Nothing's More Contagious than Happiness

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Abstract

The purpose of this study was to investigate the effects of emotional contagion on friend groups. Previous research has suggested that emotions do transfer between people in different types of relationships and settings. We hypothesized that the average emotional state score for each of the eight states (anger, disgust, fear, anxiety, sadness, desire, relaxation, and happiness) would differ for participants after hanging out with friends. Our second hypothesis was that the ICC (intra-class correlation) for the groups' overall emotional states would be higher after spending time with friends. Twenty-five students across five friend groups hung out during lunch and took the Discrete Emotion Questionnaire (DEQ) before and after hanging out. We found that the only emotion that changed after hanging out with friends was happiness, and that none of the friend groups' emotions converged. Our data, together with other sources, suggest that emotional contagion amongst friends is likely to exis,t but is more pronounced in happy emotions.

Introduction

Friendship groups are an essential part of a teen's social life, and it is how many teens manage their emotions and feelings. Emotions travel from person to person, sometimes making a whole group feel the same way (1). This emotional transfer is called emotional contagion (1). Emotional contagion can depend on the relationship's power dynamic, the conversation's affective valence, and the group's size (2). This study is critical because emotional contagion occurs in our everyday lives, often without us noticing. Understanding this process may help people make better choices for their emotional lives. In this study, we measured the emotional states of different friend groups before and after interacting over a shared activity to see how emotions can synchronize.

Emotional contagion can be defined as the sharing of emotions where groups of people interact and induce changes in other people's emotional states or moods (1). Emotional contagion is a widespread, significant, psychological, and organizational behavior. According to Barsade et al.., there are four distinct elements of emotional contagion. First, emotional contagion contains discrete emotions and general moods. Emotions are intense, short-term affective reactions to social interactions. Second, emotional contagion occurs in subconscious and conscious processes; people are generally aware of their emotions but are not often aware of how or when they change. This is true whether the person is an elector or a target of emotional contagion. Third, emotional contagion can occur in various group settings and involve a dyad or more than two people. Lastly, emotional contagion represents a social influence that influences how people feel and not just what they feel but what they think and do. This is important to our study because it provides background about emotions and shows how emotional contagion works.

Emotional contagion has different effects based on various types of relationships (2). Kimura et al. tested 166 undergraduate participants to see the emotional contagion differences between friends, acquaintances, seniors, and juniors. Participants were asked to answer a questionnaire describing their emotional states and were randomly assigned to a group representing different types of relationships. Each participant was randomly assigned to one out of four groups (a friend, an acquaintance, a senior, or a junior condition group.) Each group had its specific meaning depending on which condition they had ("friend" meant a person whom the participant communicated with), ("acquaintance " meant a person whom the participant knew/had communicated with before), ("senior" meant a person whose social status was higher than the participants'), and ("junior" meant a person whose social status was lower than the participants'.)

Participants in Kimura et al.'s study were asked to assume a partner in each group based on their assigned condition (2). As they expected, Kimura et al. found that emotionally contagious responses were significantly more potent in a friend, junior, & senior condition versus an acquaintance condition. In all of these comparisons, happy emotions were expressed by the participants, but not sad emotions. The text also supports that emotionally contagious responses were more robust in junior than senior conditions, and sad expressions did not differ in different situations. So, overall, emotional contagion does exist, but it does vary depending on

the relationship one has with that person. This connects to our project because it proves that emotional contagion is accurate, but can vary within friendship types. Importantly, this study took place in Japan, where harmony and hierarchy are valued, so it is valuable to consider how that might differ in an American sample where negativity might be more common.

Other research has also investigated how different relationship pairs elicit different emotions (3). Bizzdgo et al. thought they'd observe that a mere co-presence would produce synchrony among strangers and other relationships. They thought strangers would experience more fear and embarrassment while interacting versus friends or lovers who they thought would only experience positive emotions. A total of 124 heterosexual participants between the ages of 21 and 23 (62 females, 62 males) participated. Participants were distributed into 62 opposite-sex pairs: 23 pairs of friends, 20 pairs of romantic relationships, and 19 stranger pairs. Each male-female group viewed a series of 6 video clips together, one for each emotion: pride, romance, calmness, sadness, fear, and embarrassment. Each participant group's cardiac activity was recorded using an Electrocardiogram (ECG) sensor. They found that stranger pairs experience more psychological synchrony than romantic or friendship pairs. This suggests we have more in common with strangers than we realize. Also, because we are more comfortable around friends or partners, it may be easier to reject their influence and feel differently (3). This is important to our study because it suggests the opposite of our idea; we expect friends to influence emotions when interacting, but this study suggests that might not happen.

