & Dickens, 2010); hence, finding a causal relationship between positive emotions and cooperation is also necessary. This thesis tests whether participants who are induced into positive emotions score higher on both theory of mind and cooperation.

**Materials and Methods**

**Overview.** This was an experimental study comparing two groups. The first group was induced into positive emotions and the second group was induced into neutral emotions. Having two groups allowed us to test our hypothesis that positive emotion participants would score higher on a theory of mind assessment. This study had five steps. The first step was recruiting subjects for participation, described below. Those that volunteered were scheduled to come to a computer lab in the Ansari Business Building or in the Knowledge Center. This experiment was conducted with nine sessions composed of one through eight participants. Before the participants arrived, all computers were uploaded onto the experiment’s webpage via Qualtrics, which is a website that facilitates online experiments. After participants signed the consent form, the experiment began. Groups were randomized to the positive emotion induction or neutral induction based on a coin toss. Upon arrival to the computer lab, participants were given an empathy assessment, then were shown the emotional induction films, took a theory of mind assessment, and finally a cooperation assessment (Figure 1).
Figure 1. Diagram of the experiment’s methodology. First, all participants completed an empathy assessment, which was the Epstein Feeling Inventory (Mehrabian & Epstein, 1972). Second, half of the participants were induced into a neutral emotional state with a video entitled “Sticks” (Rottenberg, Ray, & Gross, 2007) and the other half were induced into a positive emotional state with a video entitled “Jingleheimer Junction” (McKay, 1998). Third, participants’ theory of mind was measured with the Reading the Mind in the Films Task (Autism Research Center, 2013). Fourth, the participants’ cooperation was assessed by whether or not they were willing to donate to a charity.

Recruitment. Participants were recruited using flyers posted in Mack Social Science (Appendix A) and via the online subject pool software for the psychology department. Participants were from the undergraduate student population of the University of Nevada, Reno. All participants must have fulfilled three requirements: (1) be 18 years old or older, (2) be fluent
in English, and (3) be eligible to obtain Sona System credits. Students were required to be 18 years of age, so they could legally consent to participation. Participants were required to speak English because the experimental materials (ex. consent form, theory of mind assessment, and debriefing statement) were in English. All participants were given extra credit points to reimburse their time via the UNR’s Sona System. The total sample size was 23.

Assessments. The empathy and theory of mind assessments were completed on Qualtrics, a website that collects survey responses online. The empathy assessment was completed before the emotional induction; after the emotional induction, the theory of mind assessment was completed. The cooperation assessment was done verbally, immediately before debriefing.

Empathy assessment. Upon arrival to the experiment, participants answered three demographic questions that asked for their age, gender, and ethnicity. Then the participants completed the Epstein Feeling Inventory, which measures an individual’s level of empathy (Mehrabian & Epstein, 1972) (Appendix B). In this assessment the participants quantified how well they identified with a statement. The statements included: “It makes me sad to see a lonely stranger in a group,” “I become nervous if those around me seem nervous,” and “I tend to get emotionally involved with a friend’s problem.”

Theory of mind assessment. Participants then completed the Reading the Mind in the Films Task (Autism Research Center, 2013) (Appendix C), which assessed their level of theory of mind (Golan, Baren-Cohen, Hill, & Golan, 2006). In this task, participants viewed 22 short media clips; the videos lasted 3-30 seconds each. After each clip, they were asked to identify the mental state of one character in a multiple-choice format. The researchers provided a glossary
(Appendix D) to each participant to assure that they understood the terms used in the multiple-choice options.

**Cooperation assessment.** After the theory of mind assessment, participants’ level of cooperation was measured. When all participants completed the computer portion of the experiment, the experimenter pretended that she forgot the debriefing papers and frantically shuffled through her backpack until she stumbled upon a manila envelope filled with coins. She pretended that this envelope was filled with money she raised for autistic children and asked the participants if they would like to donate. If participants donated, then they were recorded as cooperators. Assessing cooperation via donations is not new in the field of psychology. For example, Isen (1970) measured cooperation via donations in her experiment to prove that positive emotions increase cooperation.

