

Effects of Peer Pressure on Laughter

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Abstract. Our study was conducted to identify and analyze specific conforming behavior. We looked at how laughter is expressed and tried to examine if the decision “to laugh” or “not to laugh” is affected by conformity and peer pressure. Our study tried to show whether or not peer pressure influenced the study subjects in expressing laughter in experimental situations where they watched comedy videos with other people. Based on the assumption that the subjects’ recognition of such comedy videos to be “funny” and their actual “laughing” behavior did not necessarily coincide, we examined how the viewers’ judgment was influenced by the general atmosphere or other viewers’ attitudes. The results of our study proved that the subjects’ behavior was largely affected by the peer pressure exerted by the other viewers even though their subjective evaluations of the comedy videos were not.

Keywords: multimodal interaction, human behavior.

1 Introduction

Consciously or unconsciously, people tend to conform to the opinions and behavior of the majority when they are in a group. Conformity is an action in which one makes judgments or choices against his/her own wishes by agreeing with the majority of the people around them. Sometimes, an individual’s tendency to conform to the majority leads to “peer pressure”, which forces the majority’s opinions or behaviors on dissenting individuals. Suppressing one’s own wishes, opinions or emotions to conform to the majority can jeopardize individual characteristics and freedom in thought and behavior. Furthermore, social pressures demanding conformity from individuals can hinder both personal and social development. On the other hand, conformity is often necessary for social groups to function smoothly.

In this study, we investigated the factors that promote or hinder conformity by conducting well-designed specific experiments. Social interactions between different individuals are profound, complicated and greatly varied. When examining human-computer interactions, one also needs to pay attention to socially-induced actions such as conformity. For example, when designing robots, computers or agents equipped with human-like social characteristics, it is important to design an interface based on

the algorithm of social interactions. This study makes observations from such a perspective and suggests further studies on the topic.

Many studies have been conducted to identify the factors that promote or prevent such behavior. One study (Ash, 1955), for example, revealed the following: If at least one individual, out of the majority who had been pre-instructed to give wrong answers, gave the correct answer, the experiment subject was not inclined to conform to the majority. However, if that one correctly-answering individual switched to the majority, the subject became more submissive, more readily conforming to the majority.

Deutsch & Gerard (1955) reported that conforming behavior decreased drastically when study subjects did not have to reveal their judgments to the colluding, pre-instructed experiment participants or the experimenter.

Muranaka et.al. (2004) proved with a psychological experiment that people conform to computer agents in manners similar to the way they conform to other humans. Ota et.al. (1996) suggested a decision-making model based on people's conforming tendencies and proved that it was possible to induce human-like conformity by changing the internal stability level. In this way, research in conformity is expected to contribute greatly to building human models or designing HCI.

Our study was conducted to identify and analyze specific conforming behavior. We looked at how laughter is expressed and tried to examine if the decision "to laugh" or "not to laugh" is affected by conformity and peer pressure. Our study tried to show whether or not peer pressure influenced the study subjects in expressing laughter in experimental situations where they watched comedy videos with other people. Based on the assumption that the subjects' recognition of such comedy videos to be "funny" and their actual "laughing" behavior did not necessarily coincide, we examined how the viewers' judgment was influenced by the general atmosphere or other viewers' attitudes.

2 Video Viewing Experiment

We conducted video viewing experiments using comedy videos as presented stimuli. In each experiment, one study subject viewed comedy videos with 15 fake viewers. The subject was not told that everybody else in the audience was a fake viewer. Altogether, 21 university students (nine males and 12 females) participated in our study as study subjects.

2.1 Laughter Suppression by Fake Audience

Our experiments were conducted under the following three situations: (1) All Laughing (all 15 fake viewers laughed during video viewing; (2) Five Laughing (five out of 15 fake viewers laughed); and (3) None Laughing (none of the fake viewers laughed). Seven study subjects were placed in the three different situations. The subjects' seating arrangements are shown in Fig. 1.

As shown in Fig. 1, the study subject sat in the second-from-the-left seat in the last row. The seating arrangements of the 15 laughing and non-laughing fake viewers in the three different situations, i.e., All Laughing, Five Laughing, None Laughing, are also shown in Fig. 1.

