

## The Effect of Power on Susceptibility to Emotional Contagion

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This study explored two questions: Do people tend to display and experience other people's emotions? If so, what impact does power have on people's susceptibility to emotional contagion? We speculated that the powerless should pay more attention to their superiors (than their superiors pay to them) and should thus be especially likely to "catch" their superiors' emotions as well. College students, given the role of "teacher" (powerful person) or "learner" (powerless person), observed videotapes of another (fictitious) subject relating an emotional experience. They were asked what emotions they felt as they watched their partner describe the happiest and saddest event in his life. In addition, they were videotaped as they watched the tape. As predicted, clear evidence of emotional contagion was obtained in this controlled laboratory setting. However, a direct (rather than inverse) relation between power and emotional contagion was found. Powerful subjects were *more* likely to display their subordinate's feelings than subordinates were to display those of the powerful other. Several possible explanations for these unexpected results were proposed.

### INTRODUCTION

Carlson and Hatfield (in press) define *emotion* as "A genetic and acquired motivational predisposition to respond experientially, physiologically, and behaviorally to certain internal and external variables". Theorists have long argued that emotional "packages" are comprised of many components—among them, conscious awareness, facial expression, autonomic nervous system activity, and gross emotional behaviours—and that different portions of the brain process the various aspects of emotion

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(Lewicki, 1986; MacLean, 1975; Papez, 1937). Early theorists focused on the "sequence" question—which comes first, the cognitive, physiological, or behavioural aspects of emotion? Recent theorists contend that "it depends". Emotional stimuli probably trigger the conscious, physiological, and behavioural aspects of emotion almost simultaneously. Which appears first depends on the person and the situation. In any case, each of the emotional components acts on and is acted upon by the others (Candland, 1977; Berscheid, 1979).

*Emotional contagion* is defined as "the tendency to mimic the verbal, physiological, and/or behavioural aspects of another person's emotional experience/expression, and thus to experience/express the same emotions oneself". This paper will explore two questions: Can one demonstrate the existence of "emotional contagion" in a controlled laboratory setting? What is the impact of power on susceptibility to emotional contagion?

*Hypothesis 1: People tend to "catch" the emotions of others, even in carefully controlled laboratory settings.* A variety of observers have reported that people sometimes show evidence of emotional contagion. For example, people may begin to feel ill at ease when they talk with a nervous person. They may cheer up when they spend time with an acquaintance who is "up" or get depressed when forced to interact with someone who is "down".

Logically, people might "catch" another's emotions in a wide variety of ways: The conscious realisation that another person is happy or sad could make us happy or sad ("How sad people have to suffer!"). The realisation that another is happy or sad may trigger memories of the times we have felt that way; these reveries may spark emotion. Or, the process may be entirely non-conscious. People are known to "automatically" mimic the facial expressions, voices, postures, and behaviours of others (Bavelas, Black, Lemery, & Mullett, 1987). People's conscious experience may be shaped by such facial feedback (Laird, 1984; Tomkins, 1963; Izard, 1971).

Regardless of *why* such contagion might occur, researchers from a range of disciplines have described phenomena which suggest that emotional contagion *does* occur. Child psychologists find that, from the start, both parents and children tend to catch one another's emotions (Frodi et al., 1978; Hoffman, 1987; Meltzoff, 1988; Reissland, 1988; Thompson, 1987). Psychotherapists contend that they can use their own emotional reactions to gauge what their clients are feeling (Jung, 1968; Reik, 1948). Clinical researchers have collected considerable evidence that people tend to "catch" the emotions of manic, depressed, anxious, and angry people (Howes, Hokanson, & Lowenstein, 1985). Dramatic theorists (Moore, 1960) and others have observed phenomena which appear to meet the criteria of emotional contagion.

Unfortunately, such observations are often anecdotal. The first purpose of the present study, then, was to demonstrate the existence of emotional contagion in a carefully controlled laboratory setting.