Unlike friend dyads, student-teacher relationships have a unique dynamic that could impact how emotions are shared (4). Mottet and Beebe tested teachers and students to see if one another's feelings or non-verbals would affect each other. The authors had 465 (192 men, 268 women, and five did not report) participants take a course at Southwest University, and after the eighth week of the course, all participants were required to complete a questionnaire about their experience. As they expected, Mottet and Beebe found that during interactions (verbal or nonverbal) in classroom settings, students automatically mimic the nonverbal behavior of their teachers. The text also supports the idea that emotions may be contagious when given instructions. Also, students' nonverbal responsiveness increased, and so did their levels of pleasure, arousal, and dominance. Finally, students' emotional responses are correlated to their teachers' emotional responses (4). So overall, mimicry plays a part in everyday classroom settings and conversations in changing nonverbal behavior and emotional responses.

People's verbal and non-verbal actions have an emotionally contagious effect on group dynamics, such as in workplaces and business conversations (5). Barsade tested ninety-four business school students enrolled in an organizational behavior class. The students pretended to be managers in groups and practiced arguing that their employees deserved raises. Each group had a confederate who pretended to display different levels of affective valence (pleasant/unpleasant) and energy levels (high/low). The meetings were recorded, and three coders scored the people's moods and whether they had become like the confederates' mood. The confederates' emotions were contagious. However, it did not matter how the confederate delivered his emotion, people tended to follow him. This makes sense because the confederate was the most confident and comfortable with the conversation, and people were naturally drawn toward him. In a follow-up with the same activity and no confederate, the researcher found that

emotional contagion still naturally occurred as the group shared a group effect over time (5). This study is critical because it supports our hypothesis that emotional contagion is natural and happens within groups.

Overall, the research says that emotional contagion causes the sharing and induction of emotions between people. It works with dyads, groups, and between people with varying power differentials (2, 5, 3). This study contributes to our understanding of emotional contagion by focusing on teen friend groups and how they transfer into everyday conversations. In our research, we had four friend groups hang out with friends, while sharing a meal. We will survey them before and hang out to see if the group's emotions change overall and if they synchronize.

We hypothesized that the average emotional state score for each of the eight states (anger, disgust, fear, anxiety, sadness, desire, relaxation, and happiness.)would differ after hanging out. This is because research says human emotions are affected by movies and groups (1, 5, 3, 2). Second, we hypothesized that the ICC (Intra Class Correlation) for the group's emotional state score for each of the seven states would be higher after spending time together. This is because research on emotional contagion says emotions move between the subconscious and therefore, may synchronize emotions.

Materials and Methods Section

A total of 25 high school students from The Neighborhood Academy participated in the study. Twenty-four participants identify as African-American, while one identifies as biracial. One participant identifies as Black Hispanic. They are composed of males (68%) and females (32%) from grades 10-11 and between the ages of 15 to 18. There were a total of four friend groups willing to participate in the study, with the typical group size being 5 to 6 students.

The participants were given a survey known as the Discrete Emotion Questionnaire (DEQ) (6). They measure a person's emotional states, which are Anger, Disgust, Fear, Anxiety, Sadness, Desire, Relaxation, and Happiness. To complete the survey, they describe from 1 to 7 how much each word describes them right now. One meaning they do not feel that emotion at all, and a seventh meaning they feel that emotion very strongly. To get a score, we match the emotion to the four corresponding words and add up the totals. This gives the lowest possible score of four and the highest possible score of 28.

The groups for the study were already known to the primary researcher. We asked individuals in each group if they would participate and checked if all friends were included in the invitation. Each group will be invited to a hangout session where they will fill out the questionnaire as soon as they get in the room. Participants will then be welcome to eat, play games, and socialize. When the lunch period is over, participants will fill out the questionnaire again before leaving the room.

Differences in emotional states were tested with a t-test for correlated samples. The amount to which the groups' emotional states synchronized was measured using an intra-class

correlation (ICC). The abbreviation M is for mean, and SD is the standard deviation. All the tests were calculated using vassarstats.net with a 0.05 significance threshold.

