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Emotional Contagion

and the Communication of Emotion

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Running Head: Emotional Contagion

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One activist at the University of Hawaii is as well known for her racism as for her spirited defense of Hawaiian sovereignty. She spews out hatred. A few weeks ago, the student newspaper Ka Leo O Hawai'i reprinted one of her speeches. My students came into class, in a most disagreeable mood, arguing with one another about the article. Although everyone rejected the author's proposals, they had certainly caught her “meta-message” of racial hatred. “We're not the problem,” was the theme of their defense, “it's the _____ (followed by one ethnic epithet or another).” I was stunned! Hawaii is a multi-cultural society that works. People are good-natured and racially tolerant. (The intermarriage rate is a whopping 60%.) What was going on to produce such uncharacteristic venom? Something--the harsh words she spat out, the jagged cadences of her rushing sentences--had sparked a crabby, nasty, mood in the entire class.

Recently, we have become interested in the process of emotional contagion. People are usually fully aware that conscious assessments can provide a great deal of information about others. They seem to be less aware that they can often gain even more information by focusing in now and then on their own emotional reactions during social encounters. As people nonconsciously and automatically mimic their companions' fleeting expressions of emotion, they often come to feel pale reflections of their partners' feelings. By attending to this stream of tiny moment-to-moment reactions, people can and do “feel themselves into” the emotional lives of their partners (Hatfield, Cacioppo, &

Rapson, 1993). (In the Ka Leo O episode, for example, the class concluded that their own flickerings of racial anger were probably only a pale reflection of the activist's volcanic hatreds).

We have been fascinated by observing the process of emotional contagion in action. We are convinced that this process is critically important in personal relationships. In a sense, emotional contagion is the basic building block of human interaction. People must possess minimal mimicry and synchrony skills if they are to have a smooth and graceful social interaction. Emotional contagion takes people a step further: It allows them to track the intentions and feelings of others moment-to-moment, even when they are not explicitly attending to this information.

Let us begin by defining “emotional contagion” and discussing several mechanisms that we believe might account for this phenomenon. We will provide evidence that people tend (a) to mimic the facial expressions, vocal expressions, postures, and instrumental behaviors of those around them, and thereby (b) to “catch” others' emotions as a consequence of such feedback. We will review evidence from a variety of disciplines that such primitive emotional contagion exists. We will end by identifying a number of important questions which remain to be answered.

Definitions

Theorists disagree as to what constitutes an emotion family. Most, however, would agree that emotional “packages” are comprised of many components, including conscious awareness; facial, vocal, and postural

expression; neurophysiological and autonomic nervous system activity; and instrumental behaviors (Carlson & Hatfield, 1992; Fischer, Shaver, & Carnochan, l990). Different portions of the brain may process the various aspects of emotion (Gazzaniga, l985; Panksepp, 1986). Since the brain integrates the emotional information it receives, however, each of the emotional components acts on and is acted upon by the others (Candland, l977; Carlson & Hatfield, l992).

Hatfield, Cacioppo, and Rapson (1993) defined primitive emotional contagion as "The tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person's and, consequently, to converge emotionally" (p. 5).

The Emotional Contagion scale was designed to assess people's susceptibility to catching joy-happiness, love, fear- anxiety, anger, and sadness-depression, as well as emotions in general (see Appendix 1). For information on the reliability and validity of the ECS, see Doherty (1994).

Possible Mechanisms of Emotional Contagion

Theoretically, emotions can be caught in several ways. Early investigators proposed that conscious reasoning, analysis, and imagination accounted for the phenomenon. As early as 1759, the economic philosopher Adam Smith (l759/l966), for example, observed:

> Though our brother is upon the rack . . . by the imagination we place ourselves in his situation, we conceive ourselves enduring all the same torments, we enter as it were into his body, and become

in some measure the same person with him, and thence form some idea of his sensations, and even feel something which, though weaker in degree, is not altogether unlike them (p. 9).

We believe, however, that primitive emotional contagion is a far more subtle, automatic, and ubiquitous process than previous theorists have supposed. Evidence is beginning to accrue in support of the following propositions.

Mimicry

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

Scientists and writers have long observed that people tend to mimic the emotional expressions of others. Smith (l759/l966) observed that as people imagine themselves in another's situation, they display motor mimicry. He said: “When we see a stroke aimed, and just ready to fall upon the leg or arm of another person, we naturally shrink and draw back on our leg or our own arm” (p. 4). Smith felt that such imitation was almost a reflex. Since the l700s, researchers have collected considerable evidence that people do tend to imitate others' emotional expressions. Social psychophysiologists, for example, have found that facial mimicry is at times almost instantaneous: People seem to be able to track the most subtle of moment-to-moment changes. Such investigations have found that peoples' emotional experiences and facial expressions (as measured by electromyographic [EMG] procedures), tend to

reflect at least rudimentary features of the changes in emotional expression of those they observe. This motor mimicry is often so subtle that it produces no observable changes in facial expression. For example, Lundqvist (1993) recorded Swedish college students' facial EMG activity as they looked at photographs of people displaying happy, sad, angry, fearful, and surprised facial expressions. He found that the various faces of emotion evoked very different EMG response patterns. For example, when subjects observed happy facial expressions, they showed increased muscular activity over the zygomaticus major (cheek) muscle region. When they observed angry facial expressions, they showed increased muscular activity over the corrugator supercilii (brow) muscle region. A great deal of research has documented the fact that infants, children, adolescents, and adults automatically mimic facial expressions of emotion (Hatfield et al., 1993).