Of course, some people should be especially susceptible to catching others' emotions. (For example, we might expect people who are tightly linked emotionally to be especially attentive to one another and especially likely to catch one another's feelings.) Similarly, people ought to be more likely to "catch" others' emotions in some situations than in others. (We might expect people who are dependent on others to be unusually attentive to, and especially susceptible to, contagion). Thus, in this experiment, we wanted to begin exploring the factors that determine who will be especially susceptible to contagion and in what situations contagion effects will be especially likely to occur. We propose, as a beginning: *Hypothesis 2: Powerless people are more likely to attend to and to experience/express the emotions of those who have power over them, than vice versa.* Theorists have offered several reasons why there might be an inverse relationship between power and sensitivity to others. First, they argue, powerful people have no particular reason to care about their subordinates' thoughts and feelings; thus, they may pay little attention to them. Subordinates, on the other hand, have every reason to be interested in discovering what makes their superiors "tick". Subordinates must understand those who have power over them if they are to win their favour; thus they have every reason to pay close attention to them. Secondly, superiors may also have little reason to care what impression they make on their subordinates. Superiors can afford to be direct in expressing their thoughts and feelings. Thus, it should be fairly easy for subordinates to "read" and respond to them (Snodgrass, 1985). Subordinates, on the other hand, may pretend to think and feel what they think their superiors want them to think and feel. Thus, their superiors may have a great deal more trouble "reading" them (Hall, 1979; Miller, 1976; Thomas, Franks, & Calonico, 1972; Weitz, 1974). In this experiment, we are proposing that the powerful will be less attentive to, and less susceptible to, emotional contagion than their peers. In all cases, the "partners" will be sending totally accurate information about their feelings.

Researchers have assembled some evidence that power and sensitivity to others' feelings are negatively correlated (Snodgrass, 1985; Hall, 1979). It should be noted, however, that by "sensitivity", these researchers mean "awareness", i.e. the more powerful the person, the less likely he or she is to be accurate in correctly guessing the feelings of a target person. These researchers did not study the tendency of the powerful or powerless to "catch" their partners' emotions.

## METHOD

### Subjects

Forty University of Hawaii students (20 females and 20 males) participated in the experiment.

### Procedure

When subjects arrived, they were ushered into a small experimental cubicle and seated at a table. On the table was a list of nonsense words (such as BXATT and FUUVA), a sinister-looking facsimile of an electric shock device, and a pair of electrodes. A television monitor sat on the table in front of subjects and a video-camera stood nearby on a tripod.

*Power Manipulation.* The assistant's first step was to provide an informal introduction to the experiment. She claimed that two participants (a teacher and a learner) would be working together in a learning session. The two would interact by means of a monitor/camera system. She said: "The other participant has not arrived yet. Since you have arrived first, I will let you flip a coin to decide who will be the teacher and who will be the learner in the learning session". The coin was flipped and subjects were thereby randomly assigned to serve either as the powerful teacher or the powerless learner. Finally, the assistant explained that her supervisor, who was in the control room, would give them detailed "formal instructions". She then stepped outside and began making a series of noises to suggest that the "other participant" had arrived and that she was leading him to a nearby cubicle to give him the same set of "informal instructions".

After both participants were presumably in their places, the "experimenter" said that he would soon give them an overview of the experimental procedure. (Subjects thought his voice was being transmitted live. In fact, all his instructions were pre-recorded.) The subjects' TV monitor was turned on and subjects observed a male student, sitting in a cubicle identical to their own, nodding his head slightly in greeting. Ostensibly, this student was the other participant, *live* in an adjacent cubicle. In fact, this scene was the playback of a pre-recorded video tape. On the tape the picture was at first in and out of focus, and interference ("snow") appeared and disappeared, as if the video camera was being adjusted, to lend realism.

After the cameras were set, the monitor was turned off, and the experimenter proceeded with the formal instructions. According to the instructions, the teacher's job was to read through the list of nonsense words, pronouncing them in any way he or she thought was appropriate.