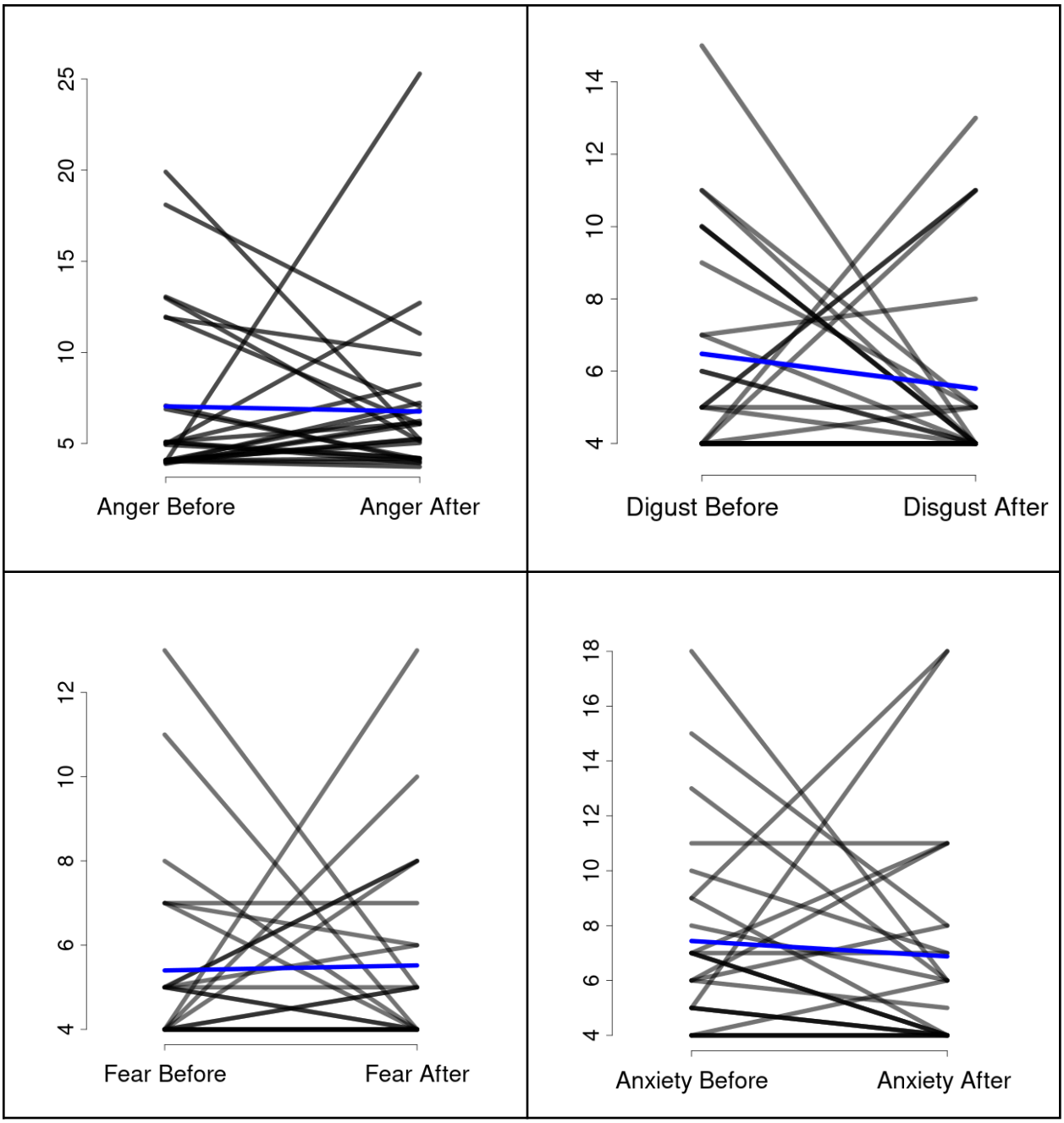
Results

The purpose of our study was to prove that human emotions are affected by group interactions. There were four total friend groups who hung out during a lunch period while talking and enjoying snacks. Students were asked to complete a Discrete Emotion Questionnaire (DEQ) before and after lunch period. Those who participated were 11th and 12th graders who hung out with each other frequently.

Our first hypothesis was that the average emotional state score for each of the eight states would differ after hanging out. A two-sample t- test for correlated samples was used to calculate the changes between the groups for all eight emotional states. The only significant difference found was for happiness from before (M=17.76) and after (M=21.68) interacting (t=-2.1, p=0.041). All other p-values were more than 0.05. All emotional states are summarized in Table 1.

