144. Hatfield, E., Thornton, P., & Rapson, R. L. (in preparation). Emotional contagion, the madness of crowds, mass hysteria, and mass sociogenic illness. In C. Haag & C. Caupenne (Eds). *Emotional contagion*.

Emotional Contagion, the Madness of Crowds, Mass Hysteria, and Mass Sociogenic Illness

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15 pages max. 14 pages, 3,850 words.

## **Abstract**

In this paper we will discuss emotional contagion, the process by which people "mind-read" and feel themselves into others' emotional experiences. Neuroscientists have explored the cognitive underpinning of this process; while social psychologists have investigated the social factors that may facilitate (or discourage) this process. We will close by reviewing the direction contagion research has taken in recent years—focusing particularly on emotional contagion as an explanation for "the madness of crowds" and mass hysteria, and as a precursor of mental and physical illness.

# **Emotional Contagion**

The ancient Greek philosophers, such as Socrates, observed (usually in passing) the people possess a powerful propensity for echoing the thoughts, emotions, and behavior of others. Theophrastus, for exampled, condemned superstitious Greek citizens who worried about the magical contagion of madness, rare diseases, and the like. Until the late 70s, however, only clinicians and social psychologists displayed a scientific interest in the phenomena. Recently, however, scholars from a wide variety of disciplines, using a variety of innovative scientific techniques, have begun to study emotional contagion. These disciplines now include cultural psychology, anthropology, primatology, the neurosciences, biology, social psychology, and history. Primitive emotional contagion<sup>1</sup> appears to be a basic building block of human interaction—assisting in "mind-reading" (allowing people to understand and share the thoughts and feelings of others), and facilitating the coordination and synchronization of interpersonal interactions.

Defining Primitive Emotional Contagion. Elaine Hatfield and her colleagues (1992) defined primitive emotional contagion as:

The tendency to automatically mimic and synchronize facial expressions, vocalizations, postures, and movements with those of another person and, consequently, to converge emotionally.

The *Emotional Contagion Scale* was designed to assess people's susceptibility to catching joy and happiness, love, fear and anxiety, anger, and sadness and depression, as

<sup>&</sup>lt;sup>1</sup> For brevity's sake, throughout this paper we will simply term this "emotional contagion."

well as emotions in general. The scale has been translated into a variety of languages—including Finnish, German, Greek, Telugu, Hindi, Japanese, Portuguese, and Swedish.

# **Mechanisms of Emotional Contagion**

There is considerable evidence that the process of primitive emotional contagion occurs in three stages: Mimicry -> Feedback -> Contagion.

Proposition 1. In conversation, people tend to automatically and continuously mimic and synchronize their movements with the facial expressions, vocal productions, postures, movements, and instrumental behaviors of others.

Proposition 2. Subjective emotional experiences are affected, moment-to-moment, by the activation and/or feedback from such mimicry.

*Proposition 3. Thus, people tend to "catch" others' emotions, moment-to-moment.* 

In "The Purloined Letter," Edgar Allan Poe (1915) contended that if people consciously imitate others' facial expressions, they would soon gain an understanding as to what the other was feeling:

When I wish to find out how wise, or how stupid, or how good, or how wicked is any one, or what are his thoughts at the moment, I fashion the expression of my face, as accurately as possible, in accordance with the expression of his, and then wait to see what thoughts or sentiments arise in my mind or heart, as if to match or correspond with the expression (p. 100).

Scholars from a variety of disciplines provide voluminous evidence that people do in fact frequently catch one another's emotions (see Hatfield, Cacioppo, & Rapson, 1992; Hatfield, Bensman, Thornton, & Rapson, 2014, for a review of this voluminous research).

Recently, cognitive neuroscientists, chemists, and medical researchers have begun to search for the cognitive underpinnings of contagion. They have used such traditional methods as electroencephalography (EEG), transcranial magnetic simulation (TMS), functional magnetic resonance imaging (fMRI), and psychopharmacological, psychoneuroendocrinological, and genetic methods in order to gain some insight into

why people so readily catch the emotions of others and why it is so easy for them to find themselves in sync with other people's thoughts, emotions, and behaviors (Lamm & Silani, 2014). Their discoveries have greatly enhanced our understanding of the processes of collective emotions and empathy. Consider the following example:

The Mirror Neuron System: Giacomo Rizzolatti (2005), a neuroscientist at the University of Parma, and his colleagues, monitored the brains of macaque monkeys as they engaged in some activity (say, grasping a peanut) or simply watched another monkey perform the same activity. They made a fascinating discovery. In the brain, there are two types of neurons: the first, canonical neurons, provide a direct link between perception and action. Another type of brain cell, mirror neurons, responds the same way when monkeys (or humans) perform an action as when they merely witness another performing the same action! Researchers have suggested that these brain structures may well be responsible for "mind-reading" (understanding the intentions of others), emotional contagion, and empathy in primates, including humans (Hatfield, Rapson, & Le, 2009; Iacoboni, 2005; Rizzolatti, 2005). For more information on the neuroscience of emotional contagion, see Claus Lamm and Giorgia Silani (2005).

