The Costs and Benefits of Verbally Rehearsing Memory for Faces

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Witnesses of a crime are typically asked to describe the appearance of the perpetrator. Such descriptions can be of great help in assisting investigators. However, recent research suggests that one potential cost of describing a previously seen face is that, at least under some circumstances, verbalization can actually disrupt subsequent recognition performance. For example, in a study by Schooler and Engstler-Schoeller (1990) subjects viewed a videotape of a bank robbery and then, after a brief delay, verbalization subjects were asked to describe the appearance of the bank robber in as much detail as possible, whereas control subjects engaged in an unrelated filler activity. All subjects were then given a recognition test that included photos of the target person and seven similar-appearing distractor photos. Compared to control subjects, verbalization subjects were significantly less accurate at recognizing the target face. In this chapter, we first review the evidence and current explanations for the disruptive effects of verbalizing previously seen faces (termed verbal overshadowing), and then describe some recent findings that reveal situations in which verbalization of faces can be helpful.

A BRIEF REVIEW OF VERBAL OVERSHADOWING

The basic finding that verbalizing a previously seen face can interfere with subsequent recognition performance has been replicated numerous times in the Schooler lab (Fallshore & Schooler, 1995; Ryan, 1992; Schooler & Engstler-Schoeller, 1990; Schooler, Ryan, & Reder, 1990) as well as in other labs (e.g., R. Chaffin, personal communication, 1990; Dodson, Johnson, & Schooler, in press; C. Kelley, personal communication, 1991; Read & Schooler, 1994; Westerman, 1991). The verbal overshadowing effect can be conceptualized within a more general framework that assumes that many activities involve a combination of both verbalizable and nonverbalizable task components. For example, as discussed in more detail later, face recognition can involve both an attention to verbalizable features (e.g., moles, shape of nose, size of ears, color of eyes, etc.) as well as difficult to articulate configurual characteristics (e.g., the relationship between the features). From this perspective, a reasonable account of the effects of verbalization is that verbalization causes subjects to emphasize the reportable task components, thereby deemphasizing (overshadowing) the nonreportable components.

Consistent with the interpretation that verbalization shifts subjects' relative emphasis on verbalizable versus nonverbalizable components, verbalization has been shown to impair a variety of other activities for which successful performance is likely to require the substantial use of knowledge or processes that are difficult to articulate. They include: color memory (Schooler & Engstler-Schoeller, 1990), insight problem solving (Schooler, Olsin, & Brooks, 1993), affective judgments (Schooler & Wilson, 1991; Wilson et al., 1993, Wilson & Schooler, 1991), implicit learning (Berry, 1984; Fallshore & Schooler, 1993), visual imagery (Brandimonte, Schooler, & Gabbino, 1995), recognizing deep structure analogies (Sieck, 1993), taste memory (Melcher, 1994; Melcher & Schooler, in press), map memory (Fiore, 1994; Fiore, Eisenhart, & Schooler, 1993), and music memory (Houser, Fiore, & Schooler, 1995; Houser & Schooler, 1994). In contrast, verbalization has been shown to help or at least not impair performance when success can be effectively achieved by relying on readily reported knowledge. Such tasks include: memory for word lists (Darley & Glass, 1975), memory for a spoken statement (Schooler & Engstler-Schoeller, 1990), analytic problem solving (Gagne & Smith, 1962; Schooler & Melcher, 1995; Schooler et al., 1993), and learning declarative knowledge (Chi, de Leeuw, Chiu, & LaVancher, 1994). The observation that verbalization disrupts a substantial variety of activities that depend on nonverbalizable information or processes while not disrupting more readily verbalized activities supports the notion that verbalization deemphasizes nonverbalizable task components.

In the domain of face recognition, additional research has been conducted in an effort to more precisely characterize the verbalizable and nonverbalizable task components that may be differentially affected by verbalization. Many conceptualizations of face recognition assume that it involves the consideration of two general types of information: featural information corresponding to the characteristics of individuals facial features and configural information corresponding to the relationship between those features (Carey...
& Diamond, 1977; Diamond & Hryciw, 1984). These features are the configural components that describe faces as they encode faces configurality. The recognition of the face (e.g., the characterization of the appearance of the appearance) is based on the featural aspects of the face.

