

Imagery Ability and the Experience of Affect by Free Associative Imagery

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Basic theoretical assumptions underlying the use of imagery techniques in various forms of psychotherapy are that imagery plays an important role in the regulation of emotional processes and that differences among individuals in their imagery ability are related to differences in their ability to experience emotional ideation. This experiment substantiated these fundamental theoretical premises by showing that the access of affect while free associating to cue words can be enhanced by using visual as opposed to verbal responses, by having greater imagery ability, and by interactions of these two variables. The access of affect was comprehensively defined by measures of self-report, primary process thinking, and psychophysiological changes. Evidence also indicated that the experience of affect during periods of rest may be greater for those with higher imagery ability. The results suggest that the interaction between imagery and verbal operations and between the psychological and physiological components of imagery are important factors in the therapeutic use of free associative imagery for exploring emotional processes.

Dual coding theories state that imagery is a specific representational system to be distinguished from verbal cognitive operations (Anderson, 1978; Paivio, 1971). Verbal system encodings are abstract and linear, whereas imagery involves more concrete and idiosyncratic representations consisting of a simultaneous activation of psychological, emotional and physiological patterns. Possessing a sensory/perceptual quality, imagery often involves the visualization of a specific object or situation that has a personal meaning for the individual. Sheehan's (1972) functional similarity concept states that many of the physiological and cognitive processes involved in perception are also involved in imagery, an hypothesis documented in studies demonstrating the similarity between physiological responses to stressful stimuli and to imagery of those stimuli (Craig, 1968; Grossberg & Wilson, 1968; Lang, Melamed & Hart, 1970). Such psychophysiological research has led Lang (1979) to his bio-informational theory that describes imagery as a cognitive propositional network that intimately

links physiological and behavioral patterns. The necessity to explain specifically the physiological patterns has been formulated by Ahsen (1982, 1984) in his Triple Code Model. This model within the cognitive framework separates out Image (I) from Meaning (M) and posits a Somatic state (S) in the middle. Ahsen's ISM Model does not accept that the physiological pattern emerges through the propositional network of meanings and suggests that an image may cause a direct physiological response. In his Triple Code Model, Ahsen offers variations of the ISM as ISM, IMS, MIS, MSI, SIM, and SMI, showing that imagery, somatic response and meanings can be generated in various combinations and from various sparking points. The model, however, emphasizes the predominance of the ISM combination over other combinations, thus underlining the importance of the image.

Because of its distinct ability to generate personally relevant ideation that is enriched with sensory, physiological and behavioral components, mental imagery may be crucial in the regulation of affect and may permit a special access to emotional processes. The degree to which an image is autonomous, to which it spontaneously intrudes into consciousness and can be controlled, seems to be one important feature determining its fluence in the regulation of affect (Horowitz, 1972; Richardson, 1969; Shorr, 1976). Reyher (1977) in particular has emphasized how spontaneous or "free" imagery can often uncover emotions and the unconscious psychological conflict that may be associated with them. In one study Reyher and Smeltzer (1968) instructed subjects to free associate to cue words using either visual imagery or verbal responses. As compared to using verbal associations, visual imagery resulted in elevated electrodermal activity, higher self-reported affect, and more manifestations of drive-related ideation characteristic of primary process.

The theoretical significance of imagery in the regulation of affect is often assumed in the various forms of psychotherapy that utilize imagery techniques. Although frequently used in the behavioral approaches (See Singer, 1966; Strosahl & Ascoug, 1981), imagery has also been an integral component of psychodynamic work, in some cases serving as the central focus of the therapy's interventions and theory of mental functioning (Ahsen, 1968; Desoille, 1965; Dosmantes-Alperson, 1981; Leuner, 1977; Reyher, 1977; Shorr, 1976). A common theme among these dynamic therapies is that imagery, as compared to verbalizations, enables a more effective exploration of unconscious emotional conflicts and may serve as a "special language" of unconscious emotional processes.