## **Emotional Contagion in Collectives**

Originally, contagion researchers focused exclusively on attempting to find out how emotion is transmitted person-to-person. Recently, however—harking back to classic writings on "collective effervescence," "the madness of crowds," "group mind," "hysterical contagion," and "psychogenic illnesses"—contagion researchers have started to explore the role of contagion in sparking collective emotions. We naturally assume that the same processes that cause individuals to "catch" one another's emotions operate in

crowds of people. One person is swept up in a terrifying situation. His panic sparks another's fear and panic, the two of them spark similar reactions in others, and so forth, until the whole community is profoundly disturbed. Thus, collectives often come to share thoughts, feelings, and behaviors.

#### **Collective Emotions**

For centuries, theorists and researchers have been fascinated by collective emotions, "group mind," "collective effervescence," the "madness of crowds," and "hysterical contagion." Gustav Le Bon (1895) sparked an interest in the "madness of crowds." He opined that in a crowd, emotions were contagious, spreading from person to person, as swiftly as the Black Death. Shortly thereafter, Émile Durkheim (1912/1995) postulated that collective gatherings spark a "collective effervescence," a kind of exaltation that reaffirms social bonds and promotes transcendent feelings and actions.

Unlike Le Bon, Durkheim argued that collective effervescence may have a positive social function. For example, in sacred celebrations, communities' religious beliefs and values come to be imbued with powerful affective meanings, thus making such values salient in everyday life.

In any case, historians have long been intrigued by the madness of crowds. An example: in the Middle Ages, in the wake of the Black Death, dancing manias swept Europe. H. L. Klawans (1990) describes the sorrow and anxiety which drove people "to the point of hysteria":

[The bubonic plague, the infamous Black Death] appeared [in the 12<sup>th</sup> century.] . . . It . . . broke over Europe in a great wave. Entire villages were exterminated. Fields became neglected. Soon famine complicated the pestilence. And just as the plague receded and the population and economy began to recover, another wave struck. . . It was at that point that

the dancing mania began and spread like a contagion. Today, most historians view this phenomenon as a form of mass hysteria (Klawans, 1990, pp. 236–237)

One writer described the 12<sup>th</sup> century madness this way:

... a strange delusion arose in Germany, which took possession of the minds of men, and, in spite of the divinity of our nature, hurried away body and soul into the magic circle of hellish superstition . . . It was called the dance of St. John or of St. Vitus, on account of the Bacchantic leaps by which it was characterized, and which gave to those affected, while performing their wild dance, and screaming and foaming with fury, all the appearance of persons possessed. It did not remain confined to particular localities, but was propagated by the sight of the sufferers, like a demoniacal epidemic, over the whole of Germany and the neighboring countries to the northwest. (Hecker, 1837/1970, ch. I, section 1)

The dancing mania spread from town to town. In Cologne, 500 joined the wild revels. In Metz, 1100 danced. Priests tried to exorcise the devils. Sufferers traveled to the Tomb of Saint Vitus in southern France to be cured. Paracelsus, a 16<sup>th</sup> century physician and alchemist, devised a harsh but effective treatment for the dancing mania: he dunked the victims in cold water, forced them to fast, and condemned them to solitary confinement. The hysterical outbreaks began to subside.

"Civilized people" often look down upon such collectivist expressions of ecstasy or mania—labeling such passion as a "disgusting and fiendish saturnalia," "hideous, hellish practices," "insane possession," or "hysteria." Nonetheless, such collective joy, anger, and frenzy has existed in all societies, at all times, and in all places—including our own. Think: the political riots we see on TV news each night or the crazed fans at Lady Gaga or Justin Bieber concerts.

In 1841, in *Extraordinary Popular Delusions and the Madness of Crowds*, the Scottish journalist Charles Mackay documented the follies that people can commit, when swept up in a contagious euphoria. Foolhardy people have invested (and lost) fortunes in

alchemy, black tulips (which became so popular in the 1600s that the bulbs were worth more than gold), the great Railway Mania (when stocks climbed to astronomical levels), and other get-rich-quick schemes, only to lose all when the bubble burst.

