IMAGES AS MEMORY AIDS: IS BIZARRENESS HELPFUL?

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Eighty subjects learned non-verb-seen-words triplets suggesting either common, plausible scenes or bizarre, implausible scenes and were instructed to use imagery or a verbal-mentalization strategy. Clearly the best free-recall performance was by the subjects who used plausible images as mediators, a superiority that was not due simply to a difference in semantic meaningfulness between the common and bizarre triplets.

The role of mediating images as aids to memory is currently enjoying a renaissance of interest, as may be seen in the recent reviews of Paivio (1969) and Bugelski (1970). A number of experiments have shown that when subjects are given instructions to use images as mediators in a paired-associate situation, recall scores are remarkably high. For example, the frequently cited study of Wallas, Turner, and Perkins (1957) reported approximately 95% correct recall with 700 paired associates, each seen only one time. More recently, Bugelski, Kidd, and Segnen (1968) also reported that, with enough time, subjects given instructions to form images outperformed controls given no such instructions, a result confirmed by Bugelski (1968) using a more difficult task. Similarly, Paivio (1969) has repeatedly shown image instructions to be superior to re-iteration instructions or to no instructions at all. Furthermore, the assertion that subjects, when instructed to do indeed use images instead of verbal mediators was supported indirectly by Bugelski (1968), who examined his subjects’ descriptions of their mediators, and in a different fashion by Atwood (1969), who showed that visual interfering stimuli were more detrimental than auditory ones when subjects were instructed to use images, while the reverse was the case in a verbal-learning task not involving imagery. It thus would seem to be well established that images can be used effectively as mediators for learning verbal material.

Attention has now turned to specifying the characteristics of a ‘good’ mnemonic image—to those qualities that make it most effective as a mediator. Atwood (1969), for example, has demonstrated the importance
of figurative unity in images. The interdependence of the various parts of the image enhances the likelihood that one part will be able to evoke the whole. One qualitative aspect of images traditionally thought to be related to mnemonic effectiveness is their bizarreness, or implausibility. Advice to construct bizarre and unusual mental pictures can be found in the classical literature (see Yates, 1966), as well as in modern sources (Miller, Galanter, and Pribram, 1960). However, current attempts to confirm bizarreness as an important variable have so far produced inconclusive results (Alwood, 1966; Wood, 1967; Bugelski, 1970), probably due in part to the difficult methodological problems involved. One of these problems involves manipulating the degree of bizarreness of the images without destroying the imaginative power of the mnemonic exercise might have for a real situation in which the subject is trying to remember a number of things. On the one hand, when the experimenter completely specifies for the subject the details of the mnemonic image, the situation is quite different from the latter's being left to create his own. Although Briggs, Hawkins, and Crovitz (1970) did obtain high recall scores when images were specified, performance might well have been better if the subjects had been required to construct images of their own choosing. On the other hand, simply telling the subjects to construct either common or bizarre images leads to difficult description and rating problems. Furthermore, it probably also confounds figural unity with bizarreness, since the most 'common' image involving two or more initially unrelated objects would likely be a simple juxtaposition.

The experiment now reported sought to clarify the relationship between bizarreness of the mnemonic image and efficiency of free recall by following a procedural middle course. Our aim was to maintain high figural unity and, at the same time, to provide just enough guidance in the construction of the image to ensure that degree of bizarreness was manipulated as the subject was free to construct an image mostly of his own choosing.

METHOD

Experimental approach—the procedure involved presenting noun-verb noun-triplet images to 22 groups; the verbs differed to guide the formation of either common or bizarre images. The subject's task was to recall as many of these as possible within a given period of time. The basic approach, then, was to use a simple two-group between-subjects design. However, certain additional controls were required. While elements of the triplets might be judged for frequency of usage, atochabil

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The interaction quite clearly is due to the opportunity of the common triplets being better in the two groups with the most frequent exposure, in comparison to the group with the least amount of exposure. The rare triplets, on the other hand, were not significantly different between groups. The common triplets also showed a significant difference between the groups with the most and the least exposure, whereas the rare triplets did not. The groups with the most exposure showed a significant difference between them, whereas the groups with the least exposure did not.

