On the relative difficulty in recalling names and occupations

WILLIAM SCOTT TERRY
University of North Carolina at Charlotte

Names are typically more difficult to learn and remember than are other personal facts, such as occupations. The recall of names and occupations was compared when the items were nominally matched by using homonyms, that is, words that could be either surnames or occupations (e.g., *Mr. Cook,* or *cook*). This manipulation was made in between-groups as well as within-subjects designs. College student subjects studied face photographs labeled with a surname or an occupation. The designation of a common set of homonyms as names or occupations varied between two groups of subjects. For a third group, the homonyms were used as names and occupations for different pictures in a within-subjects comparison. In the between-groups comparison, names were not recalled significantly less well than occupations, whereas in the within-subjects comparison, names were recalled less well than occupations. Name recall in the within-subjects group was significantly less than recall in the name-only group. The difficulty in name recall may be due to characteristics of the verbal items used, such as meaningfulness, and the use of either between- or within-subjects designs.

Psychologists have often noted the difficulty we seem to have in recalling people's names, especially in relation to recall of other kinds of personal information. For example, G. Cohen and Faulkner (1986) gave their subjects fictional biographies to learn, consisting of a name, occupation, hobby, and place of residence (e.g., "In Glasgow a policeman by the name of James Gibson has recently won a prize for ballroom dancing," p. 193). They found that subjects were less likely to remember the names (either first or surname) than the other types of information, and that this pattern obtained across young, middle-aged, and elderly adults.

This relative difficulty in recalling names versus other items of personal information has sometimes been attributed to the manner in which information about persons is stored in memory. Bruce and Young (1986) presented a theory based on person identity nodes, and Morton, Hammersley, and Berkerian (1985) described a headed records model. Both theories suggest that names are more difficult to access, or are accessed later, than other personal facts. A person may

AMERICAN JOURNAL OF PSYCHOLOGY
Spring 1994, Vol. 107, No. 1, pp. 85–94

be identified by face recognition or activation of semantic information, yet the name may remain unrecalled. Bruce and Young (1986) noted that the converse case, in which the name is remembered in the absence of recall of other identifying information, rarely occurs. Neuropsychological evidence from brain-injured individuals also suggests that names are stored separately from other words (e.g., McCarthy & Warrington, 1990).

McWeeny, Young, Hay, and Ellis (1987) argued that simpler explanations for the relative difficulty in name recall need to be considered, if only to be ruled out, noting that name and occupation words differ along a number of dimensions familiar to investigators of verbal learning. Names may be less familiar, meaningful, or imageable, whereas occupations or hobbies may possess more detailed semantic memory representations. McWeeny et al. sought to equate for some of these other verbal differences through the use of "ambiguous" words as names and occupations. Specifically, homonyms that could be used as surnames or occupations were chosen (e.g., a person is named *Carpenter,* or is a *carpenter*). Subjects studied face pictures given a name and occupation label. Some pictures had ambiguous words as the names, and others had different ambiguous words as occupations. McWeeny et al. found that even given this nominal matching, occupations were learned better than names. This finding has subsequently been referred to by G. Cohen (1990) as the Baker-baker paradox: It is more difficult to recall the name *Baker* than the occupation *baker.*

The design of the McWeeny et al. (1987) study raises two methodological issues. First, the use of a homonym as both a name and an occupation need not imply it is the same word in both cases. Martin (1975) has noted that a given word may have different meanings in different contexts. Indeed, neuropsychological evidence has shown a dissociation in aphasia of homographic words used as nouns versus verbs (Caramazza & Hillis, 1991).

Second, McWeeny et al. (1987) used a within-subjects comparison of ambiguous names and occupations. G. Cohen (1990) reported using a similar manipulation in a between-groups design. Cohen was specifically interested in the effects of meaningfulness on recall, and so ambiguous names were paired with nonword occupations for one group, and nonword names were paired with ambiguous occupations for a second group. Recall of the ambiguous names and occupations between groups was equivalent, and in both cases was superior to recall of the meaningless nonwords.

