Emotion as a function of the labeling of interruption-produced arousal*

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The experiment investigated the hypothesis that arousal elicited by interrupting a well-organized response pattern can be differentially manipulated, via confederate-provided cognitions, to be experienced as anger and euphoria. Twenty-five female Ss were individually coached to assemble the game *Instant Insanity* correctly. Each S played with the game until an organized solution pattern was established. Subsequently, they were unknowingly exposed to an insolvable version of the game. Upon the occurrence of a criterion acceleration of heart rate (arousal), a confederate was unobtrusively signaled to perform either a euphoric or angry routine. Postexperimental self-ratings indicated that aroused Ss were generally more susceptible to the confederate's expressed mood.

In recent years, the relationship between cognitive and physiological determinants of emotion has been the subject of an increasing number of investigations. Schachter (1964) has proposed that an emotional state may be considered a function of physiological excitation or arousal and of a cognition appropriate to this state of arousal. Available cognitions determine whether a state of physiological arousal is labeled "anger," "euphoria," or whatever.

Mandler (1964) contends that the interruption of a planned activity leads to the visceral precondition (physiological arousal) for emotional behavior. The exact nature of the emotion will be determined by the specific occasions (environmental cues) that accompany the interruption or inhibition of one's intention or plans. Mandler thus relates a day-to-day behavioral condition to cognitive determinants of emotion. The present study was conceived to investigate the proposition that arousal resulting from the interruption of an organized response is amenable to the manipulations of cognitive appraisal.

SUBJECTS

Twenty-five student nurses, median age being 19 years, served as the Ss of the experiment. All were paid \$1.50 per hour, plus transportation costs to the laboratory.

PROCEDURE

The game *Instant Insanity* was used to establish an organized response pattern. The requirements of the game are such that solving the puzzle requires an organized sequential plan. While the game is known to be difficult for most people, it was modified so that a solution was

relatively simple. The Ss were informed that the purpose of the study was to investigate the influence of cognitive rehearsal on learning. Each S was seated in a one-way-vision room, introduced to the other female S (confederate), fitted with heart-rate electrodes, and given a description of the purpose of the study.

The S and confederate were left alone in the chamber for 2 min to permit habituation to the surroundings and to allow the physiological indices to baseline. The modified game was then introduced to them. They were coached by E until they had completed one correct solution, following which they were left to practice with the game until they achieved the criterion of four successive correct completions. E then entered the chamber, removed the modified game, and directed S and the confederate to "rehearse in their minds" and "imagine" the solution of the game. Four minutes later, the original game was, unknown to S, substituted for the modified game. Each S was asked to demonstrate that she remembered how to achieve a solution. The modified game was different from the original game in that the fourth and last block in the series had had one color panel changed to permit an easy solution. Consequently, practice with the original game was interrupted when S attempted to apply rules learned with the modified game to the original game. This inability to implement the solution with the original game constituted the interruption of an organized response sequence for the purpose of the experiment. Ss in control groups were given the modified game to assemble following the rehearsal phase.

Arousal was defined as a 12-bpm increase of heart rate during the

experience with the original game. Upon its occurrence, the confederate was unobtrusively signaled to commence her routine. The confederate either became euphoric or angry on the basis of the signal received from E. While euphoric, she made comical comments about the game, played with its blocks in a child-like manner, persuaded the S to play Xs and Os, and engaged the S in girl talk. When angry, she made querulous comments about the game, drummed her fingers, slammed the blocks on the table, and generally glowered through the experience.

MEASURES

Immediately following the experiment, the Ss were given a 20-item questionnaire, imbedded in which were two 5-point rating scales of experienced feelings such as rated happiness and irritation. In addition, the questionnaire queried the S's prior experience with *Instant Insanity* and perceived difficulty with *Instant Insanity* and general impression of the experiment.

RESULTS

The central hypothesis of the study was that Ss experiencing arousal as a consequence of interruption would be more susceptible to the confederate's routine than the nonaroused Ss. Two-way analyses of variance were conducted for the Experimental Conditions by Confederate routines on each of the following criterion questions:

(3) How good or happy would you say you feel at present?

(12) How irritated, angry, or annoyed would you say you feel at present?

(The rating scale was: (1) Not at all (2) A little (3) Quite angry (4) Very angry (5) Extremely angry.)

Table 1 summarizes the results of the two analyses. Aroused and nonaroused Ss show no pronounced differences in their mean ratings of happiness after being exposed to a euphoric model. However, when exposed to an angry model, aroused Ss rate themselves significantly less happy than the nonaroused Ss ($F = 2.177$, $p < .06$). Mean ratings of irritation show the opposite effect. Under aroused conditions, Ss exposed to an angry model rate themselves more irritated than nonaroused Ss ($F = 2.867$, $p < .05$). The interaction of the two conditions is significant at the .06 level ($F = 4.01$). An examination of the mean "happiness" and "irritation" ratings shows that the anger induction was quite influential. The effect of the euphoria induction

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Table 1
Mean of Mood Postexperimental Ratings

Confederate Routine	"Happiness"		"Irritation"	
	Aroused M	Nonaroused M	Aroused M	Nonaroused M
Euphoric	2.50	2.66	1.66	2.10
Angry	2.15	3.53	2.85	1.00

was not as pronounced. These results provide general, though equivocal, support for the hypothesis that Ss aroused as a result of interruption would be more influenced in their ratings of emotion by the social context than would the nonaroused Ss.

DISCUSSION

The results indicate trends which support the hypothesis of the study and warrant further consideration and

replication. Mandler's (1964) proposition that arousal results from the interruption of an organized response has been substantiated. All experimental Ss produced the criterion index of arousal. There is the possibility that the increase in heart rate reflects the experience of increasing difficulty in arriving at a solution. However, such an explanation could be interpreted as a concomitant of interruption. The

possibility does warrant investigation, however. The experiment provides some evidence of the validity of Schachter's (1964) hypothesis that arousal can be differentially manipulated to provide different emotional experience. The data show that the way Ss label their arousal does have something to do with the social situation to which they were exposed.

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