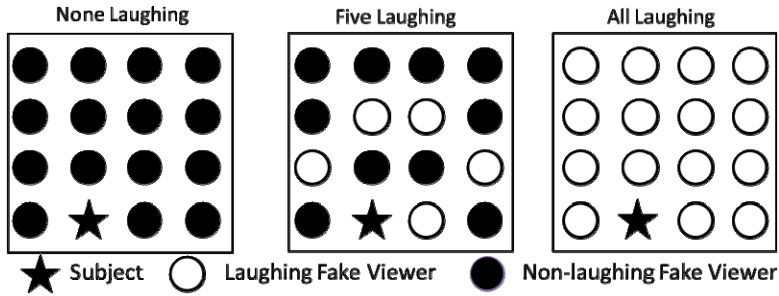


Fig. 1. Seating Arrangement for Different Situations

2.2 Experiment Scenario

Enlisting five university students, we conducted preliminary experiments to decide where the fake viewers should laugh. While viewing the comedy videos, the five students laughed spontaneously at 21 different scenes. Out of these, we selected six scenes and designated them to be “Never Laugh” scenes. The 15 remaining scenes were divided into two fake laughing groups – “Loud Laughs” and “Chuckle.” Additionally, we designated three scenes as “Forced Laughing” scenes. These were the scenes where a laugh track (canned laughter) had been inserted in the videos, even though they were not the scenes which elicited spontaneous laughter from the preliminary viewers. We presented this experiment scenario to the fake viewers, who committed the protocol to memory. Then they all participated in a one-hour joint practice session.

2.3 Filming the Viewing Room

As shown in Fig. 2, the subjects’ reactions/behaviors were filmed by two cameras. Two other cameras recorded the developments in the entire viewing room.

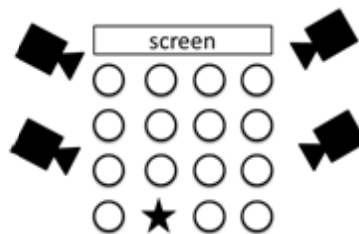


Fig. 2. Viewing Room

2.4 Procedure

In our study, the subjects and fake viewers were briefed on the general study procedure, followed by the showing of one-minute and three-minute comedy videos. After the show, the study subjects were asked to fill out Questionnaire 1. Then, they were told that all other people in the viewing room were fake viewers. They were then debriefed. Next, the subjects were asked to fill out Questionnaire 2.

2.5 Questionnaires

After viewing the comedy videos, the study subjects filled in questionnaires about their impressions in the following four categories: “Was the video enjoyable?”, “Do you want to see it again?”, “Will you tell your friends about the video?” and “Do you want to see a sequel to the video?” The subjects answered using a seven-point rating scale (1. “Not at all.”~7. “Yes, very much so.”). After debriefing the subjects, they were asked this question: “Was the viewing room conducive to laughter?” to be answered using the seven-point rating scale (1. “Not at all.”~7. “Yes, very much so.”). Lastly, they were asked if they had sensed that all other people in the audience were fake viewers (see Table 1).

Table 1. Question Items

Questionnaire 1	<ul style="list-style-type: none">• Was the video enjoyable?• Do you want to see it again?• Will you tell your friends about the video?• Do you want to see a sequel to the video?	1. “Not at all.”~ 7. “Yes, very much so.”
Questionnaire 2	<ul style="list-style-type: none">• Was the viewing room conducive to laughter?	

3 Data Extraction

We used the annotation software ELAN (Fig. 3) to tag the study subjects’ filmed behavior. By using this software, one can add the occurrences, frequency and durations of tagged events and record them in chronological order.

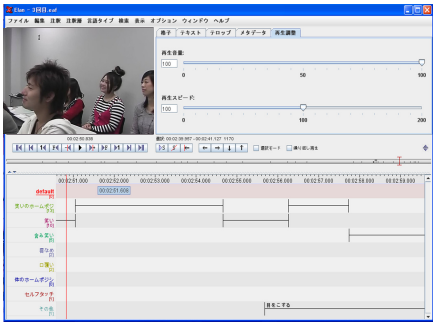


Fig. 3. Event -Tagging Example Using ELAN

Focusing on the expression of laughter in the subjects, we set up the following tag sets:

- Laugh: laughing with the mouth open.
- Chuckle: laughing with the mouth closed.
- Smile: smile retained after a laugh.
- Lip wetting: mouth-closing action.
- Glancing: casting a quick glance at the other people in the room.

We also tagged other characteristic actions.

4 Results

4.1 Questionnaire 1

Table 2 and Fig. 4 show how the study subjects evaluated the “fun” aspect of the comedy videos.

