

The Implications and Opportunities of Emotional Contagion

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Abstract

Humans are able to engage in the process of empathy, by which people consciously place themselves in the situations faced by others and thereby genuinely feel the emotions of others. There also exists an unconscious form of empathy called emotional contagion in which people unintentionally and oftentimes unknowingly adopt the emotions displayed by those with whom they interact. In this review, I will analyze the mechanics of emotional contagion and its evolutionary purpose through the lenses of biology and group dynamics. Through this detailed description of the underlying processes of emotional contagion, I will isolate certain functions that may lend themselves to the manipulation of emotional contagion and the strength of emotional contagion's potential to alter the intensity of conscious empathy. As a result, I will explore the possibility of using emotional contagion to affect the human experience and to create a more compassionate society.

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The Implications and Opportunities of Emotional Contagion

Suppose a friend of yours has just made the decision to euthanize her tumorous dog. She is understandably very torn-up about it all, and her tears and sobs remind you of how you felt nine years ago when your cat was run over by a car. You put yourself back in that mindset, engage with the emotions your friend feels now, and find that you genuinely feel her pain. This is empathy, and it required conscious effort for you to participate in it.

Now suppose your friend is displaying the same behaviors, but she hasn't told you why, and so you cannot put yourself in her shoes or even understand her mindset enough to attempt to connect. Perhaps you feel bummed out, and so you leave her to deal with her emotions alone, but as you're driving home, you find that you inexplicably still feel sad. Your face is hard, your mouth is angled down, and there's a slight aching in your chest. You're unable to think of any logical reason you should be feeling this way, but it doesn't change the fact that you do. Feeling infected by your friend's sorrow, you attempt to lighten your mood by stopping for ice cream, but the residual solemnity seems to overshadow your interaction with the ice-cream man, and when you walk away, the smile has faded from his face as well. This is emotional contagion, and it occurred without you even recognizing it.

This unconscious process seems to have the same effects on the mind and body as does conscious empathy, and its intensity, duration, and range have become popular topics of study as of late. Waters, West, and Mendes (2014) explored exactly in which ways emotional contagion affects people and interactions. This study focused primarily on the whether stress can be transmitted by way of emotional contagion from mothers to infants, as infants are unable to consciously report emotions, making them excellent subjects for tests of unconscious control. The subjects began the study at their baseline stress levels. Mothers were then placed into one of

three interview conditions—positive, negative, or control—while their infants were left to play with toys. In the positive condition, the interviewers responded to the mothers with engaged and accepting body language, and in the negative condition, the interviewers responded with detached and seemingly judgmental body language. The mothers were then returned to their infants and allowed to interact with them for two minutes before the interviewer returned and interacted with each. During the experiment, the cardiovascular responses of both the mothers and the infants were measured (Waters, West, & Mendes, 2014, p. 936).

The results of this study showed that mothers in the negative-evaluation conditions exhibited higher levels of physiological arousal than those in the positive-evaluation or control conditions, as did their infants. Additionally, these mothers reported feeling more stressed and displayed more externalized affective behavior, such as irritability or anger, when interacting with their infants. The fact that the physiological arousal of the infants whose mothers were in the negative-evaluation condition covaried with that of their mothers even though the infants had not been exposed to the same stressors as their mothers indicates that the infants adopted their mothers' levels of stress by way of emotional contagion (Waters, West, & Mendes, 2014, pp. 938-940). At the very least, this demonstrates that emotional contagion is very real and occurs entirely through interaction.

Because interactions drive human development and often the functionality of society, it is likely that emotional contagion is much more pervasive and influential than many people are aware. This paper seeks to determine the ways in which emotional contagion shapes the intricacies of society, influences the universal, and perpetuates patterns that may keep humanity from reaching its full potential. If it is the case that emotional contagion is a keystone of this world's foundation, then perhaps there are ways to manipulate it for the greater good.

The Biological Mechanics of Emotional Contagion

To understand how emotions may be spread, one must first understand how they are felt—whether the experience of emotions is determined by perceptions or behaviors, whether behavioral expressions determine the conscious acknowledgment of emotions, and ultimately whether emotions are the product of the conscious or the unconscious brain. Currently, there exist three major theories of emotion that focus primarily on the experience's biological roots: the James-Lange theory, the Cannon-Bard theory, and the Schachter two-factor theory (Weiten, 2013, pp. 418-419).

The first of these, the James-Lange theory of emotion, is perhaps the most compelling. According to Cannon (1927), this theory received nearly immediate acceptance in the psychological community as the method of emotional genesis, and for good reason, as both individual experiences and empirical analyses offer substantial support. The James-Lange theory describes the affective experience as such: An environmental stimulus, when sensed by organs such as the eyes or ears, sends signals to the brain, and a perception is formed. The perception of the stimulus elicits a reaction by way of efferent autonomic signals, which result in facial expressions, posture shifts, or more extreme biological responses, such as laughing or crying. The brain then interprets these bodily changes as emotions (Cannon, 1927, pp. 106-107).

The Cannon-Bard theory of emotion takes a slightly different approach to the relationship between autonomic arousal and emotion, stating that instead of the former causing the latter, both phenomena are caused by a third factor, and the combined autonomic arousal and emotion create a fuller affective experience. This third factor is certain subcortical structures of the brain, namely the thalamus, which, when removed or lesioned, Cannon (1927) noted, resulted in totally discontinued or dramatically heightened emotional response to stimuli, respectively (pp. 115-

118). Put simply, the Cannon-Bard theory can be described as follows: As with the James-Lange theory, the affective process begins with the sensing of an external stimulus by one or more sensory organs. The signals from these organs to the brain are routed through the thalamus, where they initiate thalamic processes of varying degrees. The degree and intensity of a thalamic process determine which emotion is felt, and they also determine which muscles and bodily organs react to the stimulus. The pairing of the conscious emotion and the bodily response creates the affective experience (Cannon, 1927, p. 120).