Fallshore and Schooler (1986) have studied the use of featural and configurality and between verbalization and memory. One contribution these two studies have suggested that when the face is presented upside down (e.g., Rhodes, Tan, Bracht, 1986), less information is learned and minimized under conditions in which verbalization is likely to be used. Consistent with some observations that verbalization disrupts the recognition of faces when the recognition did not impair recognition, it is tested with inverted recognition, findings is that verbalization disrupts declarative memory and therefore its impact on verbal information is less apt to be observed.

Although consistent with the idea that verbalization disrupts declarative memory, it should also be consistent with the view that verbalization de-emphasizes visual information (e.g., Brandimonte & Schooler, 1986), the visual code is susceptible to the effects of verbalization because the verbal code Verbalization may deemphasize visual information and, more generally, with nonreportable information.
4. THE COSTS AND BENEFITS OF VERBALIZABLE TASK COMPONENTS AND DECODING COMPONENTS. In the context of face memory, a de-emphasis on configural informational components of face memory results in a disparity between the encoding and the target encoding that emphasized during encoding and declarative encoding and that emphasized during encoding and declarative encoding during encoding.

THE BENEFIT OF VERBAL REFRESHMENT

The suggestion that the effects of verbalization are not only an emphasis on declarative encoding and that emphasized during encoding, but also a re-presentation during encoding, that emphasizes during verbalization suggests that these effects of verbalization should be eliminated if subjects are given the opportunity to see the face again after verbalization. Accordingly, if impairments are due to the inconsistency between the information emphasized during encoding and that emphasized during verbalization, then re-presenting the target face might enable subjects to recode the face in a manner that reduces this inconsistency and thereby eliminate the disruptive effects of verbalization. To address this issue, we examined the effects of re-presenting a target face after subjects had verbalized its appearance. Subjects viewed a target face, and then verbalization subjects were asked to describe it while control subjects engaged in an unrelated filler activity. After engaging in the control or verbalization activities, subjects assigned to the re-presentation condition were shown the target photo again. Finally, all subjects were given the recognition array that included a different photo of the target face and five similar distractors.

Based on the importance of the disparity between the information emphasized during encoding and verbalization, our prediction was that the disruptive effects of verbalization would be eliminated when the target face was re-presented following verbalization. As can be seen in Fig. 4.1, our prediction was not only observed but with a twist. To our surprise, re-presentation not only eliminated the verbalization effect; it reversed it.
Due to the somewhat surprising observation that re-presentation not only eliminated the negative effects of verbalization but actually reversed it, we replicated the procedure with a different set of faces, to ensure that the effect was both reliable and generalizable. To get a better understanding of the possible boundary conditions of this effect, we also added a third condition in which we re-represented the target face in an inverted position. Accordingly, if subjects extracted very simple featural information from the re-presented target face, then even inverted re-presentation could be of some value. If re-presentation refreshed subjects' configural memory or facilitated a more sophisticated analysis of individual features, then only the upright re-presentation should be of value. As can be seen in Fig. 4.2, the beneficial effects of re-presentation combined with verbalization were clearly replicated in the upright condition; however, there was no similar benefit for re-presentation of the inverted face.

The observation that re-presentation and verbalization reliably interacted in the manner that they did provides an important constraint on how we interpret the effects of re-presentation. Had re-presentation merely attenuated the verbal overshadowing effect, then the effects of re-presentation could have been attributed to a refreshing of the configural information, thereby reducing the disparity between the information emphasized during encoding and verbalization. Had re-presentation affected performance in both the verbalization and no-verbalization condition, then the effects of re-presentation could have been attributed simply to rehearsal. However, the fact that re-presentation improved performance only when subjects previously verbalized the face suggests that verbalization was responsible for causing subjects to extract new information from the face during re-presentation.