**Emotion induction.** To summarize the methodology, there were four steps in this experiment: empathy assessment, emotional induction, theory of mind assessment, and cooperation assessment (Figure 1). For the emotion induction, participants were randomized to either the positive emotion group or neutral emotion group. The control group was induced into a neutral emotional state with the video “Sticks” (Rottenberg, Ray, & Gross, 2007) which has been empirically tested to induce a neutral state of emotion (i.e., it’s boring; Fredrickson, Mancuso, Branigan, & Tugade, 2000). The “Sticks” video is a clip in which different colored lines appear on a black background (Figure 2). Since the film is not amusing, participants become bored and are induced into a neutral emotional state.
Figure 2. Snapshot of the video “Sticks.” (Rottenberg, Ray, & Gross, 2007)

that induces neutral emotions. Participants in the control condition watched “Sticks.” In this four-minute long video, different colored lines appeared on a black background. The lack of amusement in “Sticks” induced participants to experience neutral emotions.

Participants randomized into the experimental group watched the Saturday Night Live video “Jingleheimer Junction” (McKay, 1998), which has been empirically tested to increase positive emotions (i.e., amusement; Nielson and Powless, 2007). This video is a Saturday Night Live production; it is a four-minute comedy. Four actors wear shirts printed with the letters U, C, K, and F. They are inattentive to the observation that their shirts, if ordered correctly, spell an expletive word. Throughout the video they are constantly moving around and a fifth character hilariously inhibits them from spelling the swear word (Figure 3).
Figure 3. Snapshot of the video “Jingleheimer Junction” (McKay, 1998) that induces positive emotions. “Jingleheimer Junction” is a Saturday Night Live video in which four characters wear shirts printed with the letters U, C, K, and F. The characters are oblivious to the fact that their shirts, if ordered in a certain way, spell an explicit word. Throughout the video, a fifth character comically prevents them from spelling the curse word.

The sample sizes in the positive emotion and neutral emotion groups were not equal because the participants were randomized into each group by experimental sessions, not by individual participants. The researchers feared that if both the neutral video and positive video were played in the same session, then the participants randomized to watch the neutral emotion video would be distracted by the positive emotion videos. Hence, all participants in a session viewed the same video. By a flip of a coin, the first session of participants was randomized into the neutral emotion group; thus, the second session was in the positive emotion group. The emotion induction was altered between each session.

Debriefing. In the consent form, participants were told that the study was testing the effects that media have on how humans perceive others. The participants could not be informed
of the true nature of this study, otherwise knowledge of the study’s hypothesis would have affected their performance in the study. Deception was particularly important for the cooperation assessment, in which the experimenter said she was part of a group that was raising money for autistic children. After completion of the experiment, all participants were told of the experiment’s manipulation via a debriefing statement in which they were allowed to withdraw their data once they knew of the true nature of the study.

**Results**

Two participants’ data were thrown out because one did not complete the entire experiment and the other’s assessment videos were not working. The total sample size was 23. The data of 15 females and 8 males were analyzed. Participants ranged from 18 to 52 years of age. See Table 1 for a complete breakdown of scores by experimental group.

**Table 1. Summary data by experimental condition.** The positive emotion group had a lower mean score than the neutral emotion group on the theory of mind assessment ($M_{\text{positive}} = 11.73, M_{\text{neutral}} = 12.50$). All 12 participants in the neutral emotion group did not cooperate. Three participants in the positive emotion group cooperated and eight did not.

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<th></th>
<th>Mean Age</th>
<th>Ethnicity</th>
<th>Gender</th>
<th>Mean Theory of Mind Score</th>
<th>Cooperation Assessment scores</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive emotion group</strong></td>
<td>25.75</td>
<td>White = 9</td>
<td>Females = 5</td>
<td>11.73</td>
<td>Yes = 3, No = 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Asian = 3</td>
<td>Males = 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Black = 1</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Other = 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>White = 9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Asian = 2</td>
<td>Females = 10</td>
<td>12.50</td>
<td>Yes = 0, No = 12</td>
</tr>
<tr>
<td>Neutral emotion group</td>
<td>21.75</td>
<td>Asian = 2</td>
<td>Males = 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Black = 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other = 0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Our main hypothesis was that the positive emotion group would score higher on the theory of mind assessment. A t-test was conducted to compare the theory of mind scores between the experimental and the control group. Contrary to our prediction, the mean score of the positive emotion group was lower than that of the neutral emotion group ($M_{\text{positive}} = 11.73$, $M_{\text{neutral}} = 12.50$). The t-test that compared these means was not significant, ($t(21) = .60$, $p > .05$).

