# THE EFFECT OF EXPECTATIONS ON SUSCEPTIBILITY TO EMOTIONAL CONTAGION

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAII AT MANOA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

IN

PSYCHOLOGY

MAY 2014

By

Paul David Thornton

Thesis Committee:

Elaine Hatfield, Chairperson
Kentaro Hayashi
Richard Rapson

Keywords: emotional contagion, expectations, perception

## DEDICATION

I dedicate this thesis to my wonderful daughter, Bailey, my good friend Maria, and to my loving mother, Joanne. I am very grateful for you all.

**ACKNOWLEDGEMENTS**

There are a number of people whose support, guidance, hard work, and participation warrant my sincerest gratitude. I would first like to begin by thanking my committee Chairperson and mentor, Dr. Elaine Hatfield, for her endless encouragement and patience. What a privilege it is to have such a brilliant, funny, and caring ally. Next I would like to thank Dr. Richard Rapson. In addition to being one of my committee members, he is an excellent scholar and a gentleman whom I have come to hold in the highest esteem. I would also like to thank Dr. Kentaro Hayashi, an indispensible member of my committee, for his expertise and invaluable input.

There are also several research assistants who have been a tremendous help in making this study come to fruition. I would like to thank Jennifer Kawano, Mark Flores, Stephanie Harrison, Lauren Ching, and Desiree Acosta for cheerfully giving so much of their time and energy, week in and week out.

I would also like to thank the following faculty and staff from UH Manoa and UH Maui College for permitting me to recruit participants from their classes: Vice-Chancellor Dr. John McKee, Dr. Lisamarie Bensman, BK Greisemer, Megan Carpenter, Dr. Scott Sinnett, Dr. Daniel Rempala Corey Flanders, Dr. Margeaux Ciraolo, Dr. David Cicero, Dr. Erin Cisneros, Dr. Rosiana “Nani” Azman, Mackenzie Kelly, and Dr. Krista Brown. Lastly, I would be remiss not to thank Nikki Kinoshita and Chris Rho for graciously sharing their office space.

## ABSTRACT

The notion that we tend to see that which we expect to see is a well-established phenomenon. It is also evident that people tend to "catch" the emotions of others through the process of emotional contagion (EC). Yet to be explored, however, is whether one's expectations influence one's susceptibility to emotional contagion. To answer this question, college students were led to expect that they would be viewing happy or sad target faces, or they were given no information at all. Participants were then shown short videos of either happy or sad target faces. Finally, subjects were asked a series of self-report questions to determine their emotional states. It was predicted that participant expectations would either augment or attenuate susceptibility to emotional contagion depending upon whether targets' expressions were congruent with or contrary to participant expectations, respectively.

# TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

# CHAPTER 1 - INTRODUCTION

A case history: A clinical psychologist greets her first client of the day. She is feeling cheerful, energetic, and ready to go. She listens attentively as her client begins to recite a litany of problems. As time goes by, however, she realizes that her mind is wandering. She stifles a yawn. She is exhausted. Shocked at her own inattention, she tries to figure out what could be going on. At first, she focuses on herself. Did she get enough sleep last night? Maybe she's suffering from burnout. None of these explanations seem plausible. Then she takes a second look at her client. Is he depressed? Is it catching? It doesn't seem likely. He looks happy enough, rattling on. Then, unexpectedly, a veneer cracks. He breaks into tears and begins to talk about his sadness and feelings of hopelessness.

## *Emotional Contagion*

It is noncontroversial to assert that people tend to catch the emotions of others. Research verifies scientifically what sales people, politicians, clergymen, clinical psychologists, parents—and just about everyone else on the planet—have suspected all along, even if only through anecdote. This phenomenon, known as emotional contagion (EC), has been defined by Hatfield, Cacioppo and Rapson (1994) as the "tendency to automatically mimic and synchronize facial expressions, vocalizations, postures and movements with those of another person and, consequently, to converge emotionally" (p. 5).

People appear to catch others' emotions in several ways: In part, conscious processes seem to mediate such contagion (Kelly & Barsade, 2001). For example, as subjects listen to a target describe his emotional experiences, they may tend to remember times they felt much the same way and shared the same experiences. Such conscious reveries may spark a similar emotional response. Other examples of this conscious manifestation of EC are especially salient in industrial/organizational contexts, particularly those involving persuasion and customer-employee relations (Hennig-Thurau, Groth, Paul, & Gremler 2006; Pugh, 2001). More often, however, the process is probably an automatic, non-conscious one. In conversation, people automatically and continuously mimic (or are in synchrony with) the facial expressions, voices, postures, and behaviors of others **(**Arizmendi, 2011; Bavelas, Black, Lemery, & Mullett, 1987;

Biernieri, Reznick, & Rosenthal, 1988; O'Tool & Dubin, 1968; Warner, 1988).

Theorists have speculated that people's emotional experiences may be influenced by a conscious awareness of either: (1) the central nervous system (CNS) commands that direct such mimicry/ synchrony in the first place; or (2) the afferent feedback from such facial, postural, or verbal mimicry/ Synchrony (Hatfield & Rapson, 2000; Liard, 1984; Tomkins, 1963; Izard, 1971). For a review of the link between emotions and facial feedback, see Adelmann and Zajonc (1989). Ekman (cited in Schmeck, 1983) points out that this may be one reason why smiling faces at a party or grief at a time of mourning are infectious. "The perception of another face is not just an information transfer," contends Ekman, "but a very literal means by which we feel the sensations that the other feels." (p. 1). It is such mimicry/synchrony in which we are primarily interested and which we think is primarily responsible for emotional contagion. Regardless of why such contagion might occur, researchers from a range of disciplines have described various ways in which EC does in fact occur.

*Developmental Research*

Child psychologists find that, from the start, both parents and children tend to catch one another's emotions (Ebisch, Aureli, Bafunno, Cardone, Romani, & Merla 2012; Frodi, Lamb, Leavitt, Donovan, Neff, & Sherry, 1978; Meltzoff & Moore, 1992; Thompson, 1987). Shortly after birth, infants have a tendency to mimic the facial expressions of others (Meltzoff, 2011; Reissland, 1988). Meltzoff and Moore (1977) were the first to study this phenomenon and concluded that at around 12 to 21 days of age, infants will begin to mimic the facial expressions of those around them; with the youngest infant mimicking facial expressions at only 60 minutes old. These studies suggest that at some basic level of processing, infants use the perceived behavior of those around them as a basis for producing similar behavior. Meltzoff (2011) believes that through this kind of imitation, infants manifest a basic connection between self and others.

Not only do infants mimic the facial expressions of the people close to them, they also feel the emotions expressed. Researchers Haviland and Lelwica (1987) found that 10 week old infants would imitate their mother's facial expressions of happiness, sadness, and anger as well as show congruence in eye gaze. They found that while infants imitated

their mothers' smiles, when presented with angry or sad faces, the infants tended to look away or display a mouthing movement, a mechanism used to self-regulate negative emotions. When faced with their mother's sad or angry face in consecutive intervals, some infants became so upset, crying and wailing, that the study had to be halted (Haviland & Lelwica, 1987). The induced-affect hypothesis was concluded to explain the congruence between infant and adult expression of emotion. The theory posits that the mother's expression causes a similar emotional experience in the infant, corresponding to the expression perceived (Haviland & Lelwica, 1987).