The learner's job was to try to repeat the words exactly the same way. If teachers thought that learners' pronunciations were not satisfactory, they had the right to punish them by delivering a jolt of electric shock. How much electric shock was delivered was also left up to the teachers. They could set the level by turning a dial on the fake electric device. Possible settings ranged from "Very mild" to "Very strong". The experimenter noted that although the "Very strong" shocks were not harmful, they were extremely painful.

This cover story was designed to lead teachers to believe that they would have considerable power over the learners. The teachers thought they would be the sole judge of how each word should be pronounced, whether the learners' pronunciation met *their* standards, and, if not, whether or not the electric shocks should be delivered. They could also decide how strong the shocks should be. Presumably, the learners' only recourse was to try to remember how the teachers wanted the words to be pronounced, and to try to repeat them as satisfactorily as possible. Upon hearing these instructions, two subjects (both in the learner condition) withdrew from the experiment because they were frightened of electric shocks and were replaced. (In fact, this experiment was interested only in leading subjects to believe they were powerful or powerless. No real electric shocks were ever administered.)

*Emotion Manipulation.* Once the power manipulation was made, the next step was to expose the powerful/powerless (teacher/learner) subjects to a target person, who was experiencing a strong emotion, so that the extent to which they "caught" another person's emotion could be assessed. The experimenter said: "Now, you are almost ready to start the learning session. But before we start, I would like to interview each of you. This will be a good chance for you to get acquainted. You could watch one another's interviews on your television monitors. First, I would like to interview the teacher (or learner)"—whichever role the "other participant" had been assigned to play. The monitor was turned on, and the supposedly live interview began. Once again, the interview was a remotely controlled playback of a pre-recorded videotape.

The interview consisted of two parts. In one, the experimenter asked the stimulus person to describe one of the happiest events in his life; in the other, to describe one of the saddest events. Each interview segment lasted approximately three minutes. During the happy segment, the stimulus person described a surprise birthday party his friends had arranged for him. His voice, facial expressions, and gestures conveyed an intense feeling of happiness. During the sad segment, the stimulus person described a heart-rending experience he had had at his grandfather's funeral when he was six years old. This time, his facial expressions, tones, and gestures

conveyed intense sadness. The stimulus person's emotional expressions were spontaneous and natural expressions of his own experiences. The attempt was made to avoid posed emotions. (See Ekman, 1985, for a discussion of the possible differences between posed and spontaneous emotional expressions.)

The original stimulus tape was edited into two versions in order to avoid possible order effects. In one version, the happy interview preceded the sad one; in the other, the sad interview preceded the happy one. During the experiment, subjects were randomly assigned to watch one or the other.

### Dependent Measures

The next step was to assess subjects' emotional experiences and expressions as they observed the stimulus person's recounting his happiest and saddest experiences. We began this paper by noting that people may be consciously aware of their emotions and or may simply express their emotions via facial expressions, ANS responses, or habitual emotional behaviours. Accordingly, in this experiment, we wanted to assess emotion in at least two different ways. Thus: (a) judges rated the subjects' facial expressions of emotion as they watched the interviews; and (b) at the end of the experiment, subjects provided retrospective self-reports of the emotions they had experienced earlier while watching the happy and sad interviews. (The timing of these reports at the end of the experiment was to avoid alerting subjects to the fact that we were interested in their emotions.)

*Subjects Facial Expressions.* While the subjects watched the "other participant" being interviewed, the research assistant unobtrusively turned on the video camera, and taped their facial expressions during the entire interview session. Later, these facial expression tapes were carefully analysed (see later for details).

*Subjects Self-reports.* Once the "other participant's interview" was over, the assistant turned off the monitor and re-entered the room. She said it would be a minute or two until the subjects' interview began and asked them if they would fill out a brief questionnaire. There were three questions. The first, a check on the power manipulation asked subjects if they had been assigned to be the teacher or the learner. (All subjects were well aware of the condition to which they had been assigned.) The last two questions asked subjects how happy and sad they had been while observing the other participant describe his happy and sad experiences. Subjects rated their feelings on a scale modelled on one developed by Borg (1982).

