

Theories for determinants of emotional states



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INTRODUCTION

An individual fast asleep at night is suddenly awakened by a loud noise coming from somewhere within the house. He immediately becomes physiological agitated: the body begins to sweat, the heart beats faster, and hands begin to tremble. Does he experience fear, or perhaps another emotion such as anger, or even happiness?

Schachter and Singer (1962) proposed a *two-factor model* that specifies the conditions under which people will experience one particular emotion or another when faced with an emotionally exciting event, such as impending danger. This model states that a person's emotional response to danger is dependent on the *interaction* between their physiological arousal and cognitive appraisal of the situation (e. g. whether it is dangerous or not). Ordinarily, danger would trigger biological changes, such as increased heart rate, trembling, crying, and perspiration. These physiological changes in turn determine both the intensity (i. e. level) and quality (i. e. type) of our emotional response. However, the particular type of emotion experienced depends on how we cognitively perceive or 'read' the situation. For example, we experience fear if the situation is appraised as dangerous or life threatening, such as an approaching lion, or an imminent category 4 tornado.

SUPPORTING ARGUMENTS

In the scenario described at the beginning of this essay, the individual woken suddenly by a noise, and physiologically aroused will experience emotional arousal. The intensity of his emotions will be a direct function of his level of

physiological arousal. So, for example, we will experience very strong emotions if his heart is beating extremely fast and he is sweating profusely. However, the type of emotion experienced will depend on how he appraises the situation. He will experience *fear* if for example he believes a burglar has broken into the house and is armed and dangerous. By contrast he may experience *anger* if he knows that his excitable pet dog probably knocked something down while chasing his cat around the house. Or he may experience *happiness* if he knows the noise was caused by his loving fiancée who has just returned from the airport after long holiday her parents, and perhaps tripped over something when entering the darkened house. Schachter and Singers (1962) *two-factor model* is actually a redevelopment of the *James-Lange theory*. James Lange originally proposed that emotional experience is contingent on the physiological changes induced by an event. Thus, for example, imminent natural disaster for example will first trigger an emotional response in an individual, for example anxiety. Because they feel anxious, the person will experience physiological changes consistent with this emotion, for example increased heart rate, and perspiration.

ALTERNATIVE EXPLANATIONS

Whether physiological changes precede emotional arousal, or vice versa, is a controversial subject. Psychologist Walter Cannon (1927/1987) proposed an model, known as the *Cannon-Bard theory*, which contends that *physiological arousal is in fact contingent on emotional experience*. It can be argued that human beings are not very good at monitoring physiological changes in their body. For example, subtle changes in heart rate, or mild increases in perspiration may go undetected (Chwalisz et al, 1988). If so, then people

may simply fail to experience any emotion, regardless of their appraisals of the situation. Yet, people generally react instantaneously to danger, exhibiting signs of emotional disturbance, without necessarily being aware of an increase in heart rate or other physiological changes (Zillman, 1978, 1988). The emotional experience isn't determined by our detection of biological changes, but rather may be contingent on how we appraisal of the stimulus, and our *memory* (i. e. prior experience) and *general knowledge* about the stimulus. For example, an individual who suddenly comes face to face with a lion will correctly judge that this animal can kill and therefore his life is under threat. This appraisal in turn will produce fear. Similarly, the person may *remember* that he was viscously attacked the last time he met a lion, and/or more probably be aware of the fact that big carnivorous cats kill people.

Another problem with the Schachter and Singer model is their failure to account for how people *cope* with threat or danger. They assume that physiological arousal elicits emotional arousal, so that they relationship between the two variables is always positive. However, theories on coping propose that two people confronted with the same stressful event may experience marked *different* intensities of anxiety. More specifically Janis and Mann's (1977) conflict-theory argued that the level of intensity experienced varies depending on how people deal with stress generated by uncertainty what to do. *Complacency* results in little or no emotional arousal. *Defensive avoidance* refers to evasive strategies, such as denial, wishful thinking, and shifting responsibility -emotional arousal is generally low, but easily becomes intense when signs of the danger become salient. *Hypervigilance* denotes

panic, and occurs when the danger seems highly imminent (e. g. an approaching tornado, or impending illness). It is characterised by extremely high levels of emotional arousal. Finally, vigilance refers to a rational, and logical problem solving approach, and emotional arousal is considered to be 'moderate', rather than extremely high or low. The problem with Janis and Mann's (1977) model is that to date there has been a paucity of experimental research testing the association between coping strategies and stress levels (but see Mann & Tan, 1993). However, studies have demonstrated correlational relationships between coping styles and emotional arousal (Witte & Allen, 2000), suggesting that the former should form an important element of Schachter and Singers (1962) model. More specifically, it is possible that physiological changes generate strong emotions when people cope in one particular way, and little or no emotion arousal when people cope another way.