People also mimic and synchronize vocal utterances. Different people prefer different interaction tempos (Chapple, 1982). When partners interact, if things are to go well, their speech cycles must become mutually entrained. There is a good deal of evidence in controlled interview settings supporting interspeaker influence on utterance durations, speech rate, and latencies of response (Cappella & Planalp, 198l; Matarazzo & Wiens, l972; Warner, l990).

Individuals have also been found to mimic and synchronize their postures and movements with others (Bavelas et al., l987; Bernieri et al., l994; Warner, l988).

Thus, there is considerable evidence that (1) people are capable of mimicking/synchronizing their faces, vocal productions, postures, and movements with startling rapidity, and (2) they are capable of automatically mimicking/synchronizing a startling number of emotional characteristics at a single instant.

Feedback

Proposition 2: Subjective emotional experience is affected, moment-to-moment by the activation and/or feedback from facial, vocal, postural, and movement mimicry. Theoretically, emotional experience is influenced by (1) the central nervous system commands that direct such mimicry-synchrony in the first place; (2) the afferent feedback from such facial, verbal, or postural mimicry-synchrony; or (3) the conscious self-perception processes, wherein individuals make inferences about their own emotional states on the basis of their own expressive behavior. Given the functional redundancy that exists across levels of the neuraxis, all three processes may operate to insure that emotional experience is shaped by facial, vocal, and postural mimicry-synchrony and expression. Thus, research is needed to determine which of these distinctive processes subserves emotional experience and contagion or, perhaps more likely, under what conditions each underlies emotional experience and emotional contagion.

Darwin (l872/l965) argued that emotional experience should be profoundly affected by feedback from the facial muscles:

> The free expression by outward signs of an emotion intensifies it. On the other hand, the repression, as far as is possible of all outward signs softens our emotions. He who gives way to violent gestures will increase rage; he who does not control the signs of fear will experience fear in a greater degree; and he who remains passive when overwhelmed with grief loses his best chance of recovering elasticity of mind (p. 365).

Recent reviews of the literature on facial feedback show that emotions are tempered to some extent by facial feedback. What remains unclear is how important such feedback is (is it necessary, sufficient, or merely a small part of emotional experience?) and exactly how the two are linked (Adelman & Zajonc, 1989). Researchers have tested the facial feedback hypothesis, using a variety of strategies to induce subjects to adopt emotional facial expressions. Sometimes they simply ask subjects to exaggerate or to try to hide any emotional reactions they might have. Sometimes they try to "trick" subjects into adopting various facial expressions. Sometimes they try to arrange things so subjects will unconsciously mimic the emotional facial expressions of others. In all three types of experiments, the emotional experiences of subjects tend to be affected by the facial expressions they adopt.

In a classic experiment, for example, Laird (l984) told subjects that he was interested in studying the action of facial muscles. The experimental room contained apparatus designed to convince anyone that complicated multichannel recordings were about to be made of facial muscle activity. Silver cup electrodes

were attached to the subjects' faces between their eyebrows, at the corners of their mouths, and at the corner of their jaws. These electrodes were connected via an impressive tangle of strings and wires to electronic apparatus (which, in fact, served no function at all.) The experimenter then proceeded surreptitiously to arrange the faces of the subjects into emotional expressions. Laird found that emotional attributions were shaped, in part, by changes in the facial musculature. Subjects in the “frown” condition were less happy and more angry than those in the “smile” condition. The subjects' comments give us some idea of how this process worked. One man said with a kind of puzzlement:

> When my jaw was clenched and my brows down, I tried not to be angry but it just fit the position. I'm not in any angry mood but I found my thoughts wandering to things that made me angry, which is sort of silly I guess. I knew I was in an experiment and knew I had no reason to feel that way, but I just lost control (p. 480).

A variety of researchers have found that subjects' emotional feelings and behaviors are affected by feedback from their facial expressions. Subjects feel emotions consistent with those poses and have trouble experiencing emotions inconsistent with those poses (Duclos et al., l989; Kellerman, Lewis, & Laird, l989; Larsen et al., l990; Rutledge & Hupka, l985; Strack et al., l988). Exceptions to this principle can be found when the facial efference is very weak (Cacioppo et al., 1991a) and when the emotional stimulus evokes extensive cognitive appraisals or strong affect (e.g., conditioned emotional responses) independent of the posed emotion (Matsumoto, l987; Tourangeau & Ellsworth, l979).

The link between emotion and facial expression can be quite specific. When people produced facial expressions of fear, anger, sadness, or disgust, they were more likely to feel the emotion associated with those specific expressions (Duclos et al., l989).