Finally, the Schachter two-factor model, jointly developed by Schachter and Singer (1962), combines facets of both the James-Lange theory and the Cannon-Bard theory, but it puts more weight on external factors than its predecessors. The principles of this theory state that instead of arousal alone leading to the interpretation of an emotion, or of an underlying subcortical process producing both autonomic arousal and a conscious emotional experience, emotions are caused by an interaction of autonomic arousal and a conscious appraisal of the arousing situation by way of processes in the cerebrum. Essentially, what this means is that two drastically different emotional experiences, such as anger and elation, will tend to elicit the same type of autonomic arousal, but the experiences will differ on a cognitive level because the experiencer will use the environmental situation and the cognitions appropriate to the environmental situation to determine which emotion he or she is feeling (Schachter & Singer, 1962, p. 395).

Schachter and Singer tested this two-factor theory through an experiment in which participants were given shots of epinephrine and then placed in one of two situations in which the emotions of either euphoria or anger would be manipulated by a confederate's behaviors. The experimenters also manipulated whether or not the participants would be informed of the

epinephrine's physiological effects. The results of this study showed that when participants were not informed of the effects of the epinephrine, they reported their physiological arousal in terms that corresponded to the appropriate emotional valence of whichever of the two conditions they had been assigned to. However, when participants were informed of the effects of epinephrine, they were less likely to explain their arousal in emotional terms (Schachter & Singer, 1962, pp. 389-393). This would suggest that the situation not only determines which emotions are consciously felt but also whether emotions need always be associated with and used to explain physiological arousal at all.

Further support for the Schachter two-factor theory and the idea that arousal need not always equal emotions can be found in the results of a study conducted by Cantril and Hunt (1932). In this English-language replication of Marañón's 1924 study, the experimenters injected subjects with adrenaline and then asked them to report how they were feeling. Most of the subjects, though reporting physiological arousal, did not report actual emotions; instead, they described their physiological states using terms like "I feel as if I am experiencing an emotion" rather than "I am feeling an emotion." The experimenters labeled these detached expressions as indicative of "cold emotion," or arousal associated with emotions but without a particular object and therefore did not consider these types of arousal to be suggestive of any genuine emotional experience (Cantril & Hunt, 1932, pp. 301-301). These findings support the idea that arousal itself is not enough to constitute a genuine emotional experience. Furthermore, in those events during which any genuine emotions were expressed, the participants who felt them typically related them back to particular events in their lives in which they felt that level of physiological arousal (Cantril & Hunt, 1932, pp. 303-305). This would suggest that situational factors are very much important to the experiencing of genuine emotions, so much so that in order to put

ourselves in an emotional state that seems appropriate to our levels of physiological arousal, we may sometimes have to return our minds to prior events.

Despite the evidence supporting the strength of the Schachter two-factor theory, the most popularly used theory of the mechanics of emotional contagion appears to adhere to the James-Lange theory, following the premise that the phenomenon operates by way of autonomic activation and conscious attribution. According to Hatfield, Cacioppo, and Rapson (1993), the process occurs in three stages: mimicry, feedback, and contagion.

The first of these stages, mimicry, occurs any time a person is involved in a social interaction. During an encounter, a person constantly and often unknowingly imitates the postures, facial expressions, movements, and even vocal inflections of those with whom the person is communicating; for example, if one of the people involved in the interaction raises his or her eyebrows or leans inward or speaks with a higher tone of voice, the other person will likely perform the exact same behaviors in response, often instantaneously. In addition to the unconscious control suggested by the sheer rapidity of this intricate process, empirical evidence supports the idea that these behaviors are entirely unconscious; infants are able to mirror the facial expressions of adults very soon after birth, even if they are unable to associate particular emotions with those expressions. Furthermore, when a person attempts to consciously mirror another's behavior, the attempt comes across as unnatural or awkward (Hatfield, Cacioppo, & Rapson, 1993, p. 97).

All the while mimicry is happening, the brain is monitoring the body, face, and voice for changes—thus the second stage of emotional contagion, feedback. While the process of feedback is in itself unremarkable, the brain's interpretations of this feedback and the implications of these interpretations on a person's emotional state are a source of interest.

Evidence suggests that simply changing vocal tones or making facial expressions typical of an emotion can lead a person to feel that emotion, even if only on a minute level. It is in this way that this explanation for emotional contagion derives from the premises established by the James-Lange theory—for example, “I am smiling, which means I am happy” or “I am leaning in, which means I am in love.” These emotions are not only felt consciously, but they also generate unconscious responses; behaving in ways associated with certain emotions will yield autonomic processes usually seen in correspondence with these emotions, even if a person is neither recalling memories nor having thoughts to which these autonomic emotional responses would be appropriate (Hatfield, Cacioppo, & Rapson, 1993, p. 98).

The final stage, contagion, occurs when the facial expressions mirrored during an interaction and the brain’s interpretations of these expressions lead to the genuine feeling of the other person’s emotions on both a conscious and an unconscious level, such that the emotion is recognized as being felt and is also producing the appropriate autonomic responses. Once these criteria are met, it can be said that the emotion was effectively “caught” from the other person and has “infected” the catcher’s being, as would an illness—thus the term contagion (Hatfield, Cacioppo, & Rapson, 1993, p. 99).

While the James-Lange theory seems to best explain the mechanics of emotional contagion, the Schachter two-factor theory may offer a method through which emotional contagion can be intentionally manipulated. If it is the case that arousal only performs half of the work necessary to have an emotional experience and that the conscious appraisal of the environmental factors concurrent with the arousal is a necessary component to the conscious acknowledgment of an emotion, then simple behavioral mimicry, though functioning as the

unconscious road along which emotional contagion travels, would not be enough to produce a truly lasting emotional effect.

Mimicry

So why does mimicry occur at all? According to Chartrand and Bargh (1999), people unconsciously mirror the behaviors of those with whom they interact so as to facilitate their own socialization and to produce a more positive outcome to the interaction in terms of likability. This appears to have an evolutionary purpose, as those who are better able to gain positive feelings from others will be less likely to be killed by others, more likely to gain the aid of others, more likely to find a mate, and therefore more likely to reproduce. This behavioral mirroring process, called the chameleon effect, occurs when either the facial expressions or bodily posture of a person is unconsciously mimicked during an encounter.

