

Which Information Helps Resolve Recall Failures for Familiar People's Names?

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ABSTRACT

Personal names are particularly susceptible to retrieval failures. In the present paper, studies describing people's spontaneous strategies for resolving failures in recalling personal names as well as laboratory studies of experimentally induced resolution of name recall failures are reviewed. The review indicates that people frequently use spontaneous strategies based on a search for structural, semantic, and contextual information about the target person. On the other hand, both cueing and priming experimental studies have shown that providing phonological information may help resolve a recall failure, whereas providing structural or semantic information is usually not helpful. A possible explanation of this discrepancy between the spontaneous use of semantic/contextual information and the experimentally demonstrated uselessness of this kind of information is provided. Finally, the role of syntactical similarity (belonging or not to the same part of speech) in the efficiency of phonological priming is discussed.

KEYWORDS

name retrieval; person naming; proper names; tip-of-the-tongue; priming

INTRODUCTION

Naming people is an important linguistic ability. In everyday social life, names are commonly used to call or to greet people and to hold their attention during a conversation (see Cohen, 1994; Enfield & Stivers, 2007). Although we are usually able to name others, it may happen that we fail to recall someone's name at the right moment, even though we certainly know their name and would be able to recognize it without hesitation. Proper names seem to be particularly susceptible to this kind of retrieval failure: Naming people is difficult whether it is learning new names or retrieving familiar persons' names (for recent reviews, see Brédart, 2017; Hanley, 2014). A number of studies have also shown that ageing disproportionately impairs the retrieval of proper names in comparison with other word categories (e.g., Burke, MacKay, Worthley, & Wade, 1991; Evrard, 2002; James, 2006; Rastle & Burke, 1996). Such retrieval breakdowns have been equated to tip-of-the-tongue (TOT) states (e.g., Burke et al., 1991; Cross & Burke, 2004;

Hanley, 2014). However, others have defined TOT not as a retrieval failure, but as a metacognitive experience accompanying a retrieval failure, this metacognitive experience consisting of a feeling that we are about to be able to recall the target name although we cannot do so right now (Metcalfe, Schwartz, & Bloom, 2017; Schwartz & Metcalfe, 2011; 2014). In still other studies, TOT has also been considered to include two components: (a) the cognitive state, that is, the failure of the process to retrieve a known word, and (b) the phenomenological experience involving the frustrating feeling that the target word is about to be retrieved (e.g., Bacon, Schwartz, Paire-Ficout, & Izaute, 2007). The present paper deals with name retrieval failures consisting of an

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inability to recall a familiar person's name, without commission error (i.e., producing an erroneous name), while the speaker is able to report relevant biographical information about the target person, thinks he/she knows the target name, and is able to recognize this name when it is presented. In other words, recall failures considered here are nothing else than the cognitive state of TOTs. However, to avoid any confusion, the expression *recall failure* (RF) will be used instead of TOT.

The specific aim of the present paper is to assess whether people spontaneously use the most useful type of information when trying to resolve an RF. For this purpose, data from studies on spontaneous strategies for resolving RFs were compared with the results of experimental studies that have tested the efficiency of semantic and phonological information for RF resolution.

The present paper focuses on the recall of personal names since they are particularly prone to retrieval difficulties, however, this choice does not imply that mechanisms underlying RFs for people's names are different from those for other categories of words.

SPONTANEOUS (UNPROMPTED) STRATEGIES FOR RETRIEVAL FAILURE RESOLUTION

A number of studies have attempted to collect information about the strategies that people may use to resolve RFs in everyday life or in laboratory settings. First, Yarmey (1973) recorded the order in which participants chose to answer questions about certain target people while trying to resolve RFs that occurred during a face naming task. This order was considered to reflect the order in which participants mentally searched for these different types of information. Participants first tried to recall the target's occupation and then tried to remember the place where they were used to seeing that person, and thirdly, they attempted to remember when they last saw the target. Orthographic and phonological information, namely, the initial letter of the first and last names, the number of syllables in the first and last names, and finally, similar sounding names, was less likely to be utilized early in the search. Such results suggest that people prioritize remembering semantic and contextual information over phonological information when trying to resolve RFs.