An important variable relevant to the hypothesized role of imagery in the regulation of affect concerns individual differences in imagery ability. Research suggest that some people are more fluent and vivid imagers than others (Paivio, 1970; Sheehan, 1972), and that it even may be possible

to make a distinction between "visualizers" and "verbalizers" (Richardson, 1969). Such individual differences in imagery ability may be related to differences in how affective processes are regulated and one's capacity for accessing affective material. This hypothesis is supported by research indicating that individual differences in the experience of imagery correspond to various clinical and diagnostic signs (Foulkes & Fleisher, 1975; Stricklin & Penk, 1980; Yanovski & Fogel, 1978).

The purpose of this study was to examine how the experience of affect—as defined by self-report measures, electrodermal activity and evidence of primary process—is influenced by free associative visual imagery as compared to verbal processes, by individual differences in imagery ability, and by interactions of these two variables. It was hypothesized that while free associating to cue words, a procedure analogous to some therapy techniques, there would be more personally relevant, affective experiences during imagery responses and for subjects possessing greater imagery ability. Experimentally demonstrating these effects would substantiate them as basic theoretical premises that have been assumed in the various forms of psychotherapy that utilize imagery techniques. Because good imagers may experience more spontaneous imagery than poor imagers even during periods of rest, it was also predicted that good imagers would show more electrodermal activity during a baseline period. As such, individual differences in imagery ability may be related to the known differences in psychophysiological research between people who are elctrodermally "labile" and "stabile" at rest (Katkin, 1975).

Method

Subjects

The items from the visual imagery subscale of Sheehan's (1967) Questionnaire Upon Mental Imagery and from Marks' (1973) Vividness of Visual Imagery Questionnaire were administered to 400 undergraduate male students as a measure of self-reported visual imagery ability. Based on a composite score, the 30 highest scorers and the 32 lowest scores were selected and designated as "low visualizers group" and the "high visualizers group."

Apparatus

The subjects were seated in a comfortable chair in a soundproof chamber. A microcomputer controlled all experimental procedures: It presented the cue stimuli on a television screen, recorded the responses from a buttonpress panel placed on the subjects' laps, and guided the subjects through the experiment by tape-recorded instructions. A Grass model 7 polygraph recored electrodermal activity including basal skin

conductance and electrodermal skin responses. The subjects' descriptions of their associations were tape recorded.

Procedure

The subjects were randomly assigned to one of two experimental conditions — the verbal association condition or the imagery association condition. After being seated in the chamber, all subjects were instructed to relax for 10 minutes. Electrodermal activity was recorded throughout this baseline period.

Tape-recorded instructions then described the free-association portion of the experiment. All subjects were asked to free-associate, "to notice and be aware of anything that happens to come into your mind." in response to 10 cue words that appeared one at a time on the television screen. Depending on the experimental condition to which the subject was assigned, the instructional set for responding to the cue words emphasized either a visual imagery or verbal content for these free associations. The subjects in the Visual Condition were asked to respond to each cue word by focusing on any images or "pictures" that came to mind in response to the word. The subjects in the Verbal Condition were asked to free associate to each word by noticing any words or phrases, "anything you happen to say to yourself" in response to the words. No mention was made of visual imagery. For the first 30 seconds the subjects created their associations in silence. At the end of that period they were instructed to recall their associations, making an attempt to reproduce and describe them as accurately as possible.

These free-association protocols were later scored blindly for primary process manifestations using a scoring system developed by Holt and Havel (1960). This scoring system assesses the prevalence and intensity of emotional states that are related to or derived from the sexual and aggressive drives, the so-called "content" aspects of primary process thinking as conceptualized by psychoanalytic theory.