For example, one question asked: "How strong a happiness (sadness) did you experience when you watched your partner describe his happy event?" Possible answers ranged from 0 (Nothing at all) to 10 (Extremely strong). For information on the reliability and validity of this scale, see Borg (1982.) Finally, subjects were debriefed.

### Analysis of the Facial Expression Tapes

*Rating the Subjects' Emotions.* The subjects' facial reactions to the happy and sad interviews were edited into a single tape, containing 80 one-minute segments (40 subjects  $\times$  2 sessions for each subject—happy and sad). Each segment began one minute after the subjects began watching the happy or sad interview (this allowed the subjects to get well into the film) and ended one minute later. Next, four judges, who were blind to the hypotheses and to the subjects' experimental condition, independently viewed each segment and rated how happy and sad the subjects' faces seemed to be, on the same Borg scales we described earlier. (The edited tape did not contain an audio track, so that there were no verbal clues as to whether the stimulus person was describing a happy or sad event.) On the basis of these ratings, an Index of Happiness (Judges' Ratings of subjects' happiness minus their sadness) was calculated for each subject. Again, possible ratings ranged from (+10; Extremely happy to -10; Extremely sad.)

*Rating the Stimulus Person's Emotions.* Finally, to determine how successful our emotion manipulation had been—to check whether the happy and sad segments were in fact uniformly positive and negative—four judges rated the stimulus person's emotions in the two interview segments, again using the same Borg scales we described earlier. This time, subjects both saw the stimulus person's facial expressions and listened to his descriptions of the happy and sad events. (Thus, the raters assessed the same emotional stimuli that the subjects viewed.) Once again an Index of Happiness was calculated on the basis of judges' ratings.

## RESULTS

### Emotion Manipulation Check

The judges rated the stimulus person's emotions as he described his happy and sad experiences. As expected, judges' ratings on the Index of Happiness were significantly higher in the happy than in the sad condition.  $M$  for the happy interview = 6.50;  $M$  for the sad interview = -4.12 ( $F(1, 6) =$

95.48,  $P < 0.001$ ). These data suggest that the stimulus person's presentation was effective.

### Dependent Measures

Turning to hypotheses 1 and 2, recall that there were two sets of dependent measures: judges' ratings and subjects' self-reports. For each set of data, a 2 (Levels of Power: Teacher vs. Learner)  $\times$  2 (Order: Happy first vs. Sad first)  $\times$  2 (Type of Emotion: Happy vs. Sad) ANOVA was conducted, where Power and Order were between-subject factors and Emotion was a within-subject factor.

*Hypothesis 1: People will experience/express the emotions of others, that is, manifest emotional contagion, even in a carefully controlled laboratory setting.* In Table 1, we find clear evidence that subjects tended to "catch" the emotions of the stimulus person. This is true whether we examine their self-reports of emotion or look at judges' ratings of the facial expressions of emotion they displayed while watching the happy or sad interviews. Specifically, judges' rated subjects' facial expressions of emotion as happier (on the Index of Happiness) when they were watching a stimulus person express happy emotions ( $M = 1.44$ ) than when they were watching him express sad feelings ( $M = -0.73$ ); ( $F(1, 36) = 56.51, P < 0.001$ ). Likewise, the subjects' self-reports indicated they felt happier during the

TABLE 1  
Judges' Ratings and Subjects' Self-Reports of Emotion

<i>Judges' Ratings of Subjects' Emotional Expressions</i>			
<i>Power</i>	<i>Happy</i>	<i>Sad</i>	<i>Marginal Means</i>
Teacher	1.96	-0.85	0.55
Learner	0.93	-0.61	0.16
Marginal means	1.44	-0.73	
<i>Subjects' Ratings of Their Emotions</i>			
	<i>Happy</i>	<i>Sad</i>	<i>Marginal Means</i>
Teacher	3.77	-4.08	-0.15
Learner	3.60	-3.88	-0.14
Marginal means	3.68	-3.98	

*Note.* The higher the number, the happier (as assessed on the Index of Happiness) the subject or the judge is judging the subject to be.



happy interview ( $M = 3.68$ ) than during the sad interview ( $M = -3.98$ );  $F(1, 36) = 165.55, P < 0.001$ ).