Historian such as Barbara Ehrenreich (2006), in *Dancing in the Streets: A History of Collective Joy*, and Robert Bartholomew (2001) provide vivid reviews of the power of collective ecstasy, joy and mania, political passion, religious frenzies, collective fury and hatred, senseless riots and violence, and fear and panic. The sweep of these historical narratives makes for compelling reading. Whatever we call such contagion, the process is certainly a powerful one. Collective passions cause citizens, caught up in misguided patriotic or religious fervor, to cheer as mad women ("witches") are burned at the stake; as young African-Americans are lynched for "crimes;" or as young men march off, banners flying, to crusades in the Holy Land, or senseless wars (like the Great "war to end all wars").

## **Emotional Contagion: Medical and Demographic Evidence**

In recent years, medical researchers have explored whether mathematical models, developed to predict the spread of infectious diseases, could also be applied to predict the spread of emotions and various medical conditions. One of America's most ambitious medical studies is the Framingham Heart Study, which was designed to understand the roots of heart disease. Founded in 1948 by the National Heart Institute, the study has followed more than 15,000 American men and women for 50 years. Each year participants are asked "Who are your parents, your spouse, your children, your siblings, and your friends? Where do they live?" Then they are given a complete medical examination—every aspect of their mental, emotional, and physical health is assessed.

The goal was to learn more about heart disease. When two social scientists, Nicholas Christakis and James Fowler (2011), heard about this study, they realized they had come upon a goldmine. From the Framingham files they could construct a sociogram, tracing people's social networks, in order to discover what impact (if any) social networks had on people's mental, emotional, and physical health. Their research soon revealed a surprising finding: people's emotions are as contagious as the most virulent of infectious diseases! Let us review a sprinkling of their research now.

Joy, happiness, and enthusiasm: The World Health Organization is increasingly emphasizing happiness as a precursor of health. In a study of 5,124 Framingham participants, the authors constructed a map tracing 53,228 ties between family, friends, and work colleagues. To their surprise, they found that happiness and enthusiasm spread through social networks of family, friends, neighbors, and the wider community, like wildfire! Happy people tend to be located in the center of their local social networks and in large clusters of other happy people. Family mattered but so did friends, and so did friends of friends (Cristakis & Fowler, 2011; Hill, Rand, Nowak, & Christakis, 2010).

Clinicians have long known that *anxiety and depression* are contagious. James C. Coyne (1976), for example, invited University of Pennsylvania students to participate in a study examining the process by which people get acquainted. They were instructed to telephone a woman, located somewhere in Ohio, and chat with her for 20 minutes. The woman with whom they chatted was, unbeknownst to them, either depressed or non-depressed. Dealing with someone's depression took a toll. Those who spoke with a depressed woman became aware that she was sad, weak, passive, and in a low mood. They came away from the encounter feeling more depressed, anxious, and hostile than

before, and were not eager to talk to her again. Participants who talked to a non-depressed woman naturally did not have such disagreeable reactions. Similarly, contagion has also been found to spark loneliness (Cacioppo, Fowler, & Christakis, 2009).

Anxiety. Probably most research has been devoted to demonstrating how contagious anxiety is. In the 1960s, Alan C. Kerckhoff and Kurt W. Back (1968) watched a drama unfold. The first reports on the six o'clock news indicated that a mysterious epidemic had hit a Montana factory:

Officials of Montana Mills shut down their Strongsville plant this afternoon because of a mysterious sickness. According to a report just in from Strongsville General Hospital, at least ten women and one man were admitted for treatment. Reports describe symptoms as severe nausea and breaking out over the body. Indications are that some kind of insect was in a shipment of cloth that arrived from England at the plant today. And at the moment the bug is blamed for the outbreak of sickness (p. 3).

The mysterious illness swept through the plant. In a few weeks, many workers were stricken with the mysterious illness, characterized by panic, anxiety, nausea, and weakness. Experts from the U. S. Public Health Service Communicable Disease Center and University entomologists were brought in to scour the vast textile plant for specimens. The total catch consisted of one black ant, a housefly, a couple of gnats, a small beetle, and one mite. Nonetheless, the plant was fumigated. In the end, scientists concluded that hysterical contagion had sparked the epidemic.