Furthermore, Ekman and his colleagues (Ekman & Davidson, 1993; Ekman, Levenson, & Friesen, 1983) have argued that both emotional experience and autonomic nervous system (ANS) activity are affected by facial feedback. They asked people to produce six emotions: surprise, disgust, sadness, anger, fear, and happiness. They were to do this either by reliving times when they had experienced such emotions or by arranging their facial muscles in appropriate poses. The authors found that the act of reliving emotional experiences or flexing facial muscles into characteristic emotional expressions produced effects on the ANS that would normally accompany such emotions. Thus facial expressions seemed to be capable of generating appropriate ANS arousal.

Vocal feedback can also influence emotional experience. Hatfield and her colleagues (Hatfield et al., 1995) conducted a series of experiments designed to test the vocal feedback hypothesis. Subjects were men and women of African, Chinese, European, Filipino, Hawaiian, Hispanic, Japanese, Korean, Pacific Island, or mixed ancestry.

The first experiment studied the moods of individuals who read joyous, loving, angry, or sad passages. The experimenter told subjects that he was conducting applied social psychological research for the Bell Telephone Company. He was interested in finding out how well various kinds of telephone

equipment could transmit the complex sound patterns of emotional communications. Subjects were asked to read, as realistically as possible, short typescripts of a joyous, loving, sad, or angry telephone conversation into the headset.

The authors assessed subjects' emotional experience and the impact of vocal feedback on it in two ways. First, the subjects described their own emotional states via a series of self-report measures at the end of the experiment. Second, although subjects believed themselves to be unobserved as they delivered the emotional messages, their faces were, in fact, surreptitiously videotaped as they spoke into the telephone: Judges later rated these secret recordings. The authors found that subjects' emotions, whether conveyed by self-report or by facial expressions, were shaped by feedback from the emotional messages they delivered. Subjects reported feeling happier and judges rated their faces as looking happier when they had tried to express the happy message in appropriate tones: They felt more love (and were rated as looking more loving) when they had recited the loving message in a loving voice, and so forth.

In a second experiment, the scientists made every effort to hide the fact that they were interested in the subjects' emotions. This time they claimed that Bell Telephone was testing the ability of various kinds of telephone systems to reproduce the human voice faithfully. Subjects were then led to private rooms, where the experimenter gave them a cassette tape containing one of six sound patterns: joy, love-tenderness, sadness, fear, anger, or a neutral control pattern. Subjects were asked to listen to the sound pattern, practice reproducing its

elements, and, once they felt comfortable, reproduce it as exactly as possible into a telephone, which would automatically record the sounds they made.

Communication researchers have documented that the basic emotions are linked with specific patterns of intonation, vocal quality, rhythm, and pausing. Klaus Scherer (1982) found, for example, that when people were happy they produced sounds with small amplitude variation, large pitch variation, fast tempo, a sharp sound envelope, and few harmonics. The five nonneutral tapes in the Hatfield (Hatfield et al., 1995) study were therefore designed to possess the sound patterns appropriate to their respective emotions: Subjectively, the joyous sounds had some of the qualities of merry laughter. The sad sounds possessed the qualities of crying. The companionate love tape consisted of a series of soft "ooohs" and "aaahs." The angry tape comprised a series of low growling noises from the throat and the fearful sounds contained a set of short, sharp cries and gasps. Finally, the neutral tape was one long monotone, a hum without any breaks.

At the end of the experiment, subjects were asked for "one last favor." The experimenter claimed it would help her in analyzing the data if she had a check on what sort of mood the subjects were in just at the moment. Subjects then indicated how happy, loving, angry, sad, and fearful they felt, right at the moment. Subjects were told that this check would be helpful because moods might affect the ability to reproduce various sounds. Results revealed that subjects' emotions were powerfully affected by the specific sounds they pro-

duced. Thus, this experiment also provided support for the vocal feedback hypothesis.

Communications researchers have documented that emotions are linked with specific patterns of intonation, voice quality, rhythm, and pausing. For example, Scherer (1982) found that when people are happy they produced sounds with small amplitude variation, large pitch variation, fast tempo, a sharp sound envelope and few harmonics. The five tapes were designed to possess the sound characteristics associated with joy, love, anger, fear and sadness. The authors found evidence that the emotions of individuals were affected by feedback from their vocal productions.

A research note and suggestion for subsequent research: We are convinced that emotional contagion can be produced by feedback from all sorts of activities. Some critics have taken sharp exception to this contention. They argue that facial feedback is necessary for contagion. They point out that in the preceeding experiments, we did not prevent subjects from making appropriate facial expressions as they recited the various scripts and sound patterns. Thus, it may well have been facial feedback (not vocal feedback) that produced the linked emotional reactions. Since these two experiments do seem to suggest that there is some sort of a link between emotion and vocal feedback, the next step is to find out why we secured such a link. Subsequent research is required to explore a variety of questions, such as: What is most important in producing the subjective emotional experience-feedback link? Is it hearing the emotional sound patterns, producing the emotional sound patterns, or both? If in

subsequent research scientists were to find that people's emotions were stirred more when they both hear and produce emotional sounds themselves than when they merely hear someone else recite emotional sounds, we would then be forced to ask, “Why is that so?” Is it hearing oneself speak (aural feedback) or producing sounds oneself (feedback from the vocal musculature), or both that is important? If scientists were to find that it is actually producing the sounds that is important, the questions would continue: “Why is that?” Is it because facial and postural displays usually accompany vocal activity? If so, then it would be facial and postural feedback that was important, not vocal feedback. Or is subjective emotional experienced affected by vocal activity, in and of itself?