In a series of parallel studies, I also found the Baker-baker paradox held in within-subjects but not in between-subjects designs. Using materials and procedures like those described in the Method section

below, subjects in a within-subjects experiment studied 10 face photos, half paired with homonyms as the names, and half as the occupations. All other labels were unambiguous name or occupation words. In a second study, I took advantage of the fact that certain diseases are named after people (e.g., Addison's or Hodgkin's) to compare recall of a name versus a medical disorder with the same verbal label. I found that college students (n = 18) recalled occupations better than names, and nursing students (n = 24) recalled diseases better than names, even though (nominally) the same words were being used as names versus occupations and diseases. When the designation of ambiguous items as names or occupations/diseases was done between separate groups of subjects, students (n = 25/group) recalled slightly fewer ambiguous names than occupations, and nursing students (n = 28/group) recalled slightly more ambiguous names than diseases. In neither case did the difference approach statistical significance, Fs < 1.

This discrepant pattern of results is reminiscent of the controversy in verbal learning over the use of mixed and unmixed lists. Twedt and Underwood (1959) considered the possibility that paired-associate transfer experiments (e.g., A-B to A-C or to A-Br) might produce differing results depending on whether a given subject was tested on one transfer paradigm (the unmixed-list design) or received items from two or more paradigms intermixed within a single transfer list (the mixed-list design). Although Twedt and Underwood did not find differential effects, others have found interactions of design with treatments in both transfer (e.g., Wickens & Cermak, 1967) and simple paired-associate learning (Johnson & Penney, 1966). As applied to the present situation, a between-groups comparison of ambiguous names and occupations could correspond to the unmixed-list procedure, whereas a within-subjects comparison could correspond to the mixed-list procedure. Thus, there is an empirical basis for anticipating inconsistent effects across designs.

Within- and between-subjects designs can produce different results for several reasons, not the least of which is an increased statistical sensitivity of the former. However, G. Cohen (1990) and Johnson and Penney (1966) both argued that the two designs can lead to differential processing or strategies. For example, using ambiguous words exclusively as names or occupations might allow a consistent strategy across items to facilitate encoding. Alternatively, using ambiguous items as both names and occupations could lead to some confusion during recall. McWeeny et al. (1987) did not present error data for such possible confusions. However, in my within-subjects studies noted above,

ambiguous names and occupations were sometimes exchanged, something that rarely happened in the between-groups conditions.

The above analysis rests on between-experiment comparisons (i.e., McWeeny et al., 1987, vs. G. Cohen, 1990) and my own between- versus within-subject studies. Such comparisons are confounded by variations in materials, subject population, etc. What is needed is a single study incorporating both the within- and between-subjects manipulations. This was accomplished in the present experiment by using ambiguous words as names and occupations in a three-group design. Subjects were given face photos to study, each paried with an ambiguous word: For the first group, the ambiguous word was designated as the surname; for the second group, as the occupation; and for the third group, as the name on half the pictures and as the occupation on the other half.

Two facts were paired with each picture to parallel previous studies (G. Cohen, 1990; McWeeny et al., 1987). Investigators of mixed- and unmixed-list designs have noted that variations among groups in the number or difficulty of filler items can affect the ease of learning the target words (Johnson & Penney, 1966). Therefore, the complete set of to-be-learned words was equated across groups. The second facts used with each picture were all typical hobby or pastime words, and were labeled "interests" for subjects in all three groups.

EXPERIMENT

METHOD

Materials and design

The stimuli were ten 2.5 × 3.5-cm face pictures, mostly adapted from Navarick (1979, pp. 379–380). Pictures of five male and five female adults of various ages were used. They were copied onto a single sheet of paper (approximately 22 × 36 cm) in three rows of 4, 2, and 4 pictures each. Beneath each photo were two rows of typed information, one labeled *name* or *occupation,* and the other *interests.* Ten ambiguous words were selected that could be interpreted either as surnames or occupations (*carpenter, mason, cook, farmer, baker, weaver, singer, barber, painter, and bishop*). (That these words do occur as surnames was confirmed by inspection of the Charlotte, NC, phone directory. Each of the above names had anywhere from 25 to 400+ residential listings, with a median of slightly over 100.) Ten other labels that were unambiguous pastimes or hobbies (e.g., ham radio operator; has a home aquarium) were also used.

Three versions of the study sheet were prepared. One sheet had each photo labeled *name* and *interests,* with 10 ambiguous words used as names and 10 hobbies used as interests. The second sheet labeled the ambiguous

items as *occupation,* and included the same 10 interests. These two versions were used in the between-groups conditions. The third version, used in the within-subjects condition, had five photos labeled name and interests, and five labeled occupation and interests, on different sides (left/right) of the sheet. Two forms were prepared, counterbalancing each photo with the use of an ambiguous word as name and as occupation. Thus, each of the 10 photos had identical to-be-remembered words; what varied across versions was the designation of the ambiguous words as name or occupation.