	Before	After	T-value	P-Value
Anger	7.04	6.76	0.22	0.41
Disgust	6.48	5.52	1.02	0.32
Fear	5.40	5.52	-0.18	0.86
Anxiety	7.44	6.88	0.56	0.58
Sadness	5.76	5.52	0.34	0.74
Desire	13.52	13.6	0.04	0.97
Relaxation	18.88	21.32	1.43	0.16
Happy	17.76	21.68	-2.1	0.04

Table 1. Groups' different emotional states before and after hanging out.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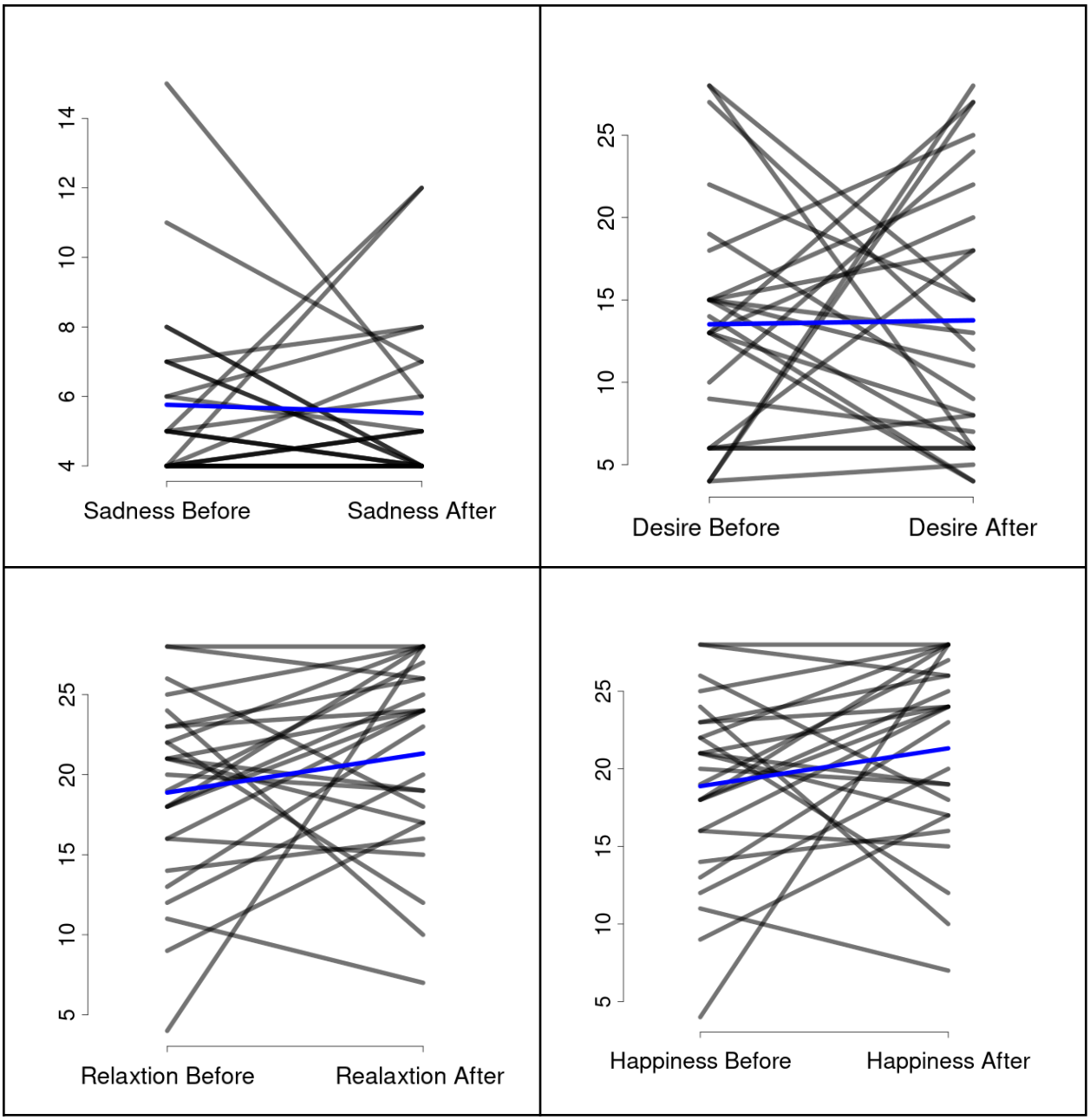