During the silent association period the subjects were asked to perform a simple task that was intended to insure that subjects who were asked to use visual associations were not employing verbalizations, while subjects asked to use verbal associations were not employing visual imagery. Research has shown that engaging in such simple cognitive tasks will interfere with any other cognitive activity of that kind, but will not greatly affect other types of cognitive activity (Brooks, 1968; Greenberg, 1977). In the visual imagery condition, the subjects heard a tape-recorded voice counting from 1 to 5. On every count of 5, the subjects pressed a button labeled "5" on the panel on their lap. This simple task was intended to occupy the subjects' verbal processes, thereby eliminating some of the verbal associations that may have intruded into their visual associations. In the verbal condition, the analogous task was to watch on the television

screen the presentation in sequence of the digits 1 to 5. At each appearance of the digit "5," the subjects pressed the "5" button. Errors on these tasks were scored by the computer.

The cue stimuli that elicited the associations consisted of five affective and five neutral words. The affective words were punish, bloody, naked, seduce, and kill; the neutral words were walk, build, browse, cook and discuss. The neutral words were included in the experiment because of the possibility of there being a higher arousal during imagery, as compared to verbalizations, simply due to the greater effort it may require. Four randomly determined sequences of the 10 words were used and each subject was randomly assigned to one of the four sequences. Using statistical tables compiled by Kucera and Francis (1967), cue words in the affective and neutral word-sets were chosen so that they did not differ, as determined by *t*-test, in terms of frequency of use in the English language. Based on the results of a rating study, the affective and neutral word-sets were also chosen so that they did not differ, as determined by *t*-test, in terms of their degree of abstraction and the degree to which they suggested physical activity. Choosing the words based on these dimensions controlled for differences in the extent to which the word-sets pulled for verbal or visual associations and for the higher physiological arousal that is known to occur during imagery involving physical activity (Jones & Johnson, 1978).

All subjects answered a post-experimental questionnaire containing 5-point bipolar items that inquired about: (1) the degree to which they censored their description of their associations; (2) the degree to which their associations were personally relevant to their lives; (3) whether there were any experiences of sounds, smells, tastes or body sensations during their associations; and (4) the degree to which the buttonpress task interfered with their associations.

Results

During the baseline period the High Visualizers manifested a higher mean basal skin conductance than the Low Visualizers ($F = 8.48$, $df (1,58)$, $p < .01$). A higher mean basal skin conductance ($F = 8.80$, $df (1,58)$, $p < .01$) and a higher mean number of electrodermal skin responses ($F = 7.11$, $df (1,58)$, $p < .01$) also appeared for the High Visualizers during the free associations than for the Low Visualizers. On the post-experimental questionnaire the High Visualizers reported more perceptions of tastes ($F = 8.53$, $df (1,58)$, $p < .01$), smells ($F = 5.17$, $df (1,58)$, $p < .01$) and body sensations ($F = 7.29$, $df (1,58)$, $p < .01$) during their free associations than did the Low Visualizers. Because it was necessary to determine whether electrodermal activity during free associations was influenced by habitual levels of arousal during baseline, scores representing a deviation from baseline mean were calculated for basal skin conductance and electro-

dermal skin responses during free associations. An analysis of variance of these scores yielded no significant differences between High and Low Visualizers during free associations.

Several significant results emerged concerning differences between visual and verbal association conditions. Subjects in the Visual Condition reported more censoring ($F = 9.40, df (1,59), p < .01$) and a higher perceived personal relevance of their associations ($F = 4.27, df (1,59), p < .01$) than subjects in the Verbal Condition. As depicted in Figure 1, an interaction emerged in which subjects in both conditions reported the same low degree of censoring of their responses to the neutral words, while for the affective words subjects in the Visual Condition reported a greater change in the increase of censoring than for subjects in the Verbal Condition ($F = 8.99, df (1,58), p < .01$). On the buttonpress task subjects in the Visual Condition made twice as many errors as subjects in the Verbal Condition ($F = 4.24, df (1,59), p < .05$). None of the predicted results emerged concerning the manifestation of primary process in the free association protocols.