The test booklet consisted of four pages, each having five photos from the study sheet. Two pages requested recall of the interests for different halves (left/right sides) of the studied page, and the other two test pages tested recall of names, occupations, or one page of each, depending upon the experimental condition. This test format was used to reduce reliance on spatial cues and interitem associations during testing. The sequence of pages was counterbalanced across subjects.

Subjects and procedure

Subjects were 48 undergraduates (19 male, 29 female) enrolled in two different psychology courses, neither taught by the researcher. Each class was tested as a group in a single session. The students were randomly assigned by a prearranged, balanced sequence of study sheets, to three equal-sized groups: Ambiguous items were received as names (Group N); occupations (Group O); or both (Group N+O). The students were instructed to study the test sheet for 2 min, and were informed that the label information would have to be recalled. After the study period, there was a brief delay of about 3 min, during which the study sheets were collected. Testing was self-paced. Subjects were then debriefed.

RESULTS

To be scored as correct, an item had to be matched with the correct picture, and only minor spelling variations were accepted. All statistical analyses set $p < .05$. For the major significant effects, the mean square error term and omega squared are given. For within-subjects analyses, the partial omega squared procedure is used (Keppel, 1991, p. 354).

The results, presented in terms of the mean percentage correct recall, are shown in Table 1. The main finding can be simply described: Names were less well recalled than occupations in the within-subjects condition (N+O), but not in the between-groups condition (N vs. O). In the latter, names were recalled only slightly less well than occupations.

This general statement is supported by several orthogonal analyses of the data. The first analysis assessed recall among the three groups for the ambiguous items (summing names and occupations for the within-subjects group) and interests. This 3 × 2 analysis showed no

Table 1. Mean percentage correct recall (*SD*) of names, occupations, and interests, in both between-groups and within-subjects comparisons

Group N		Group O		Group N+O		
Name	Interest	Occupation	Interest	Name	Occupation	Interest
76.87	83.75	81.87	75.63	60.00	82.50	68.75
(19.6)	(16.3)	(14.2)	(20.9)	(21.9)	(25.2)	(26.3)

Note. N = name; O = occupation; N+O = name plus occupation.

significant differences among groups or between items, Fs(2, 45) = 1.7 and < 1, and no interaction between these two variables, $F = 1.87$. Thus, the total number of items correctly recalled by each group was similar.

The present experiment is unusual in that it treats the between- and within-subjects conditions as levels of a second independent variable. Therefore, the analysis described by Erlebacher (1977) was used: a 2 × 2 design with type of label (name vs. occupation) and type of design (between-groups vs. within-subjects) as factors. This analysis showed a significant superiority in recall of occupations overall, $F(1, 35) = 8.45$, and most important, an interaction of label with design, $F(1, 35) = 5.52$ ($MS_e = 327.29$).

The first of two follow-up analyses compared name versus occupation recall in the between-groups conditions. Groups N and O did not differ in their recall of ambiguous items, $F < 1$ ($MS_e = 292.92$, omega squared = −.01).

In a repeated-measures analysis of Group N+O, names were recalled significantly less well than occupations, $F(1, 14) = 9.00$ ($MS_e = 450$, omega squared = .20). The two counterbalancing forms of the study sheet were not significantly different, $F = 1.92$, and forms did not interact with the item type, $F < 1$.

The differential recall of names could at first be attributed to the enhanced sensitivity of the within-subjects analysis, or conversely, to the insensitivity of the between-groups analysis. This proposition was tested by using the within-subjects' name-recall data in a series of between-groups analyses. Just as subjects in Group N+O recalled fewer names than occupations, the percentage of names recalled by Group N+O was less than the percentage of occupations recalled by Group O, $F(1, 30) = 11.21$ ($MS_e = 341.46$, omega squared = .24). More important, a smaller percentage of names were recalled by Group N+O than by Group N, $F(1, 30) = 5.29$ ($MS_e = 431.5$, omega squared = .12). The preceding analysis is based on the percentage recall of 10 words studied as names for Group N, and 5 for Group

N+O. Analyses using the 5 names corresponding to each counterbalancing form used with Group N+O showed similar results: Recall of each subset of names derived for Group N differed significantly from that of Group N+O, $Fs(1, 30) = 4.35$ and 5.44.