Primary intersubjectivity is a term used to describe the shared experience between mother and infant (Trevarthen, 2011). This rhythmic "dance" between mother and infant is characterized by a synchronized timing of movements, onset of facial gestures, and anticipation of the other's intentions. This relationship begins before birth, as soon as the baby is able to distinguish his mother's voice from others while inside the womb, and continues throughout infancy. Infants fall into synchrony with their mother, making a purposeful and conscious effort to take part in reciprocal ways of moving; so as to be part of a companionship. Trevarthen (2011) believes that this shared experience helps the infant and mother learn to know and trust each other and helps the infant adapt to the social world.

Parents seem equally prone to catch and mimic the emotions of their newborns (Thompson, 1987). Although mothers are most likely to catch and mimic their infants' positive emotions (interest, enjoyment, and surprise), they also mimic the infants' negative emotions (pain, sadness, and anger) to some extent (Malatesta & Haviland, 1982). Frodi and her colleagues (1978) found that parents who were asked to observe a sad-angry newborn reported feeling more "annoyed, irritated, distressed, disturbed, indifferent, and less attentive and less happy" than those who viewed a smiling infant. Their diastolic blood pressures and skin conductance levels paralleled these reports. Together, such observations suggest that parents and children might me predisposed to take on one another's emotional reactions.

### *Social/Personality Psychological Research*

Wheeler (1966) attempted to distinguish "true contagion" (the rapid transfer of emotion from one person to others in the group) from other types of social influence—

such as conformity, imitation and response to social pressure, and social facilitation. Wheeler took the position that contagion was distinctly different from the other forms of influence in that it required a pre-existing approach-avoidance conflict. Presumably person X was conflicted between the instigation to perform B (say, to get angry and yell at a noisy neighbor) and the internal restraints against the performance of B. When X saw Y yell at the inconsiderate neighbor, X was likely to quickly catch Y's emotion and imitate Y's hostile actions. Wheeler's model is quite different from that of Hatfield and her colleagues, who view contagion as a normal, continuing part of a social exchange. Nonetheless, Wheeler and other social psychologists have found that group members do seem particularly susceptible to catching the laughter (Leventhal & Mace, 1970), euphoria and anger (Schachter & Singer, 1962) or fear, and panicky behavior of other group members (Kerckhoff & Back, 1968).

There is now some evidence to suggest that EC may also be prevalent in the bourgeoning world of social networking. Researchers Kramer, Guillory, and Hancock (2011) found that they were able to manipulate Facebook users' expression of emotionality (via newsfeed comments) by controlling the number of positively or negatively emotionally laden newsfeeds they were exposed to. Users who were exposed to fewer negative newsfeeds posted fewer negative newsfeeds of their own. Similarly, users who were exposed to fewer positive newsfeeds posted fewer positive newsfeeds of their own.

There are a number of factors that can influence contagion, including personality type (Lundqvist, 2008), social status (Bono & Ilies, 2006; Sy, Cote & Saavedra, 2005), and degree of relationship intimacy (e.g., close friends versus acquaintances). While there are also gender differences in susceptibility to EC, it is not clear to what degree these differences can be attributed to innate biology or social influences. Haviland and Malatesta (1981) found that, while infant girls were more likely to express joy, infant boys were more likely to express anger, fear, and distress. Girls were also found to be more attentive to others' emotions, and, consequently, more adept than boys at decoding the emotions of others, supporting the notion that innate gender differences may exist. Furthermore, the preponderance of research suggests that, upon reaching adulthood, females are typically more susceptible to contagion than males (Doherty & Orimoto,

1995; Haviland & Malatesta, 1981; Magen & Konasewich, 2011). However, researchers Marianne Sonnby-Borgstrom and her colleagues (2008) point out that gender differences in susceptibility to EC may best be attributed to "gender differences in emotion regulation, rather than [to] differences in biologically prepared emotional reactivity" (p. 111). In one study they found that, at the subliminal level, men and women experienced contagion to a similar degree, whereas at the supraliminal level—the level at which respondents are able to regulate their own emotion displays—women were significantly more expressive and reported a greater experience of contagion than men. This suggests that socialization may play an important role in determining who is more or less likely to be susceptible to contagion.

### *Neuroscientific Research*

Recent research in neuroscience suggests that long before language develops, a complex neural circuit, described as a mirror neuron system, is involved in human imitation (Nagy, 2006). This imitation involves not only facial expressions, but also fine motor movements of the hands and fingers as well as vocalization (Rizzolatti, Fogassi, & Gallese, 2001). Iacoboni (2008) argues that mirror neurons are likely involved in human action understanding, learning, and the facilitation of social connections. Iacoboni explains that "…we understand the mental states of others by simulating them in our brain, and we achieve this end by way of mirror neurons" (p. 34). Nagy and his colleagues (2006) posit that the development of mirror neurons in humans is not only for the sake of learning and replicating movement, but also for the development of long lasting intimate relationship. If mirror neurons are involved in the facilitation of mimicry/synchrony, it seems likely that, by extension, they also play an important role in the facilitation of EC as well.

### *Clinical Research*

Clinical researchers have found considerable evidence as to the impact that manic, depressed, anxious, and angry people have on those around them (Howes, Hokanson, & Lowenstein, 1985; Joiner, 1994). In many instances, contagion is evident. For example, Joiner (1994) studied how people react to living with a depressed person. He and his colleagues assessed 96 pairs of college roommates on the Beck Depression Inventory and the Negative Life Events Questionnaire over the span of three weeks. Consistent with the

emotional contagion effect, roommates' levels of negative affect became increasingly similar over time. Interestingly, it was found that depressed students who sought excessive reassurance from their roommates predicted higher levels of negative affect contagion. In other words, depressed individuals were more likely to infect their non-depressed roommates, especially if they persistently asked for reassurance of their worth, despite whether feedback had already been given (Joiner, 1994).

Tower and Kasl (1996) studied married couples in their longitudinal study to assess the contagion effect of negative emotion in couples with one depressed spouse. Their study supports the emotional contagion hypothesis that concordance of depressive symptoms does occur over time, but found that it occurs to a lesser extent in couples rating high on perceived closeness. They explain that perceptions of closeness, intimacy, and emotional supportiveness of the relationship served as a protective factor against one's vulnerability to catching their spouse's depressive symptomology. Slight differences related to gender were found, with wives being influenced more quickly by their husband's depressive symptoms than the other way around.