The proposed mechanism by which Chartrand and Bargh's chameleon effect occurs is referred to as the perception-behavior link, which essentially states that the perception of behaviors in another person will increase the occurrence of the behaviors on the part of the perceiver (Chartrand & Bargh, 1999, p. 893). This phenomenon is not just limited to emotional expressions; people have also been observed to unconsciously mimic drug effects perceived in the behaviors of others (Nowlis & Nowlis, 1956, p. 350). The potential influence of this link on people's engaging in the chameleon effect could shed light on the mechanics of emotional contagion—as well as the use of emotional contagion in the fostering of conscious empathy through the overriding of unconscious processes—should this link prove to be unconscious in nature.

The experimenters tested for the chameleon effect by setting up one-on-one encounters between confederates and participants in which the confederates were instructed to perform

certain behaviors—such as face-rubbing and foot-shaking—and demonstrate certain expressions—such as smiling—and the participants were monitored for reciprocity of these behaviors and expressions. The results demonstrated that those participants assigned to face-rubbing confederates rubbed their faces more frequently, and those assigned to foot-shaking confederates shook their feet more frequently. Additionally, those assigned to confederates who smiled more also smiled more. This indicates that people often adopt the postures, behaviors, and expressions of those with whom they interact (Chartrand & Bargh, 1999, pp. 899-900).

The neurological basis of unconscious mirroring and its effects on empathy have been linked to processes undergone by mirror neurons located in a person's parietal and frontal lobes. It was already known that mirror neurons, which fire when a person perceives another performing an action, assist in the acquisition of motor skills and facial expressions; therefore, it would follow that these neurons help in such things as perspective taking and the understanding of socially accepted ways of emotional expression, two processes that require at least some degree of effortful engagement in conscious empathy (Weiten, 2013, p. 103). Additionally, the fact that these neurons are found in areas of the motor cortex and the frontal lobe, which is responsible higher cognitive processes such as hypothetical thought and moral reasoning, would suggest that if there is a connection between imitation and empathy, this is likely where it would be found.

This potential connection between the functions of mirror neurons and the human ability to empathize was analyzed in a study conducted by Kaplan and Iacoboni (2006). In this study, the experimenters placed participants into three conditions where they underwent brain scans while watching brief videos in which a person grabbed a cup from a table. In one condition, the cup was part of a nicely prepared breakfast scene, in the second, the cup was part of a recently

eaten breakfast scene, and in the third, no environmental context was provided. At one point in the video, a hand removed the cup from the scene using either precision (by the handle) or prehension (by the body of the cup) grip. The first of these grips is typically used when drinking, and the second one is typically used when cleaning; therefore, precision grip was more congruent with the prepared breakfast scene, and prehension was more congruent with the eaten breakfast scene. After viewing the videos, the participants were asked to rate their cognitive and emotional empathetic engagement on four scales: perspective taking, fantasy scale, empathic concern, and personal distress (Kaplan & Iacoboni, 2006, pp. 176-178).

These researchers found that when participants viewed a gripping behavior that was incongruent with the expected situation, they reported higher empathic concern. Additionally, the brain scans showed a higher number of signal changes in the areas of the brain containing mirror neurons in the scenes featuring a context than in those that had no context (Kaplan & Iacoboni, 2006, pp. 179-182). This indicates that it was easier for people to engage in empathy whenever they understood the intention of an action and that whenever conscious empathy was occurring, the mirror neurons were more active. Therefore, it would be reasonable to say that the mirror neurons play an active and important role in a person's ability to empathize and may in fact be neurologically responsible for this ability. If it is the case that mirror neurons are what allow us to engage in perspective taking, then it is likely also true that they are implicated in behavioral mimicry as described by Chartrand and Bargh, and therefore, they likely also play a major role in the process of emotional contagion.

Another potential neurological mechanism that may be indicative of emotional contagion was investigated by Fawcett, Wesevich, and Gredebäck (2016). In this study, the sizes of infants' pupils were monitored with eye-tracking software while the infants were shown pairs of

black circles and squares with varying center sizes. This was done such that the centers of the circles and squares resembled eyes in that the centers appeared to be pupils and the space between them and the shapes' outlines appeared to be sclera. The results showed that the infants' pupils dilated to match the sizes of the centers of both circles and squares (Fawcett, Wesevich, & Gredebäck, 2016, pp. 999-1001).

The researchers provide three explanations for these findings, all of which detail processes that are independent of conscious cognition: first, that the apparent pupil sizes displayed in the images resulted in the infants perceiving different degrees of arousal in the images, which led them to change their levels of arousal accordingly; second, that viewing what appeared to be larger pupils led the infants to like the images more—as humans tend to find larger pupils attractive—and this liking resulted in the enlargement of their own pupils; and third, that infants associated larger pupils with arousal cues, thus priming arousal. If the second of these explanations were followed, it would be the case that empathy only arises from feelings of attraction or liking rather than from biofeedback and attribution, as the other two explanations would suggest. In any case, the results of this study display what is referred to as pupillary contagion, which is an autonomic form of mimicry (Fawcett, Wesevich, & Gredebäck, 2016, p. 1001). The researchers proceed to suggest that these findings shed light on biological processes that allow for infants to acknowledge and adopt other people's emotional states, which is a necessity for the development of empathy; if this is true, then it is likely the case that the biological processes responsible for emotional contagion serve as facilitators to effortful empathy. What the researchers fail to mention, however, is which base biological structures and pathways allow for this to occur below the threshold of consciousness (Fawcett, Wesevich, & Gredebäck, 2016, p. 1001).

In an attempt to address this lack of information and to better understand the neurological processes that underlie pupil dilation, I analyzed Haines's (1991) anatomical maps of the brain. While the majority of conscious visual information is routed through the lateral geniculate nucleus (LGN) in the midbrain to the occipital lobe for conscious processing, some of that information instead travels through the superior colliculus to the pretectal nucleus, where it is then routed to either the Edinger-Westphal nucleus or the intermediolateral horn by way of the reticular formation. The former structure is responsible for monitoring certain parasympathetic responses to visual stimuli, specifically pupillary constriction, while the latter is implicated in the hormonal regulation of sympathetic processes, such as pupillary dilation (Haines, 1991, pp. 204-205; Kandel, Schwartz, Jessell, Siegelbaum, & Hudspeth, 2013). I was unable to discern whether these structures connected to regions that are known to contain mirror neurons.

