

The Impact of Emotional Contagion and its Relationship to Mood

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Abstract

Emotional contagion or the tendency to mimic and feel emotional displays and experiences of others in social interactions is more than likely to be influenced by affect or the existing mood of individuals engaging in those interactions (Hatfield, Cacioppo, & Rapson, 1992). This current study analyzed the relationship between susceptibility to emotional contagion and existing mood using two well-established scales: the PANAS (Positive and Negative Affect Schedule) scale and the EC (Emotional Contagion) scale (Watson, Clark, & Tellegan, 1988; Doherty, 1997). Two hypotheses were assessed with the first one being that individuals with a high self-report of mood (positive or negative) will be more susceptible to emotional contagion and the second one stating that women will have higher self-reports of mood and will be more susceptible to emotional contagion than men. Results, limitations, and implications are discussed further throughout the study.

Keywords: emotional contagion, affect

In 1992, Hatfield, Cacioppo, and Rapson proposed that by observing another's face, voice, posture, and instrumental behavior during conversation and social interaction, people unconsciously and automatically begin mimicking the emotions expressed by the person they are conversing with, and ultimately, may come to *feel* as the other person feels. They termed this phenomenon as *emotional contagion* that can occur in various ways through multiple situations. More specifically, Hatfield et al. (1992) discussed primitive emotional contagion that is relatively automatic, unintentional, uncontrollable, and largely unconscious and also the mechanisms that might account for it. There are a variety of differences that are assumed in an individual's ability to mirror others' emotions, and these include genetic heritage, gender, personality, and early experiences (Hatfield et al., 1992). Each of these aspects has a tendency to make the individual either more or less vulnerable to emotional contagion. For this current study, the relationship between mood as measured by the PANAS (*Positive and Negative Affect Schedule*) scale and the susceptibility to emotional contagion as measured by the EC (*Emotional Contagion*) scale (Watson et al., 1988; Hatfield et al., 1992) is assessed. Knowing the relationship between mood and susceptibility to both positive and negative emotions is crucial as it may influence social interactions and increase people's ability to empathize with others around them.

Process of Emotional Contagion

The process of emotional contagion has been a very important topic to study in the field of research for empathy. Emotional contagion is seen as a specific component of empathy in which people not only have the ability to share another person's feelings but also have the ability to feel as the other person is feeling (Hatfield, Rapson, & Le, 2009). Hatfield and Rapson (2010) proposed that there are three ways in which the process of emotional contagion operates:

Proposition 1: In conversation, people automatically and continuously mimic and synchronize their facial expressions, voices, postures, movements and instrumental behaviors with those of others.

Proposition 2: Subjective emotional experience is affected, moment-to-moment by the feedback from such mimicry/synchrony.

Proposition 3: Consequently, people tend, from moment-to-moment, to “catch” others’ emotions. (p. 1-2)

Facial mimicry is an important aspect of emotional contagion because it is quite observable by others, and the person observing another’s emotional display during interaction will receive and feel those emotions through displaying congruent facial expression (McIntosh, 2006). A study done by McIntosh (2006) has also shown that facial mimicry can happen spontaneously through simply observing others indicating that people automatically match behaviors and feelings of others in their social environment. With regard to how people react to others’ emotional facial expressions, studies have shown that these reactions could be due to affective or cognitive processes (Hess, Philippot, & Blairy, 1998). Hess et al. (1998) indicated that facial mimicry in response to another’s emotional display can result from affective processes in which the receiver shares the sender’s emotion through congruent facial expression. However, when emotions from the sender are more difficult to decipher, such as anger, the receiver uses more cognitive processes to show congruent facial expressions (Hess et al., 1998).

The process of emotional contagion can also be seen from a neurological point of view. Specific neuroimaging studies have shown that neural networks activated during pain experience in the first-person are the same networks activated when observing others’ physical or psychological pain (Coutinho, Silva, & Decety, 2014). This is an important finding in showing

how emotional contagion works in the brain and how evidence of the process is not only observed on the outside of a person.

