CURRENT RESEARCH IN SOCIAL PSYCHOLOGY
http://www.uiowa.edu/~grpproc/crisp/crisp.html

Submitted: October 20, 2011
First Revision: November 6, 2011
Second Revision: April 14, 2012
Accepted: April 15, 2012

SELF-RATINGS OF LOVE AND FEAR ON EMOTIONAL CONTAGION SCALE DEPEND ON THE ENVIRONMENTAL CONTEXT OF RATING

Naureen Bhullar
Department of Psychology, Widener University

ABSTRACT

The influence of environmental context on self-rating of emotional contagion was tested in 107 undergraduate subjects across two conditions- alone or in a group with their classmates. Susceptibility to emotional contagion, or the tendency to 'catch' emotions of other individuals was assessed in these two groups using an Emotional Contagion (EC) scale. Greater susceptibility to emotional contagion for the Love sub-scale was observed in the group condition and greater susceptibility for the Fear sub-scale was observed in the alone condition. Importance of rating environment is emphasized for self-rating scales of emotion.

INTRODUCTION

Does the environmental context in which we rate ourselves on an emotion scale really matter? Does the presence of people around us change our self-ratings of our susceptibility to emotions of others? Does it facilitate or inhibit our ratings for susceptibility to emotional contagion? This study investigated the possible impact of the testing or rating environment on the self-rating of susceptibility of emotional contagion measured by the Emotional Contagion (EC) scale. Emotional contagion refers to the tendency of humans to 'catch' other individuals' emotions (Hatfield, Cacioppo, & Rapson, 1993, 1994). Emotions are not just transmitted through words but also through non-verbal expressions including body language, tone, posture and facial expressions. This mimicry is believed to be automatic and unconscious (Hatfield et al., 1994). The susceptibility to emotional contagion in individuals is measured by an Emotional Contagion (EC) Scale developed by Doherty (1997) and it is based on a self-report scale including examples to assess happiness, love, anger, fear and sadness.

Different variables influence the degree of emotional contagion. For example, the level of closeness between individuals is a significant determinant of the extent to which individuals

might mimic each other emotionally with greater degree of closeness between individuals (e.g. couples in love and mother-infant relationship) associated with greater chance of emotional contagion (Hatfield, Cacioppo, & Rapson, 1992). Also, people who are more emotionally expressive are likely to infect others with emotions (Hatfield et al., 1994). Besides these individual factors, other factors like environmental context might also influence susceptibility to emotional contagion. This study compared susceptibility to emotional contagion in undergraduate students across two conditions- alone versus group. This was an exploratory study used to assess possible differences in the five sub-scales of love, happiness, anger, fear and sadness in undergraduate students depending on the presence or absence of other individuals when they are rating themselves on the EC scale.

The concept of emotional contagion and the scale is based on the influence of others' emotions on an individual. It is believed to be the precursor of social abilities like empathy (Carr, Iacoboni, Dubeau, Mazziotta, & Lenzi, 2003) which involves an ability 'to take the perspective of the other person' through our imagination (Decety & Jackson, 2006). The mechanism of emotional contagion is not exactly clear. There are two competing hypotheses. One of them is based on the automatic motor mimicry of expressive aspect of emotional contagion (Gallese, Keysers, & Rizzolatti, 2004; Hatfield, Cacioppo, & Rapson, 1994) and according to this view, we mimic another individual's facial expression and this is direct motor matching between the emotion perceived by the observer and the one initiated by an individual. The alternative account does not view this process as only mimicry but a reaction to an expressed emotion of an observed individual where induction of a similar emotional reaction in the observer results in a similar expression of emotion (Moody, McIntosh, Mann, & Weisser, 2007).

The question which further arises is whether perception of one's own emotional contagion is influenced by the presence of people around us. To investigate this question, we would look into the literature of the impact of social presence and absence on emotional experience and expression.