This raises the question of whether bodily responses to emotion are entirely unconscious, a subject that was partially explored by Ekman and Davidson (1993). Using Duchenne de Boulogne's description of the musculature involved in a joyful smile as their operational definition for the emotion of happiness and their behavioral independent variable, the experimenters tested whether the act of modifying a facial expression to fit those expressions expected to complement an emotion would result in physiological changes associated with that emotion even if the emotion was not genuinely felt. Using an EEG, they measured their participants' brain activity while the participants contorted their faces into smiles of various intensities and associated with various emotions. The results demonstrated that different types of smiles are associated with different emotions—whereas Duchenne de Boulogne's definition of a smile is indeed indicative of joy, there are other alterations of smiles to indicate irritation or disgust—and that these different types of smiles activated the brain regions associated with these

different emotions despite the fact that these emotions were not being consciously felt by the participants (Ekman & Davidson, 1993, pp. 343-344).

The fact that participants were able to activate through facial manipulation the same parts of their brains that would ordinarily be activated by feeling or remembering having felt certain emotions indicates that people may have a level of conscious control in what was assumed to be the autonomic expression of emotions. If the line between the unconscious and conscious is so tenuous when dealing with emotions, it is not unreasonable to say that perhaps the conscious experience of empathy could be easily influenced through the manipulation of the unconscious experience of emotional contagion.

Emotional Contagion as a Means of Manipulation

Before the potential of emotional contagion as an influencer of empathy can be explored, one must first look at ways in which it is already being used to manipulate people, both incidentally and intentionally. It would seem that, in some cases, the manipulation of emotional contagion is as unconscious as the process itself; media outlets, artists, pundits, preachers, and professors all utilize emotional contagion in ways that give them degrees of authority so as to pluck at the heartstrings of their supporters and inspire action whether they are aware of it or not. While there are many anecdotal instances of emotional contagion's ability to sway a society, the true strength and duration of its effects are still largely in the realm of speculation.

One such area in which emotional contagion has been implicated is education. Patrick, Hisley, and Kempler (2000) designed two studies in which they analyzed the effects of a teacher's enthusiasm on students' levels of intrinsic motivation. The first study was conducted by way of a simple questionnaire on which participants were asked to rate on Likert scales their perceptions of their professors' enthusiasm, of their professors' other classroom behaviors, of

their own intrinsic motivation, and of their own psychological vitality. In the second study, participants who thought they had signed up for a simple study on biofeedback were assigned to conditions in which the experimenter with whom they interacted was either high or low in enthusiasm. After the experimenters explained the process and applications of biofeedback and the participants performed basic motor movements they believed were necessary for the study, they were left alone with articles on the topic of biofeedback. Whether the participants chose to read these articles and continue learning about biofeedback indicated their levels of intrinsic motivation (Patrick, Hisley, & Kempler, 2000, pp. 220, 227-229).

An analysis of the questionnaires distributed during the first study indicated that students who perceived their professors as more enthusiastic also rated themselves highly in intrinsic motivation and psychological vitality. More importantly, it was shown that the perceived enthusiasm of their professors was the strongest predictor of both the intrinsic motivation and the psychological vitality of the respondents (Patrick, Hisley, & Kempler, 2000, p. 225). Of course, these results only showed that a relationship exists between the variables; it could have been the case that the enthusiasm of professors was enhanced by the feeling that the students cared about the course material. The results of the second study showed that the relationship between the variables is indeed causal in nature. The participants who were assigned the highly enthusiastic experimenter were more likely to read the supplemental literature on biofeedback, indicating that when people see that an educator clearly cares a great deal about a subject, then the people will themselves display more interest in that subject (Patrick, Hisley, & Kempler, 2000, p. 232). The experimenters suggest that emotional contagion may explain this causal relationship. If enthusiasm is demonstrated in terms of evident arousal and imitable behaviors, then that arousal and those behaviors could easily be unconsciously mimicked, thus resulting in the genuine

experience of enthusiasm, which the consciousness interprets as intrinsic motivation (Patrick, Hisley, & Kempler, 2000, p. 234).

If emotional contagion is responsible for intrinsic motivation in cases such as this, then it may well be the case that its effects are truly lasting. After all, many a case study shows that people often change their majors, fall in love with a subject, or even find their callings because of “that one teacher” or “that one class.”

The ability of emotional contagion to affect a person’s entire way of thinking is not just limited to educational settings. Oftentimes, it can be seen in expressions of culture or in the most innocuous of social nuances. Artists, for instance, use it to play with their patrons, and advertisers use it to prod people’s pockets.

Art and Humor

Few things quite capture, convey, and influence the range of human emotions like art. Musical scores can bring people to tears, portraits can cost viewers hours of engagement and reflection, and literature can leave a heart broken for days. In some cases, these emotional modifications exceed a smaller scale; doleful images of people suffering in third-world countries can lead a person to donate money for a lifetime, and charged images of patriotic pride can rally hundreds into military service. In addition to propaganda, satirical novels or mournful poetry can lead a person to address larger issues in society. In present day Colombia, for example, university students who have been personally affected by the civil war have been using artistic expression and others’ emotional reactions to those expressions to share their plight with the world and to petition the government for peace.

Auditory art may rely on emotional contagion more than other forms. Research gathered by Juslin and Västfjäll (2008) suggests that emotional contagion is one of the primary methods

through which musical performance evokes emotions in the listener, and if music's value lies in the ways it makes people feel, then emotional contagion could be invaluable to the function of music as a whole. These researchers assert that both the tonal changes in the music and the body language of the performer influence the emotions of the listener. In the first case, it could be that specific autonomic auditory structures in the brain process instrumental music in much the same way as they process certain qualities of the human voice, such as pitch and timbre, even if the conscious brain is capable of discerning between music and speech. Certain patterns and speeds of musical sounds, then, may be associated with certain patterns and speeds of speech; for example, quick, loud, and brash music may sound angry to a listener, just as high, slow, quivering music may sound sad (Juslin & Västfjäll, 2008, p. 566). Because the listener perceives emotions, the biological processes mentioned earlier begin to occur, resulting in the unconscious mimicry and genuine feeling of these emotions.