The kinds of errors made may help explain the poor within-subjects name performance. The majority of the errors were omissions (nonresponses), although about 20% were commission errors (wrong responses). Subjects in Group N+O supplied more commission errors than the other two groups combined, and nearly all of these involved names. Group N+O made more substitutions of a name for another type of information than did Group N (6 vs. 1), and more often placed a name with the wrong picture (10 vs. 5). (Keep in mind that these figures are based on 5 names studied by Group N+O, but 10 for Group N.) The remaining commissions were intrusions of nonstudied items as answers (7 vs. 1 for Groups N+O and N, respectively). Group O provided three occupation-interest confusions, two mismatchings of an occupation with the wrong photo, and no intrusions. The combined number of these commission errors was significantly different among the three groups, $\chi^2 = 16.67$.

These name errors made by Group N+O indicate that the ambiguous words could sometimes be recalled, but not correctly identified as a name or paired with the correct face. In contrast to the 60% correct recall noted in Table 1, if the items recalled but incorrectly labeled are included, Group N+O provided 80% of the ambiguous names during testing. The comparable figure for Group N is 80.6%.

DISCUSSION

Why are names perceived to be so difficult to recall? The most obvious constraint is the difficulty in names themselves. Compared with occupations, names are often less familiar, meaningful, or imageable. As McWeeny et al. (1987) also point out, names are arbitrary in the sense that they convey little information concerning the identity of the person. In real life, there may be additional cues to a person's occupation (the presence of distinctive props, or the context itself), but not to his or her name. Finally, if names are used less often than other facts about individuals, the names may be less accessible to recall yet still be recognized.

Previous attempts to equate names and occupations for some of the above factors by using homonymic words have met with mixed results. Although McWeeny et al. (1987) found a name deficit, G. Cohen (1990) found that names and occupations could be equally well recalled. The current experiment suggests that the choice of a research

design may be a factor in obtaining conflicting results. Fewer names than occupations were correctly recalled (i.e., in response to the photo with which they had been paired during the study phase) in the within-subjects comparison, but names and occupations were not differentially recalled in the between-groups condition.

In considering why the two designs produced different results, several hypotheses are possible. The within-subjects design may have sensitized the subjects to the alternate meanings of the ambiguous words, leading to confusion as to whether a recalled word was a name or an occupation. There were such commission errors, although maybe not enough to completely explain the poorer performance. Name/interest and name/face mismatchings also occurred. It is possible that the within-subjects design, with its potential for inducing confusion, presented a more difficult task to the subjects and led to more name errors in general.

Alternatively, one could argue that the name-only group was sensitized to the dual meanings of the ambiguous words. As has been suggested for unmixed-list verbal learning procedures (Johnson & Penney, 1966), these subjects could then have employed a consistent strategy for remembering items. Subjects in Group N could take advantage of the more elaborate semantic information associated with the alternate meaning of these words. During testing, a recalled ambiguous item would be, by default, a name.

Statistical considerations pose a more serious threat to the detection of any name-recall deficit in the between-groups comparison. Within-subjects analyses, by partialing out the individual subject differences, are often more sensitive to independent variable manipulations. However, in the present case, a between-groups analysis of Group N+O and Group N showed a significant name deficit by the former. Alternatively, the number of subjects may have precluded sufficient power to detect even a reasonably sized effect between groups. Granted, Group O did recall more ambiguous items than did Group N, though not significantly. However, my previous studies with these materials led me to expect a large effect size (ES), where ES equals the difference between means divided by the standard deviation (J. Cohen, 1992). For example, the recall of typical names and occupations between groups (e.g., *Mr. Smith* and *lawyer*) produced an ES of 1.55; recall of ambiguous names and occupations in a within-subjects comparison produced an ES of 0.78. In both cases, these would be considered large effects. The ESs in the present experiment are 0.296 for name versus occupation recall between Groups N and O; 0.81 for name recall between Groups N and N+O; and 1.21 for occupation versus name recall between Groups O and N+O. Although it is possible (and

maybe even likely) that a name-recall deficit could be demonstrated in a between-groups design, the present results indicate that such an effect may be of a different order of magnitude than that found within-subjects.

The point of using homonyms is to determine whether names are poorly recalled even when certain other factors are nominally equated. Such a deficit would support models asserting that names are stored separately from other person information in memory (McWeeny et al., 1987). However, the demonstration of a design interaction makes any interpretation tenuous. Which design is then appropriate for testing name-memory models? Each design produces its own set of demands and the possibility of differential sensitization to the experimental treatments. It is difficult, and possibly arbitrary, to state which design has more external validity.