Our secondary hypothesis was that the positive emotion group would be more cooperative and donate more to the charity. A chi square analysis demonstrated that the positive emotion group was more likely to cooperate ($\chi^2(1, N = 23) = 3.76$, $p = .05$) (Figure 4), as predicted.

Figure 4. Graph of participants who cooperated based on experimental condition. The cooperation of participants was assessed by whether or not they were willing to donate to a charity for autistic children. No one in the neutral
emotion group cooperated. Eight participants in the positive emotion group did not cooperate, but three in the positive emotion group cooperated.

Given our non-significant finding for the hypothesis that positive emotions increase theory of mind, we conducted a secondary data analysis of our demographics in an effort to test if the theory of mind assessment was working as expected. Females got a higher mean score on the theory of mind assessment than males ($M_{females} = 12.60$, $M_{males} = 11.25$, $M_{total} = 11.93$), but a t-test shows that the difference between the means was not significant ($t(21) = 1.01$, $p = .13$).

Also as expected, a t-test showed that individuals who scored higher on the theory of mind assessment were more likely to cooperate, ($t(21)= 1.36$, $p = 0.13$), but again the difference was not significant.

**Discussion**

Although some statistical analyses resulted in nonsignificant findings, this study still contributes to the field of Positive Psychology and may influence the methodology for future studies that investigate the functions of positive emotions. In the present experiment, participants who were induced to experience positive emotions were more likely to cooperate. This finding is congruous with previous studies that claim positive emotions increase cooperation (Isen, 1970; Johnson & Ahlgren, 1976; Bierhoff & Muller, 1999; Johnson, 1971; DeSteno, Bartlett, Baumann, Williams, & Dickens, 2010). Thus, this thesis strengthens the well-established theory that positive emotions increase cooperation.

This experiment also found that as participants’ theory of mind increased they were more likely to cooperate; but the relationship was not found significant. Also, females had a higher mean score on theory of mind than males, but the difference was not significant.
predicted to score higher on theory of mind because females have been empirically tested to better comprehend and be more understanding of others’ mental states (Klein & Hodges, 2001). In this experiment, the lack of significance between theory of mind and cooperation and between gender and theory of mind should not be discouraging. Instead, researchers should be encouraged to extend this experiment with a larger sample size. Theory of mind tended to increase cooperation, and females tended to score higher on theory of mind. If the experiment was replicated with a larger sample size, the relationship between theory of mind and cooperation and between gender and theory of mind may be found significant.

The main hypothesis of this study was that positive emotions increase theory of mind. This hypothesis was partly influenced because positive emotions have been empirically found to increase empathy (Nelson, 2009; Sallquist, Eisenberg, Spinrad, Eggum, & Gaertner, 2009), attention towards other people (Carver, 2003), and mindfulness of others’ mental states (Mellers et al., 2010). Unfortunately, the hypothesis that positive emotions increase theory of mind was not supported with the current experiment’s data. Another influence of the hypothesis is that negative emotions have been found to decrease perspective taking (Okun, Shephard, & Eisenberg, 2000). In other words, when individuals experience negative emotions, they are less likely to understand the mental states of others. Since negative emotions decrease theory of mind, the present study sought to test whether or not positive emotions have the opposite effect on theory of mind. Currently, researchers do not know whether positive emotions increase theory of mind, decrease theory of mind, or do not affect theory of mind. Perhaps if the present study was extended or replicated with a larger sample size, a significant relationship would be found between positive emotions and theory of mind.
This thesis has thus far argued that positive emotions may increase theory of mind; however, there is a possibility that positive emotions may actually decrease theory of mind. To the researchers’ surprise, the positive emotion group had a lower mean than the neutral emotion group on the theory of mind assessment. The notion that positive emotions decrease theory of mind is supported by Lagattuta and Wellman (2002) who demonstrated that when children focus on positive emotions, they are less likely to discuss the mental states of other people and less likely to discuss the causes and consequences of emotions. This finding suggests that positive emotions decrease attention to others’ mental states.

Another explanation for why the positive emotion group tended to score lower on theory of mind may be that positive emotions decrease attention to narrow details. Positive emotions have been found to increase attention to broad details, but decrease attention to narrow details (as cited in Isen, 2000, p. 554). The theory of mind assessment used in this thesis utilized terms with difficult definitions, with which participants had to pay close attention to in order to choose the correct answers. There is a possibility that positive emotions decreases attention to narrow detail in the present study and thus deteriorated performance on the theory of mind assessment. The effect that positive emotions have on theory of mind is currently not conclusive. Despite the nonsignificant results of this experiment, the hypothesis that positive emotions increase theory of mind may still be found. Before conducting another experiment to investigate this theory, experimenters should consider the methodology used in the present study.