The preceding research, then, is only a first step, documenting that subjective emotional experience is shaped by vocal feedback (for whatever reasons). We hope to encourage subsequent, more painstaking research, to disentangle the complex threads of the process.

Finally, evidence exists suggesting that emotions are shaped by feedback from posture and movement (Bernieri, Reznick, & Rosenthal, l988; Warner, 1990). Interestingly enough, the theorist of theater, Konstantin Stanislavski (in Moore, 1960), noticed the connection between posture and performance. He argued: “Emotional memory stores our past experiences; to relive them, actors must execute indispensable, logical physical actions in the given circumstances. There are as many nuances of emotions as there are physical actions” (pp. 52-53). Stanislavski proposed we may relive emotions anytime we engage in a variety of small actions that were once associated with

these emotions. Whether or not Stanislavski was correct, there exists an array of evidence supporting the contention that subjective emotional experience is affected, moment-to-moment, by the activation and/or feedback from facial, vocal, postural, and movement mimicry.

Contagion

Proposition 3: Consequently, people tend, from moment-to-moment, to "catch" others' emotions.

Finally, there is evidence from animal researchers, developmentalists (interested in emotional contagion, empathy, and sympathy), clinical researchers (exploring transference and countertransference and the impact that anxious, depressed, and angry people have on others), social psychologists and sociologists, and historians, which suggest that people do indeed often catch the emotions of others (Hatfield, et al., 1993).

Future Research Directions

Recently, Cacioppo, Rapson, and Hatfield (Hatfield et al., 1993) systematically assembled the train of evidence in favor of the emotional contagion process. It soon became clear that although scientists have learned a great deal about the process of contagion (in general), they possess surprisingly little information as to whether or not significant individual differences exist in the ability to infect others with emotion or in the susceptibility to catching others' emotions. If we think of the transmission of moods as akin to the transmission of social viruses, it seems reasonable to suppose that some people (the Typhoid Marys of this world) may well possess a natural ability to infect others with the

“virus” while other people (the Woody Allen's) may stand especially vulnerable to contagion. Thus, in our current research program we plan to focus on six questions: (a) What kinds of people possess the most power to infect others with their emotions? (b) What kinds of people are the most vulnerable to catching others' emotions? In what kinds of relationships are people the most vulnerable to contagion? (c) What are the advantages (disadvantages) of possessing the power to infect others with one's own emotions? (d) What are the advantages (disadvantages) of possessing the sensitivity to read and reflect others' emotions? (e) Can people be taught how to shape emotional encounters (or at least resist being overwhelmed by others' emotions)? (f) Can people be taught to be more in tune with others' emotions?

Question 1: What kinds of people possess the most power to infect others with their emotions?

Some individuals are able to draw others into their emotional orbits. They possess infectious laughs. They are the “life of the party.” When they are down, they are a “drag.” Everyone suffers. What kinds of people possess the most power to dominate emotional encounters? Logically, it would seem that powerful senders should possess three characteristics:

Hypothesis 1. They must feel, or at least appear to feel, strong emotions.

Hypothesis†2.†They must be able to express (facially, vocally, posturally, and/or in their instrumental behavior) those†strong†emotions.

Hypothesis†3. They must be relatively insensitive to and unresponsive to the feelings of those who are experiencing emotions incompatible with their own.

Question 2: What kinds of people are the most vulnerable to catching others' emotions? In what kinds of relationships are people especially vulnerable to contagion?

Do people differ in the capacity to share the joy, love, sadness, anger, and fear of others? Do they differ markedly in their tendency to get swept up in others' emotions? We suspect that they do. Logically, it would seem that six characteristics should make individuals especially susceptible to emotional contagion:

Hypothesis 1. People should be more likely to catch others' emotions if their attention is riveted on the others than if they†are oblivious to others' emotions.

Hypothesis 2. People should be more likely to catch others' emotions if they construe themselves in terms of their interrelatedness to the others rather than in terms of their independence and uniqueness.

Hypothesis 3. Those able to read others' emotional expressions, voices, gestures, and postures should be especially vulnerable to contagion.

Hypothesis 4. Those who tend to mimic facial, vocal, and postural expressions should be especially vulnerable to contagion.

Hypothesis 5. Those who are aware of their own emotional responses (i.e., whose subjective emotional experience is tempered by facial, vocal, postural, and movement feedback) should†be†more†vulnerable†to†contagion.

Hypothesis 6. Emotionally reactive people should be more vulnerable†to†contagion.

Conversely, people who do not attend to others, who construe themselves as distinct and unique from others, who are unable to read others' emotions, who fail to mimic, or whose subjective emotional experiences are unaltered by peripheral feedback should be fairly resistant to contagion.

We would also argue that men and women should be most vulnerable to contagion in certain kinds of relationships--in love or other close relationships and in relationships that involve power. Specifically, we would propose:

Hypothesis 1: Couples passionately or companionately in love should be especially likely to catch the emotions of the beloved.