Situational Factors of Emotional Contagion

Many factors can contribute to how people experience emotional contagion. Coenen and Broekens (2012) organized these factors into three broad groups; individual differences, interpersonal factors, and miscellaneous. An example of individual differences is emotion-related trait which discusses how people who are especially susceptible to emotional contagion are those who pay close attention to others' emotions rather than those who communicate their emotions strongly to others. With interpersonal factors, evidence has shown that emotional contagion is stronger in in-groups versus out-groups. Under the miscellaneous category involves pre-existing mood where weak evidence shows that people are most susceptible to emotional contagion when they are happy.

Gender and occupation also seems to play an important factor in susceptibility to emotional contagion. Doherty, Orimoto, Singelis, Hatfield, and Hebb (1995) conducted a study to show gender and occupational differences in emotional contagion. Participants for this study were drawn from three groups: 290 men and 253 women who were students, 61 men and 24 women who were physicians, and 184 men and 71 women who were Marines. Results showed that generally women were somewhat more susceptible to emotional contagion than men, and students overall showed evidence of being more susceptible to emotional contagion than did either physicians or Marines. In addition, physicians showed more sensitivity to the negative emotions of anger, fear, and sadness than did the Marines. Suggested reasoning for these findings relating to occupation were that students have not selected a career and/or been socialized into one leaving them more sensitive to all emotions in general.

Not only is emotional contagion present in genuine human interaction and observation but also in human communication through technology. Hancock, Gee, Ciaccio, and Lin (2008) conducted a study to observe how emotions are expressed in computer-mediated communication and if the receiver can sense this emotion. The study consisted of two groups of participants, a negative affect group and a neutral group, in which each group contained dyads. One person from the dyad was randomly assigned as the emotion experiencer while the other person was the partner. Movie clips were shown to each group with an emotionally distressing clip shown to the experiencer in the negative affect group and a neutral clip shown to the experiencer in the neutral affect group and also all of the partners in each group. Then each dyad was to have a conversation with each other through instant messenger where they were to learn something they had in common with their partner and discuss something that was worrying their partner. Overall, the results showed that experiencers in the negative affect group produced significantly fewer words and more negative words than the control and also took significantly longer to produce messages. Also, the partners could definitely sense the experiencer's emotions and the ones talking to negative emotion experiencers were in a less positive affective state. These results suggest that emotional contagion can certainly happen in text-based communication and also rather quickly for the interactions in the study were only about 15 minutes long.

Emotional Contagion in Groups

A variety of studies have been conducted over emotional contagion in various group situations. One study about emotional contagion within groups in general conveyed that, naturally or with a confederate, emotional contagion consistently takes place among group members, however, it is subtle in terms of people's awareness of both its occurrence and its effects (Barsade, 2001). Another general study conducted by Bhullar (2012b) compared taking

the Emotional Contagion scale alone or with groups. The Emotional Contagion scale is a survey that assesses how susceptible people are to ‘catching’ others’ emotions. Bhullar’s (2012b) study found that greater susceptibility to emotional contagion for the Love sub-scale was observed in the group condition while greater susceptibility for the Fear sub-scale was observed in the alone condition. These findings are important in showing that susceptibility to emotional contagion can vary significantly depending on certain situations.

More specifically in group settings, emotional contagion and leadership share an interesting relationship. Hsee, Hatfield, and Carlson (1990) compared the relationship of emotional contagion between the powerful and the powerless with interesting results. They predicted that the powerless would show more susceptibility to emotional contagion, but in fact, powerful people seemed *more* sensitive in terms of expression of others’ feelings. Hsee et al. (1990) concluded that powerless people may be more aware of others’ feelings yet less likely to display and experience those feelings. The researchers also discussed how the powerless were under a great deal of stress during the study, and if they were under moderate stress instead, they may pay more attention to the powerful and possibly succumb to emotional contagion. Another study, conducted by Dasborough, Ashkanasy, Tee, and Tse (2009), focused on how members’ perceptions of a leader’s behaviors and affect associated with attributions of insincerity result in negative emotions. However, the study goes further to show that these perceptions can spread to other members which, in turn, eventually reflects the group’s affective climate, trust, and relationships between members and also between the leader and members.