Not surprisingly, clinicians have also observed that psychotherapists tend to catch their clients' emotions. Sigmund Freud first described the concept of transference as "displaceable energies," in which he described the transfer of strong feelings from one individual to another (Freud, 1888/1954). Jung (1935/1976) also observed:

> Emotions are contagious…. In psychotherapy, even if the doctor is entirely detached from the emotional contents of the patient, the very fact that the patient has emotions has an effect upon him (the doctor). And it is a great mistake if the doctor thinks he can lift himself out of it. He cannot do more than become conscious of the fact that he is affected. (p. 155).

Arizmendi (2011) suggests that the process of transference in psychotherapy occurs by a series of linking mechanisms between patient and therapist resulting from empathy. He believes that the interaction between patient and therapist creates an atmosphere of emotional contagion through empathic understanding. By paying close attention to the patient on implicit and explicit levels, automatic processes of physiological and emotional synchrony connect the two people, making transference an inevitable occurrence.

Many psychologists have made the case that such "transference" reactions could be used as a valuable tool in the diagnosis and treatment of their clients (Jung, 1968; Reik, 1948; Tansey & Burke, 1989). That is to say, under certain conditions, clinicians can use their own emotional reactions to gauge what their clients are feeling (Reik, 1948). The notion that people can monitor their own emotional *reactions* to gain insight into the feelings of others is intriguing. But how can a therapist be certain if the feelings she experiences are hers or her clients'? Furthermore, to what extent do therapists' expectations of what a client is *likely* to be feeling shape their perception of what that client is *actually* feeling? In the "real world," how does one partial out the variance? How does one decide whether one feels as one does because of events in one's own life or because one is catching the emotions of another? Therefore, the way in which our expectations influence our perception should seem critically important to understanding why it is that we often feel what we feel when in the company of others.

*Expectations and Perception*

A substantial body of evidence suggests that people's sensory experiences are determined not only from bottom-up processing, but from top-down processing as well (Goldfried & Robins, 1983; Hirt, 1990; Jelalian & Miller, 1984; Lee, Frederick & Ariely 2006; Markus, 1977; Snyder, 1984; Swann & Read, 1981; Williams, 2007; Wilson, 1985). That is to say, in addition to the influence that external stimuli have on our sensory organs, our a priori expectations, beliefs, emotional states, desires/preferences (Dunning & Balcetis, 2013), and cognitive schemas also influence the type of information we will more likely attend to, consolidate, and later recall from our environment. Williams (2007) explains that "top-down processes may act indirectly on perception and decision-making by clouding the memory of an experience and changing the intensity of attention paid during the experience" (p.25). Furthermore, people tend to carefully process information that is *consistent* with their beliefs and ignore information that is *inconsistent* with those beliefs, even if the new information is strongly disconfirmatory (Jelalian & Miller, 1984).

*Hypotheses*

In the case history with which this paper began, it was suggested that the expectations of a therapist might affect her susceptibility to emotional contagion. This is

a critically important point. If, for example, therapists' cognitive schemas have a major impact both on how they consciously interpret the emotional expressions of their clients and on their own emotional reactions, therapists would not really be able to use their own emotional reactions to detect clients' "hidden" emotional states with any certainty. If on the other hand, therapists' expectations affect only their perceptions of what the clients *should* be feeling, but the therapists' emotional and imitative/synchronous responses to clients' faces, tones, or postures lead them to quite a different conclusion, therapists could gain a great deal of information about others' hidden emotional lives by monitoring their own emotional responses. In order to better understand the relationship between expectations and EC, the present study posits the following three hypotheses:

*Hypothesis 1: There will be a main effect for the reality:*

When expectations are controlled, the "reality" (i.e., the emotions depicted in the videos) should elicit emotional contagion. Namely, when subjects are *not* primed, they should still experience contagion as a direct result of viewing the emotional stimuli (i.e., the videos).

*Hypothesis 2: There will be a main effect for expectations:*

Subjects' expectations should affect their susceptibility to emotional contagion. Specifically, subjects who *are* primed to see happy or sad faces will report experiencing *more* EC than subjects who are not primed.

*Hypothesis 3: There will be an interaction between subjects' expectations and the reality:*

Subjects' expectations should either augment or attenuate susceptibility to contagion depending upon whether targets' expressions are congruent with or contrary to subject expectations. In other words, subjects who are primed to see happy (sad) faces and are subsequently shown happy (sad) faces—emotional expressions in accord with their expectations—will experience the greatest contagion, while subjects who are primed to see happy (sad) faces and are subsequently shown sad (happy) faces—emotional expressions contrary to their expectations—will experience a comparatively attenuated level of EC.

## CHAPTER 2 - RESEARCH METHODS

*Design*

This study involved a 3 (Subjects expectations: primed to see happy targets, primed to see sad targets, or not primed) x 2 (Reality: Targets' faces were either happy or sad) design, with a total of 6 different conditions. All factors (Expectations and Reality) are between-subject factors.

*Participants*

One hundred twenty-one students were recruited from psychology courses at the University of Hawaii at Manoa and University of Hawaii Maui College campuses. The sample consisted of 86 female, 33 male, and 2 "Other" participants. Consistent with and representative of Hawaii's diverse population, this sample was also ethnically diverse, with 58 Asians, 31 Caucasians, 10 Hawaiians, 7 Hispanics/Latinos, 3 Blacks/African Americans, 3 Pacific Islanders, 2 Native Americans/Alaskans, and 9 participants categorized ethnically as "Other." Age of participants was as follows: 18-24 years (N = 94), 25-34 years (N = 17), 35-44 years (N = 8), and 45-54 years (N = 2). Since age was indicated by range, exact upper and lower limits, as well as mean age could not be calculated. Participants were offered extra credit in return for their participation.

*Measures*

Subjects completed the Joviality and Sadness scales from the Positive And Negative Affect Schedule—Expanded Form (PANAS-X). Developed by Watson and Clark (1999), the PANAS-X is an especially effective tool for assessing culturally diverse populations. These two scales provided a particularly germane measure of emotions, considering the research questions of interest and in light of the cultural diversity of the sample. Although the Joviality scale contains eight items (happy, cheerful, joyful, excited, enthusiastic, lively, energetic, and delighted), the three items with the weakest varimax-rotated factor loadings (delighted, lively, energetic; Watson & Clark, 1999) were dropped from the scale, resulting in a five item Joviality scale that was then used in concert with the 5 item Sadness scale. Each of these Likert-type scales offers respondents the option of answering 1-5, with 1 being "Very slightly or not at all," and 5 being "Extremely." Therefore, scores on the Joviality and Sadness scales ranged from 5 to 25, with lower scores indicating lower happiness/sadness, and higher scores indicating higher

happiness/sadness.