**Methodological considerations.** This experiment could have found significant results if more participants were tested, the videos in the theory of mind assessment were of better quality, theory of mind was assessed in real-life situations, and the theory of mind assessment was not so difficult. The main concern in this study is the small sample size. A power analysis exhibited
that the present experiment had a small 30% possibility of finding a significant relationship between positive emotions and theory of mind. The chisquare analysis had a scanty 23% chance of finding a significant relationship between positive emotions and cooperation. Furthermore, the t-test had a small 43% probability of finding significance between gender and theory of mind. A power analysis demonstrated that this experiment needed 42 participants to find significant results, but the sample size was only 23. The larger the sample size, the greater the possibility there is to find significance (Biau, Kerneis, & Porcher, 2008); thus, future studies can replicate this experiment with a larger sample size, in order to increase the likelihood of finding significant relationships.

Another concern with the present study’s methodology is the poor quality of the videos. The crackling of the audio could have made it difficult for the participants to hear the characters’ tone of voice. The videos’ resolution was inadequate and their flow was discontinuous; the poor quality of the videos could have made it difficult to visualize the emotions on the characters’ faces.

The choice of the theory of mind assessment is also a concern; the participants’ ability to identify the mental states of others was not measured in a real life setting. Reading the Mind in the Films Task (Golan, Baren-Cohen, Hill, & Golan, 2006) was used to measure the participants’ theory of mind. During the assessment, participants were asked to identify the mental state of a character from a short video clip. Using real life scenarios, instead of videos with actors, may lead to more accurate measurements of the participants’ theory of mind.

The theory of mind assessment could also have been too difficult. The average score on the theory of mind assessment was 54%. In other words, the participants answered only half of the items correctly. The assessment did not use emotional definitions that are commonly used;
and understanding these terms of emotions is important to perform well on the assessment. For example, one term used in the assessment was “listless,” which is not a term used in everyday language. A glossary was provided to the participants to help them complete this assessment, but the vocabulary could have still been too difficult. In order to improve this experiment, a less difficult assessment could be administered.

**Limitations of the present study.** In addition to the methodological concerns, the present study was also challenged with limitations. The researchers could not have controlled the participants’ mood and how serious participants took the assessments. The video stimuli have been empirically tested to induce neutral emotions (Fredrickson, Mancuso, Branigan, & Tugade, 2000) and positive emotions (Nielson and Powless, 2007). However, the video stimuli may not have been strong enough to manipulate the participants’ emotions if they were already experiencing strong emotions at the beginning of the experiment. In order to address this limitation, future studies can use stronger stimuli to induce positive emotions and neutral emotions.

The seriousness with which the participants took the experiment also could not have been controlled. Participants completed the study in order to receive extra credit for their classes. The participants received full credits regardless of their scores, so some of them may not have taken the assessments seriously thus making their data invalid. This flaw can be addressed by providing an incentive to perform well. Camerer and Hogarth (1999) provided evidence that monetary incentives increase performance in experiments that involve judgment tasks. Since, participants in the present study were asked to judge the mental states of individuals, monetary incentives could have been used to entice participants to perform optimally. Futures studies that extend the present study should improve the sample size, the theory of mind assessment, stimuli
that induce positive or neutral emotions, and seriousness with which the participants took the experiment. With these modifications, the likelihood of finding a significant relationship between positive emotions and theory of mind increases.

**Future studies.** The secondary hypothesis, which is that positive emotions increase cooperation, was supported by this experiment. On the other hand, the primary hypothesis that the positive emotion group would score higher than the neutral emotion group on the theory of mind test was not supported by this experiment. The main explanation for the lack of support for the primary hypothesis is that the experiment had multiple methodological considerations. The methodologies of this experiment should be ameliorated, and then conducted again.