In the Reason and Lucas (1984) diary study of naturally occurring resolved RFs, four main types of internal strategy were identified (among 29 cases of RFs): alphabetical search (6.9% of RFs), the generation of similar words or names (44.8%), the search for contextual information (20.7%), and the generation of mental images related to the target (6.9%). Unfortunately, in that study, the category that was the most often reported, that is, the generation of similar words or names, was not clearly defined. It is not possible to figure out from Reason and Lucas' report whether generated words were similar to the target with respect to meaning or to phonology. Cohen and Faulkner (1986) noted that participants involved in a retrospective study reported having used various resolution strategies, such as running through the alphabet, generating candidates from the same context, or reliving past encoun-

ters with the target person. Unfortunately, they did not provide precise information on the respective frequency of use of such strategies.

Finley and Sharp (1989) studied the resolution of RFs induced with questions from the *Trivial Pursuit* game, for which the answers were names of famous people or places. Before starting the game, the experimenter presented participants with a list of strategies that could be used in case of an RF. These strategies were grouped into four categories: (a) search for phonological characteristics of the target name (running through the alphabet, recalling the first letter of the name), (b) visual search (forming an image of the target person's face), (c) semantic search (retrieving significant biographical information about the target person), and (d) context search (remembering when, where, or why the person was encountered). If the RF was resolved, participants were asked to explain how they had retrieved the name. Participants' responses were grouped into four categories. In 37% of cases, participants reported that the name "popped up" and was not the result of a conscious search. In 27% of cases, they reported having used an alphabetical/phonological strategy, in 10%—a visual search strategy, and in 26%—a semantic/contextual strategy. In other words, considering only cases for which the use of a strategy was reported, a phonological-like strategy was used in 43% of cases, whereas mental imagery and semantic/contextual search were used in 57% of cases.

Finley and Rothberg (1991) conducted a questionnaire study to investigate young adults' strategies for recalling names in case of RF. In response to open-ended questions, the two memory strategies that were the most frequently reported were (a) recalling a place associated with the person (41% of the participants) and (b) recalling the place where the target name had been learnt (35%). Following the open-ended questions, these authors also proposed a list of possible retrieval strategies and participants were asked to indicate how frequently they used each strategy using a 5-point scale (with 5 = *always*, 3 = *sometimes*, and 1 = *never*). They found that the three most frequently reported strategies were (a) forming a mental image of the place where the target person or name is usually seen ($M = 4.61$), (b) forming a mental image of the target person's face ($M = 4.20$), and (c) recalling the context to which the target person is associated ($M = 4.14$). Unfortunately, the other strategies proposed in the questionnaire were not described in the paper.

The three more detailed studies of strategies that people spontaneously used for resolving RFs (Finley & Rothberg, 1991; Finley & Sharp, 1989; Yarmey, 1973) are relatively consistent and showed that people seem to privilege semantic and contextual information over phonological or orthographic information when trying to resolve an RF (see also Hofferberth, 2011). A possible bias of these studies is that participants might have reported that they strategically searched for semantic/contextual information when, in fact, this preference was simply a by-product of their failure to retrieve phonological or orthographic information. However, even when the phonological form of a name cannot be spontaneously retrieved, searching for orthographic or phonological cues, for instance, by running through the alphabet to find the first letter or the first phoneme, remains possible.

These studies do not inform us about the respective efficacy of different types of information used for resolving RFs. Indeed, none of these studies used a design allowing us to assess the proportions of RF resolution, among a given number of experienced RFs, due to phonological, semantic, contextual, or perceptual information, respectively. Note that an analysis of the participants' speech while saying aloud responses that came to mind during their attempts to resolve TOTs for infrequent words indicated that the production of phonologically similar words or word-fragments was a better predictor of the target word retrieval than responses which were semantically related to them (Kohn et al., 1987).