*Stimuli*

The Amsterdam Dynamic Facial Expression Set (ADFES) has been shown to be a valid and reliable tool (Schalk, Hawk, Fischer, & Doosje, 2011) and was therefore chosen for use in this study. Ten Northern European and Middle Eastern models displaying the emotions of "Joy" and "Sadness" were selected as the targets for the stimulus videos. Video snippets (four seconds in duration each) of their "Face Forward" poses were spliced together to create two longer videos—one video to depict happiness and the other video to depict sadness. The video depicting happiness presented facial expressions transitioning from a neutral expression (No emotional display) to a smile (Happy emotional display). The video depicting sadness presented facial expressions transitioning from a neutral (No emotional display) expression to a frown (Sad emotional display). The same ten models were used to display both emotions (Happiness and Sadness). Each video began with the caption, "Please watch the following 1 minute video." At the conclusion of each video, another caption read: "Please click 'Next' AFTER this video has stopped." Videos were approximately one minute in duration and were not accompanied by sound.

*Procedures*

Participants were recruited either by dissemination of a study advertisement (see Appendix A) in psychology classrooms, or through a student "subject pool." When participants arrived at the laboratory, they were greeted by either the principal investigator (PI) or a research assistant (RA). Participants were asked to provide their name, instructor's name, and course number (see Appendix B). Subjects were then seated at a desk furnished with a computer monitor. All surveys and stimuli were completed/viewed on the computer through Survey Monkey. Participants were first instructed to read a consent form (see Appendix C). Once participants consented to participate in the study, they were given instructions explaining how to complete the study process (see Appendix D). After reading the instructions, participants were asked to provide demographic information (see Appendix E).

*Independent Measures: Manipulating Expectations*

Next, participants read one of three randomly assigned priming vignettes: Happy

Prime, Sad Prime, or Neutral Prime (See Appendix F). After reading one of the three priming vignettes, participants watched one of two randomly selected short videos: a video depicting "Happy" targets or a video depicting "Sad" targets (See Appendix G for video screenshots). With three different priming vignettes and two different target videos, participants were therefore randomly assigned to one of six possible conditions (See table 2.1 for a list of study conditions).

Table 2.1
Study Conditions

| Expectations | | Reality | Abbreviation |
|---|---|---|---|
| 1. Targets will be Happy | → | Participants see happy faces | HH |
| 2. Targets will be Happy | → | Participants see sad faces | HS |
| 3. No expectations (Neutral) | → | Participants see happy faces | NH |
| 4. No expectations (Neutral) | → | Participants see sad faces | NS |
| 5. Targets will be Sad | → | Participants see happy faces | SH |
| 6. Targets will be Sad | → | Participants see sad faces | SS |

Participants in conditions one and six were shown emotional expressions that were in accord with the emotions they were primed to expect to see. Participants in conditions two and five were shown emotional expressions that were discordant from those they had been primed to expect to see. Participants in conditions three and four were not primed to see any specific emotion.

*Dependent Measures: Assessing Emotional Contagion*

After participants viewed one of two randomly assigned videos, they were asked to complete both the Sadness subscale and an amended Joviality subscale from the PANAS-X (see Appendix H). These subscales are designed to measure positive and negative affect.

*Statistical Analyses*

A two-way analysis of variance (ANOVA) was conducted to measure the effect of priming vignettes (three levels: neutral, happy, or sad) and stimulus videos (two levels: happy or sad) on susceptibility to emotional contagion. Scores on both of the PANAS-X

Joviality and Sadness subscales were calculated and compared across conditions.

*Results*

Though some trends in the data do appear to support these hypotheses in select conditions (see Figures 1 and 2), the priming vignettes and stimulus videos failed to provide any significant interactions or main effects (See table 2.2 for mean scores and standard deviations for both the *Sadness* and *Joviality* PANAS-X subscales).

Table 2.2
Means and Standard Deviations for *Sadness* and *Joviality* Scales

| **Condition** | **Stimulus** | **Joviality Score** | **Sadness Score** |
|---|---|---|---|
| Happy | Happy | 2.74 (*SD* = 0.89) | 1.79 (*SD* = 0.92) |
| Happy | Sad | 2.56 (*SD* = 1.11) | 1.75 (*SD* = 0.81) |
| Neutral | Happy | 2.58 (*SD* = 1.04) | 1.69 (*SD* = 1.05) |
| Neutral | Sad | 2.80 (*SD* = 0.95) | 1.77 (*SD* = 0.76) |
| Sad | Happy | 2.96 (*SD* = 0.99) | 1.67 (*SD* = 0.69) |
| Sad | Sad | 2.35 (*SD* = 0.96) | 1.84 (*SD* = 0.68) |

Participants in the SS condition (N = 23) indicated the lowest Joviality scores (*M* = 2.35) and the highest Sadness scores (*M* = 1.84). Similarly, participants assigned to the HH condition (N = 25) reported slightly higher Joviality scores (*M* = 2.74) compared with those assigned to the HS condition (N = 21, *M* = 2.56). However, the Joviality scores for the HH condition (*M* = 2.74) were slightly *lower* than the Joviality scores for the SH condition (N = 29, *M* = 2.96). Furthermore, the Joviality scores for the NS condition (N = 7, *M* = 2.80) were slightly *higher* than the Joviality scores for the NH condition (N = 16, *M* = 2.58). Those in the NS condition also reported slightly higher Sadness scores (*M* = 1.77) than did those in the NH condition (*M* = 1.69). Lastly, Sadness scores for the HH condition (*M* = 1.79) were essentially no different from the Sadness scores for the HS condition (M = 1.75; See Figures 2.1 and 2.2 for a plotted illustration of mean scores by condition).