Social Presence and Emotion

The presence of people around us often influences our emotional experiences and emotional expressiveness. The influence of people on our emotional experience has been demonstrated in studies on consumer behavior where joint consumption led to similar patterns in evaluations with shared experiences leading to greater enjoyment (Raghunathan & Corfman, 2006; Ramanathan & McGill, 2007). This is also observed in theme parks and other recreation places like going to movies and restaurants where people often prefer to go in groups rather than alone. This sharing of emotions is believed to be influenced by the need to belong by humans (Gardner, Pickett, & Brewer, 2000), which could be met even by temporary relationships like a classroom or a doctor's waiting room setting. Promoting interactions among individuals whose reactions to a particular experience are similar was found to increase the enjoyment of the experience (Raghunathan & Corfman, 2006) and even the mere presence of another individual enhanced enjoyment of shared experiences (DiTommaso & Spinner 1993). The question which arises is whether presence of others enhances or diminishes experience of certain specific emotions.

There is limited research on influence of social stimuli on experience of emotions though there is evidence to suggest that presence or absence of people influences our emotional expression by either facilitating or inhibiting it (e.g. Buck, Losow, Murphy, & Costanzo, 1992). Fridlund and colleagues (1990) examined the influence of social stimuli on facial expressiveness by asking subjects to imagine a pleasant experience alone versus with others and measured their facial electromyograph (EMG) and they showed greater facial electromyography patterns when the subjects imagined the situation with other people. Other examples of social stimuli enhancing emotional expressiveness have also been observed with infants smiling dependent on their mother's presence (Jones & Raag, 1989). There is also evidence of social inhibition of expression with the presence of other people resulting in decreased expressiveness of emotions (Yarczower & Daruns, 1982). These opposing reactions have been described by the type of emotions and the context of emotions. Exposure to pleasant emotions in the presence of others often results in social facilitation. That is, positive expressivity is enhanced more in the presence of familiar people whereas negative expressivity appears to be inhibited in the presence of unfamiliar people (Buck et al., 1992; Fridlund, 1990). There has been little to no work done on the possible impact of presence of people on self-rating of emotions especially in terms of their emotional experience and susceptibility to contagion. Would the presence of people be an implicit reminder of the influence of others on our emotional experience and expression? In the current study, even though the research question is not related to direct exposure to any emotion, it involves emotion examples on the EC scale presented to subjects in two groups – with familiar people they know in the classroom or when alone.

The major questions for this study were the following: Does the condition in which subjects are tested (alone versus in a group) affect their ratings of their susceptibility to emotional contagion? Would the different sub-scales of happiness, love, fear, anger and sadness differ in these two conditions?

METHOD

One hundred and twenty two undergraduate students from a private university participated in the current study and data from only 114 students was collected. The remaining 8 students did not complete the surveys. The mean age was 19.95 years (SD=2.47). The experimenter gave 58 students the Emotional Contagion survey (Appendix A) in a separate room where individual students completed the survey alone. The remaining 56 students were selected from two separate classes with about 28 students each. They were given the survey in a classroom along with other students and they completed the survey with their classmates. These students were given the EC scale in the latter part of the semester to ensure some familiarity and they were well- acquainted with their classmates.

RESULTS

Cronbach's alpha for the items of Emotional Contagion scale in this study is 0.78 indicating moderately good reliability. All of the items on the Emotional Contagion scale were added together to get a total score. This score was compared across the two conditions- alone versus group. There was no significant difference in the total score between alone ($\underline{M}$=50.05, $\underline{SD}$=7.7) and group ($\underline{M}$=50.03, $\underline{SD}$=7.3) conditions ($\underline{t}$ (111) =0.01, $\underline{p}$=0.99). Items corresponding to the

five sub-scales were added together to get Happy, Sad, Anger, Fear and Love categories. An independent samples t-test was carried out to compare susceptibility to emotional contagion across alone condition versus group condition for the five categories. There was no significant difference observed between alone (M=11.55, SD=2) and group (M=11.46, SD=2.21) conditions (t (112) =0.22, p=0.83) for the Happy sub-scale. There was also no significant difference observed between alone (M=9.62, SD=2.52) and group (M=9.53, SD=2.7) conditions (t (111) =0.19, p=0.85) for the Sad sub-scale. There was no significant difference observed between alone (M=8.28, SD=1.78) and group (M=8.3, SD=2.19) conditions (t (112) =-0.74, p=0.94) for the Anger sub-scale.