As for the role of the performer's body language in musical emotional contagion, the researchers point to mirror neurons. Impassioned musicians will channel their own emotions into their performances, and these emotions will be displayed on their faces, in the hunch of their shoulders, in the ways they handle their instruments, and in the ways the music moves their bodies. All of these expressions and movements may be unconsciously mimicked by members of the audience, resulting again in the genuine feeling of these emotions (Juslin & Västfjäll, 2008, pp. 565-566).

The researchers do mention that emotional contagion is likely not the only factor influencing the emotions of listeners of music. Instead, it works alongside a multitude of other factors, such as visual imagery that accompanies the music, individual memories that listeners have associated with the music, and musical expectancy, to create a fuller emotional experience

(Juslin & Västfjäll, 2008, pp. 571-573). After all, emotional contagion is an entirely autonomic process, and the appreciation of music requires varying levels of conscious control. Nonetheless, emotional contagion undoubtedly enhances the experience of music and may even serve as a priming agent for certain memory associations or conscious emotional appraisals that occur when listening to music.

Much in the same way that music uses emotional contagion to engage with listeners and provide a gratifying emotional immersion, literature utilizes emotional contagion to influence readers. When a person is reading, he or she is often able to visualize actions, engage with the characters, and respond with emotion to dramatic situations in ways that seem effortless. When characters feel sad, the reader often does, too, and when a protagonist dislikes another character, the reader often shares in those judgments. Coplan (2004) includes emotional contagion as one of three potential processes that explain these aspects of the reader's relationship with literature, the other two being conscious empathy and sympathy.

Coplan iterates that the difference between emotional contagion and empathy depends on whether the reader is actively taking the perspective of a character and whether the reader is able to differentiate between his or her own emotions and those of the character. She claims that the majority of reader engagement with literature cannot be attributed to emotional contagion, as reading is a cognitive and imaginative process, but she does concede that emotional contagion may be influenced by literature to facilitate true empathy (Coplan, 2004, p. 145).

If the processes discussed earlier are considered once again, though, it is easy to apply them to literary technique. Firstly, the point-of-view could affect the way a reader engages in effortful imagination. Perspective taking would be easier in second-person than in third-person, as the reader would become the object of the narrator's "you" pronouns and would thus become

engaged in the events of the story. Additionally, first-person point-of-view would facilitate perspective taking even more than second-person, as the reader may unconsciously feel or see themselves engaging in certain actions and thought processes due to the use of the pronoun “I.” In cases such as these, it would not be much of a stretch to say that the reader would likely internalize the emotions of the protagonist or narrator, and the reader would thus genuinely feel those emotions. In this case, the ability to differentiate between the characters’ emotions and the reader’s emotions would be hindered, and so it could be said that emotional contagion is taking place. Another way in which literature may influence emotional contagion is through dialogue tags. Oftentimes, characters engaged in discussions will move about, gesticulate, and make facial expressions, all of which are relayed back to the reader. These activities would likely activate mirror neurons, and the reader may unconsciously imitate certain postures or facial expressions exhibited by the characters. Based on Hatfield’s model of mimicry-feedback-contagion, the reader would genuinely feel the emotions felt by the characters.

Even if the entire affective experiences of music and literature rely only a small amount on emotional contagion, there are specific artistic genres that require it to serve their optimal purpose. Humor, for example, is very much emotionally charged and derives its entire function from whether the emotions of its audience are being effectively manipulated. In this case, emotional contagion would be vastly useful, as it would allow the artist to change the audience’s emotions by way of autonomic arousal rather than by conscious cognition.

Gervais and Wilson (2005) analyzed the importance of emotional contagion to the success of humor. These researchers treat laughter as a medium through which emotional contagion occurs, as laughter is a distinct and recognizable form of emotional expression, and laughter, like yawning, has always been considered a highly contagious human behavior.

Particularly, laughter has been used as an operational definition of displays of positive affect, and because it involves very dramatic physical expression, such as wide smiles, full-body heaves, and arched eyebrows, it is very easy for people to mimic. Therefore, laughter and all of its mirthful emotional attachments travel very quickly from person to person (Gervais & Wilson, 2005, pp. 401-403). To further support this contagious nature, the researchers highlight biological studies that shed light on the autonomic neural structures involved in laughter, primarily the supplementary motor area, which is located in the prefrontal cortex. The prefrontal cortex, as mentioned earlier, is home to a large number of mirror neurons, and so if the laughter circuit is located in this region, then it would make sense that laughter is so easily mimicked and that the joy associated with it is so easily caught (Gervais & Wilson, 2005, pp. 405-406).

In addition to identifying laughter as a mode of emotional contagion, the researchers also discuss certain social and psychological reasons that emotional contagion—particularly this form of it—may be evolutionarily beneficial. In a social sense, it allows people to share an acknowledgment of some sort of incongruity, which can diffuse tension in a situation or between groups. Additionally, when members of a group laugh together, they feel more positive, which helps to build amicable bonds (Gervais & Wilson, 2005, pp. 412-413). This exemplifies the ability of emotional contagion to affect social behaviors and settings, as well as the success it has in doing so. Perhaps this is the reason the television industry uses laugh tracks.

If conscious manipulation of emotional contagion were applied to humor, it would be evident that humor both undermines the physiological processes involved in emotions and benefits from them; if a comedian can get a crowd laughing, the crowd will likely internalize feelings of joy, thus making the crowd more likely to continue laughing and less critical of the comedian. Therefore, it is the goal of a humorist to utilize emotional contagion to bend his or

her career in more favorable directions. In some cases, humorists may even use laughter to soften the blow of a social criticism, thus raising awareness and enabling social change.