Figure 1. No difference in anger, disgust, fear, anxiety, sadness, desire, and relaxation levels after interacting with friends; happiness levels increased.. *Twenty-five students from The Neighborhood Academy hung out with friends for 45 minutes and answered a Discrete Emotions Questionnaire (DEQ) before and after. A t-test for correlated samples only found a difference for happiness from before (M= 17.76) and after (M=21.68) interacting (t=-2.1, p=0.041). All other p-values were more than 0.05.*

Our second hypothesis was that the ICC (Intra Class Correlation) for the group's emotional state score for each of the seven states would be higher after watching the movie. An ICC is a measure of how the emotions of people in the groups sync or diverge. An ICC of 0 would mean the group had nothing in common in their emotion scores. An ICC of 1 would mean the group was perfectly synchronized. In three of the groups, the ICC went down after hanging out, so this means they got less alike. One group saw an increase from 0.053 to 0.115, but this increase was really small, and the second number was still very low and close to zero. Overall, they did not seem to get more alike after hanging out. All ICC numbers are in Table 2 below.

	Before	**After**
Group 1	**0.117**	**0.003**
Group 2	**0.041**	**0.02**
Group 3	**0.124**	**0.12**
Group 4	**0.053**	**0.115**

Table 2. The groups' emotional states did not sync up.

Discussion

In this study, we determined if emotions were contagious amongst friend groups. Our first hypothesis was that the average emotional state score for each of the eight states would differ after hanging out. This was partially supported because Happiness scores went up, but the other emotion scores did not (Table 1, Figure 1). Our second hypothesis, the ICC (Intra Class Correlation) for the group's emotional state score for each of the seven states, would be higher after spending time together. An ICC is a measure of how the emotions of people in the groups synced or diverged. This is not supported as none of the ICC tests for the four groups that supported my hypothesis (Table 2).

Our studies are consistent with Kimura's research on emotional contagion (2). Kimura found that happy emotions are more likely to spread than sad emotions between various acquiescence conditions (2). We also found changes in happiness, not sadness. Originally, we thought Kimura's results were because the experiment took place in Japan, and due to their hierarchy, they were not expected to spread any negative emotions (2). But maybe it could've been that positive emotions are just more contagious than negative emotions.

Our results are consistent with another study by Bizzidego et al. (3). They examined emotional contagion among friends. Generally, emotions are more contagious among strangers than friends. Our study found that happiness was the only emotion that changed when people spent time with their friends. Together, these studies suggest that emotional contagion may be more prevalent among friends than strangers. This may be because when spending time with

friends, the goal is often to make each other happy, which can make friends more resistant to their friends' positive emotions and less affected by negative ones.

Finally, our results are inconsistent with Basrade's research on group emotions converging emotions (5). We both used an Inter-Class Correlation test, where they found that participants got more alike, emotions synced up when they spent time with each other. However, we found that participants stayed the same or got less alike. Considering these two studies, emotional contagion can be contagious, but does not mean that participants will automatically synchronize. This makes sense because Barsade et al. had participants participate in a more competitive activity where they were advocating for increased pay for employees. In our study, participants were relaxing with friends, so there wasn't anything for them to agree or not agree upon. It's possible that Barsade et al.'s participants could have felt all emotions, such as Fear, Disgust, Anxiety, Sadness, etc., while in my study, they were more likely to feel one emotion over others, in this case, Happiness.

Our study had many limitations. Our first limitation was that we were limited in the types of emotions that people experienced. Our future tip for other researchers is to make sure they create or pick an activity for participants that will make them experience a lot of emotions. Another limitation we experienced would be the number of friend groups we had to test. We'd recommend using more friend groups because having more different kinds of friends makes people more likely to experience different kinds of emotions. For example, recruiting friends of different age ranges would be helpful.

A future improvement could be having participants participate in a more competitive activity like a board game or video game or a brain-working activity, such as a logic puzzle. This may boost the likelihood of the participants experiencing a more varied range of emotions and not just happiness. Another improvement we'd suggest is finding a wider range of friend groups as well, such as younger groups like middle schoolers and older groups like teachers. This may help to have more different perspectives on kinds of people, which would increase the chances of friends in friend groups experiencing more emotions.

According to our research, we found that happiness is the only emotion that changes after being with friends. However, there is a possibility that the activities the participants were partaking in may not have been interesting enough to hold their focus to evoke other such emotions. Therefore, a wider range of friend groups and brain-working or challenging activities may need to occur in order to find better results regarding these emotions. The results of our study and other previous studies taken together suggest that emotional contagion amongst friends is real and common. Therefore, teenagers should consider hanging out with their friends more often because it will bring them more happiness and it will not affect their friends emotions in a negative way.

Works Cited

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