A significant difference was observed between alone (M=9.21, SD=2.38) and group (M=8.15, SD=2.79) conditions (t (111) =2.18, p=0.03) for the Fear sub-scale with higher scores in the alone condition. Also, a significant difference was observed between alone (M=11.39, SD=2.6) and group (M=12.64, SD=2.28) conditions (t (112) =-2.178, p=0.008) for the Love sub-scale with higher scores in the group condition.

DISCUSSION

This study compared susceptibility to emotional contagion across testing conditions- alone versus in a group using the Emotional Contagion scale. Overall, there was no significant difference observed between the two conditions for the total score. However, when the sub-categories of the scale were compared across the two conditions, there were significant differences observed between alone and group conditions for Fear and Love in opposite directions. Greater susceptibility to emotional contagion was observed in the group condition for Love sub-scale. On the other hand, greater susceptibility to emotional contagion was observed in the alone condition for Fear sub-scale.

Social presence seems to be related to facilitation of positive emotion (i.e. love) in the present study. In this study, participants in the group condition were in a classroom and they were not facing each other and neither was there any manipulation of emotions. However, they were in the presence of their classmates and susceptibility to emotional contagion of love might be possibly influenced by other factors including just the presence of individuals, which might remind them of the interpersonal nature of the emotion of love. Love is an important emotion, though it has been overlooked by psychologists (Izard, 1977; Tomkins, 1984). Love has often been described in terms of inter-personal relationships. Love has been classified in multiple ways- romantic love, filial love, love for country, job, music, freedom. In the present study on emotional contagion, the love sub-scale is focused on romantic love (e.g. item 6 is ‘when I look into the eyes of the one I love, my mind is filled with thoughts of romance’). Love has been difficult to operationalize and study and different terms including ‘satisfaction’ have been used to describe people’s reaction towards their loved ones as the latter term is easier to classify (Lamy 2011). Semantic induction of love has been used by researchers to demonstrate its impact on behavior (Lamy, Fischer-Lokou, & Gueguen, 2008, 2009). In one of these studies, subjects were asked to recall a love story ‘which meant a lot to them’ and these subjects were more benevolent in their subsequent interactions with others than a control group. Hearing romantic music for a few minutes in a waiting room seemed to encourage women to respond more favorably to an

attempted seduction of complying with a request to give one's phone number (Gueguen, Jacob, & Lamy, 2010).

All of these above-mentioned examples demonstrate the inter-personal relationship of love. Does the mere presence of people, even in the absence of an interaction, lead to greater susceptibility to the emotional contagion of love? Emotions have traditionally been intrinsically linked to conscious feeling and almost never linked to unconscious feelings (e.g. Clore, 1994). However, there is evidence to suggest that emotional process may remain unconscious as when people can have subliminally triggered emotional reactions that drive their behavior in the absence of any conscious feelings (Winkielman & Berridge, 2004). Moreover, emotional contagion has been described to be an 'automatic and unconscious' process by Hatfield and colleagues. Even though this description by Hatfield and colleagues is focused on individuals getting influenced by another person's more overt display of emotion and in the present study, there is no overt display of emotion but only the questionnaire of EC scale with hypothetical scenarios. It is possible that the presence of other individuals in the room is implicitly influencing the subjects reporting on the love items on the scale.

On the other hand, susceptibility to the emotion of fear seemed to be observed more in the alone condition. Being alone when responding to the questions on the EC scale regarding fear (e.g. item 8 'watching the fearful faces of victims on the news makes me try to imagine how they might be feeling') might have resulted in reporting a higher susceptibility to fear. The question which arises here is whether fear is more likely to be expressed in solitary conditions than in a group. This has been observed by people while watching a scary movie where they express greater fear when alone compared to a context where other people are also present. There is evidence to suggest that solo individuals in different settings (e.g. solo hikers and children alone at home) report fear in these solitary conditions (Coble, Selin, & Erikson, 2003; Ruiz-Casares & Rousseau, 2010). Hence, the subjects in the alone condition expressed greater degree of susceptibility to fear compared to subjects in the group condition.