Finding the effect that positive emotions have on theory of mind would be of great importance in Positive Psychology. Positive Psychology has consistently found that positive emotions increase the thought-action repertoire, which is the variety of thoughts and actions that is available to an individual at a given moment (Fredrickson & Branigan, 2005). Positive emotions increase the thought-action repertoire by increasing creativity (Isen, Daubman, & Nowicki, 1987), external attention (Isen, 1970), and openness to new experiences (Williams, Rau, Cribbet, & Gunn, 2009). The finding that positive emotions increase the ability to understand the mental states of other people would provide further evidence that positive emotions increase the thought-action repertoire. Furthermore if positive emotions are found to increase theory of mind, neurobiological explanations can be investigated, such as does the brain area responsible for positive emotions help activate the brain area responsible for theory of mind?

On the other hand, if positive emotions were found to decrease the ability to understand others’ mental states, then a revolution in Positive Psychology would occur. The finding that
positive emotions decrease theory of mind would be contrary to previous studies of positive emotions. Instead of broadening the thought-action repertoire, positive emotions would be found to decrease the thought-action repertoire. A finding that positive emotions decrease theory of mind may serve as a catalyst to study other cognitive activities in which positive emotions decrease the thought-action repertoire. Whether positive emotions increase or decrease theory of mind, finding a significant relationship between these factors would be important for Positive Psychology research.

**Practical Uses.** The present study is of practical use to therapists who treat patients with difficulties interacting with the social world. Two of the main Clinical Psychology areas that can benefit from this study are family therapy and autism. The effect that positive emotions have on theory of mind is important for family therapists, because the ability to understand others’ mental states is important for the success of family therapy. As theory of mind increases, family members are more likely to relate to each other in constructive ways and to understand their own responsibility in creating a functioning family (Safier, 2003). Currently, there is contradictory evidence as to whether family therapists should induce clients into positive emotions in order to be more successful in mending families. Negative emotions have been found to increase awareness of the causes and consequences of others’ emotions (Lagattuta & Wellman, 2002); but positive emotions have also been found to increase attention towards others’ mental states (Mellers et al., 2010). The contradiction of whether positive emotions or negative emotions increase theory of mind should be resolved by conducting future experiments. If positive emotions are found to increase the ability to understand others’ mental states, then family therapists should induce clients into positive emotions.
Therapists who treat autistic individuals can also benefit from the effect that positive emotions have on theory of mind. Autistic individuals have a difficult time socializing with others, which further aggravates their disorder (Groden, Diller, Bausman, Velicer, Norman & Cautela, 2001). Therapists can help autistic patients integrate into the social world by engaging more positive emotions into their lives (Groden, Kantor, Woodard, & Lipsitt, 2011). When autistic children experience positive emotions, such as optimism, they are more able to understand their social world and are thus more able to engage in it. This increased social interaction helps autistic patients to live normal lives. If positive emotions are significantly found to increase theory of mind, then Positive Psychology techniques can be greatly helpful in family therapies, treatments for autism, and other Clinical Psychology areas in which understanding others is important for treatment.

The finding of whether or not positive emotions increases theory of mind is applicable to situations in which the understanding of others’ mental states is important. Although the present experiment did not yield significant results, this research question should still be investigated. There were many methodological considerations in this experiment; the main concern was a small sample size. This experiment should be extended with a larger sample size, so that the possibility of finding a significant relationship between positive emotions and theory of mind increases. Studying the functions of positive emotions is an emerging field in psychology. Finding whether or not positive emotions increase the ability to understand the mental state of others will extend knowledge of the function and evolution of positive emotions.
References


How well do you read minds?

PARTICIPATE IN A RESEARCH PROJECT EXPLORING:
How Media affects perceptions of others

What would I do?
The experiment will be conducted at UNR and will prolong 60-80 minutes
• You will complete a survey on perceptions of people.
• You will watch a short media clip.
• Then you will perform a theory of mind assessment

Can I participate?
Yes, if you:
• Are 18 years of age or older
• Are able to read English fluently in order to complete tasks and surveys
• Can participate in research through the SONA system

Participants will be compensated for their time
With 4 SONA credits

This research takes place at the University of Nevada, Reno and has been approved by the UNR Institutional Review Board.

If you are interested in learning more, please call (775) 303-6354 or email jojoviernes78@yahoo.com
Appendix B: Empathy Assessment

**Epstein Feeling Inventory.** Questionnaire that measures participants’ level of empathy. It consists of 33 inquiries, in which participants indicate on a 5-point likert scale how well they identify to each statement (Mehrabian & Epstein, 1972).