When an artist creates something he or she hopes to share with the world, that artist will consciously take measures to affect emotion lest the entire artistic endeavor fail. By this logic, it would be fair to say that, if certain steps are taken that will facilitate the spread of emotion from the art piece to the audience or from audience member to audience member, the artist is willfully manipulating emotional contagion to evoke an emotional result. If the themes an artist is attempting to convey are tied closely enough with the emotional aspect of the art, then emotional contagion may even be used to impact a life in a more lasting way than transient states of emotion. Therefore, it can be deduced that it is possible to consciously undermine the unconscious minds of others to affect the ways in which they think and behave.

Sales and Industry

While art oftentimes employs emotional contagion to inspire action or offer catharsis, there is a more nefarious device on the flipside. Industries and advertising agencies have added the process to their arsenal of consumer control and currently use it to alter purchasing decisions and workplace efficiency just below the threshold of the collective consciousness.

Howard & Gengler (2001) studied emotional contagion's effects on consumer attitudes toward products. In the first experiment in this study, participants were placed into dyads and allowed to evaluate a Russian *palekh* box after having been designated to be either a sender or a receiver and participating in two different raffles. The senders were led to believe that they had either won a *palekh* box or had won nothing from their raffle, and the receivers were led to believe that they had either won two six-packs of Coca-Cola or had won nothing from theirs. The participants were then brought together and allowed to evaluate the box, and in the

conditions where the receivers won nothing, the receiver was given one six-pack of Coca-Cola and told that it was from the sender, who won the six-packs but wanted to share. In short, the experiment was set up such that in half of the trials, the senders believe they have won the box, leading to higher levels of happiness in the senders, and in the other half of the trials, the receivers believe the senders won Coca-Cola and chose to share it with them, leading to higher regard for the senders on the part of the receivers. This means that in 25% of the trials, the senders are happy and well-liked by the receivers, in another 25% of the trials, the senders are neutral and well-liked by the receivers, in another 25% of the trials, the senders are neutral and not well-liked by the receivers, and in the final 25% of the trials, the senders are happy but not well-liked by the receivers. The participants' interactions with each other and their evaluations of the box were recorded and coded (Howard & Gengler, 2001, p. 192).

The results of the first experiment showed that senders evaluated the products more highly when they were happy and well-liked by the receivers, and the receivers evaluated the products more highly when they liked senders who were also happy. The researchers attributed this favorability to emotional contagion, as it was found that when senders were well-liked, the receivers mimicked their behaviors more, leading to higher levels of happiness in the receivers, which in turn led to more positive feelings about the product (Howard & Gengler, 2001, p. 195).

The second part of this study was directed toward determining whether emotional contagion can still affect product evaluations when the people evaluating the product are not interacting face-to-face. This experiment replicated the design of the first one, with two modifications: the senders were all led to believe that they had won the box, and in half of the trials, the senders and the receivers were instructed not to interact (Howard & Gengler, 2001, p. 196). The results of this study showed that in the conditions in which the senders and receivers

did not interact, the receivers did not rate the product more favorably regardless of how well they liked the senders or how happy the senders were. This is to be expected, as the mechanics of emotional contagion require that people interact and engage in behavioral mimicry in order for it to occur at all (Howard & Gengler, 2001, p. 198). These findings could be applied to real-world marketing strategies; for example, if a person sees a commercial in which a celebrity he or she feels favorable about is happily promoting a product, that person will be more likely to have favorable feelings toward that product.

In addition to influencing purchasing decisions, emotional contagion can be manipulated to affect any number of workplace scenarios. Research gathered by Vijayalakshmi and Bhattacharyya (2012) offers a contemplation of the settings and interpersonal and contextual factors that interact with and enhance the process of emotional contagion in the workplace, such as racial similarity, levels of interpersonal attraction, intentionality of emotional expression, group size, and group cohesion, but they stipulate that detailed research into this area is scarce (pp. 366-371). Regardless, because people in the workplace are constantly interacting and because the functionality of a workplace depends on the functionality of the relationships constructed between coworkers, the researchers stress the importance of raising awareness of emotional contagion in professional settings.

A more detailed study of emotional contagion's effects on workplace behaviors was conducted by Barsade (2002). In this study, a confederate was placed in a mock managerial exercise with four participants and instructed to behave in accordance with one of four moods: cheerful enthusiasm, hostile irritability, serene warmth, and depressed sluggishness. These moods were dependent on two factors: energy and pleasantness. Throughout the mock exercise,

the participants' behaviors were recorded, and at the end of the study, the participants were asked to report their moods (Barsade, 2002, pp. 653-656).

The results of this study showed that regardless of the confederate's pleasantness or energy levels, the participants displayed behaviors and reported feeling emotions congruent with the emotions associated with the behaviors that the confederate displayed. These results support the idea that emotional contagion is a constant process, and that the nature of the emotions transmitted does not affect the degree to which contagion occurs (Barsade, 2002, pp. 667-668). Additionally, an analysis of group interactions after the confederate had given his presentation demonstrated that the effects of emotional contagion linger after the interaction with the "patient zero" has ended and may continue to influence the dynamic of a group (Barsade, 2002, p. 668). This accentuates the strength of emotional contagion and its potential to alter the entire atmosphere of a workplace. Therefore, it would be in business owners' best interests to foster environments in which emotional contagion can be utilized to spread feelings of satisfaction and motivation, which could increase workplace initiative and productivity and would likely encourage open and understanding veins of communication.

To summarize, it appears to be the case that emotional contagion has the potential to be utilized to influence the desires of consumers or to create more streamlined and harmonious workplaces. If visual media can serve as a vessel through which advertisements and the emotions attached to them can be delivered to the masses, it may be the case that this media can be used to hijack an entire society's limbic systems and foster an intrinsic desire to behave prosocially. If emotional contagion can be used to enhance the wellbeing of a workplace, then those same strategies could possibly be applied to a larger social sphere. This, of course, leads to questions of ethics, but first one must consider if these strategies are already in place.

Emotional Contagion as a Vessel of Social Change

Humans have built society on interaction. Every law, construct, and cultural value has become familiar and accepted as such by way of encounters and information transmission. It should be no wonder, then, that the very mechanics of society may owe part of their origins to emotional contagion and may be the concrete that conceals certain heavily-trafficked networks of emotional contagion about which humans as a whole are largely unaware. If this is the case—if the way society has been constructed has allowed emotional contagion to join the wiring of its most intricate systems—then it would be reasonable to say that all it takes to influence the thoughts and behaviors of a significant portion of society is a careful hacking of emotional contagion and a Pavlovian pairing of cognitions with these unconscious emotions.