Hypothesis 2: Caretakers and infants should be especially prone to share one another's emotions. (In fact, the caretaker–infant relationship may be a prototype of the kind of relationship in which people “lose their boundaries”).

Hypothesis 3: People who have a psychological investment in others' welfare should be vulnerable to contagion. Thus, psychotherapists may be prone to catch their clients' emotions, teachers their students' moods, and caretakers their dependents' feelings.

Hypothesis 4: People who have power over others should be resistant to contagion. Those they control should be more vulnerable to soaking up emotions.

In the past few years, researchers have conducted a series of preliminary studies designed to determine whether or not people are most susceptible to contagion in such encounters--when others are liked or disliked (McIntosh, 1994), when they possess attitudes similar or dissimilar to their own (Stockert, 1993), when they are from the same or different ethnic groups (Singelis, 1994), or when they are powerless or possesses considerable power (Hsee, Hatfield, Carlson, & Chemtob, l99la, 1992). As yet, however, there is only sparse evidence in favor of these reasonable sounding hypotheses.

Question 3: What are the advantages (disadvantages) of possessing the power to infect others with one's own emotions?

There are times when people wish to transmit their own emotions to others. When teachers try to distract a classroom full of irritable children, when friends visit the hospital to cheer up a sick chum, when hosts try to liven up a dull party or calm down an explosive situation, they are trying to dominate an interpersonal encounter.

In the future, theorists must try to provide a theoretical framework for understanding when it is to people's advantage to be able to impress their feelings on others and when it is a distinct disadvantage to do so.

Question 4: What are the advantages (disadvantages) of possessing the sensitivity to read and reflect others' emotions?

Generally, people benefit enormously from being able to read and share others' feelings. On rare occasions, however, sharing others' feeling may be too much of a good thing. Sometimes people need to build a glass wall around their feelings--say, when they wish to maintain their cool in a “hot” situation or to respond with verve and energy in a deadly cool environment. Sometimes peoples' interests are in opposition. In such situations, it may be a good thing to possess the ability to resist others' emotions.

In the future, theorists must try to provide a theoretical framework for understanding when it is to people's advantage to be “in tune” with others' emotions and when it is a distinct disadvantage to do so.

Question 5: Can people be taught how to shape emotional encounters (or at least resist being overwhelmed by others' emotions)?

One of the most common questions newspaper, radio and TV reporters, colleagues, and friends ask is, “How can people avoid getting swept up in others' emotions?”

There are times when people must struggle to avoid getting carried away. This year, we have spent a good part of our sabbatical in England. Today, The Daily Telegraph carried a news item asking, “What is so funny?”:

> The Church of England is concerned by a new phenomenon which seems to affect a growing number of Evangelical churches in west

> London, particularly Holy Trinity, Brompton. Its symptoms are mass fainting in church, accompanied by hysterical laughter.
>
> There is nothing new about fainting in church. Convent girls have always done it, although usually in ones and twos, seldom en masse. The Church of England newspaper reports a service in Holy Trinity last weekend which ended in total confusion as dozens of people broke into helpless laughter--or, in some cases, tears--and started trembling; many of them falling to the floor.
>
> Another vicar was forced to cancel an evening service because so many of his congregation from an earlier service were still lying on the floor, laughing helplessly. . . This is a feeling we should fight against as hard as we can (Waugh, 1994, p. 19).

Usually, however, when people ask for a bit of “insensitivity training,” their problems are closer to home. Two examples:

One of our friends, a TV commentator, mentioned that her director was a very sick man. He was always blowing his top. His foul temper had demoralized all of the news staff. They had started behaving as badly as he did. Our friend admitted that she trudged home everyday with a headache, hating everyone. How could she avoid picking up her boss' and colleagues “bad vibes?”

A second example: When one of our colleagues learned about our research on contagion, he asked about a recurring problem. During the semester, he was a calm, reasonable man. But every time he went back to

Virginia to visit his elderly parents' for a few weeks, in spite of his best intentions, within minutes he ended up acting like he was 10 years old. His discovery that people tend to catch the joy, anger, or depression of those around them, gave him, for the first time, an intellectual understanding of why he behaved so badly:

> No wonder. My father is quite senile. Sometimes he is so irascible and so demanding that I always end up arguing with him in spite of my best intentions." "Everyone in my family is a nervous wreck. I try to stay calm, but after a few days, I am worse than the others.

But, then he asked a harder question: "What tricks can you teach me to allow me to remain the calm center in the storm?"

One might think that the answer would be simple. As we observed when discussing Question 2, people who do not attend to others, who construe themselves as distinct from others, who are unable to read others' emotions, who fail to mimic, or whose subjective emotional experiences are unaltered by peripheral feedback, should be fairly resistant to contagion. Theoretically, then, by teaching people any of the preceding "skills", we could increase their resistance to contagion.