As an alternative to separate-storage of names, it may be that names are typically less meaningful than occupations (G. Cohen, 1990). Equating names with other personal facts for meaningfulness would reduce the usual name disadvantage. Also, because names do not represent a homogeneous class of items, variations in their meaningfulness should lead to differences in recallability (Hanley-Dunn & McIntosh, 1984). Meaningfulness has been variously defined over the years (e.g., number of associations, pronounceability, familiarity, or imagery; see Howe, 1980, for a review). One recent model of person memory, that of Burton and Bruce (1992), defines meaningfulness by the number of connections between a name and other facts in semantic memory. Typically, names may be fairly isolated from other facts, having a connection only to a particular person. Other representations in semantic memory (occupations, interests, etc.) may have multiple connections. A rich set of interconnections may mean that activating one representation will cause activation of a larger semantic network, thus facilitating both encoding and subsequent retrieval.

The present finding that meaningful names can sometimes be well recalled will come as no surprise to those who provide mnemonic instruction. Several authors have suggested that meaningful names can be easier to recall (e.g., Cermak, 1975), and Higbee (1977) has even suggested noting whether a person's name is also an occupation. Cognitively treating names more like occupations should lead to better recall. The present results suggest that remembering the label *cook* in association to a face can be ambiguous if you later cannot recall whether this was the person's name or occupation. However, if the occupation is already known, to imagine that person as a cook may help you to remember the name.

Notes

Correspondence concerning this article should be addressed to W. Scott Terry, Department of Psychology, University of North Carolina at Charlotte, Charlotte, NC 28223. Received for publication January 6, 1992; revision received September 15, 1992.

References

Bruce, V., & Young, A. (1986). Understanding face recognition. *British Journal of Psychology, 77,* 305–327.

Burton, A. M., & Bruce, V. (1992). I recognize your face but I can't remember your name: A simple explanation? *British Journal of Psychology, 83,* 45–60.

Caramazza, A., & Hillis, A. E. (1991). Lexical organization of nouns and verbs in the brain. *Nature, 349,* 788–790.

Cermak, L. S. (1975). *Improving your memory.* New York: McGraw-Hill.

Cohen, G. (1990). Why is it difficult to put names to faces? *British Journal of Psychology, 81,* 287–297.

Cohen, G., & Faulkner, D. (1986). Memory for proper names: Age differences in retrieval. *British Journal of Developmental Psychology, 4,* 187–197.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155–159.

Erlebacher, A. (1977). Design and analysis of experiments contrasting the within- and between-subjects manipulation of the independent variable. *Psychological Bulletin, 84,* 212–219.

Hanley-Dunn, P., & McIntosh, J. L. (1984). Meaningfulness and recall of names by young and old adults. *Journal of Gerontology, 39,* 583–585.

Higbee, K. L. (1977). *Your memory.* Englewood Cliffs, NJ: Prentice-Hall.

Howe, M. J. A. (1980). *The psychology of human learning.* New York: Harper & Row.

Johnson, G. J., & Penney, R. K. (1966). The effect of mixed and unmixed list designs in paired-associate learning. *Journal of Verbal Learning and Verbal Behavior, 5,* 234–239.

Keppel, G. (1991). *Design and analysis: A researcher's handbook* (3d ed.). Englewood Cliffs, NJ: Prentice-Hall.

Martin, E. (1975). Generation-recognition theory and the encoding specificity principle. *Psychological Review, 82,* 150–153.

McCarthy, R. A., & Warrington, E. K. (1990). *Cognitive neuropsychology.* San Diego, CA: Academic Press.

McWeeney, K. H., Young, A. W., Hay, D. C., & Ellis, A. W. (1987). Putting names to faces. *British Journal of Psychology, 78,* 143–149.

Morton, J., Hammersley, R. H., & Berkerian, D. A. (1985). Headed records: A model for memory and its failures. *Cognition, 20,* 1–25.

Navarick, D. J. (1979). *Principles of learning.* Reading, MA: Addison-Wesley.

Twedt, H. M., & Underwood, B. J. (1959). Mixed vs. unmixed lists in transfer studies. *Journal of Experimental Psychology, 58,* 111–116.

Wickens, D. D., & Cermak, L. S. (1967). Transfer effects of synonyms and antonyms in mixed and unmixed lists. *Journal of Verbal Learning and Verbal Behavior, 6,* 832–839.