*Hypothesis 2: Powerless people would be more likely to experience/express the emotions of those who have power over them than vice versa.* If Hypothesis 2 is correct, Power and Emotion should interact; the powerless should be happier when watching the happy interview and sadder when watching the sad interview, than are the powerful. As can be seen from Table 1, however, the data provide no support for this hypothesis. When we examine subjects self-reports, we find that it matters little whether one is powerful or powerless—everyone *recalled* being equally happy or sad when watching the happy and sad interviews.

Subjects' faces seem to tell a different story, however. Surprisingly, when we look at the *judges'* ratings of the powerful or powerless subjects' emotional expressions while viewing the tapes (see Table 1), it appears that the "powerful" teachers were *more* susceptible to emotional contagion than the "powerless" learners. The teachers displayed much (and significantly) more happiness when viewing the happy interview and somewhat (nonsignificantly) more sadness when viewing the sad interview. By contrast, the learners seemed relatively less responsive to the stimulus person's moods. This time, the Power  $\times$  Emotion interaction was significant,  $F(1, 36) = 4.92, P < 0.05$ . The teachers' faces displayed somewhat greater sadness when viewing the sad interview. This difference is not significant, however.

*Order Effects.* In this experiment, we carefully controlled for order effects. Statistical analyses yielded no statistically significant Order effects.

*Gender Effects.* Gender was not included as a factor in our original design. Nonetheless, we were interested in whether there were gender differences in sensitivity to emotional contagion. When gender was added to a related ANOVA, neither a significant main effect for Gender nor a significant Gender  $\times$  Emotion interaction was obtained.

## DISCUSSION

The data provide strong support for Hypothesis I—that people will tend to display and experience the emotions of those they associate with, and that this contagion can be demonstrated in tightly controlled laboratory settings. This support comes from both subjects' self-reports of the emotions they felt and judges' facial expression ratings.

The discovery that people tend to display and experience one another's emotions has interesting implications both for the understanding and for

the control of emotion. First, if one realises that emotions are "contagious", one has a better chance of understanding seemingly inexplicable emotional reactions. Sometimes we feel happy, angry, sad, or anxious not because of events in our own lives, but because we are sensitive to the expression of others' feelings. Once this is realised, we can be better judges of the source of our own emotions in various situations.

Secondly, the recognition that emotions are "contagious" gives us some hints as to how to control our own emotions as well. If we spend too much time associating with people who are angry, bitter, or depressed, we may end up feeling the same way ourselves. The implication is that, to control one's emotions, one should exercise control over one's relationships.

Hypothesis 2 stated that powerless people are more likely to display and experience the emotions of those who have power over them than vice versa. This hypothesis was strongly disconfirmed. When we examined subjects' retrospective self-reports, we found no evidence of a Power  $\times$  Emotion interaction. Moreover, when judges' ratings were examined, we found that the Power  $\times$  Emotion interaction was significant in a direction *opposite* to that proposed. These surprising findings may be discussed in terms of: (a) why there might be a discrepancy between subjects' and judges' assessments of emotion; and (b) why these results are opposite of those predicted, based on our extension of previous investigations, such as Snodgrass' (1985) findings that power and emotional sensitivity were negatively related.