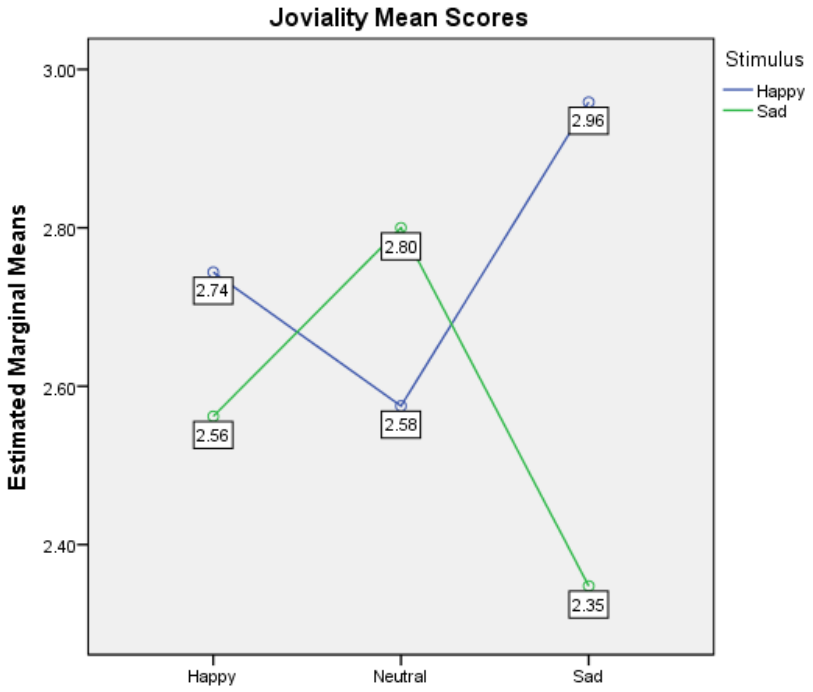



Figure 2.1 – Interaction of Expectations and Stimuli on Joviality

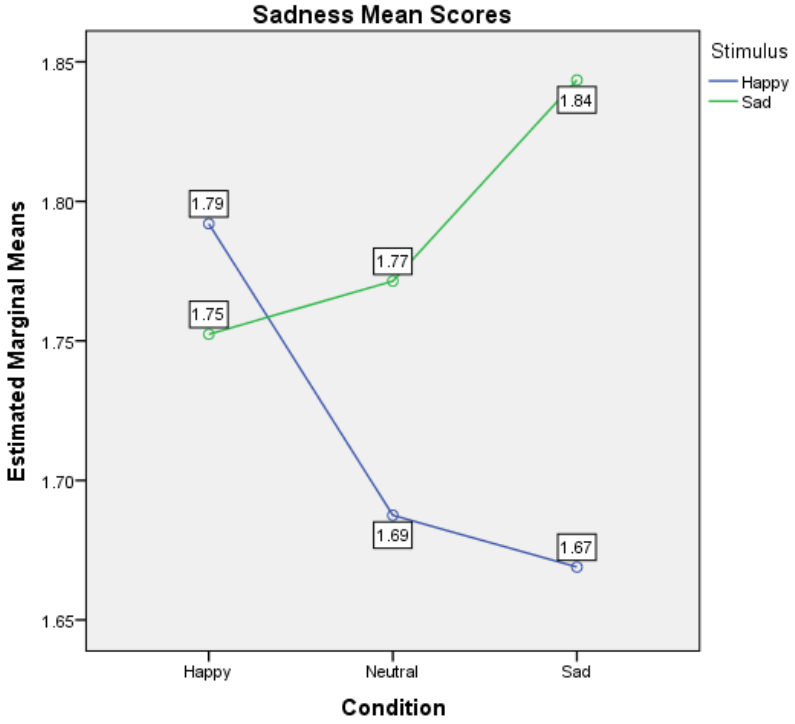



Figure 2.2 – Interaction of Expectations and Stimuli on Sadness

## CHAPTER 3 – DISCUSSION

As detailed in Chapter 1, this study posited three main hypotheses. There would be (1) a main effect for the reality (i.e., the stimulus videos), (2) a main effect for the expectations (i.e., the priming vignettes), and (3) an interaction effect between expectations and reality. The results of the two-way ANOVA, though not statistically significant in any of the conditions, did appear to trend with the prediction that HH and SS conditions (accordant conditions) would result in the highest Joviality/lowest Sadness scores and highest Sadness/lowest Joviality scores, respectively. With the exception of this one trend, which supports one of the interaction effects predicted in hypothesis 3, the data failed to support any of the hypotheses.

### *Limitations*

Experimental design flaws appear to constitute most of this study's limitations. These likely include weak priming vignettes, ineffective stimuli, and a failure to obtain pre-experiment measures of mood. The priming vignettes were very brief and provided little information to participants. Providing only a sentence or two may have had essentially no influence on contagion, particularly when coupled with discordant stimuli. The vignettes were only vaguely descriptive and presumably did not inspire participants to empathize with the emotional displays of the targets. With respect to the stimuli, the stimulus videos failed to effectively arouse emotional response. While the videos are reliable and valid measures with respect to *depicting* emotions, it cannot be assumed that they are effective tools for *inspiring* an empathic emotional response. In other words, while participants may have successfully *identified* the targets' emotional displays, this is not tantamount to effectively *catching* the targets' emotions. Since participants' emotional states were not measured prior to the introduction of the priming vignettes and stimulus videos, it was not possible to accurately measure changes in mood that may have resulted from the experimental procedure.

In addition to the experimental design flaws outlined above, there are two other concerns that merit some discussion: (1) a heavily female-weighted sample, and (2) potentially incorrect hypotheses. Since psychology courses—the source from which all participants in this study were recruited—tend to be dominated by mostly female students, this resulted in a lopsided, female-weighted sample (female, N = 86; male, N =

33; other, N = 2). Finally, turning to the hypotheses proposed in this study, it may be the case that, irrespective of their salience, expectations have very little influence on susceptibility to EC. The effect of expectations may instead become essentially nullified with the introduction of a powerful enough stimulus, especially when that stimulus is discordant from expectations. However, this cannot be known with any degree of certainty until the study has first been replicated with the necessary design issues properly addressed.

*Future Directions*

In light of the limitations detailed above, there are a number of avenues for future research in this area. The notion that expectations may influence susceptibility to EC is certainly conceivable. Therefore, replicating this study with more salient priming and stimulus conditions may render more notable results. Specifically, it is suggested that priming vignettes provide highly vivid and emotionally captivating back stories. Additionally, participants should be instructed to genuinely empathize with the characters depicted in the vignettes.

Research indicates that people are generally able to distinguish between authentic and feigned emotional displays (Ekman, 2009). Since many of the targets in the ADFES stimulus set arguably appear somewhat stilted, it may be preferable to use more organic stimuli (e.g., videos of people exhibiting genuinely deep joy and sorrow) in future incarnations of this study.

Finally, had participants completed pre- and post-experiment measures of Joviality and Sadness, difference scores could have been obtained, thus providing a more accurate measure of any changes attributable to the independent variables. This critical detail should also be addressed in any future studies.

**APPENDIX A - STUDY ADVERTISEMENT**

University of Hawai'i at Manoa

The University of Hawai'i is conducting a study:

## Are you at least 18 years old?

If the answer to this question is **YES…**

Paul Thornton would like to invite you to participate in a research project**!**

**The purpose** of this study is to gain a better understanding of the ways in which people respond to the emotions of the people they encounter.

**To learn more about the study and/or sign up to participate, please email Paul Thornton at**

**pdt@hawaii.edu**

## APPENDIX B - PI/RA SCRIPT

University of Hawai'i at Manoa

**Pre-participation**:

When each participant arrived at the lab, they were greeted with the following:

Hi, my name is_____. I am a/the research assistant/principal investigator for this project. Thank you for coming. Before we begin, may I have your name, your instructor's name, and your course number [*This information was logged into a Google spreadsheet to ensure students received their extra credit*] Thank you. Please have a seat here [*Subjects were sat at a desk with a computer monitor*]. Please read the following consent form [*displayed on the computer screen*]. If you decide to participate in this study, please click the 'Yes' button after reading the form. If you instead choose not to participate, please click the 'No' button, and let me know. You will receive the extra credit points for your class even if you choose not to participate in this study. The process should take approximately 15-20 minutes total. When you have completed the study, the computer will indicate this by directing you to a page that says 'Thank you for your participation!' Once you see this page, please come let me know. Also, if you have any questions during the process or need any help, please let me know; I'll be just outside the lab while you complete the study. Do you have any questions before you begin? Okay, see you soon.