1. It makes me sad to see a lonely stranger in a group.
2. People make too much of the feelings and sensitivity of animals.
3. I often find public displays of affection annoying.
4. I am annoyed by unhappy people who are just sorry for themselves.
5. I become nervous if others around me seem to be nervous.
6. I find it silly for people to cry out of happiness.
7. I tend to get emotionally involved with a friend's problems.
8. Sometimes the words of a love song can move me deeply.
9. I tend to lose control when I am bringing bad news to people.
10. The people around me have a great influence on my moods.
11. Most foreigners I have met seemed cool and unemotional.
12. I would rather be a social worker than work in a job-training center.
13. I don't get upset just because a friend is acting upset.
14. I like to watch people open presents.
15. Lonely people are probably unfriendly.
16. Seeing people cry upsets me.
17. Some songs make me happy.
18. I really get involved with the feelings of the characters in a novel.
19. I get very angry when I see someone being ill-treated.

20. I am able to remain calm even though those around me worry.

21. When a friend starts to talk about his problems, I try to steer the conversation to something else.

22. Another's laughter is not catching for me.

23. Sometimes at the movies I am amused by the amount of crying and sniffling around me.

24. I am able to make decisions without being influenced by people's feelings.

25. I cannot continue to feel OK if people around me are depressed.

26. It is hard for me to see how some things upset people so much.

27. I am very upset when I see an animal in pain.

28. Becoming involved in books or movies is a little silly.

29. It upsets me to see helpless old people.

30. I become more irritated than sympathetic when I see someone's tears.

31. I become very involved when I watch a movie.

32. I often find that I can remain cool in spite of the excitement around me.

33. Little children sometimes cry for no apparent reason.
Appendix C: Theory of Mind Assessment

**Reading the Mind in the Films Task.** Assessment that measures participants’ theory of mind, which is the ability to understand others’ mental states. This assessment contains 22 short video clips. After each video, participants identify a character’s mental state via a multiple-choice question.

1.

![Image 1](image1.png)

At the end of the scene, how is the woman feeling?
- Bothered
- Embarrassed
- Surprised
- Interested

2.

![Image 2](image2.png)

At the end of the scene, how is the woman feeling?
- Hesitant
- Mean
- Smug
- Sneaky
3. At the end of the scene, how is the woman feeling?
   - Appealing
   - Hurt
   - Resentful
   - Brooding

4. At the end of the scene, how is the man feeling?
   - Intimate
   - Bitter
   - Remote
   - Determined

5. At the end of the scene, how is the woman feeling?
   - Unsure
   - Disliking
   - Nervous
   - Disgusted
6. At the end of the scene, how is the man feeling?
- Ashamed
- Unsure
- Awkward
- Annoyed

7. At the end of the scene, how is the woman feeling?
- Surprised
- Worried
- Interested
- Afraid

8. At the end of the scene, how is the older man feeling?
- Assertive
- Appalled
- Exasperated
- Tense
9. At the end of the scene, how is the older woman feeling?
- Sociable
- Admiring
- Overcome
- Liked

10. At the end of the scene, how is the younger man feeling?
- Content
- Grateful
- Afraid
- Troubled

11. At the end of the scene, how is the woman feeling?
- Lured
- Fond
- Listless
- Disconcerted
12. At the end of the scene, how is the woman feeling?
- Bothered
- Prickly
- Calming
- Close

13. At the end of the scene, how is the older man feeling?
- Reflective
- Sad
- Serious
- Relaxed

14. At the end of the scene, how is the woman feeling?
- Pleased
- Smug
- Wanting
- Kind
15. At the end of the scene, how is the man feeling?
- Composed
- Bemused
- Humble
- Uneasy

16. At the end of the scene, how is the woman feeling?
- Unassuming
- Smug
- Bitter
- Defiant

17. At the end of the scene, how is the bearded man feeling?
- Frustrated
- Incensed
- Bothered
- Judging
18. At the end of the scene, how is the older woman feeling?
- Wanting
- Complaining
- Enjoying
- Grateful

19. At the end of the scene, how is the woman feeling?
- Stem
- Sure
- Turnmoil
- Revulsion

20. At the end of the scene, how is the woman feeling?
- Despairing
- Intimate
- Disbelieving
- Resigned
21. At the end of the scene, how is the younger woman feeling?
- Jealous
- Bored
- Annoyed
- Fond

22. At the end of the scene, how is the younger woman feeling?
- Concerned
- Enjoying
- Mysterious
- Sure
Appendix D: Glossary of emotional states

A glossary (Autistic Research Center, 2013) was provided to participants to help them understand the terms of emotional states that were used in the theory of mind assessment. The glossary was provided because the terms used in the theory of mind assessment were rather difficult to comprehend.