### Differences Between Self-Report and Judges' Ratings of Emotion

There are two possibilities why there were differences between the subjects' self-reports and the judges' ratings. One is that the subjects were not precisely aware of the emotions they were experiencing and displaying—hence their self-reports were not accurate. Although people normally believe they know and can verbalise what they feel, researchers have suggested that there are times when people simply run off well-learned emotional sequences without thinking and without knowledge of the emotion (Lewicki, 1986). Thus, it is possible that the "teachers" were not aware of the precise extent to which they were displaying and experiencing their partners' emotions. It has been found elsewhere, for instance, that the feelings that subjects reported were inconsistent with those their behaviours objectively revealed (e.g. Wilson, 1985; Wilson & Dunn, 1986).

As a second possibility, the discrepancy between self-reports and the objective measures might be due to a more pedestrian reason—that the self-report measures were collected after the entire interview session, whereas

their facial expressions, on which the judges' ratings were based, were recorded while the subjects were observing the interviews. Thus, when asked to report their feelings, subjects may simply have had trouble recalling exactly what they felt at the time they viewed the interviews. Both of these possibilities argue that the subjects' self-reports were the less reliable index to their actual feelings than the judges' ratings.

### Explanation for the Power $\times$ Emotion Interaction

How can we account for the fact that powerful people seemed *more* sensitive in terms of expression of their partners' feelings than vice versa? Two very different possibilities seem compelling. The first explanation for these results assumes that had we asked subjects for their cognitive assessments of their partners, we would have secured results identical to those of previous experimenters (e.g. Snodgrass, 1985). We may have found powerless subjects to be more *aware* of their partners' feelings—yet less likely to display and experience those feelings, that is, to show emotional *contagion*. The second explanation assumes that we would have secured very different results from those of previous experimenters—we would have found that powerless subjects were deficient both in their understanding of their partners and in their emotional responsiveness to them.

Perhaps powerless people focus on cognitive assessments of more powerful others. Previous researchers have documented that the powerless have a need to know the feeling and reactions of their superiors in order to respond accordingly and win favours (Hall, 1979; Miller, 1976; Thomas et al., 1972; Weitz, 1976). The powerless person may speculate: What does my superior think? What does this mean for me? How should I respond? As a consequence, the powerless may attend more to the thoughts and feelings of the powerful and tend to get "out of touch" with their own feelings. If this hypothesis is correct, we would predict that if subjects were asked to try to accurately label or describe their *partners'* feelings, powerless subjects would be accurate; yet their own emotional reactions would be muted; they would show little contagion.

Another explanation for the discrepancy between our results and the prediction based on previous research is that the power manipulation used in the present study was stronger than that normally used. In the Snodgrass (1985) study, for instance, "powerful" subjects only had the right to teach and evaluate "powerless" subjects. In the present study, the teachers additionally had the opportunity to administer strong electric shocks to punish the powerless, putting the teachers into total control but leaving the learners under tremendous anxiety and stress.

In retrospect, then, it seems reasonable to argue that the teachers may

have found it easier to pay full attention to the task at hand; to absorb and react to all that their partners were saying. In contrast, the learners may have had a great deal more trouble absorbing information. When one is anxious or aroused, it may become harder to focus on another person's statements. There is considerable evidence that when people are under severe stress, they have trouble processing stimuli of many kinds. It has been observed that stress may seriously impair people's ability to attend to or to process information (e.g. Mandler, 1982, 1984; Easterbrook, 1959). People can only focus on a limited number of things at one time. When people are under stress, they are forced to devote at least some attention to their inner world—to attend to their throbbing heads, their pounding hearts, their upset stomachs, and so forth (Carlson & Hatfield, in press), and to the events that seem to be causing the stress. This, too, may make it difficult to concentrate on peripheral events—such as their partners' description of the happiest and saddest events in his or her life.

It seems plausible to argue, then, that under moderate stress conditions, the powerless might be motivated to learn a great deal about their partners, pay close attention to them, and thus be especially susceptible to emotional contagion. It is only when they are under a great deal of stress that they may become unable either to accurately perceive the powerful other or to respond to their partners emotionally. If this is so, we might expect experiments which varied degree of stress, power, and emotion to secure a three way interaction—with powerless subjects behaving very differently under high stress versus low stress conditions.

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