That assignment, however, turns out to be harder than one might think. The preceding skills might be part of our genetic heritage; in any case, by adulthood they have been honed for a lifetime. It may be almost impossible for a sensitive person to turn them off. Most people can manage to be on their best behavior for a short-time. With a great exertion of will, one can probably manage to put on an act of appearing "calm, cool, and collected" . . . for an hour or two at

a time. But then one's inner turbulence begins to seep through. One has to beat a hasty exist, go back to their hotel room, and unwind for the rest of the day . . . if one is to come back to charm another day. Otherwise, those sarcastic words, hissed through clenched teeth, those rising voices, those snotty digs, those overly polite tones, and all-those other telltale signs of anger, anxiety, or distress begin to seep out. Contagion seems to be irresistible for all but the oblivious.

What if one has to be in a terrible situation for long periods of time (i.e., having to deal with a difficult parent, a tyrannical boss, a hyper-active child for prolonged period?) We are afraid that here, we have no answer. Some people, because they are born with a care-free temperament or because they were exposed to difficult situations from childhood, possess or have developed a protective insensitivity. They respond with a quip and a shrug to an angry outburst and forget it. They calmly go about soothing the anxious. But these are not skills easily learned and perhaps it is not even desirable to learn them. The ability to read one's own and other's emotions is a valuable asset; it may not be desirable to blunt those skills.

So we really have no useful advice for those forced to deal for a prolongued period with the cruel, rude, anxious, or depressed.

In the future, scientists should try to provide a theoretical framework for understanding how people can be taught to maintain their general sensitivity to others, while resisting contagion in certain specific situations when that is what is called for.

Question 6: Can people be taught to be more sensitive to and in tune with others' emotions?

As we observed when we were discussing Question 2, people should be most likely to catch others' emotions when their attention is riveted on others, they possess interdependent self-construals, they are able to read others' emotional expressions, they tend to mimic other's emotional expressions, they are aware of their own emotional responses, and they are emotionally reactive.

Theoretically, then, by teaching people any of the preceding skills, we should be able to increase people's ability to read others' emotions by increasing their susceptibility to emotional contagion. Again, we expect that that it may turn out to be harder to train an insensitive person to be sensitive to others than one might think. If people are motivated, they could surely manage to attend closely to others. To the extent that attention is the bedrock of emotional contagion, people's sensitivity and ability to be in tune with them should increase.

We are less confident that people can be taught to mimic others' emotional behaviors, however. Social scientists interested in rapport once speculated that people could set others at ease by mimicking their facial expressions, voices, and postures. Bandler and Grinder (1975), for example, advocated “neurolinguistic programming.” By mimicking others, they insisted, business people, therapists, teachers, and so forth could presumably establish such strong rapport that they could manipulate people into doing all sorts of things that might be against their own best interests. Morris (1966) argued that

therapists could put clients at ease by modeling their movements. Then psychotherapy could begin.

The data quickly shattered these easy assumptions. Most people, it turned out, were simply not able to consciously mimic others very effectively: the process is simply too complex and too fast. For example, it took even the lightning fast Muhammed Ali a minimum of l90 MS to detect a standard signal and 40 MS more to throw a punch in response. Condon and Ogston (1966), however, found that college students automatically and routinely synchronized their movements within 21 MS. Davis (1985) argued that microsynchrony is mediated by brain structures at multiple levels of the neuraxis and is either "something you've got or something you don't; there is no way that one can deliberately 'do' it." (p. 69). Those who try consciously to mirror others, he speculated, are doomed to look phony. LaFrance and Ickes (1981) found that those subjects who mirrored one another's postures too much during an initial encounter ended up feeling self-conscious and judging the encounter to be forced, awkward, and strained.

Early attempts to teach therapists to be empathic failed dismally. According to clinical lore, therapists can best display empathy by leaning forward in their chairs, periodically nodding their heads, and saying "uh-huh" now and then. Bird-whistell (see Davis, 1985, pp. 66–67) reported, however, that psychotherapy interns who were instructed to use these techniques failed. Instead of nodding when their clients needed support, they nodded each time they became anxious

and desperate to do something. Thus, they ended up telegraphing not empathy but panic.

In the future, scientists should try to provide a theoretical framework for understanding how people can be taught to be more sensitive to others, so they can reap the benefits of having some sense of what others are feeling moment-to-moment.

Implications of Existing Research

In emotional contagion research we confront a paradox. Most people seem to be capable of mimicking others' facial, vocal, and postural expressions with stunning rapidity. As a consequence, they are able to feel themselves into those other emotional lives to a surprising extent. And yet, puzzlingly, most people seem oblivious to the importance of mimicry-synchrony in social encounters. They seem unaware of how swiftly and how completely they are able to track the expressive behaviors and emotions of others.

What are some implications of recent findings concerning the nature of contagion? The research on contagion underscores the fact that we use multiple means to gain information about others' emotional states: Conscious analytic skills can help us figure out what makes other people “tick”. But if we pay careful attention to the emotions we experience in the company of others, we may well gain an extra edge into “feeling ourselves” into the emotional states of others. Both provide invaluable information. In fact there is evidence that both what we <u>think</u> and what we <u>feel</u> may provide valuable, and different, information about others. In one study, for example, Hatfield and her colleagues

(Hsee, Hatfield, & Chemtob, l992), found that people's conscious assessments of what others “must be” feeling were heavily influenced by what the others said. People's own emotions, however, were more influenced by the others' nonverbal clues as to what the others were really feeling.