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>admiring</td>
<td>demonstrating respect for, or approval of, something or someone</td>
</tr>
<tr>
<td>afraid</td>
<td>to feel frightened, to have a feeling of fear</td>
</tr>
<tr>
<td>annoyed</td>
<td>to feel irritated or displeased, slightly angered</td>
</tr>
<tr>
<td>anxious</td>
<td>to be uneasy and nervous about something, worried and tense</td>
</tr>
<tr>
<td>appalled</td>
<td>to feel deeply shocked, alarmed</td>
</tr>
<tr>
<td>ashamed</td>
<td>to feel badly or embarrassed about yourself or your actions</td>
</tr>
<tr>
<td>assertive</td>
<td>to show a very confident personality, to be self-assured</td>
</tr>
<tr>
<td>awkward</td>
<td>feeling not comfortable or relaxed in a particular social situation</td>
</tr>
<tr>
<td>belittled</td>
<td>to be intentionally made to feel small and unimportant</td>
</tr>
<tr>
<td>bitter</td>
<td>to feel hurt, resentful, to feel ill will towards others</td>
</tr>
<tr>
<td>bored</td>
<td>to feel uninterested because something or someone is dull or unstimulating</td>
</tr>
<tr>
<td>bothered</td>
<td>to feel disturbed or worried about something</td>
</tr>
<tr>
<td>brooding</td>
<td>to think something over continuously and unhappily</td>
</tr>
<tr>
<td>calming</td>
<td>putting others at ease, soothing</td>
</tr>
<tr>
<td>close</td>
<td>to feel a warm and deep emotional connection to someone</td>
</tr>
<tr>
<td>complaining</td>
<td>expressing dissatisfaction or unhappiness with something</td>
</tr>
<tr>
<td>composed</td>
<td>to have emotions under control, to be calm and prepared to deal with anything</td>
</tr>
<tr>
<td><strong>concerned</strong></td>
<td>to be worryied about something or someone</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td><strong>content</strong></td>
<td>to be perfectly satisfied, to want nothing more</td>
</tr>
<tr>
<td><strong>defiant</strong></td>
<td>to resist boldly</td>
</tr>
<tr>
<td><strong>despairing</strong></td>
<td>to lose all hope</td>
</tr>
<tr>
<td><strong>determined</strong></td>
<td>to pursue vigorously something one has decided on</td>
</tr>
<tr>
<td><strong>disconcerted</strong></td>
<td>to feel thrown into a state of confusion and a loss of composure</td>
</tr>
<tr>
<td><strong>disgusted</strong></td>
<td>to be severely offended by something or someone, to find something very unpleasant and distasteful</td>
</tr>
<tr>
<td><strong>disliking</strong></td>
<td>to find something or someone disagreeable and unpleasant</td>
</tr>
<tr>
<td><strong>embarrassed</strong></td>
<td>to be made to feel self-conscious and shy, often in a social situation</td>
</tr>
<tr>
<td><strong>enjoying</strong></td>
<td>getting pleasure from something or someone</td>
</tr>
<tr>
<td><strong>exasperated</strong></td>
<td>to feel very annoyed, to lose patience with someone or something</td>
</tr>
<tr>
<td><strong>fond</strong></td>
<td>to have a liking for something or someone, to having an affection for something or someone</td>
</tr>
<tr>
<td><strong>frustrated</strong></td>
<td>to feel dissatisfied because one is thwarted in doing something or because one has not achieved what one has set out to do</td>
</tr>
<tr>
<td><strong>furious</strong></td>
<td>to feel very angry, full of rage</td>
</tr>
<tr>
<td><strong>grateful</strong></td>
<td>to feel thankful, appreciative</td>
</tr>
<tr>
<td><strong>hesitant</strong></td>
<td>to be slow to take action or make a particular judgement, to feel uncertain or lacking confidence about something</td>
</tr>
<tr>
<td><strong>humble</strong></td>
<td>to feel modest, to feel one is not special but ordinary</td>
</tr>
<tr>
<td><strong>hurt</strong></td>
<td>to feel upset or in pain</td>
</tr>
<tr>
<td><strong>incensed</strong></td>
<td>to feel wildly enraged and angered; deeply maddened</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>interested</td>