**Post-participation:**

Great! Thanks for participating! I need to spend just a few minutes debriefing you. [*At this time, each participant was handed a debriefing form and the full nature of the study was disclosed. Participants were also reassured that they would receive extra credit for participating and they were asked not to share any of the study details with anyone while the study was ongoing*].

## APPENDIX C - CONSENT FORM

University of Hawai'i at Manoa

**Consent to Participate in Research**

Please read this consent form and indicate below if you wish to participate in this study. Thank you.

My name is Paul Thornton, and I am a Master's student in the Department of Psychology at the University of Hawaii (UH). I am conducting a study that investigates the ways in which people perceive and respond to the emotional displays of others. I am asking you to participate in this project because you are at least 18 years old and enrolled as a student at the University of Hawaii.

**Project Description:** Activities and Time Commitment: The activities you will do while participating in this study are as follows: First, you will provide some demographic information. This should take you approximately 2 minute to complete. Second, you will read instructions, followed by a one paragraph vignette describing the contents of the video that you will be shown. This should take you approximately 3 minutes to complete. Third, you will watch a video of several people expressing emotions. This should take you approximately 2 minutes to complete. Fourth, you will complete survey items from two different scales. The items are designed to assess your reaction to the video. Each survey item will require that you select one of five possible responses. Completion of this survey should take you approximately 5 minutes. The total time required to complete the entire study is approximately 15-20 minutes.

**Benefits and Risks:** You will receive extra credit points for your participation. There are no direct benefits to you as an individual for participating in this study. The more general benefits are that results from this study might help researchers to better understand the ways in which people perceive and respond to the emotional displays of others. It is believed that there is little or no risk to participating in this research project.

**Confidentiality and Privacy**: I will take steps to protect your privacy and the confidentiality of

the information that you provide. Research data will be confidential to the extent allowed by law. Agencies with research oversight, such as the UH Committee on Human Studies, have the authority to review research data. Your name and personal information will not be connected in any way to the data. All research records will be stored in a locked file in the primary investigator's office for the duration of the research project. All research records will be destroyed three years after the completion of the project.

**Voluntary Participation:** Participation in this research project is voluntary. You can freely choose to participate or to not participate in this study, and there will be no penalty or loss of benefits for either decision. If you agree to participate, you can stop at any time without any penalty or loss of benefits to you which you are otherwise entitled.

**Questions**: If you have any questions regarding this research project, please contact the Principal Investigator, Paul Thornton, at pdt@hawaii.edu. You can also contact my faculty advisor, Dr. Elaine Hatfield, of the Department of Psychology at the University of Hawaii at Manoa, at elainehatfield582@gmail.com. If you have any questions regarding your rights as a research participant, please contact the UH Committee on Human Studies at (808) 956-5007, or uhirb@hawaii.edu

**If you wish to participate in this study, please click "YES" below. If you choose NOT to participate in this study, please click "NO" below, and inform the researcher of your decision not to participate. You will receive the course extra credit even if you choose not to participate in this study.**

- o Yes (I wish to participate)
- o No (I do NOT wish to participate)

## APPENDIX D - PARTICIPANT INSTRUCTIONS

University of Hawai'i at Manoa

Thank you for participating in this Emotional Displays study. Complete the four steps listed below by following the on-screen prompts. Inform the researcher once you have completed all of these steps. IMPORTANT: PLEASE READ EACH PAGE COMPLETELY BEFORE PROGRESSING TO SUBSEQUENT PAGES. Click "Next" to begin.

1. Provide demographic information about yourself
2. Read a short video description
3. Watch a 1 minute video
4. Complete a brief post-experiment survey

## APPENDIX E - DEMOGRAPHIC SURVEY

University of Hawai'i at Manoa

**What is your age?**

- o 18-24
- o 25-34
- o 35-44
- o 45-54
- o 55-64
- o 65-74
- o 75 or older

**What is your gender?**

- o Female
- o Male
- o Other

**Which of the following best describes the ethnic group with which you most strongly identify?**

- o Asian (Chinese/Filipino/Japanese/Korean)
- o African American/Black
- o Caucasian
- o Hawaiian
- o Hispanic/Latino
- o Middle Eastern
- o Native American/Alaskan
- o Pacific Islander
- o Other (Please specify)

# APPENDIX F - VIGNETTES

University of Hawai'i at Manoa

**Happy Condition**

In a moment you will watch a short video. You will see several college students whose faces were recorded while their boyfriends or girlfriends were instructed to say something sincerely sweet to them. As you might expect, the students were genuinely happy when they heard the nice comments. Pay close attention to the emotions being displayed. Please click "next" when you are ready to begin viewing the video.

**Sad Condition**

In a moment you will watch a short video. You will see several college students whose faces were recorded while their boyfriends or girlfriends were instructed to say something sincerely hurtful to them. As you might expect, the students were genuinely sad when they heard the hurtful comments. Pay close attention to the emotions being displayed. Please click "next" when you are ready to begin viewing the video.

**Neutral Condition**

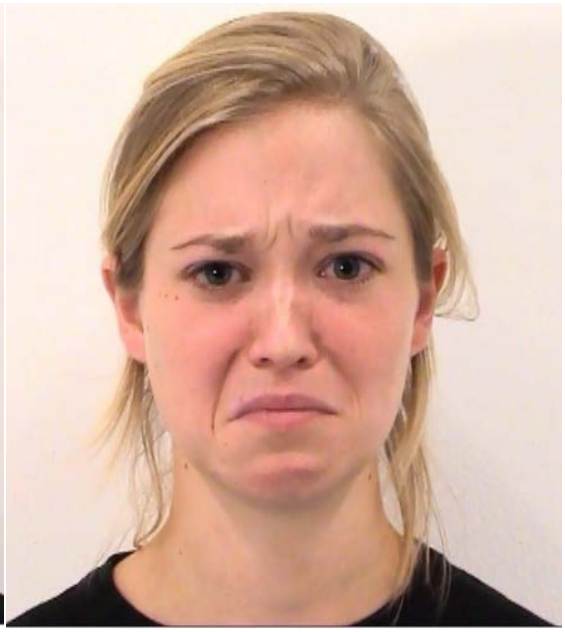
In a moment you will watch a short video. You will see several college students whose faces were recorded while their boyfriends or girlfriends were instructed to say something to them in order to provoke an emotional reaction. Pay close attention to the emotions being displayed. Please click "next" when you are ready to begin watching the video.

## APPENDIX G - ADFES VIDEO SCREENSHOTS

University of Hawai'i at Manoa

Sample video screenshots of female and male targets

Happiness Video Screenshot



Sadness Video Screenshot

Happiness Video Screenshot

Sadness Video Screenshot

## APPENDIX H - PANAS-X FORM

University of Hawai'i at Manoa

This scale consists of a number of words and phrases 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, at this moment.