Awareness of the existence of emotional contagion may prove useful in understanding and advancing various areas of interpersonal communication--between lovers, teachers and students, parents and children, therapists (or doctors or lawyers) and clients, between labor or international negotiators, between heads of state. They may better help us understand group behaviors which have shaped history, whether they be Hitler fanning hatred to his listeners, Martin King spreading a message of love, or the ways in which crowds behave. And they may even tell us something about the awesome contemporary power of celebrityhood and of the mass media as these agencies of large-scale emotional and cognitive contagion continue to expand their capacities to define reality for billions of people.

References

Adelmann, P. K., & Zajonc, R. (l989). Facial efference and the experience of emotion. Annual Review of Psychology, 40, 249-280.

Bandler, R., & Grinder, J. (1975). The structure of magic: I. A book about language and therapy. Palo Alto, CA: Science and Behavior Books.

Bavelas, J. B., Black, A., Lemery, C. R., & Mullett, J. (l987). Motor mimicry as primitive empathy. In N. Eisenberg & J. Strayer (Eds.), Empathy and its development (pp. 3l7-338). New York: Cambridge University Press.

Bernieri, F. J. (l988). Coordinated movement and rapport in teacher-student interactions. Journal of Nonverbal Behavior, l2, l20-l38.

Bernieri, F. J., Reznick, J. S., & Rosenthal, R. (l988). Synchrony, pseudosynchrony, and dissynchrony: Measuring the entrainment process in mother-infant interactions. Journal of Personality and Social Psychology, 54, 243-253.

Bernieri, F. J., Davis, J. M., Rosenthal, R., & Knee, C. R. (1994). Interactional synchrony and rapport: Measuring synchrony in displays devoid of sound and facial affect. Personality and Social Psychology Bulletin, 20, 303-311.

Cacioppo, J. T., & Petty, R. E. (l983). Social psychoophysiology: A sourcebook. New York: The Guilford Press.

Candland, D. K. (l977). The persistent problems of emotion. In D. K. Candland, J. P. Fell, E. Keen, A. I. Leshner, R. Plutchik, & R. M. Tarpy (Eds.), Emotion. Monterey, CA: Brooks/Cole.

Cappella, J. N., & Planalp, S. (l98l). Talk and silence sequences in informal conversations III: Interspeaker influence. Human Communication Research, 7, ll7-l32.

Carlson, J. G., & Hatfield, E. (l992). Psychology of emotion. Fort Worth, TX: Harcourt, Brace, Jovanovich.

Chapple, E. D. (l982). Movement and sound: The musical language of body rhythms in interaction. In M. Davis (Ed.), Interaction rhythms: Periodicity in communicative behavior. (pp. 3l-52). New York: Human Sciences Press.

Condon, W. S., & Ogston, W. D. (l966). Sound film analysis of normal and pathological behavior patterns. Journal Nervious Mental Disorders, l43, 338-347.

Darwin, C. (l965). The expression of the emotions in man and animals. Chicago: University of Chicago Press. (Original work published in 1872).

Davis, M. R. (l985). Perceptual and affective reverberation components. In A. B. Goldstein and G. Y. Michaels (Eds.), Empathy: Development, training, and consequences (pp. 62-l08). Hillsdale, NJ: Erlbaum.

Doherty, R. W. (1994). The emotional contagion scale: A measure of individual differences. Unpublished Master's thesis, University of Hawaii, Honolulu.

Duclos, S. E., Laird, J. D., Schneider, E., Sexter, M., Stern, L., & Van Lighten, O. (l989). Emotion-specific effects of facial expressions and postures on emotional experience. Journal of Personality and Social Psychology, 57, l00-l08.

Ekman, P., & Davidson, R. J. (1993). Voluntary smiling changes regional brain activity. American Psychological Society, 4, 342-345.

Ekman, P., Levenson, R. W., & Friesen, W. V. (1983). Autonomic nervous system activity distinguishes among emotions, Science, 221, 1208-1210.

Fischer, K. W., Shaver, P. R., & Carnochan, P. (l990). How emotions develop and how they organize development. Cognition and Emotion, 4, 8l-l27.

Gazzaniga, M. S. (l985). The social brain: Discovering the networks of the mind. New York: Basic Books.

Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1993). Emotional contagion. New York: Cambridge University Press.

Hatfield, E., Hsee, C. K., Costello, J., Weisman, M. S., & Denney, C. (l995). The impact of vocal feedback on emotional experience and expression. Journal of Social Behavior and Personality, 10, 293-312.

Hsee, C., Hatfield, E., Carlson, J. G., & Chemtob, C. (l99la). The effect of power on susceptibility to emotional contagion. Cognition and Emotion, 4, 327-340.

Hsee, C., Hatfield, E., Carlson, J. G., & Chemtob, C. (l99lb). Emotional contagion and its relationship to mood. Unpublished manuscript. Honolulu, HI: University of Hawaii.

Hsee, C., Hatfield, E., & Chemtob, C. (l992). Assessments of emotional states of others: Conscious judgments versus emotional contagion. Journal of Social and Clinical Psychology, 11, 119-128.