Table 2. Descriptive Statistics of Questionnaire 1

	All Laughing		Five Laughing		None Laughing		Sum	
	mean	SD	mean	SD	mean	SD	mean	SD
Was the video enjoyable?	5.29	1.38	5.29	1.60	5.86	0.69	5.48	1.25
Do you want to see it again?	4.43	2.37	4.14	1.77	5.29	2.14	4.62	2.06
Will you tell your friends about the video?	5.29	1.38	4.43	1.72	5.00	1.63	4.90	1.55
Do you want to see a sequel to the video?	5.71	1.11	5.29	2.21	6.00	1.83	5.67	1.71

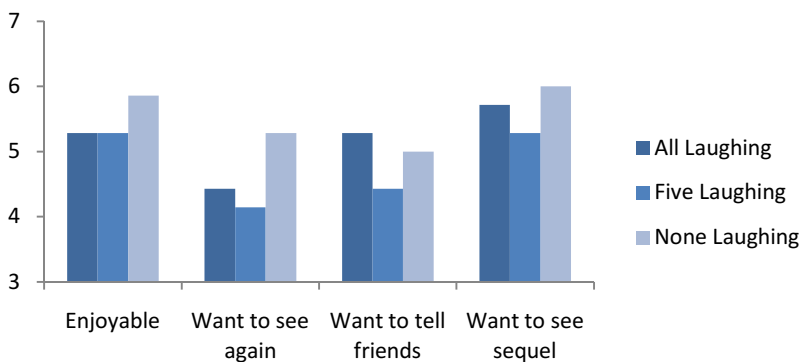


Fig. 4. Questionnaire 1: Rating Scale Values

These rating scale values were used as the dependent variables in our one-way analysis of variance. There was no significant difference between rating scale values. Under all experimental situations, the “Enjoyable” and “Want to see a sequel” categories scored highly. This showed that the subjective evaluation of the comedy videos was not affected by the viewing room atmosphere, i.e., All Laughing, None Laughing, etc.

4.2 Questionnaire 2

After completion of the study and the debriefing of the study subjects, we asked them if they were aware of the fake viewers in the audience (Questionnaire 2). The results of the seven-point rating scale answers regarding the “viewing room atmosphere” are shown in Table 3 and Fig. 5 below.

Table 3. Descriptive Statistics of Questionnaire 2

	All Laughing		Five Laughing		None Laughing		Sum	
	mean	SD	mean	SD	mean	SD	mean	SD
Was the viewing room conducive to laughter?	4.00	2.16	5.29	1.11	1.71	0.76	3.67	2.06

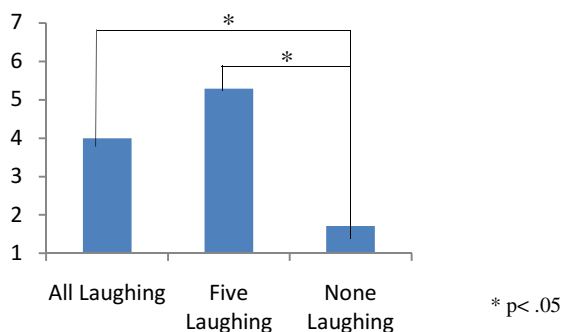


Fig. 5. Questionnaire 2: Rating Scale Values

These rating scale values were used as the dependent variables in our one-way analysis of variance. There was a significant difference between the three experiment situations, i.e., between “None Laughing” and “All Laughing” and also between “None Laughing” and “Five Laughing” ($p < .05$). For the “None Laughing” situation, the average rating scale value was 1.71, which shows that the atmosphere was least conducive to laughing. Due to the fact that no significant difference existed between the “Five Laughing” and “All Laughing” situations, we can say that an “atmosphere conducive to laughing” does not necessarily correlate with the number of people laughing.

Lastly, only one study subject out of 21 answered “I was vaguely aware” to the question, “Were you aware that all other people were fake viewers?” So this subject’s data was deleted from evaluation before proceeding to further analysis of the recorded film.

4.3 Recorded Film Analysis

Table 4 lists the descriptive statistics of each analysis index (tag sets) shown in Chapter 3. We conducted one-way analysis of variance using these indices as dependent variables. We observed significant differences in the order of 5% for all of the indices.

Table 4. Descriptive Statistics of Expressed Behavior

	All Laughing		Five Laughing		None Laughing		Sum	
	mean	SD	mean	SD	mean	SD	mean	SD
Smile	42.66	34.47	23.02	28.98	1.22	3.22	22.26	30.27
Laugh	33.19	29.56	23.22	22.74	2.70	4.63	19.53	24.42
Chuckle	17.14	17.90	17.06	14.01	16.21	15.73	16.79	15.21
Lip-wetting	1.57	2.44	6.37	11.84	15.80	19.46	7.99	14.03
Glancing	.00	.00	.00	.00	2.78	3.60	.97	2.44

Fig. 6 shows the length of laughter under different study situations. The average length was 33 seconds for “All Laughing”, 23 seconds for “Five Laughing” and only two seconds for “None Laughing.” As “laugh” in this paper is defined as “laughing with the mouth open,” the study suggests that the subjects felt uneasy about laughing with the mouth open in an atmosphere where all other people did not laugh.