Use the following scale to record your answers:

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

_____ Happy

_____ Sad

_____ Joyful

_____ Downhearted

_____ Cheerful

_____ Blue

_____ Excited

_____ Lonely

_____ Enthusiastic

_____ Alone

| | |
|---|---|
| *Joviality Scale*[1] | happy, joyful, ~~delighted~~, cheerful, excited, enthusiastic, ~~lively, energetic~~ |
| *Sadness Scale* | sad, blue, downhearted, alone, lonely |

To calculate the Joviality score, add the scores for the following five items: happy, joyful, cheerful, excited, and enthusiastic. The total score can vary from 5 to 25.

To calculate the Sadness score, add the scores for the following five items: sad, blue, downhearted, alone, and lonely. The total score can vary from 5 to 25.

*Interpretation*: There are no 'cut-offs'; higher scores reflect higher levels of the construct in question, i.e., joviality (happiness) or sadness.

[1] As noted in the discussion of the Joviality Scale in Chapter 2, the three weakest items (delighted, lively, energetic) were excluded to form a 5 item measure commensurate with the Sadness Scale.

## APPENDIX I - DEBRIEFING FORM

University of Hawai'i at Manoa

**Debriefing Form:** The Effect of Expectations on Susceptibility to Emotional Contagion

Thank you for participating in this study. The purpose of this study is to better understand how our expectations can influence whether we are more or less likely to "catch" the emotions of the people around us. Specifically, this study investigates whether we are more or less likely to catch the happy or sad emotions of others when their emotional displays are consistent with or contrary to what we expect to see.

In order to ensure that you would not artificially regulate your own emotional reactions to the video, we had to give you relatively vague information about the nature of the study. Rather than initially disclose to you that we were measuring whether you would "catch" the emotions depicted in the videos, we instead explained that you were participating in an experiment designed to study men and women's reactions to a series of short videos. Thus, while our explanation was not misleading, per se, we failed to fully disclose precisely what it was that we were aiming to measure.

Furthermore, we did mislead some participants. Specifically, we mislead those of you who were told that the people in the videos had either responded emotionally to something "sweet" or something "hurtful" that their boyfriends or girlfriends had said to them. This was not in fact true. We chose to fabricate these "back stories" in order to provide participants with a believable explanation for the emotional displays being presented.

We apologize for not defining more clearly what it is that we were seeking to measure, but we believe that some degree of ambiguity was necessary in order to most effectively investigate the subject of our research.

If you are uncomfortable with having been presented with relatively vague information, you are free to withdraw your information from this study. However, we assure you that the answers to the questions you provided were completely anonymous and will be analyzed as part of a larger

group of data.

Because this experiment is ongoing, we request that you not share the true nature and purpose of this experiment with others who may potentially participate in our study. It is very important that you keep this information confidential. As you probably realize, if you knew the full extent of the study before you participated, it would have greatly affected your behavior. Other participants would also be affected if they knew the true purpose, so please keep this confidential.

If you have any questions about this research you may ask them now, or contact me, Paul Thornton, later at (808) 269-1230 or pdt@hawaii.edu. If you have any questions regarding your treatment or your rights as a participant in this research project, please contact the University of Hawai'i at Manoa Committee on Human Studies at (808) 956-5007, or uhirb@hawaii.edu.

## REFERENCES

Adelmann, P. K., & Zajonc, R. B. (1989). Facial efference and the experience of emotions. *Annual Review of Psychology*, *40*(1), 249-280

Arizmendi, T. G. (2011). Linking mechanisms: Emotional contagion, empathy, and imagery. *Psychoanalytic Psychology*, *28*(3), 405-419. doi:10.1037/a0024176

Bavelas, J., Black, A., Lemery, C. R., & Mullett, J. (1987). Motor mimicry as primitive empathy. In N. Eisenberg, J. Strayer (Eds.), *Empathy and its development,* (pp. 317-338). New York: Cambridge University Press.

Bernieri, F. J., Reznick, J., & Rosenthal, R. (1988). Synchrony, pseudosynchrony, and dissynchrony: Measuring the entrainment process in mother—infant interactions. *Journal of Personality & Social Psychology*, *54*(2), 243-253

Bono, J. E., Ilies, R. (2006). Charisma, positive emotions and mood contagion, *The Leadership Quarterly*, *17*(4), 317-334

Doherty, R., & Orimoto, L. (1995). Emotional contagion: Gender and occupational differences. *Psychology Of Women Quarterly*, *19*(3), 355.

Dunning, D., & Balcetis, E. (2013). Wishful seeing: how preferences shape visual perception. *Current Directions In Psychological Science (Sage Publications Inc.)*, *22*(1), 33-37. doi:10.1177/0963721412463693

Ebisch, S. J., Aureli, T., Bafunno, D., Cardone, D., Romani, G. L., & Merla, A. (2012). *Mother and child in synchrony: Thermal facial imprints of automatic contagion. Biological Psychology*, *89*, 123-129

Ekman, P. (2009). *Telling lies: Clues to deceit in the marketplace, politics, and marriage.* New York: W W Norton & Co.

Freud, S. (1954). Hysteria. In J. Strachey (Ed.), *The standard edition of the complete psychological works of Sigmund Freud*. (pp. 41– 57). London, England: Hogarth Press, Inc.

Frodi, A. M., Lamb, M. E., Leavitt, L. A., Donovan, W. L., Neff, C. & Sherry, D. (1978). Fathers' and mothers' responses to the faces and cries of normal and premature infants. *Developmental Psychology, 14*, 490- 498

Goldfried, M. R. & Robins, C. (1983). Self-schema, cognitive bias, and the processing of therapeutic experiences. In P. C. Kendall (Ed). *Advances in cognitive-behavioral*

*research and therapy* (pp. 33-80). New York: Academic Press.

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

Hatfield, E. & Rapson, R. L. (2000). Emotional Contagion. In W.E. Craighead & C.B. Nemeroff (Eds.), *The Corsini encyclopedia of psychology and behavioral science.* New York: John Wiley & Sons, 493-495

Haviland, J., & Lelwica, M. (1987). The induced affect response: 10-week-old infants' responses to three emotion expressions. *Developmental Psychology, 23.*, 97-104

Haviland, J., & Malatesta, C. Z. (1981). The development of sex differences in nonverbal signals: Fallacies, facts, and fantasies. In C. Mayo & & N. M. Henley (Eds.), *Gender and nonverbal behavior* (pp. 183-208). New York: Springer-Verlag.

Hennig-Thurau, T., Groth, M., Paul, M., & Gremler, D. D. (2006). Are all smiles created equal? How emotional contagion and emotional labor affect service relationships. *Journal of Marketing, 70(3), 58-73*

Hirt, E. R. (1990). Do I see only what I expect? Evidence for an expectancy-guided retrieval model. *Journal of Personality and Social Psychology, 58.*, 937-951

Howes, M. J., Hokanson, J. E., & Lowenstein, D. A. (1985). Induction of depressive affect after prolonged exposure to a mildly depressed individual. *Journal of Personality and Social Psychology, 49*, 1110-1113

Iacoboni, M. (2008). *The new science of how we connect with others. Mirroring people.* New York: Farrar, Straus and Giroux.