If this speculation sounds devious or questionable, it would be important to take a moment to acknowledge that emotional contagion is being used every day by a plethora of agents and entities to sway the public and perpetuate patterns. This is a fundamental part of the unconscious aspect of socialization. Take, for instance, political polarization: It seems to be the case that when a group of like-minded individuals engage in a conversation without the presence of a devil's advocate, the talk gets more and more impassioned, more and more radical. When a preacher animatedly spews fire and brimstone, the congregation may follow the example, shouting louder and louder and even engaging in glossolalia. When a group of protesters engage with an opposing force, they may become more and more reactive, and mob mentality may allow their emotions to spread like wildfire and hijack their logic. All of these examples owe at least a part of their apparatus to emotional contagion; if one considers all that has been previously discussed, it becomes apparent that the arousal and within-group mimicry that is bound to occur in these situations are likely the direct causes of whatever emotions those engaged in these

situations feel. In these examples, emotional contagion brings people together and causes them to feel unified and to take action toward a common goal, even if they cannot consciously report what that goal is or the reasons they feel it is important.

If emotional contagion can drive people to form groups, can enhance a person's assuredness in his or her beliefs, and can inspire someone enough to act, then it is only natural that it be used to guide humanity toward a beneficent goal, and that can only be done once a society familiarizes itself with the ways in which it is already at the mercy of emotional contagion so that it may clear those roads of obsolete or dangerous configurations and implement the constructions of new ones.

Perpetuating the System

Currently, the social conduit of emotional contagion is laden with repetitions that maintain the current order. A person may feel content with his or her life because those around that person feel content, and he or she may never think to question whether this contentment originates from his or her own mind or from the baseline established by the environment. Conversely, a person may only feel outrage because those around him or her feel outrage, even if in actuality that person has no understanding of the causes of this outrage. In many cases, a person may accept the belief system of his or her group of friends without realizing that the adoption of these beliefs is happening.

The strength of emotional contagion's influence on the reinforcement and spread of beliefs was analyzed by van der Valk (2003). This publication, which focuses primarily on racism, the ways in which it threatens planetary progress, and the ways in which it is maintained, directs the focus away from social learning's role in the development of social cognitions and suggests that unconscious affect may have more of a role in these processes than many social

psychologists are willing to acknowledge. The author claims that many prejudices are based more on irrational emotions that may exist below the threshold of awareness rather than on conscious cognitions, pointing to the fact that primal, subcortical anxiety and aggression are more characteristic of prejudicial behaviors than logical, justifiable thought processes (van der Valk, 2003, p. 60).

The author proceeds to point out historical instances of social cognitions being influenced by emotional contagion, specifically the mass hysteria following the Black Death and the modern revulsion directed toward the Holocaust (van der Valk, 2003, p. 60). Indeed, if one begins having a conversation about the Holocaust, he or she will typically react with an almost automatic expression of disgust and may report feelings of repugnance. If the conversation lasts long enough, the entire interaction between the people involved may take on a somber tone, and after it has concluded, all parties may come away from it feeling glum. It would seem, then, that the negative cognitions so closely tied to such an event are directly rooted in emotions, and if these emotions are susceptible to contagion, then that would explain why these negative perceptions of such events seem so ingrained in shared social identities and why reactions to stimuli associated with these events are oftentimes so visceral.

Van der Valk briefly explores two potential routes through which this emotional contagion operates: interactions with those to whom people feel affinity and the mass media. The first of these can be evaluated based on the premises on which certain aspects of the chameleon effect are constructed, particularly the premises stating that people are more likely to mimic those to whom they feel attracted. According to this idea, people will have an easier time mimicking the behaviors and emotions of their parents, friends, or lovers, and so emotional contagion will occur more readily with these cohorts (van der Valk, 2003, p. 60). When a person

being mimicked expresses disgust or sadness while undergoing a certain cognition, then the imitator will begin to unconsciously associate his or her own feeling of that emotion with the cognitive stimulus that brought that emotion to the interaction in the first place. This association may then cause the imitator to develop similar feelings toward that stimulus as those he or she caught from the person he or she imitated. As to the mass-media hypothesis, it would make sense that certain cognitions are easier to catch in much the same way as listed above, especially when these cognitions are repeatedly introduced by media outlets and reporters who do very little to disguise their own visible emotional reactions to these cognitions (van der Valk, 2003, p. 60).

Taking into account these ideas regarding the large-scale influence of emotional contagion, it may become evident as to why such attitudes as racism are so widespread; if a person was raised in an environment where he or she caught negative affect from interactions in which racial minorities were discussed, then he or she will likely always associate negative affect with racial minorities. Here, affect has informed cognition (van der Valk, 2003, p. 60). The unconscious process of emotional contagion has in this case facilitated social learning and allowed for a dangerous ideology to easily infiltrate a person's mind.

Now that certain social processes of emotional contagion and the ways in which they influence negative aspects of society have been evaluated, it is important to determine ways to use these processes to reverse the prevalence of these negative aspects and to replace them with components that may help a society reach its full potential.

Changing the System

Before the potential of emotional contagion to be undermined and utilized as a force for social change can be discussed, a moment should be taken to summarize and review the premises that have been previously discussed, as they will prove important to the following section. First,

emotional contagion is an unconscious form of empathy that acts as a primer to conscious empathy. Second, emotional contagion has the potential to be manipulated by the environment to create conducive situations and interactions. Third, the current setup of society offers many pathways of emotional contagion, and these pathways are often utilized to spread ideas and to normalize certain notions. Now that these ideas have been readdressed, it is time to explore ways in which emotional contagion can be used to construct a more empathetic world for the benefit of all humans.