Fig. 6. Length of Laughter

Fig. 7 shows the length of “Smile”, the state in which a person retains a smile after a bout of laughter. As shown, the average “Smile” time was 42 seconds for “All Laughing”, 23 seconds for “Five Laughing” and only one second for “None Laughing.” As described earlier, laughs are difficult to observe in the “None Laughing” environment, so it is only natural that a “Smile” was hardly observed in this situation. Contrarily, the “Smile” time was longest in the “All Laughing” situation. When the fake viewers create an atmosphere conducive to laughing, the study subjects showed “Smiles” and seemed ready to burst into laughter at any time.



Fig. 7. Length of Smile

The results of our study showed that the subjects hardly laughed in an atmosphere non-conductive to laughing, i.e., when all the people around did not laugh. The results of Questionnaire 1 (Section 4.1) were interesting in that the subjects in the “None Laughing” situation evaluated the comedy videos to be “enjoyable” as much as in the “All Laughing” and “Five Laughing” situations. The subjects in the “None Laughing” atmosphere did not laugh, even though they felt the comedy videos were “enjoyable”. The peer pressure from the “None Laughing” audience suppressed the laughter. Our study also showed that the subjects’ evaluation of the comedy videos did not improve only because the audience was laughing more. In conclusion, whether or not the people around were laughing did not affect the evaluation of the comedy videos; however, it greatly affected the generation and expression of laughter by the subjects.



Fig. 8. Length of Lip Wetting



Fig. 9. Length of Glancing

Fig. 8 and Fig. 9 show the length of “Lip wetting” and “Glancing.” As a result of the one-way analysis of the variance, both of these expressions appeared frequently in the “None Laughing” situation.

Lip wetting is considered to be a displacement behavior. The subject wants to laugh at a comical scene but suppresses it when nobody around is laughing. Displacement behavior is not a person’s intended behavior but is generated when he/she is in a conflicting or stressful situation. A well-recognized displacement behavior is scratching the head when a person is embarrassed. In our study, frequent body posture shifting and neck and shoulder rotations were noted as displacement behaviors. Peer

pressure suppressed laughter from the subjects in the “None Laughing” situations, which were obviously stressful situations.

Glancing was also frequently seen in the “None Laughing” situations. The subjects try to visually confirm the behavior of others around when no laughter is heard in comical developments in the video. Again, we observe insecurity in the subjects when they look around to check other people’s reactions/behaviors to determine whether or not to go along with them.



Fig. 10. Lip Wetting



Fig. 11. Glancing

5 Discussion

The results of Questionnaire 1 revealed that the “fun” aspect was recognized regardless of the people around laughing or not laughing. Comedy shows often insert a laugh track, and studio audiences often include fake, pre-arranged cheering audience members. Such gimmicks, however, do not necessarily affect the “fun” aspect itself. As regards the viewing room atmosphere, the results of Questionnaire 2 revealed that when none were laughing, it was least conducive to laughter. However, “some people laughing” and “All Laughing” made no difference. As known from the experiments conducted by Ash (1955), the presence of at least one “like-minded” person was critical in our experiment. “Five laughing” and “Ten laughing” did not make much difference. It is necessary to determine where the threshold was in the none-to-five laughing situations.

While analyzing the results of the Questionnaires, the researchers also confirmed that the subjects’ behaviors were greatly influenced by peer pressure: Under all experimental conditions, the decision to laugh or not to laugh was greatly affected by the attitude of the people around, regardless of the evaluation of the “fun” aspect. It is noteworthy that various displacement behaviors were observed in the “None Laughing” situation. Even when a subject finds the comedy video “fun”, he or she was greatly stressed in a conflicting “None Laughing” situation.

The results of our experiment showed that “laughing” is quite a primitive behavior, but that it is also socially conditioned. A laugh is produced out of inter-human relationships. The knowledge gained from our experiment is expected to offer valuable insight into Relationality Design and Relationality-Oriented System Designs.

6 Conclusion and Future Work

This study aimed to examine the factors that encourage or discourage conformity. Specifically, the study examined the effects of peer pressure on laughter generation and expression by conducting experiments with comedy videos. The results of our study proved that the subjects' behavior was largely affected by the peer pressure exerted by the other viewers even though their subjective evaluations of the comedy videos were not.

The study presented herein is a basic inquiry into behaviors which are generated out of people-to-people interactions. The obtained knowledge is useful in designing man-computer and man-robot relationality. In order to induce any certain behavior, the atmosphere, interface design and agent behavior need to be examined closely.

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