Izard, C. E. (1971). *The face of emotion.* New York: Appleton-Century-Crofts.

Jelalian, E., & Miller, A. G. (1984). The perseverance of beliefs: Conceptual perspectives and research developments. *Journal of Social and Clinical Psychology, 2*, 25-56

Joiner, T.E., Jr. (1994). Contagious depression: Existence, specificity to depressed symptoms, and the role of reassurance seeking. *Journal of Personality and Social Psychology, 67*, 287–296.

Jung, C.G. 1935/1976. The Tavistock lectures. Lect. V. In: *Collected Works*, Volume 18; page 138

Kelly, J. R., & Barsade, S. G. (2001). Mood and emotions in small groups and work teams. *Organizational Behavior and Human Decision Processes, 86*, 99–130.

Kerckhoff, A. C., & Back, K. W. (1968). *The June bug: a study of hysterical contagion.* New York: Appleton-Century-Crofts.

Kramer, A. D. I., Guillory, J., & Hancock, J. T. (2011). Experimental evidence of massive-scale emotional contagion through social networks. Manuscript submitted for publication, Cornell University.

Laird, J.D. (1984) The real role of facial response in the experience of emotion: A reply to Tourangeau, Ellsworth, and others. *Journal of Personality and Social Psychology, 47,* 909-917

Lee, L., Frederick, S., & Ariely, D. (2006). Try it, you'll like it: The influence of expectation, consumption, and revelation on preferences for beer. *Psychological Science (Wiley-Blackwell), 17*(12), 1054-1058. doi:10.1111/j.1467-9280.2006.01829.x

Leventhal, H., & Mace, W. (1970).The effect of laughter on evaluation of a slapstick movie. *Journal of Personality, 38,* 16-30

Lundqvist, L. (2008). The relationship between the biosocial model of personality and susceptibility to emotional contagion: a structural equation modeling approach. *Personality and Individual Differences, 45,* 89-95

Magen, E., & Konasewich, P. A. (2011). Women support providers are more susceptible than men to emotional contagion following brief supportive interactions. *Psychology of Women Quarterly*, *35*(4), 611-616

Malatesta, C. Z., & Haviland, J. M. (1982). Learning display rules: The socialization of emotion expression in infancy. *Child Development, 53,* 991-1003

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35,* 63-78

Meltzoff, A. N., & Moore, M. K. (1992). Early imitation within a functional framework: The importance of person identity, movement and development. *Infant Behavior and Development, 15,* 479-505

Meltzoff, A. N., & Moore, M. K. (1977). Imitation of facial and manual gestures by human neonates. *Science, 198*(4312), 75-78. doi:10.1126/science.198.4312.75

Meltzoff, A. N. (2011). Social Cognition and the origins of imitation, empathy and theory of mind. In U. Goswami (Ed.), *The Wiley-Blackwell handbook of childhood cognitive development, 2,* 49-75

Nagy, E. (2006). From imitation to conversation: The first dialogues with human neonates. *Infant and Child Development, 15*(3), 223-232. doi:10.1002/icd.460

O'Toole, R., & Dubin, R. (1968). Baby feeding and body sway: An experiment in George Herbert Mead's "Taking the role of the other." *Journal of Personality and Social Psychology,* 10, 59-65

Pugh, S. D. (2001). Service with a smile: Emotional contagion in the service encounter. *Academy of Management Journal, 44(5),1018-1027*

Reik, T. (1948). *Listening with the third ear: The inner experience of a psychoanalyst*. New York: Farrar, Straus and Giroux.

Reissland, N. (1988). Neonatal imitation in the first hour of life: Observations in rural Nepal. *Developmental Psychology,* 24, 464-469

Rizzolatti, G.; Fogassi, L.; & Gallese, V. (2001). Neurophysiological mechanisms underlying the understanding and imitation of action. *Nature Reviews, 2,* 661-669

Schachter, S., & Singer, J. E. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychological Review, 69,* 379-399

Schmeck, H. (Sept. 9, 1983). Study says smile may indeed be an umbrella. *The New York Times, 132*(45), 796, p. 1-16.

Snyder, M. (1984). When beliefs create reality. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology, 18,* (pp. 247-305). New York: Academic Press.

Sonnby-Borgstrom, M., Jonsson, P., & Svensson, O. (2008). Gender differences in facial imitation and verbally reported emotional contagion from spontaneous to emotionally regulated processing levels. *Scandinavian Journal of Psychology*, 49, 111–122. doi: 10.1111/j.1467-9450.2008.00626.x

Swann, W. B., & Read, S. J. (1981). Self-verification process: How we sustain our self-conceptions. *Journal of Experimental Social Psychology, 17,* 351-372

Sy, T., Côté, S., & Saavedra, R. (2005). The contagious leader: impact of the leader's mood on the mood of group members, group affective tone, and group processes. *Journal of Applied Psychology, 90*(2), 295-305.

Tansey, M. J., & Burke, W. F. (1989). *Understanding counter-transference: From projective identification to empathy*. Hillsdale, NJ: The Analytic Press.

Thompson, R. A. (1987). Empathy and emotional understanding: The early development of

empathy. In Eisenberg & J. Strayer (Eds.), *Empathy and its development.* New York: Cambridge University Press.

Tomkins, S. S. (1963). *Affect. Imagery. Consciousness. Vol. 2. The negative effects.* New York: Springer.

Tower, R. B., & Kasl, S. V. (1996). Depressive symptoms across older spouses: Longitudinal influences. *Psychology and Aging, 11,* 683-697

Trevarthen, C. (2005) First things first: Infants make good use of the sympathetic rhythm of imitation without reason or language. *Journal of Child Psychotherapist, 31*(1), 91-113

Trevarthen, C. (2011). What is it like to be a person who knows nothing? Defining the active intersubjective mind of a newborn human being. *Infant and Child Development, 20*(1), 119-135. doi:10.1002/icd.689

Van Der Schalk, J., Hawk, S. T., Fischer, A. H., & Doosje, B. (2011). Moving faces, looking places: validation of the Amsterdam Dynamic Facial Expression Set (ADFES). *Emotion Washington Dc, 11*(4), 907-920. Retrieved from http://dx.doi.org/10.1037/a0023853

Warner, R. (1988). Rhythm in social interaction. In J. E. McGrath (Ed.), *The social psychology of time: New perspectives.* (pp. 63-88). Chicago, IL: Sage.

Watson, D., & Clark, L. A. (1999). *The PANAS-X: Manual for the positive and negative affect schedule-expanded form.*Unpublished manuscript, The University of Iowa.

Wheeler, L. (1966). Toward a theory of behavioral contagion. *Psychological Review, 73,* 179-192

Williams, T. (2007). The effects of expectations on perception: Experimental design issues and further evidence. *Research Review, 8,* 24-27.

Wilson, T. D. (1985). Strangers to ourselves: The origins and accuracy of beliefs about one's own mental states. In J. N. Harvey & G. Weary (Eds.), *Attribution: Basic issues and applications.* Orlando, FL: Academic Press.