

Two-factor Theory of Emotion (Schachter & Singer)

Authored by
mohammad looti

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Schachter & Singer (1962) The two-factor theory of emotion, or Schachter-Singer theory, states that emotion is a function of both cognitive factors and physiological arousal. According to the theory, "people search the immediate environment for emotionally relevant cues to label and interpret unexplained physiological arousal."

Schachter and Singer study

Stanley Schachter and Jerome Singer (1962) performed a study on 184 college students on how emotion comes from a state of arousal and what makes the most sense of the situation. From this information, they designed a study that would give the participants a shot of epinephrine (adrenaline). Although, all participants told that they were given an injection of a new drug called Suproxin to test their eyesight. Shortly after injection, blood pressure and heart rate both increase, blood flow decreases, while muscle and cerebral blood flow increase, blood sugar and lactic acid concentration increases, and respiration rate increases slightly. Schachter and Singer then manipulated the participants by informing them in one of the three different ways: epinephrine informed, epinephrine ignorant, and epinephrine misinformed.

Procedure

Epinephrine informed: They would tell the participants that some of the subjects have experienced side effects from the Suproxin. Those side effects would last for about 15-20 minutes. Subjects were told their hands would start to shake, heart will start to pound, and their face may get warm and flushed. Once again they would mention that the effects would last 15-20 minutes. While the physician was giving the injection, subjects were told that the injection was mild and harmless and repeated the description of the symptoms that the subject could expect. Therefore, the subjects would know precisely what they would feel and why.

Epinephrine Ignorant: The experimenter said nothing relevant to the side effects and left the room while the physician was giving the injection. She told the subject that the injection was mild and harmless and would have no side effects. In this condition the administrators didn't explain to the subjects about the symptoms they might feel.

Epinephrine Misinformed: The experimenter would misinform the subjects about what they would feel. The experimenter would tell them the side effects would only last around 15-20 minutes. They were told they would probably feel their feet go numb, an itching sensation over parts of their body, and a slight headache.

All of those subjects were injected with the epinephrine. While there was a placebo condition, when the subjects were injected with saline solution. Those injected with the saline solution, were given the same treatment as the epinephrine conditions. Yet, none of these symptoms are

consequences of an injection of epinephrine.

After the physician left the room, a stooge actor came into the room. The actor was to manipulate the situation acting euphorically or in an angry fashion. To demonstrate these emotions, the stooge had a set routine of verbal, nonverbal, and actions to perform. With the euphoria emotion, as soon as the experimenter left, the stooge introduced himself and made a series of standard icebreaker comments and then started the routine.

The anger stooge used negative emotions right from the beginning. As the subject was filling out a five pages long questionnaire, the stooge paces his or her own answers with the subjects. At several points in during the questionnaire, the stooge would make a series of standardized comments about the questions. His comments would start off innocently, growing angry, and finally end up in rage.

For the measurement of euphoria or anger the observer kept a chronicle of what the subject did and said. For the euphoria stage, there were four specific categories the observers looked for: the subject joins the stooge's activity, initiates a new activity, ignores the stooge, or watches the stooge. During any particular behavior, the subjects were was coded in one or more of these categories.

There were six categories of measurement during the anger stage. The observer would record the subjects in the following categories: if the subject agrees with the stooge, disagrees with the stooge, subject is neutral or has a noncommittal response, initiates agreement or disagreement, watches without comment, and ignores the stooge.

Results

Singer and Schachter checked the success of the injections and the bodily state. Singer and Schachter asked themselves a single question, "does the injections of epinephrine produce symptoms of sympathetic discharge as compared to the placebo conditions? In Singer and Schachter results the epinephrine showed more sympathetic activation than the subject of the placebo. Singer and Schachter also noticed that the pulse rate of the epinephrine subjects had increase tremendously compared to the placebo pulse rates that's decreased.

The results showed all their possible comparisons on the symptoms mean scores of the epinephrine conditions were greater than the corresponding scores in the placebo by .001. Singer and Schachter examination of the two subjects were clear that epinephrine subjects were indeed in a state of physiological arousal. While the effects of the placebo subjects were in an inactive physiological state.

Effects on the manipulation of the emotion state were both significantly changed. It found that

epinephrine misinformed was epinephrine informed conditions makes it clear that the experimental differences are not due to the artifacts results. While with a few subjects the epinephrine did not work at all. Those subjects did not report any tremors, showed no increase in pulse, and did not have any other relevant physical symptoms.

It was clear from the study that self-report manipulating appropriateness had a very strong effect on euphoria. There was constant pattern that epinephrine misinformed and ignorant were the most euphoric. There were more euphoric than the placebo subjects and the epinephrine informed subjects. The research concluded that subjects can be manipulated into states of euphoria, anger, and amusement. If a subject has a state of physiological arousal, with no explanation he will label this state due to the cognitions available to him. Therefore, this means that by manipulating the cognitions available to them, he or she's feelings will be manipulated.

Summary

When an individual has no immediate explanation for the state of physiological arousal they are feeling, they will label the feelings to which cognitions are available to them. That is why subjects would have feelings of euphoria or anger. The subjects that were in the misinformed or ignorant condition behaved similar to the stooge. While those who were informed of the expected feelings had little to no emotion pattern. They found that when the subjects were informed the individual had a perfectly appropriate explanation for his or her feelings.

