EMOTIONAL IMAGERY AND COGNITIVE REPRESENTATION OF EMOTION: AN ATTEMPT TO VALIDATE LANG'S BIO-INFORMATIONAL MODEL

ALBERTO ACOSTA, JAIME VILA and ALFONSO PALMA

UNIVERSITY OF GRANADA, SPAIN

ABSTRACT

In two experiments female students exhibiting fear of rats were differentially trained in stimulus versus response imagination. Subsequently they were presented with fear provoking and non-fear provoking scene descriptions including only stimulus propositions or including stimulus and response propositions (manipulated within subjects in Exp. I and between groups in Exp. II). Greater changes in heart rate were observed in both experiments during the description and imagination of the fear provoking scenes in the groups trained to imagine response information as compared with the groups trained to imagine stimulus information. The results are consistent with Lang's model concerning the cognitive representation of emotional imagery.

1. INTRODUCTION

Many therapy techniques such as systematic desensitization, flooding and cover conditioning, make use of emotional images in order to modify patients' behavior. Some of these techniques can be applied "in vivo", but therapists usually prefer to apply them via the imagination, probably because real events are more difficult to control and adapt to the therapeutic context than imagined ones. However, in spite of the prevalent use of emotional images in a clinical context, theoretical models dealing with mental emotional imagery are scarce. Lang (1977, 1978, 1979) has developed one of the few models based on images as they are used and generated in behavior therapy techniques and has published some experimental data in support of it (Lang et al., 1980; Miller et al., 1981). Subsequently, Lang (1984, 1985) has generalized the model in order to deal with the cognitive events that determine the central representation and expression of emotional responses.

Lang's model is based on Pylyshyn's (1973) and Kieras's (1978) notions on images as well as on Sperry's (1952) concept of the brain. According to Pylyshyn and Kieras, the image is an elaborated description and an integration of specific statements about the world. It is something that is functionally organized, a finite group of propositions which mediates the coding, storage and retrieval of any information, independently of its modality. On the other hand, in accordance with Sperry, Lang considers that the basic function of the brain is not to generate perceptual

M. Denis et al. (eds.), Cognitive and Neuropsychological Approaches to Mental Imagery, 347–354.
experience, but to organize and facilitate action. Lang et al. (1980, p. 180) state:

"The emotional image is seen here as a logical program of information, like those which provide a meaningful integration of stimulus input, but also organizing efferent information (somatic and visceral), and thus having the functional properties of a perceptual-motor set. Our view of the image is both propositional and constructional (Kieras, 1978; Pylyshyn, 1973). That is, the emotional image is not understood to be an internal apprehension, a picture scanned by the mind's eye, but a finite information structure in the brain which can be reduced to specific propositional units. Consonant with the concept of the image as an integration of perceptual and motor elements, the propositions which form the image structure designate both stimulus and response events."

Lang et al. (1980) and Miller et al. (1981) have published some experimental data in support of the model. In these studies control over the informational structure of the image was achieved in two ways: firstly, through differential training of the subjects in stimulus versus response imagination; and secondly, through differential manipulation of the propositional structure of the scripts presented to the subjects (including only stimulus propositions or including both stimulus and response propositions).

The results by Lang and his associates indicate higher physiological activation when the subjects are trained in response imagination and when the scripts presented to them include response propositions. Other researchers have also reported data which seem to support the model. In this context we have carried out two experiments with the purpose of improving on some methodological weaknesses encountered in the literature -such as the screening of the subjects- and to obtain an independent validation of the model.

2. EXPERIMENT I

Subjects were 24 female students evidencing fear of rats. They were assigned to three groups following a blocking procedure according to their subjective and behavioral fear scores: non-training group, stimulus-training group, and response-training group.

Subjects in the training groups had two training sessions in which they had to imagine scenes either including only stimulus propositions or including stimulus and response propositions. Subjects in the stimulus-training group were differentially reinforced for reporting stimulus information during the imagination such as colours, shapes, sizes, etc. Subjects in the response-training group were differentially reinforced for reporting response information during the imagination such as cardiac activation, muscular tension, sweating, etc.

In the laboratory session all subjects had to imagine two non-fear provoking and two fear provoking scenes. One of the two scenes of each type was presented including only stimulus propositions, the other including stimulus and response propositions. The content of the scene and type of script