Emotional contagion can also be prevalent and important to be aware of in the workplace. Employees’ moods and emotions can influence decision making, teamwork, leadership, and many other factors (Barsade & Gibson, 2007). Employees’ emotional displays can also directly

influence customers' emotional states, however, the influence depends on the way employees' display their emotions (Hennig-Thurau, Groth, Paul, & Gremler, 2006). Hennig-Thurau et al. (2006) defined two specific ways employees display their emotions: through deep acting and surface acting. Deep acting refers to the emotions of the employee coming from within as opposed to surface acting in which the employee simply smiles but no friendliness or warmth is perceived by the customer. Customers who encounter deep, or authentic, acting employees are more likely to adopt the emotions of that employee than those who interact with surface acting, or inauthentic, employees. These results coincide with suggestions that individuals have the ability to 'put on' particular emotional expressions in order to influence others (Barsade & Gibson, 2007).

Influence of Mood

In addition to the concept of emotional contagion, evidence has been shown to support the idea of mood contagion as well (Neumann & Strack, 2000). Quite similar to emotional contagion, mood contagion goes a little more in depth and leaves people feeling a certain way overall, rather than a temporary emotional state. Mood also has an influence on a person's memory in which people "attend to and learn more about events that match their emotional state and people also recall an event better if they somehow reinstate during recall the original emotion they experienced during learning" (Bower, 1981, p. 147). Another aspect that has an influence on a person's affective state is flow in which a study was conducted to assess the relationship between flow and positive affect in college students (Rogatko, 2009). This study showed that high flow activities led to higher positive affect in students which implies that high flow activities should be implemented in school, sports, and the workplace.

Research Hypotheses

As previous studies have suggested, emotional contagion and mood seem to have a slightly strong relationship (Bhullar, 2012a). A person's current mood seems to have an influence on how susceptible they are to 'catching' others' emotions especially, as Bhullar (2012a) discovered, the relationships between positive affect and positive emotions in emotional contagion and between negative affect and negative emotions in emotional contagion. For the present research, a similar relationship between mood and emotional contagion should be observed, in which mood affects one's susceptibility to emotional contagion. Two hypotheses have been formed for this research:

Hypothesis 1: People with a high self-report of mood (positive or negative) will be more susceptible to emotional contagion.

Hypothesis 2: Women will have higher self-reports of mood and will be more susceptible to emotional contagion than men.

Both the EC scale and the PANAS scale are valid measures that have been used quite frequently in multiple studies (Doherty, 1997; Watson et al., 1988). The EC scale is measured to be positively associated with affective orientation, emotionality, sensitivity to others, self-esteem, and emotional more so than cognitive forms of empathy (Doherty, 1997). The PANAS scale has also been measured to relate to external variables such as the Positive Affect scale is related to social activity while the Negative Affect scale is related to perceived stress (Watson, Clark, & Tellegen, 1988). Thus, both scales should correlate well with each other when used together during studies.

Method

Participants

A total of 100 undergraduate students from a private Midwestern university participated in the study. Two students did not fully complete the survey, leaving the final sample to be 98 students for the first hypothesis and three students did not identify their gender, which left a total of 97 students for the second hypothesis. The sample consisted of 28 males and 69 females that were all randomly recruited throughout various classrooms, the dining hall, and multiple organizational meetings.

Materials

Two scales were used for this study. The first scale participants filled out was the Emotional Contagion Scale developed by Doherty (1997). This is a 15-item survey that assesses how susceptible an individual is to emotional contagion based on a 4-point Likert scale. Each statement in the survey attempted to elicit a specific emotion from within the individual and that individual would rate how true that statement is for them. The second scale used was the PANAS Scale as developed by Watson et al. (1988). This scale consists of 20 adjectives, 10 being positive (i.e. interested, excited, strong) and 10 being negative (i.e. distressed, upset, guilty), that individuals have to rate how they feel about each adjective at that very moment that they are taking the survey based on a 5-point Likert scale. The only demographic asked on the survey was gender.