Kellerman, J., Lewis, J., & Laird, J. D. (l989). Looking and loving: The effects of mutual gaze on feelings of romantic love. Journal of Research in Personality, 23, l45-l6l.

LaFrance, M., & Ickes, W. (1981). Posture mirroring and interactional involvement: Sex and sex typing effects. Journal of Nonverbal Behavior, 5, 139-333.

Laird, J. D. (l984). The real role of facial response in the experience of emotion: A reply to Tourangeau and Ellsworth and others. Journal of Personality and Social Psychology, 47, 909-9l7.

Larsen, R. J., Kasimatis, M., & Frey, K. (l990). Facilitating the furrowed brow: An unobtrusive test of the facial feedback hypothesis applied to negative affect. Unpublished manuscript, University of Michigan at Ann Arbor.

Lundqvist, L-O. (1993). Emotional contagion to facial expressions. Comprehensive Summaries of Upsalla Dissertations from the Faculty of Social Sciences, 41, Uppsala, Sweden: ACTA Universitatis Upsaliensis.

Matarazzo, J. D., & Wiens, A. N. (l972). The interview: Research on its anatomy and structure. Chicago: Aldine-Atherton.

Matsumoto, D. (l987). The role of facial response in the experience of emotion: More methodological problems and a meta-analysis. Journal of Personality and Social Psychology, 52, 769-774.

McIntosh, D. N. (1994). Spontaneous facial mimicry, liking, and socially-induced affect. Unpublished manuscript, University of Denver.

Moore, S. (1960). The Stanislavski system. New York: Viking Press.

Morris, D. (1966). Postural echo. Manwatching (pp. 83-85). New York: Abrahams.

Panksepp, J. (l986). The anatomy of emotions. In R. Plutchik & H. Kellerman (Eds.), Emotion: Theory, research, and experience Vol. 3: Biological foundations of emotion (pp. 9l-l24). New York: Academic Press.

Rutledge, L. L., & Hupka, R. B. (l985). The facial feedback hypothesis: Methodological concerns and new supporting evidence. Motivation and Emotion, 9, 2l9-240.

Scherer, K. (1982). Methods of research on vocal communication: Paradigms and parameters. In K. R. Scherer & P. Ekman (Eds.), Handbook of methods in nonverbal behavior research (pp. 136-198). New York: Cambridge University Press.

Singelis, T. (1994). Culture, self, and emotional contagion. Unpublished manuscript, University of Hawaii at Honolulu.

Smith, A. (l966). The theory of moral sentiments. New York: Kelley. (Original work published in l759)

Stockert, N. (1993). Perceived similarity and emotional contagion. Unpublished Doctoral dissertation, University of Hawaii.

Strack, F., Martin, L. L., & Stepper, S. (l988). Inhibiting and facilitating conditions of facial expressions: A non-obtrusive test of the facial feedback hypothesis. Journal of Personality and Social Psychology, 54, 768-776.

Tourangeau, R., & Ellsworth, P. C. (l979). Journal of Personality and Social Psychology, 37, l5l9-l53l.

Warner, R. (l988). Rhythm in social interaction. In J. E. McGrath (Ed.), The social psychology of time: New perspectives (pp. 63-88). Chicago: Sage.

Warner, R. (l990). Interaction tempo and evaluation of affect in social interaction: Rhythmic systems versus causal modeling approaches. Unpublished manuscript.

Waugh, A. (1994, June 20). What is so funny. The Daily Telegraph, p. 19.

Appendix 1

The†Emotional†Contagion†Scale

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. 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:

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

1. I'm very sensitive in picking up other people's feelings.
2. If someone I'm talking with begins to cry, I get teary-eyed.
3. Being with a happy person picks me up when I'm feeling down.
4. When someone smiles warmly at me, I smile back and feel warm inside.
5. I pay attention to what other people are feeling.
6. I get filled with sorrow when people talk about the death of their loved ones.
7. I clench my jaws and my shoulders get tight wen I see the angry faces on the news.
8. When I look into the eyes of the one I love, my mind is filled with thoughts of romance.

9. I pay attention to how people say things, not just to what they say.
10. It irritates me to be around angry people.
11. Watching the fearful faces of victims on the news makes me try to imagine how they might be feeling.
12. I melt when the one I love holds me close.
13. I tense when overhearing an angry quarrel.
14. Being around happy people fills my mind with happy thoughts.
15. I sense my body responding when the one I love touches me.
16. I notice myself getting tense when I'm around people who are stressed out.
17. I cry at sad movies.
18. Listening to the shrill screams of a terrified child in a dentist's waiting room makes me feel nervous.

Note. Happiness items = 3, 4, 14. Love items = 8, 12, 15. Interest items = 1, 5, 9. Fear items = 11, 16, 18. Anger items = 7, 10, 13. Sadness items = 2. 6, 17. The higher the score, the more susceptible to emotional contagion a person is said to be.

Groups:

Adamatzky, A. (2005), *Dynamics of Crowd-Minds: Patterns of irrationality in emotions, beliefs and actions.* London: World Scientific.