Stimulus Characteristics

Schachter and Singers (1962) model makes no reference to features of the stimulus itself. Rogers (1983) argued that the way we respond emotionally to a stimulus, specifically a threatening communication such as a health warning, depends on how we perceive aspects of the stimulus. He argued that dangerous events, such as a probable illness or impending natural disaster contain cues as to the *probability* of the event, and its *seriousness* or magnitude. The greater our estimates of the seriousness of a threat, and its probability of occurrence, the greater the level of anxiety experienced. In other words, stimulus characteristics determine the intensity of our emotional experience. A large volume of research published since the mid

1970s has found ample evidence in support of Rogers (1983) ideas (see reviews by Eagly & Chaiken, 1993; Milne et al, 2000). In fact Rogers formulations continue to influence professional thinking especially in trying to understand people's emotional reactions to threatening health communications. It can be argued that Rogers's ideas do not invalidate Schachter and Singers (1962) model. Stimulus characteristics may simply be something *else* people consider, *in addition* to monitoring their physiological parameters, and trying to work out the situation. Or perhaps Rogers's appraisals fit in with Schachter and Singers emphasis on appraisals of the situation. Thus, if people perceived the situation as highly dangerous, *because of the high severity and probability of the danger*, then they would interpret their physiological arousal as fear.

METHODOLOGICAL AND ANALYTICAL ISSUES

Critique of Schachter and Singers two-factor model requires closer scrutiny of the evidence they present in support of their model. Various methodological and analytic constraints limit the conclusions that may be drawn (Coolican, 1994). Firstly, the study design is questionable. This study was set up as a between-groups design with subjects assigned to either one of two physiological arousal conditions – a treatment group (injected with adrenaline), or placebo group (given a saline condition). There was no control group. The presence of a control group is significant because it allows the researcher to demonstrate that observed effects were not simply a result of the 'anticipatory' effects of interventions (treatment or placebo) given to subjects. Another problem with the design was the failure to control for background variables that may confound treatment effects. In particular,

subjects baseline emotions prior to the study should have been accounted for in the analysis, in order to partial out any pre-intervention differences between groups. The population was a sample of introductory psychology students. This kind of sample is generally better informed than the average man on the street, and have been able to decipher the researchers' hypotheses, and hence provide responses intended to confirm or refute the predictions. The sample size was also rather limited (just over a 100), making it more difficult to detect statistically significant differences between the groups. This may partly explain the absence of group differences in self-reports of anger between the adrenaline-ignorant and adrenaline-informed groups. The anger condition was problematic because it was felt that subjects didn't want to display anger towards the experimenter regarding their participation in the experiment. The sample was not randomly recruited meaning that the findings may in fact be specific to the particular subjects used, and may not generalise accurately to the wider population.

CONCLUSIONS

Perhaps the best evidence in support of the *two-factor model* lies in the difference observed between the three 'information' conditions amongst subjects injected with adrenaline. Those in the adrenaline-ignorant and adrenaline-misinformed group reported the highest 'happiness' levels, presumably because, lacking information about why they were experiencing physiological arousal, they automatically assumed that they felt that way because they were happy. This demonstrates two things. Firstly, it shows that physiological arousal may elicit an emotional experience (intensity), and secondly that an understanding of the situation led to a particular type of

emotional experience – *happiness* . This confirms supports the two-factor proposition that emotional experience is a function of the interaction between physiological and situational (i. e. cognitive) factors. Nevertheless, the evidence is questionable, largely due to the absence of a control group, and also the small sample size. Schachter and Singers analysis also fails to account for other factors that may moderate that may have an independent effect on emotional experience, regardless of physiological arousal, such coping strategy, memory, prior experience, and general knowledge. There is a strong possibility that the impact of physiological arousal may be significantly attenuated after accounting for additional factors. In essence, emotional experience in certain circumstances may be driven solely by cognitive factors (i. e. thoughts, perceptions, memory), with biological changes have little or no effect peoples emotional response.

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