Emotional Contagion Survey. The Emotional Contagion (EC) Scale is a 15-item measure developed by Doherty (1997) to measure individual differences in susceptibility to emotional contagion. This measure contains five major subscales that the items are linked to including happiness, love, sadness, anger, and fear. These subscales are used to specifically measure susceptibility to positive emotions (happiness and love) as well as to negative emotions (sadness, anger, and fear). Test-retest reliability was strong (Cronbach's alpha = .90), and

construct validity for the measure was adequate, having significant positive correlations with scales measuring reactivity, emotionality, and empathy (Doherty, 1997).

Positive and Negative Affect Schedule. The Positive and Negative Affect Schedule (PANAS) is a 20-item measure developed by Watson et al. in 1988. It is a reliable and valid tool for measuring the two different mood states (positive and negative affect) over different intervals of times ('today', 'during the past few days', 'during the past year', 'in general on an average', etc.). Internal reliability for the positive affect (PA) subscale ranged from 0.86 to 0.90 using Cronbach's alpha, and for the negative affect (NA) subscale, 0.84 to 0.87. Overall, the PANAS has strong reported validity with such measures as general distress and dysfunction, depression, and state anxiety.

Procedure

Over a two week period, 100 surveys were passed out throughout various locations on campus. These locations included classrooms, dining halls, and multiple organizational meetings. Participants first listed their gender, then filled out the EC Scale followed by the PANAS. For the EC Scale, the researcher instructed the participants to answer honestly and circle how true each statement was to them personally. Then, for the PANAS participants were instructed to honestly write down how much each adjective described their mood at that current moment in time. After surveys were collected, participants were debriefed and dismissed.

Results

After gathering all 100 surveys, scores for both the EC Scale and the PANAS were calculated. The highest possible score one could get on the EC Scale is 60 while the lowest possible is 15. The mean score for this present study was 42.11 ($SD = 5.92$) with the highest score being 60 and the lowest being 28. Mean scores for the PA and NA scales were also

calculated. The highest possible score one can get for either scale is 50 and the lowest possible score is 10. The mean score calculated for the PA scale was 32.64 ($SD = 7.86$) with the highest score being 49 and the lowest score being 11, and for the NA scale the mean was 15.58 ($SD = 5.29$) with the highest score being 30 and the lowest score being 10.

In order to test the relationship between emotional contagion and mood, a Pearson bivariate correlation was performed. This analysis indicated a significant positive correlation between emotional contagion ($M = 42.11$, $SD = 5.92$) and PANAS scores ($M = 48.22$, $SD = 9.72$), $r = .24$, $p = .008$. A correlation was also performed between emotional contagion scores and PA scores as well as between emotional contagion scores and NA scores. A significant positive correlation was found between emotional contagion ($M = 42.11$, $SD = 5.92$) and PA scores ($M = 32.64$, $SD = 7.86$), $r = .23$, $p = .010$. A not significant positive correlation was found between emotional contagion ($M = 42.11$, $SD = 5.92$) and NA scores ($M = 15.58$, $SD = 5.29$), $r = .10$, $p = .159$. These findings show that people's current moods have a significant influence on their susceptibility to emotional contagion. Also, people with a more positive affect are significantly more susceptible to emotional contagion, while there is no significance for people with a more negative affect having an influence on their susceptibility to emotional contagion.

An independent samples t-test was performed to assess the relationship between gender, susceptibility to emotional contagion, and mood. The independent samples t-test analysis comparing susceptibility to emotional contagion between males and females indicated that susceptibility to emotional contagion for females ($M = 43.40$, $SD = 5.67$) is significantly greater than susceptibility to emotional contagion for males ($M = 38.59$, $SD = 5.30$), $t(93) = 3.79$, $p < .001$. The independent samples t-test analysis comparing self-reports of mood between males and females indicated that self-reports of mood in females ($M = 48.16$, $SD = 9.71$) were not

significantly higher than self-reports of mood in males ($M = 48.18$, $SD = 9.66$), $t(95) = -.01$, $p = .497$. These findings mean that women are significantly more susceptible to emotional contagion than men, but each gender had very similar self-reports of mood.

Discussion

The first hypothesis of this study was that people with a high self-report of mood (positive or negative) will be more susceptible to emotional contagion. A statistical analysis of the data showed a significant relationship between susceptibility to emotional contagion and self-reports of mood. In other words, people's mood can influence their susceptibility to catch and feel other people's emotions, especially if they are in a more positive mood. The second hypothesis stated that women will have higher self-reports of mood and will be more susceptible to emotional contagion than men. A statistical analysis showed that women are significantly more susceptible to emotional contagion than men but do not have a significantly higher self-report of mood.