![Graph](image)

**FIG. 4.2.** A replication of the re-presentation study with the addition of an inverted re-presentation condition.

The impact of subsequent ability benefic effects of its solution. When solving a problem, subjects often show better results if they practice the solution. Needham & Begg (1970) observed that receiving a solution to a problem allows subjects to appreciate the solution and its underlying aspects of the solution. They found that subjects who view the solution and who have refreshed their memories for the solution's aspects of the face, are in a position to optimally apply the solution's aspects to their disposal. On one hand, subjects may have refreshed their memories for the solution's aspects of the face, and on the other hand, they may have refreshed their memories for the solution's aspects of the face.
Although this account must still be considered somewhat speculative at this time, the general finding that re-presentation of the target face can reverse the negative effects of verbalization does offer some rather straightforward insights into the nature of the effects of verbalization. First, the fact that reencoding the face following verbalization eliminates the verbal overshadowing effect further supports the suggestion that the disruptive effects of verbalization are due to the inconsistency between the information emphasized under standard encoding conditions and the information emphasized following verbalization. Second, the fact that verbalization is actually helpful when combined with re-presentation of the face supports the claim that consideration of verbalizable aspects of a face can be helpful, particularly when it is done in such a way as to not be inconsistent with the manner in which the face was encoded.

The Relationship Between Verbalization and Interference

In the standard verbal overshadowing paradigm, subjects view a single face, verbalize it or not, and then are tested. However, real-world settings may not be as tightly controlled; subjects may see many faces at the time of the witnessed event, or they may be exposed to multiple mug shots after the event. Although a few studies have found that the deleterious effects of verbalization can persist for some time after subjects viewed and verbalized the face (2 days in the case of Schooler & Engstler-Schooler, 1990; 2 weeks in the case of Read & Schooler, 1994), it is still possible that the effects of verbalization would be quite different if subjects were exposed to multiple faces at the time of encoding. For example, Deffenbacher, Carr, and Leu (1981) found that exposure to multiple faces near the time of encoding of a target face produced a significant degree of interference, even though subjects were generally resistant to additional forgetting when tested 2 weeks later. This finding is also consistent with other demonstrations that the interference associated with seeing multiple faces primarily occurs from exposure to faces presented under comparable encoding conditions (e.g., Davies, Shepard, & Ellis, 1979). Thus, although verbalization effects have been shown to be relatively unaffected by delay, it is an open question as to whether verbalization interacts with the effects of interference associated with encountering multiple faces within the context of the encoding situation.

In fact, there is some reason to believe that verbalization might help to insulate subjects against the interfering effects of seeing multiple faces. For example, Deffenbacher et al. (1981) also observed that, relative to faces, words were less susceptible to interference resulting from encountering intervening stimuli between encoding and test. Thus, another potentially useful characteristic of face verbalization is that it may provide semantic tags that may help subjects keep track of the target face across multiple faces prior to being tested.

To address the relationship between verbalization and Schooler (1994) conducted a face verbalization interference test where subjects were instructed to remember faces viewed a face, verbalized it or not, and then the remaining three faces. Subjects were then exposure to faces in an order corresponding to faces that were tested in later trials may have exposure to earlier recognition tests. What is interesting about these data, however, is the fact that subjects showed markedly less interference than controls.

Although it is not possible to present procedures for testing for differential susceptibility to interference. As mentioned, Deffenbacher et al.

![Figure 4.3](image)

**FIG. 4.3.** The effects of verbalization and interference of interpolated faces.
(and landscapes) were more susceptible than words (nouns) to retroactive interference. Deffenbacher et al. speculated that this difference might be due to the relative role of phonological and semantic encoding mechanisms for visual and verbal stimuli. They suggested: "Interference is not initially observed for the nouns, however, because the phonological and semantic encoding mechanisms are much more successful with them than the landscapes and faces, activating already learned well established codes that could possibly serve as pegs on which to hang episodic information." (Deffenbacher et al., 1981, p. 304).