According to Summers-Effler (2002), who based her theory of social change on Collins's interaction ritual theory, emotional contagion may very well be the first step to action and lasting cognitive change. Collins's theory states that people are motivated to increase their emotional energy by either (a) engaging in a solidarity ritual characterized by face-to-face interaction and an awareness that the focus of all parties involved is on the energy of the group or (b) engaging in a hierarchical interaction in which a person uses his or her power over another to drain that person's emotional energy so as to replenish his or her own. This motivation is rooted in the desire for satisfaction and self-actualization. In either case, the transfer of emotions between those involved in the interactions relies entirely on emotional contagion (Summers-Effler, 2002, p. 42). By this logic, if an individual engaged in a ritual interaction turns the focus from the group to the self, then the flow of emotional contagion ceases, and that person has established some sort of status quo. Therefore, those who maintain the status quo are in control of the flow of emotional contagion, and emotional energy becomes a sort of currency used to reward behaviors that the maintainers of the status quo feel are acceptable, resulting in subjugation and the perpetuation of dehumanization (Summers-Effler, 2002, p. 43-44).

Summers-Effler continues by saying that while the majority of interactions and the flow of emotional energy is mediated by unconscious emotional contagion, the system that regulates these processes is maintained by the installation of social norms that dictate which emotions are to be felt in which situations. When a person consciously feels an emotion that is incongruent with these norms, that emotion is labeled deviant and is cause for subjugation. To avoid this type of subjugation, people manage their deviant emotions internally, which only further disables the solidarity rituals that allow for the flow of emotional contagion to occur (Summers-Effler, 2002, pp. 46-48).

The solution to this oppressive system, then, is to externalize and legitimize deviant emotions by engaging in solidarity rituals, thus forging a new group identity and restoring the flow of emotional contagion. Once a group has formed a new collective identity, it is no longer defined by its oppressors, and so it identifies the learned repression of deviant emotions as an illustration of injustice. The acknowledgment of injustice results in the formation of a critical consciousness, which in turn enables resistance measures to be taken (Summers-Effler, 2002, pp. 49-54). Once resistance gains enough followers, it is only a matter of time before it overturns the system that once held it down.

While this theory addresses the importance of emotional contagion to the balance of emotional energy, the formulation of a status quo, and the creation of an oppressed group's collective identity, it falls just short of describing the systems through which these processes can take place and the potential of emotional contagion to alter the hearts of the oppressors. These gaps are fairly easy to fill, fortunately; for example, the mass media's routes of emotional contagion can be used to give the oppressed a voice, thus making their plights known and encouraging support for the cause. After all, it is easy enough to feel sympathy for refugees by

reading their stories, but it is not until a person sees the anguish on their faces and engages in the mimicry processes that allow the person to genuinely feel that anguish does the true nature of the emotion become known. Once that person is able to unconsciously recognize that anguish, the person is able to consciously engage in empathy, which can lead to realizations that encourage action and allow for true human connection.

These applications only solve pre-existing problems, of course; they do nothing to prevent the problems from arising in the first place. In order to do that, the values of a society must undergo a fundamental change, and these new values can potentially be spread and normalized by way of emotional contagion. If one adheres to Summers-Effler's theory, then the best way to consciously override the flow of emotional contagion and impregnate this flow with mutually beneficial cognitions is to begin conditioning the younger generations to associate these new humanistic values with good emotions and the older oppressive ones with bad emotions. In this way, the emotions become much like a virus that has been genetically modified to carry a cure. They will be released into the bloodstream, into the solidarity rituals and the open interactions that forge bonds between humans, where they will infect society with altruistic ideas that may eventually make conscious empathy an easier process than apathy.

This leaves just one major question unanswered: is this process of conditioning via emotional contagion even ethical?

The Ethics of Manipulating Emotional Contagion

Just as the environment of a workplace was compared earlier to the function of a larger society, the function of a larger society will now be compared to the workplace environment such that ethical dilemmas regarding manipulation of emotional contagion in the workplace can be used to address larger-scale quandaries that might plague larger society.

First, is it ethical at all to consciously manipulate another person's emotions? Does that not undermine that person's agency and reduce that person to a mean rather than an end?

Second, is it permissible to require people to engage in the establishment and sharing of new social values if those people do not share the values? These issues are addressed in relation to business practices by Fulmer and Barry (2009).

In response to the first dilemma, the authors remind that the conscious manipulation of emotional contagion already occurs in business settings when bosses set up environments in ways that alter the emotions of their employees, and they analyze this practice in a utilitarian sense. The verdict: if emotional manipulation benefits the many by increasing productivity and causes no lasting moral harm, there is no issue. This only addresses the first part of the dilemma, of course, and emotional manipulation assuredly undermines a person's autonomy. However, people can avoid becoming simple means to an end if emotional contagion is used to infect them with a genuine feeling that their efforts are beneficial to them as well, which will foster an intrinsic motivation to continue their engagement in emotional manipulation (Fulmer & Barry, 2009, p. 172).

As to the second dilemma, the authors look to nursing practices and their adherence to utilitarian premises to assuage any moral distress. Nurses often have to lie to patients so as to persuade them to take certain treatment options or downplay the severity of a situation so as to minimize patients' emotional agony. In this way, nurses are sharing ideas they may not apply to their own lives, but they are making a personal sacrifice in order to benefit others (Fulmer & Barry, 2002, pp. 174-175). If the goal is to create a more empathetic society that is beneficial to all persons, then it will be necessary for everyone to make personal sacrifices. This is simply

part of altruism, and once the new set of values has been instilled, these types of personal sacrifices may not even be seen as such any longer.

Conclusion

While emotional contagion is an entirely unconscious process, a conscious understanding of its mechanics can allow a society to manipulate it in such a way as to spread social values and facilitate conscious empathy. If used the right way, this potential could create a world in which conscious empathy is second nature, resulting in kinder interactions and higher levels of compassion, which would in turn minimize division and oppression. The feasibility of this manipulation is still up in the air, as it is difficult to determine who has the authority to manipulate emotion and which values a society has the right to sanction upon its people. Nonetheless, the potential of emotional contagion is undeniable, and its importance to the everyday interactions that hold society together cannot be underplayed. It is my hope that future research will be able to demystify all aspects of emotional contagion and that we may use what we learn to reach humanity's full potential.

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