In conclusion, it is important to take into account the rating environment for different self-reports of emotional scales by participants and exercise caution before generalizing the findings. For emotional contagion, there is possibly also the influence of the presence of people on our ratings of susceptibility to emotional contagion based on our environmental context but it might be observed only with certain emotions. There seemed to be a stronger susceptibility to emotional contagion of love reported in a group setting compared to the solitary condition and conversely, a stronger susceptibility to emotional contagion of fear in the solitary condition. Further on, it would be informative to compare the same individual's ratings on susceptibility to emotional contagion across group and solitary settings to see if it is the setting which is related to these differences or some intrinsic individual factors including personality, mood and self-construal or a combination of several factors.

REFERENCES

Buck, R., Losow, J.I., Murphy, M.M., & Costanzo, P. (1992). Social facilitation and inhibition of emotional expression and communication. *Journal of Personality and Social Psychology, 63(6),* 962-968.

Carr, L., Iacoboni, M., Dubeau, M.C., Mazziotta, J.C., & Lenzi, G.L. (2003). Neural mechanisms of empathy in humans: A relay from neural systems for imitation to limbic areas. *Proceedings of the Natural Academy of Sciences of USA, 100*, 5497-5502.

Clore, G.L. (1994). Why emotions are never unconscious. In P. Ekman & R.J. Davidson (Eds.), *The nature of emotion: Fundamental questions* (pp 285-290). New York: Oxford University Press.

Coble, T.G., Selin, S.W., & Erikson, B.B. (2003). Hiking alone: understanding fear, negotiation strategies and leisure experience. *Journal of Leisure Research, 35(1),* 1-22.

Decety, J., & Jackson, P. L. (2006). A social-neuroscience perspective on empathy. *Current Directions in Psychological Science, 15*, 54–58.

DiTommaso, E., & Spinner, B. (1993). The Development and Initial Validation of the Social and Emotional Loneliness Scale for Adults. *Personality and Individual Differences, 14*, 127–34.

Doherty, R.W. (1997). The emotional contagion scale: A measure of individual differences. *Journal of Nonverbal Behavior, 21*, 131–154.

Fridlund, A.J. (1990). Sociality of solitary smiling: Potentiation by an implicit audience. *Journal for Personality and Social Psychology, 60*, 229-240.

Gallese, V., Keysers, C. and Rizzolatti, G. (2004). A unifying view of the basis of social cognition. *Trends in Cognitive Sciences, 8*, 396-403.

Gardner, W.L., Pickett, C.L., & Brewer, M.B. (2000). Social Exclusion and Selective Memory: How the need to belong influences memory for social events. *Personality and Social Psychology Bulletin, 26 (4),* 486–96.

Gueguen, N., Jacob, C., & Lamy, L. (2010). "Love is in the air": Effects of songs with romantic lyrics on compliance with a courtship request. *Psychology of Music, 38,* 303-307.

Hatfield, E., Cacioppo, J.T., & Rapson, R.L. (1992). Emotional contagion. In M.S. Clark (Ed.), Review of Personality and Social Psychology, Vol 14. *Emotion and social behavior* (pp 151-177). Newbury Park, CA: Sage.

Hatfield, E., Cacioppo, J.T., & Rapson, R.L. (1993). Emotional contagion. *Current Directions in Psychological Science, 2*, 96–99.

Hatfield, E., Cacioppo, J.T., & Rapson, R.L. (1994). *Emotional contagion*. New York: Cambridge University Press.

Izard, C. E. (1977). *Human emotions.* New York: Plenum Press.

Jones, S.S., & Raag, T. (1989). Smile production in older infants: The importance of a social recipient for the facial signal. *Child Development, 60*, 811-818.

Lamy, L. (2011). Love or the black sun of personal relationships. *Journal for the Theory of Social Behaviour, 41 (3),* 247-259.

Lamy, L., Fischer-Lokou, J., & Gueguen, N. (2008). Semantically induced memories of love and helping behavior. *Psychological Reports, 102*, 418-424.