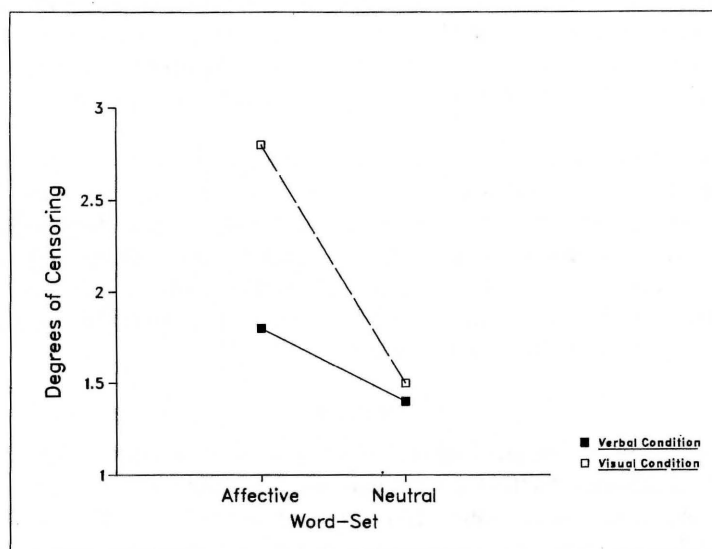


FIGURE 1
Association condition x word-set interaction for censoring of associations

As illustrated in Figure 2, a significant interaction occurred between association condition and visual imagery ability concerning the subjects' reports of the personal relevance of their associations ($F = 4.77, df (1,58), p < .01$). High Visualizers in the Visual and Verbal Conditions and Low Visualizers in the Visual Condition all reported a relatively high level of

personal relevance, while Low Visualizers in the Verbal Condition reported lower personal relevance.

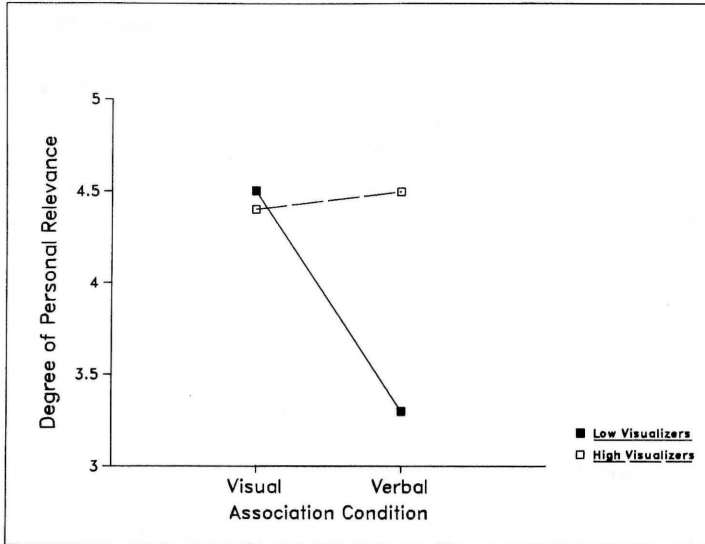


FIGURE 2

Visual imagery ability x association condition interaction for personal relevance of association

Conclusions

Several findings support the basic theoretical assumption in various forms of psychotherapy that visual imagery plays an important role in the regulation of affect. That High Visualizers manifested greater electrodermal activity than Low Visualizers during baseline and while free associating to cue words suggest that the high visualizers were experiencing more physiologically arousing affect. High visualizers also reported more imagery in other sensory modalities while free associating, imagery which undoubtedly enriched the affective tone of their associations. Also, that both High and Low Visualizers using visual free associations reported a higher personal relevance of their responses than Low Visualizers using verbal associations indicates how the affective quality of imagery is related to its ability to facilitate a sensory reactivation of a specific past experience. Even in the Verbal Condition, High Visualizers reported a higher personal relevance, which may be the result of their experiencing imagery even when instructed to use verbalizations. That Low Visualizers in the Visual Condition also reported a relatively high personal relevance suggests that even Low Visualizers can access more personally relevant ideation when instructed to use imagery rather than verbal associations. Because good

imagers may be more adept at using imagery to probe their underlying emotional life, psychotherapists may find it diagnostically valuable to evaluate a client's imagery ability; but given adequate training in the use of imagery, even poor imagers can enhance their insight into affective, personally relevant experiences.