The implications of this study are important in that susceptibility to emotional contagion can help build relationships between people. The sharing of emotions can be influential to how one perceives another and can determine whether future interactions will occur. Also, having a particular mood will certainly influence whether someone will share and "catch" emotions during interactions. Sharing emotions is similar to discovering commonalities between people which can always help build relationships. If people were not capable of experiencing how another feels during interactions, then it would be difficult to form deep, meaningful relationships with others since emotions are always prevalent within interactions.

There are a few limitations to this study involving surveys used and data gathered. A more even distribution in gender would have been nice simply to see whether the data gathered

would have changed at all. Only 28 males took this survey which does not provide sufficient data to observe differences in gender. Also, having a majority of females take this survey suggests bias towards the second hypothesis stated. Another limitation regarding the data collected is that self-reported measures were used to assess susceptibility to emotional contagion and mood. It would be more accurate to observe interactions between people to see if mimicry and similarities happen because people would be in the moment during interactions rather than trying to imagine specific emotional situations.

Future research is definitely considered for this study. It would be interesting to research how susceptibility to emotional contagion could be affected by how well the person knows another and how much the person likes the other they are interacting with. Interactions are usually noticeably different between people who know each other well and people who have just recently met. Not only would knowing the person well be important but based on how much the person likes the other and how much that person enjoys the other's company can also possibly affect emotional contagion during interactions. This kind of research would definitely be conducted best through observation between different types of relationships for individuals. Relationships are an important aspect in life as well as emotions, which emphasizes the significance of having research done in this area specifically.

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Appendix

Gender: Male Female

This is a scale that measures a variety of feelings and behaviors in various situations. There are no right or wrong answers, so try very hard to be completely honest in your answers. The collection of data and results are *completely anonymous*. Read each question and indicate the answer which best applies to you. Please answer each question very carefully.

Use the following key:

<i>Never</i> = Never true for me	<i>Rarely</i> = Rarely true for me.	<i>Often</i> = Often true for me.	<i>Always</i> = Always true for me.
1	2	3	4

1. If someone I'm talking with begins to cry, I get teary-eyed.

1	2	3	4
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2. Being with a happy person picks me up when I'm feeling down.

1	2	3	4
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3. When someone smiles warmly at me, I smile back and feel warm inside.

1	2	3	4
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4. I get filled with sorrow when people talk about the death of their loved ones.

1	2	3	4
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5. I clench my jaws and my shoulders get tight when I see the angry faces on the news.

1	2	3	4
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6. When I look into the eyes of the one I love, my mind is filled with thoughts of romance.

1	2	3	4
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7. It irritates me to be around angry people.

1	2	3	4
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<i>Never</i> = Never true for me	<i>Rarely</i> = Rarely true for me.	<i>Often</i> = Often true for me.	<i>Always</i> = Always true for me.
1	2	3	4

8. Watching the fearful faces of victims on the news makes me try to imagine how they might be feeling.

1	2	3	4
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9. I melt when the one I love holds me close.

1	2	3	4
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10. I tense when overhearing an angry quarrel.

1	2	3	4
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11. Being around happy people fills my mind with happy thoughts.

1	2	3	4
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12. I sense my body responding when the one I love touches me.

1	2	3	4
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13. I notice myself getting tense when I'm around people who are stressed out.

1	2	3	4
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14. I cry at sad movies.

1	2	3	4
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15. Listening to the shrill screams of a terrified child in a dentist's waiting room makes me feel nervous.

1	2	3	4
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This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers.

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

Interested	_____	Irritable	_____
Distressed	_____	Alert	_____
Excited	_____	Ashamed	_____
Upset	_____	Inspired	_____
Strong	_____	Nervous	_____
Guilty	_____	Determined	_____
Scared	_____	Attentive	_____
Hostile	_____	Jittery	_____
Enthusiastic	_____	Active	_____
Proud	_____	Afraid	_____