SPONTANEOUS RESOLUTION WITHOUT A CONSCIOUS SEARCH ("POP-UPS")

Retrieval failures may also spontaneously resolve after a delay that some researchers have called a period of incubation (Choi & Smith, 2005). During spontaneous resolutions, the target name "pops into mind" while the individual is not paying attention to it. The reported rates of occurrence of such spontaneous resolutions vary strongly from one study to another: 46 to 61% of RFs according to the age group in Burke et al.'s (1991) diary study; 10 to 23% in Cohen and Faulkner's (1986) retrospective study; 32% in the Reason and Lucas (1984) study; 37% in the Finley and Sharp (1989) study. In addition, these pop-ups have been reported to occur more frequently in older than in young adults (Burke et al. 1991; Heine, Ober, & Shenaut, 1999). However, the cause of such a spontaneous resolution is not easy to determine. Some authors have proposed that an incubation interval is likely to help participants to escape from an inappropriate retrieval strategy that has led to the RF (Choi & Smith, 2005). Others have suggested that such resolutions result from an incidental cueing, that is, critical phonological components would accidentally occur during the delay, either in a conversation or in inner speech, allowing the sudden access to the whole phonology of the target name (Burke et al., 1991; James & Burke, 2000; Reason & Lucas, 1984). Laboratory studies have been designed to investigate the impact of semantic, phonological, and syntactical factors on the resolution of RFs.

EXPERIMENTALLY-INDUCED RESOLUTION OF RETRIEVAL FAILURES

Two types of procedures have been used to help resolve RFs in the laboratory: cueing studies and priming studies. In cueing studies, a cue is explicitly provided to the participant to help her/him resolve an RF. In priming studies, a component (a letter, a syllable, or even a first name) is presented before a key question to which the answer is the target name. This component is either related (priming condition) or unrelated (control condition) to the target. The presentation of the prime is never explicitly stated as an aid in RF resolution. On the contrary, precautions are taken to prevent the participants from being aware of the relationship between the prime and the target.

Cueing Studies

Researchers have used face naming tasks and recorded the difficulties provoked by this type of task. Three kinds of difficulties were usually observed: (a) a failure to recognize a familiar face; (b) a feeling of familiarity for a familiar face accompanied by a failure to retrieve any biographical information about the person (familiarity only experiences), and (c) an ability to retrieve biographical information about the target person accompanied by a failure to retrieve that person's name. In the Hanley and Cowell (1988) study, each time one of these incidents occurred, participants were presented with one of the following cues: a different picture of the target person's face, biographical information describing the target person's identity, or the initial letters of the person's first name and surname plus the number of letters in the first name and the surname. This procedure revealed that when participants were experiencing the third type of difficulty described above (semantic information retrieved but name not reported), the only cue that helped name retrieval was orthographic information (initial letters). Providing extra biographical information was not helpful. Other researchers tested the utility of different cues for resolving person naming failures induced by verbal descriptions (e.g., "The star of the Oscar-winning film *Gandhi*;" target = Ben Kingsley) rather than by the visual presentation of faces (Brennen, Baguley, Bright, & Bruce, 1990). These authors showed that presenting the face of the described person did not help resolve RFs induced by the descriptions, whereas providing orthographic cues (initials) did facilitate name retrieval. The efficacy of phonological cues, as well as the inefficacy of semantic cues for the resolution of RFs when naming people are consistent with results from studies of RF resolution for words such as common nouns. For instance, participants were much more likely to retrieve a target after the presentation of an orthographic cue (the first letter and dashes representing the remaining letters of the target, e.g., "c_ _ _ _ _" for chameleon) than after the presentation of a semantic cue (another word from the same category as the target, e.g., salamander for the target chameleon) when they experienced an RF induced from a definition (Heine et al., 1999).

Priming Studies

In studies that investigated the efficiency of priming for resolving RFs, the procedure usually consisted of inducing RFs with general knowledge questions (e.g., "What is the name of the blonde female actor who starred in the movies *As Good as It Gets*, *Twister*, *Cast Away*, *What Women Want*, and *Pay It Forward*?" Target: Helen Hunt). When an RF was successfully induced, participants were presented with a question including one of the following: (a) a phonologically and semantically related prime (Helen Mirren, an actress), (b) a phonologically related but semantically unrelated prime (Helen Keller, a historical figure) or (c) a phonologically and semantically unrelated prime (Martha Stewart, a business woman). Following this step, the original RF-inducing question was presented again (White, Abrams, & Frame, 2013). To evaluate the efficacy of the priming procedure, the rate of RF resolution after the presentation of a prime was compared with the rate of resolution after the presentation of an unrelated name. The presenta-