The hypothesis that free associative imagery can enhance the experience of affect was further supported by the result that all subjects using visual associations, regardless of imagery ability, reported a higher personal relevance of their associations, and, consequently, a greater need to censor their descriptions of these affective experiences as compared to subjects using verbal associations. The increase in the need to censor responses to affective words as compared to neutral words was also greater for subjects using visual associations. While responding to the cue words, subjects in both association conditions were asked to perform a simple task that was intended to maximize the likelihood of their employing the appropriate type of association. Although subjects in both conditions did not differ in their report of how much the task interfered with their associations, subjects using visual associations made twice as many errors on the task than did subjects using verbal associations. As indicated by responses to an open-ended question on the post-experimental questionnaire, many of the subjects in the visual condition reported being so involved in their associations that they occasionally neglected the task. Rather than the buttonpress task interfering with the visual associations, the visual associations interfered with performance on the task — which was probably due to the personal and affectively captivating quality of the visual associations.

The predicted differences between High and Low Visualizers and between visual and verbal associations did not emerge concerning the primary process manifested in the association protocols. A possible explanation is that even though more affect may have been experienced through imagery associations, subjects did not or could not accurately translate that affect into the spoken descriptions of their imagery that were later scored for primary process. Because imagery may be a cognitive system that is distinct from verbal processes, it is entirely possible that attempting to translate imagery experience into the verbal system may result in a loss of the representation of affect. An additional explanation is that the instructional set to free associate may have restricted the range of primary process ideation. In order to make the Visual Condition instructions as similar as possible to those for the Verbal Condition, subjects were only instructed to focus on visualizations. Reyher and Smeltzer (1968), who did find more primary process in imagery associations than in verbal associations, instructed their subjects in the imagery condition to focus on "body sensations" and "feelings" as well as visual images.

Reyher and Smeltzer's (1968) more powerful instructional set for imagery

associations may also account for their finding greater electrodermal activity during imagery associations than for verbal associations, while this study did not. However, in this study, High Visualizers did show elevated electrodermal activity during the baseline period as compared to Low Visualizers — a habitual level of arousal that contributed to their greater electrodermal activity during the free association task. This result was consistent with the hypothesis that even during periods of supposed relaxation and inactivity, people with greater imagery ability may be reacting emotionally and physiologically to their own internally generated experiences. For High Visualizers, therefore, periods of silence in psychotherapy may contain rich material in the form of spontaneous mental imagery.

Affective imagery is an integrative process that potentially activates a network of psychological and physiological patterns. Measures of physiological changes, self-reported assessments, and objective scorings of primary process manifestations may each represent one aspect of the total imagery experience. Yet the presence or absence of these various components of affective imagery is poorly understood. Whether the integrity of the total imagery experience is retained, or whether its various psychological and physiological components are absent or dissociated, may be important diagnostic signs in psychotherapy. Several theorists, for example, have speculated that various cognitive mechanisms may be employed as defensive strategies to obscure or disrupt image integrity (Ahsen, 1968; Horowitz, 1970), and may thus indicate underlying intrapsychic conflict. That imagery in therapy must be described in order to be shared also implies shaping and censoring, both consciously and unconsciously, by verbal operations. These verbal processes, which are heavily determined by intellectualizations and reality demands, may restrain the spontaneous, affective qualities of the imagery experience. Elucidating the role of imagery in the regulation of affect and the implications of this for psychotherapy, therefore, requires experimental investigations of how various psychological and physiological components of imagery are integrated, how they become dissociated, and how describing and evaluating one's imagery necessarily involves an interactive translation between imagery and verbal processes.

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