The results support the proposition that for following the injection of epinephrine, those subjects had no explanation for the bodily state they felt. They did give behavioral and self-report indications that they had been manipulated into the feeling states of euphoria and anger. Subjects' emotional states were inferred from both observations of the subjects and the subjects responses on a self-rating of emotion scale. Those subjects who had received the adrenaline injection were more emotional by both measures, showing that the first factor in emotion, intensity, resulted from visceral arousal.

Participants who were in the misinformed or ignorant condition behaved similarly to the confederate, while those who were informed of the expected effects of the adrenaline showed no emotional pattern. This suggests that participants who were informed cognitively attributed their feelings to the physiological effects of the adrenaline, while the uninformed or misinformed groups could perform no such attribution and so interpreted the feelings as emotion. Schachter's cognitive labeling theory thus identifies "cognitive attribution," the mind's attempt to pair the feeling of arousal with its (inferred) causal pattern in the environment as the second factor in the Two-factor Theory of Emotion.

Misattribution of Arousal

The misattribution study tested the two-factor theory of emotion. This theory has helped support Schachter & Singer's concept of the two-factor theory. Psychologists, Donald G. Dutton and Arthur P. Aron wanted to use a natural setting that would induce physiological arousal. In this experiment, they had male participants walk across two different styles of bridges. One bridge was a very scary (arousing) suspension bridge, which is very narrow that was lies above a deep ravine. The second bridge was a much safer and less rocky as the first.

At the end of each bridge an attractive female experimenter met the participants. She gave the participants a survey to fill out and a number to call if they had any other further questions. The idea of this study was to find which group of males were more likely to call the female experimenter. The results found that the men who walked across the scary bridge were most likely to call the woman, asking for a date. This was most likely due to the arousal they felt from walking across the scary bridge. They had misattributed their arousal from the bridge towards the woman, making her seem more attractive. Strangely, when asking the males why they called the woman they all had reasons for why they called her. Some said it was because of her attractive face, body, and eyes. Yet, none of the participants attributed their feelings to the bridge causing arousal, therefore causing the experimenter to become more attractive.

Supporting Evidence

In the Schachter & Wheeler (1962) study the subjects were injected with epinephrine, chlorpromazine, or a placebo. Chlorpromazine is similar form of a tranquilizer. None of the subjects had any information about the injection. After receiving the injection, the subjects watched a short comical movie. While watching the movie, the subjects were monitored for signs of humor. After the movie was watched, the subjects rated how funny the movie was and if they enjoyed. The results concluded that the epinephrine subjects demonstrated the most signs of humor. The placebo subjects demonstrated less amount of humor but more than the chlorpromazine subjects.

Erdmann & Janke (1978) administered these subjects with ephedrine, adrenaline like substance or they were give a placebo. The administrators informed the subjects that they were testing the comparison between pills and powders. Therefore, the subjects were not aware they had taken a drug. After the drug was taken, the subjects followed one of four different routes: neutral, happy, anger, or anxiety conditions. For the neutral condition the subjects rated a text on the nature of the experiment. For the happy conditions subjects were reminded that they had done very well on an earlier mock intelligence test. Then they were asked several complimentary questions, such as: how many grades had they skipped in school? In the anger conditions subjects it was the exact opposite. They were told how horrible they had done on a previous intelligence examination, and were asked how many times they had to repeat a grade in school. While for the subjects in the anxiety conditions, subjects were told they would be receiving electric shocks and were given several mild shocks. The result found that both physiological and self reported dated should that

the drug increased the subject's arousal levels over the placebo effect. Data from the mood scale showed that drug manipulation increased the anger and happy conditions. While the happy subjects felt much happier than the anger condition subjects.

Criticism of the Theory

Criticism of the theory has come from attempted replications of the Schachter and Singer (1962) study. Marshall and Zimbardo (1979, and Marshall 1976) tried to replicate the Schachter and Singer's euphoria conditions. Just as Schachter and Singer did, the subjects were injected with epinephrine or a placebo. Except the administrator told the subjects that they will be experiencing non-arousal symptoms. Then the subjects were put into four different conditions: subjects injected epinephrine and were exposed to a neutral confederate, another in which they received the placebo and were told to expect arousal symptoms, and two conditions in which the dosage of epinephrine was determined by body weight rather than being fixed. The results found that euphoria confederate had little impact on the subjects. Also, that the euphoric confederated didn't produce any more euphoria than the neutral confederate did. Concluding that the subjects who were injected with epinephrine were not more susceptible to emotional manipulations than the non-aroused placebo subjects.

Maslach (1979) designed a study to try to replicate and extend on the Schachter and Singer study. Instead of being injected with epinephrine, the administrators used hypnotic suggestions for the source of arousal. Either the subjects were hypnotized or were used as a control (same as the placebo effect in the Schachter and Singer study). Subjects that were hypnotized were given a suggestion to become aroused at the presentation of a cue and were instructed not to remember the source of this arousal. Right after they had hypnotized, a confederate began acting either in a euphoric or anger condition. Later on in the study the subjects were exposed to two more euphoric confederates. One confederate was to keep aware the source of the arousal, while the other confederates told the subjects to expect different arousal symptoms. The results found that all the subjects both on self-reports and on observation found that unexplained arousal causes negative conditions. Subjects still showed angry emotions regardless of the euphoric confederate. Maslach concluded that when there is a lack of explanation for an arousal it will then cause a negative emotion. Which will evoke either angry or fear. Although, Maslach did mention a limitation that there might have been more negative emotion self-reported because there are more terms referring to negative emotions than to positive ones.