<td>to have one's attention held by something or someone</td>
</tr>
<tr>
<td>intimate</td>
<td>to have a deep and personal relationship or experience with someone</td>
</tr>
<tr>
<td>jealous</td>
<td>to want what others possess</td>
</tr>
<tr>
<td>judging</td>
<td>forming an opinion by assessing and evaluating the options</td>
</tr>
<tr>
<td>kind</td>
<td>to act in a friendly manner, to be considerate of others, thoughtful</td>
</tr>
<tr>
<td>liked</td>
<td>to be appealing to others, others are fond of you</td>
</tr>
<tr>
<td>listless</td>
<td>to feel unwilling to make any effort, to lack energy</td>
</tr>
<tr>
<td>lured</td>
<td>to be tempted by the promise of something appealing and attractive</td>
</tr>
<tr>
<td>mean</td>
<td>to be unkind, spiteful, selfish, inconsiderate of others' feelings</td>
</tr>
<tr>
<td>mysterious</td>
<td>to behave in a curious manner that others cannot comprehend</td>
</tr>
<tr>
<td>nervous</td>
<td>to feel in a state of anxiety, to be in a tense and worried state</td>
</tr>
<tr>
<td>overcome</td>
<td>to feel a powerful mix of happy emotions because of others kindness or</td>
</tr>
<tr>
<td></td>
<td>something good that has happened</td>
</tr>
<tr>
<td>pleased</td>
<td>to feel happy, satisfied and contented that something has happened</td>
</tr>
<tr>
<td>prickly</td>
<td>to be highly irritable and reactive towards the comments of others</td>
</tr>
<tr>
<td>reflective</td>
<td>to be contemplative, particularly about something that has happened and what</td>
</tr>
<tr>
<td></td>
<td>the effects have been</td>
</tr>
<tr>
<td>relaxed</td>
<td>to feel calm and happy and not have any worries or anxieties</td>
</tr>
<tr>
<td>remote</td>
<td>to feel deliberately disconnected from a situation; to have no interest in what is going on</td>
</tr>
<tr>
<td>resentful</td>
<td>feeling annoyed about something or being ill-used</td>
</tr>
<tr>
<td>resigned</td>
<td>to feel reluctant to do something, but carry it out without complaint, to</td>
</tr>
<tr>
<td></td>
<td>reluctantly accept a situation</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
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<td>------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>revulsion</td>
<td>to feel great horror or disgust towards something</td>
</tr>
<tr>
<td>sad</td>
<td>to feel unhappy or sorrowful</td>
</tr>
<tr>
<td>serious</td>
<td>to act in a plain and honest, sometimes grave way</td>
</tr>
<tr>
<td>smug</td>
<td>to feel excessively happy with oneself in a conceited manner</td>
</tr>
<tr>
<td>sneaky</td>
<td>to behave in a secret or deceptive way; trying not to let others know you are doing something</td>
</tr>
<tr>
<td>sociable</td>
<td>to enjoy being in other people's company and talking and listening to them</td>
</tr>
<tr>
<td>stern</td>
<td>to have a harsh or severe attitude; to be firm in dealings with others</td>
</tr>
<tr>
<td>sure</td>
<td>to feel that something is definitely right or certain</td>
</tr>
<tr>
<td>surprised</td>
<td>to feel unexpectedly amazed or shocked</td>
</tr>
<tr>
<td>tense</td>
<td>to feel nervous and be unable to relax, often in anticipation of something happening</td>
</tr>
<tr>
<td>troubled</td>
<td>to feel worried or concerned by something; slightly disturbed</td>
</tr>
<tr>
<td>turmoil</td>
<td>to feel very confused and troubled, in a state of great worry and indecision</td>
</tr>
<tr>
<td>unassuming</td>
<td>to act in a modest way, doing something without needing reward or gratification</td>
</tr>
<tr>
<td>uneasy</td>
<td>to feel worried or anxious about something, possibly causing restlessness</td>
</tr>
<tr>
<td>unsure</td>
<td>to not feel confident or certain about something or someone</td>
</tr>
<tr>
<td>wanting</td>
<td>desiring to have something, desiring something to happen</td>
</tr>
<tr>
<td>worried</td>
<td>to feel unsettled or anxious about something</td>
</tr>
</tbody>
</table>