tion of phonologically and semantically related names as well as the presentation of phonologically but not semantically related first names increased the resolution of RFs in comparison with the presentation of unrelated first names. The combination of semantic similarity and phonological similarity did not increase RF resolution compared with phonological similarity alone. Priming was efficient when primes were complete first names. However, when primes were the first syllables of names (e.g., target: Alfred Hitchcock, a director; phonologically and semantically related prime: Alec Baldwin, a director and actor; phonologically related but semantically unrelated prime: Albert Einstein, a historical figure; unrelated prime: Herman Melville, an author), neither of the two priming conditions significantly differed from the control condition (White et al., 2013). The issue of the amount of phonological overlap between the target and the prime that is necessary to overcome an RF through phonological priming is not completely resolved (see Hofferberth-Sauer & Abrams, 2014; White & Abrams, 2002). Another factor relevant to the efficacy of the phonological priming of RF resolution is the frequency of occurrence of the first syllable. Retrieval failures for words beginning with low-frequency syllables were shown to be more often resolved after the presentation of a word that shared the same first syllable than for words with high-frequency first syllables (Farrell & Abrams, 2011).

Authors that have used priming to increase the resolution of RFs have argued that priming is independent of strategic processing, in contrast to cueing paradigms where participants can use a given word to help trigger the recall of the target name (Oberle & James, 2013; White et al., 2013). Such authors have also suggested that the priming procedure is more similar than cueing procedures to spontaneous RF resolution that occurs when phonology is encountered accidentally in natural conversation (James & Burke, 2000). These studies have usually included a short postexperiment questionnaire assessing the participants' awareness of the priming manipulation (Burke, Locantore, Austin, & Chae, 2004; White et al., 2013). Some studies reported that few participants noticed the manipulation (Oberle & James, 2013). However, others reported that a non-negligible proportion of participants expressed awareness of the phonological relationship between the answers to questions and the names to be retrieved later when naming target pictures, and that they reported using this knowledge to anticipate picture naming (Burke et al., 2004). In the White et al. (2013) study of RF resolution, in order to ensure that strategic retrieval processes were not the cause of the observed effects, reanalyses of data including only participants who reported having been unaware of the manipulation were conducted. Such analyses globally confirmed the results obtained with the whole sample of participants.

The nature of semantic relatedness used in priming studies should probably be more deeply examined. Indeed, studies using an interference paradigm have showed that the simultaneous or quasisimultaneous presentation of a distractor being categorically related items to a target person (e.g., a distractor sharing only the same occupation as the target) had similar effects on the target's face naming latencies compared with the presentation of an unrelated item (Izaute & Bonin, 2006, Experiment 1; Young, Ellis, Flude, McWeeny, & Hay, 1986, Experiment

3). By contrast, the presentation of a close associate distractor from the same category (e.g., presenting the name "Jimmy Connors" when the target face is that of John McEnroe) or from a different occupational category (e.g., John Kennedy for Marilyn Monroe's face) had stronger (albeit negative in this paradigm) effects on naming latencies compared with presenting unrelated items (Izaute & Bonin, 2006, Experiment 2; Young et al., 1986, Experiment 5). In addition, other studies showed that face naming latencies were shorter following the presentation of a close associate's face compared with the presentation of the face of a member of the same category who was not particularly associated with the target and with the presentation of an unrelated face. These last two conditions did not differ (Barry, Johnston, & Scanlan, 1998; Young, Flude, Hellawell, & Ellis, 1994, Experiment 3).