Fig. 1. Mean number of responses correctly recalled for each group during the free recall test. The error bars represent the standard error of the mean. The groups are labeled as: 1 - Common triplets, 2 - Rare triplets. The results show a significant difference between the groups for both the common triplets and the rare triplets. The common triplets were recalled better in the group with the most exposure, whereas the rare triplets were recalled better in the group with the least exposure. The middle group showed intermediate results.

RESULTS

The results from the experiment showed that the frequency of exposure significantly affected the recall of the triplets. The groups with the most exposure recalled the common triplets better, whereas the groups with the least exposure recalled the rare triplets better. There was no significant difference between the groups for the rare triplets, but the groups with the most exposure recalled the common triplets better than the groups with the least exposure. The groups with the intermediate exposure showed intermediate results. The results suggest that the frequency of exposure plays a significant role in the recall of the triplets.
for the bizarre-verbal group. This suggests that the superiority of common images is not simply a consequence of the greater time spent in the construction of those images.

DISCUSSION

The present data indicate that use of common or plausible triplets resulted in superior recall, with unprejudiced the best performance being identified with the construction of images from this material. Thus it would appear that the frequently recommended strategy of using bizarre imagery as a mnemonic aid is unwise.

Before speculating on the reasons for this finding, let us explore the possibility that an explanation not involving imagery might easily account for our results. The likelihood that the superiority of the common-imagery group is attributable to some 'verbal' factor rather than to the content of the subjects' visual images was fairly clearly eliminated by the several procedural controls employed. First, the fact that some words are easier to remember than others was offset by using the same stimulus and response nouns in both the common and bizarre triplets. Second, while the meaningfulness of the triplet as a whole changes when the verb is changed, the inclusion of groups with identical stimulus materials, but with instructions to use a verbal-mediation strategy, makes possible the segregation of semantic effects from effects due to imagery. Indeed, the significant interaction of stimulus material and instructions makes clear the operation of nonverbal—here, specifically 'imaginal'—factors in the enhanced recall of the common-triplet response noun.

How should we account for the superiority of common over bizarre imagery? One might suppose, given the virtually limitless capacity of visual memory (see Wallace et al., 1967; Standing, Conzeo, and Haber, 1970), that an image, if well formed, should persist regardless of its bizarre-ness. Indeed it is possible that the subjects' bizarre images for some reason may have been less complete, less detailed, or less "vivid." For all groups, the 30-sec maximum for image construction was usually ample; nevertheless, the subjects presented with the bizarre triplets may have adopted a less stringent criterion for vividness or completeness.

A second possibility for the superiority of plausible imagery is that a common triplet may easily suggest several images to a subject, whereas a bizarre triplet suggests only one. A greater number of images leading to a given response could increase the likelihood of that response at the time of recall.

Figurative unity, which Atwood (1969) has shown to be important for remembering an image, probably did not play a role in the present experiment. The subjects in both imagery conditions were instructed to create an image that linked the two nouns in some manner specified by the verb, so that there is no reason to believe that the parts of a bizarre image were less spatially interdependent than those of a common image.

One final point concerns what is meant by 'common' as opposed to 'bizarre' images as mnemonic aids. One might object that there is nothing particularly common about elephant, horse, or queen; play hair (two of the common triplets used); that is, that the triplets do not truly span a continuum from common to bizarre. In fact, 'commonness' is probably an inappropriate term when used in the context of mnemonic imagery. A truly common image in a practical mnemonic system would be an extremely rare event, since the essence of such a system is the pairing of the object to be remembered with one of an arbitrary list of items, a pairing chosen simply because the items are easy to remember in a particular order. It therefore may be more reasonable to refer to a continuum running from 'plausible' to 'bizarre.'

In conclusion, and aside from the particular reasons for the superiority of common over bizarre imagery, it seems fair to say that any practical advice to a person for using imagery as a mnemonic system should, while stressing concreteness and figural unity, direct him to imagine the most plausible connection between the retrieval cue and the object to be remembered, and not to waste effort constructing an especially bizarre, implausible, or unusual image.

Notes
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1. Some examples of nouns rejected on this basis would be those in brackets: horse pull [carriage], shotgun blast [fire], or tablespoon measure [hula].
2. Response nouns rejected on this basis might have been (in brackets) horse pull [strawberries], shotgun blast [fire], or tablespoon measure [hula].
References