It may be that the verbalization of a face helps to associate it with a semantic code that provides a tag which enables subjects to differentiate it from other faces to which they have been exposed. In short, verbalizing faces may cause them to be treated more like words; on the one hand, this may disrupt the consideration of the unique configural properties of faces, but on the other hand, this may enable faces to be better tagged and therefore to withstand the interference associated with exposure to multiple faces.

CONCLUSIONS, CAVEATS, AND IMPLICATIONS

In sum, there appear to be both costs and benefits to verbal rehearsal of faces. On the down side, verbalization can de-emphasize critical nonreportable task components associated with a variety of nonverbal activities. In the domain of face recognition, verbalization of faces appears to result in a de-emphasis at the time of recognition of the configural information typically involved in the encoding of upright same-race faces. This disparity between the nonreportable configural information emphasized during encoding and the more readily verbalized information emphasized at test can result in reduced performance of subjects who attempt to verbalize a previously seen face.

On the positive side, when the disparity between the information attended to during encoding and postencoding verbalization is reduced through representation, the negative effects of verbalization are not only reduced but actually reversed. This combination of verbalization and re-presentation may improve subjects' performance both by eliminating the inconsistency between encoding and postencoding activities and by highlighting differences between subjects' verbalized memories and the target, thereby providing subjects with an opportunity to fill in and correct their memories. Another positive effect of verbalization is to insulate subjects against the disruptive effects of interference, perhaps by providing semantic tags that enable them to better differentiate the faces.

The potential for practical applications of this research is quite substantial. First, it seems clear that we must not assume that asking witnesses to describe the appearance of the perpetrator has no consequence on the witnesses' memory. Instead, it appears that verbalization may have both costs and benefits, depending on a variety of factors. With respect to the findings reported here, the observation that subjects benefit from verbalization when seeing a face re-presented raises the possibility that it may be helpful during a crime, witnesses verbalize the perpetrator's appearance to themselves and then recheck the face to see how their verbalization fits. Of course, it is not clear how often witnesses would have the presence of mind to be able to engage in such complex processing activity.) There may also be some practical significance to the finding that verbalization may off insulate against interference. Specifically, verbalization may help to protect subjects against the interference that can result from exposure to multiple mug shots (e.g., Davids et al., 1979).

Although this line of research has potentially important practical implications, some caveats should be considered before direct applications are contemplated. Most important, it should be noted that, although the negative effects of verbalization on face recognition have been replicated many times in various labs, they are not always observed (e.g., S. Lindsay, personal communication, 1990; Lovett, Small, & Engstrom, 1992; Yu & Geiselman, 1993). It is not entirely clear why these differential effects of verbalization are sometimes observed, many possible factors may be involved. For example, in the studies reviewed here it has been seen that the presence of verbalization effects depends on the degree to which subjects spontaneously rely on nonreportable face components (e.g., configural) at encoding, the degree to which subsequent recognition considerations are shifted away from what was emphasized during encoding, and whether interference encountered. It is possible that some of the failures to find disruptive effects of verbalization may have been the result of variations in these variables.

There also may be important population variables at play. It seems quite possible that subjects vary in the degree to which they spontaneously focus on nonreportable face components during encoding, which may mediate whether or not they are subsequently impaired by verbalization. Consistent with this view, Ryan and Schoeler (1995) found that verbalization impaired the performance of subjects who scored above the median on various visual memory tasks (e.g., embedded figures, general face recognition tasks), but not those who scored below the median on these tasks. It is also possible that subjects may differ in their ability to apply verbal processes to faces, and this difference may also mediate the impact of verbalization. For example, Ryan and Schoeler also observed that subjects with above-average GPAs (presumably higher verbal abilities) showed less impact of verbalization than subjects with below-average GPAs. Additional evidence for the importance of verbal ability comes from research in a very different domain: verbal ability and expertise in wine. Melcher and Schoeler (in press) observed that verbalization impaired the wine recognition performance of non-expert wine drinkers.