CONCLUSIONS AND FUTURE DIRECTIONS

Determining Which Kind of Information Helps Resolve Retrieval Failures

The present review indicates that both cueing and priming studies have shown that providing further semantic information about a target has no significant effect on RF resolution. By contrast, providing phonological or orthographic information about the searched name most often increases the probability of RF resolution. The efficiency of phonological cueing has also been observed in some patients with proper name anomia following brain damage (e.g., Lucchelli & De Renzi, 1992; Otsuka et al., 2005, for a synthesis see Semenza, 2009). The results of these studies curiously contrast with those from earlier studies reporting that people spontaneously tend to prioritize the recall of semantic information over phonological or orthographic information when trying to resolve RFs. How to explain this discrepancy? One possibility would be that people's metacognitive knowledge about RF resolution is inadequate. In some sense, it would be surprising if people developed a misconception about the higher usefulness of semantic information, in comparison with phonological information, for a phenomenon as common as the RF². However, it is possible that such an erroneous metacognitive belief is formed as follows: When people are, or feel, unable to retrieve phonological information about the target, they search for more available information, such as semantic or contextual details. During, but not because of, the processing of these pieces of information, access to the target name may become possible again (just like when the target name pops up), giving the individual the illusion that semantic/contextual processing caused the retrieval of the target. To test such a hypothesis, it would be interesting to compare the timing of spontaneous resolutions (pop-ups) with that of resolutions associated with a search for semantic information. If this hypothesis is correct, then the time for resolving an RF from a search of semantic information should be on average similar to, or even longer than the time for a spontaneous resolution.

Further studies of people's spontaneous strategies for solving RFs would be useful because the existing available data come from rather old studies published between 1973 and 1991, sometimes conducted with relatively small numbers of participants (Finley & Rothberg, 1991: $N = 49$; Finley & Sharp, 1989: $N = 16$; Yarmey, 1973: $N = 43$). In addition, research exploring people's metamemorial knowledge about the factors producing and helping the resolution of RFs is also clearly needed, since, at the moment, this is an unexplored topic that could help us understand better why people often search for semantic or contextual information when experiencing an RF.

The Role of Grammatical Class in Retrieval Failure Resolution

The grammatical class of words appears to be a factor impacting the phonological priming of RF resolution. Indeed, studies have shown that a prime phonologically related to a target increased RF resolution only when it did not belong to the same grammatical category as the target. For example, the presentation of the noun *insecticide* was likely to help resolve an RF for the adjective *intransitive*, whereas the presentation of another adjective, *incredible*, had no positive effect in comparison with the presentation of a word unrelated to the target (Abrams & Rodriguez, 2005). In brief, phonological cues do not seem to have the same effect whether they are part of a word whose grammatical category is the same as that of the target word or not. This would be due to the fact that, sometimes, a prime that is phonologically related to the target and belonging to the same syntactical class as the target may become a competing alternative, particularly if its frequency of use is higher than that of the target. If one accepts that different syntactical classes are represented separately in the mental lexicon, a phonologically related prime from a different part of speech could help activate the target word through bottom-up phonological priming, but it could hardly become a competing alternative for the target word (MacKay & Burke, 1990). This result raises new questions about the resolution of RFs for proper names. For instance, all other things being equal, would a noun, an adjective, or a verb phonologically related to a target name be a better prime compared with a homophonic name? To take an example, if priming is stronger when the syntactical class of the prime is different from that of the target, then answering the question "What do you call a skin wound caused by the poison injected by certain insects or plants?" (target = *sting*) should be more efficient than answering "Who was the lead singer and bassist of the band *The Police*?" (target = *Sting*), for resolving a failure to name Meryl Streep in a picture. This is another problem which requires empirical verification.

In conclusion, from available sources of data, it seems that people often resort to semantic strategies in order to resolve RFs. In the meantime, experimental laboratory research has indicated that providing semantic cues or primes is not useful for resolving RFs. At first sight, it would be useful to advise people to base their memory search on phonological information rather than on semantic information when they try to resolve an RF. However, such a conclusion might be premature: Investigations of the role of grammatical similarity between a prime and a target suggest caution in this regard. Indeed, if a reso-

lution strategy leads to the retrieval of a name that is phonologically related to the target name with a higher frequency of use compared with the target, then there is a risk that the retrieved name will become a persistent alternative. This will have the effect of making the retrieval of the target still more difficult rather than resolving the RF. Further empirical research is needed to understand more clearly what type of, and in which circumstances, phonological information efficiently helps people resolve RFs.

FOOTNOTES

¹ The Finley and Rothberg (1991) study also included three older participants. Given the very small size of this sample, these participants' responses will not be reported.

² Note that semantic and contextual details can be useful to resolve other types of person identification difficulties such as familiarity-only experiences (see Hanley & Cowell, 1988).

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