Lamy, L., Fischer-Lokou, J., & Gueguen, N. (2009). Induced reminiscence of love and chivalrous helping. *Current Psychology, 28*, 202-209.

Moody, E.J., McIntosh, D.N., Mann, L.J., & Weisser, K.R. (2007). More than mere mimicry? The influence of emotion on rapid facial reaction to faces. *Emotion, 7(2)*, 447-457.

Raghunathan, R., & Corfman, K. (2006). Is happiness shared doubled and sadness shared halved? Social influence on enjoyment of hedonic experiences. *Journal of Marketing Research*, *43*, 386–94.

Ramanathan, S., & McGill, A.L. (2007). Consuming with others: Social influences on moment-to-moment and retrospective evaluations of an experience. *Journal of Consumer Research, 34*, 506-523.

Ruiz-Casares, M., & Rousseau, C. (2010). Between freedom and fear: children's views on home alone. *British Journal of Social Work, 40(8),* 2560-2577.

Tomkins, S. S. (1984). Affect theory. In K. R. Scherer & P. Ekman (Eds.), *Approaches to emotion.* Hillsdale, NJ: Erlbaum.

Winkielman, P. & Berridge, K.C. (2004). Unconscious emotion. *Current Directions in Psychological Science, 13(3),* 120-123.

Yarczower, M., & Daruns, L. (1982). Social inhibition of spontaneous facial expressions in children. *Journal of Personality and Social Psychology, 43*, 831-837.

APPENDIX A

The Emotional Contagion Scale

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

Use the following key:

5. *Always* = Always true for me.
4. *Often* = Often true for me.
3. Usually = Usually true for me.
2.*Rarely* = Rarely true for me.
1.*Never* = Never true for me.

1. If someone I'm talking with begins to cry, I get teary-eyed.
2. Being with a happy person picks me up when I'm feeling down.
3. When someone smiles warmly at me, I smile back and feel warm inside.
4. I get filled with sorrow when people talk about the death of their loved ones.
5. I clench my jaws and my shoulders get tight when I see the angry faces on the news.
6. When I look into the eyes of the one I love, my mind is filled with thoughts of romance.
7. It irritates me to be around angry people.
8. Watching the fearful faces of victims on the news makes me try to imagine how they might be feeling.
9. I melt when the one I love holds me close.
10. I tense when overhearing an angry quarrel.
11. Being around happy people fills my mind with happy thoughts.
12. I sense my body responding when the one I love touches me.
13. I notice myself getting tense when I'm around people who are stressed out.
14. I cry at sad movies.
15. Listening to the shrill screams of a terrified child in a dentist's waiting room makes me feel nervous.

Note: The higher the score, the more susceptible to emotional contagion a person would be said to be. Happiness items = 2, 3, & 11. Love items = 6, 9, & 12. Fear items = 8, 13, & 15. Anger items = 5, 7, & 10. Sadness items = 1, 4, & 14. Total score = all items.

Source: Doherty, R. W. (1997). The Emotional contagion scale: A measure of individual differences. *Journal of Nonverbal Behavior, 21,* pp. 131-154.

APPENDIX B (Correlation matrix of the items on the Emotional Contagion scale with Means and Standard deviations; N = 114)

	Mean (SD)	Happy	Sad	Anger	Fear	Love
Happy	11.508 (2.10)	1	.284**	.196*	.212*	.215*
Sad	9.575 (2.597)	.284**	1	.193*	.444**	.223*
Anger	8.289 (1.985)	.196*	.193*	1	.424*	.163
Fear	8.69 (2.632)	.212*	.444**	.424**	1	.084
Love	12.008 (2.515)	.215*	.223*	.163	.084	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

AUTHOR BIOGRAPHY

Naureen Bhullar is an Assistant Professor at Widener University in Chester, PA. Her research and teaching interests include emotional states and contagion in different contexts, influence of emotion on learning in infants, parenting in lower income families, peer review in undergraduate writing, and alcohol and gambling behavior in undergraduate students.
Email: nbhullar@mail.widener.edu.