To find out which workers had been susceptible to such contagion, and why,

Kerckhoff and Back conducted a series of interviews. They talked to those who had
fallen ill, to those who had not, and to those who had witnessed the epidemic. They also
studied medical records. They came to the following conclusions:

- (1) Workers were most likely to catch the "disease" if they were severely stressed at the time the "epidemic" struck. Women were most susceptible if they had been experiencing marital problems, if they were responsible for supporting their families, felt trapped, and were overworked and exhausted at the time the epidemic hit. Workers were especially vulnerable if they lacked coping skills. Women did not catch the disease if they did not have the "luxury" of falling ill. Women who had job security quickly succumbed. Women who reported needing a job desperately, who felt insecure about their abilities, who were straining to produce, who felt obligated to keep their job at any cost, and were worried about being laid off, did not get sick.
- (2) Initially, the majority of the victims were social isolates, who had a history of "nervousness" and fainting. Once the panic began to spread, however, workers were most likely to catch the disease if they had close emotional ties with the other "infected" workers. Women who were members of other social groups, social isolates, or outsiders (either because they were black, new at the plant, or because their workstations separated them geographically from the victims) did not get sick. Many such women, in fact, were often so little touched by the epidemic that they were skeptical that an "epidemic" had ever existed.

The story of such epidemics is legion. In a lively text, *Little Green Men*, *Meowing Nuns*, *and Head-Hunting Panics: A Study of Mass Psychogenic Illness and Social Delusion*, Barthalomew (2001) itemized the strange and wondrous diseases hysterical contagion can spark. In convent, the tranquil nuns, mooing like cows. Two thousand men in Guangdong, China, plagued by an epidemic of *koro*. Victims are convinced that their genitals, especially the penis, are shrinking into their bodies. There

are reports of little green men, invading the countryside, mythical chemical spills, chemical and biological terrorism, and the like—all which ignite panic, illness, and even death.

Let us return to the work of the detectives who studied the contagion of illness using the data from the fabled Framington study.

The contagion of obesity: Once gain, Christakis and Fowler (2011) proposed that social contagion should predict that obesity can spread through a social network, just like viruses spread, because people "infect" others with their perceptions and habits. They examined data from the Framingham Heart Study, described earlier. Among the participants, obesity had increased from 14% in the 1970s to 30% in 2000. Based on their data, however, they found that the rapid increase in obesity rates was due largely to social network influence. Of course other factors influence obesity, such as access to unhealthy food and a sedentary lifestyle. Nonetheless, it was contagion that proved to be the most powerful determinate of weight. When a Framingham resident became obese, his or her friends were 57% more likely to become more obese, too. Even more astonishing was the fact that the effect didn't stop there. A Framingham resident was 20% more likely to become obese if the friend of a friend became obese—even if the connecting friend didn't put on a single pound. Indeed, a person's risk of obesity went up about 10% even if a friend of a friend gained weight. The authors' flamboyant statement, "Your colleague's husband's sister can make you fat, even if you don't know her," naturally garnered worldwide press attention. In its wake came a few statistical critiques (see Kolata, 2011).

Over the years, Christakis and Fowler (2011) have continued to analyze the

Framingham data, finding more and more examples of contagious behavior. Smoking, they discovered, spreads socially—in fact, a friend taking up smoking increases ones chances of taking up the "filthy habit" by 36%; if you have a three-degrees removed friend who starts smoking, you are 11% more likely to do the same. The researchers (and others, such as Ethan Cohen-Cole and Jason Fletcher (2008), have found that happiness, altruistic (and selfish) behavior, exercise, acne, headaches, sleep problems, drinking, illegal drug use, depression, loneliness, and divorce are contagious too. Christakis and Fowler (2011) termed this the "three degrees of influence" rule of human behavior: we are tied not just to those around us, but to others in a web that stretches farther than we know. The authors' research has provoked a great deal of medical research designed to trace the epidemiology of various diseases.

#### Conclusion

In this chapter we have traced the role of emotional contagion theory in explicating the spread of collective emotions. Early sociologists such as Gustav Le Bon (1896) sparked an interest in the "group mind" and the "madness of crowds." They explored the process of hysterical contagion in a variety of societies and natural settings.

In the 1970s, however, social psychologists proposed a theory of emotional contagion, focused on individuals rather than crowds. They attempted to pin down the process by which one individual transmits his or her emotions to another person or small group.

Today, however, clinicians, psychologists, physicians and epidemiologists, echoing Le Bon, have begun to apply emotional contagion theory to collective emotions and to the social contagion of various mental and physical diseases. We concluded this

chapter by reporting on the new and compelling research documenting that, under a variety of conditions, partners and even entire communities may catch their fellows' moods and emotions.

The list of emotions and behaviors subject to contagion is long. It includes joy and happiness, depression, and loneliness; physical problems—such as allergies, obesity, reactions to chemical spills and environmental hazards, and the like; and social and health-related problems, such as smoking, sleep problems, illegal drug use, depression, and divorce. Contagion theory seems to be opening many doors to a better understanding of human behavior.

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