

# Recognizing the Presidents: Was Alexander Hamilton President?



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1–7

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## Abstract

Studies over the past 40 years have shown that Americans can recall about half the U.S. presidents. Do people know the presidents even though they are unable to access them for recall? We investigated this question using the powerful cues of a recognition test. Specifically, we tested the ability of 326 online subjects to recognize U.S. presidents when presented with their full names among various types of lures. The hit rate for presidential recognition was .88, well above the proportion produced in free recall but far from perfect. Presidents Franklin Pierce and Chester Arthur were recognized less than 60% of the time. Interestingly, four nonpresidents were falsely recognized at relatively high rates, and Alexander Hamilton was more frequently identified as president than were several actual presidents. Even on a recognition test, knowledge of American presidents is imperfect and prone to error. The false alarm data support the theory that false fame can arise from contextual familiarity.

## Keywords

recognition, presidents, false fame, familiarity, collective memory, open data, open materials

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The emerging study of collective memory, defined as a form of a memory shared by a group and central to identity of the group's members (e.g., Corning & Schuman, 2015; Olick & Robbins, 1998; Wertsch & Roediger, 2008), has enjoyed increasing interest from historians, sociologists, philosophers, and other scholars. Recently, psychologists have joined the study of collective memory using their empirical techniques (Hirst & Manier, 2008; Roediger & Abel, 2015). In the research reported here, we investigated recognition of names of individuals who served as American presidents. Virtually all Americans know the leader of their country, and being able to recall the current president is often used as a quick indicator of neurological health following a head injury.

A central component of collective identity is a group's leader, a person who is often viewed with pride but sometimes with fear, embarrassment, or even shame (e.g., Schwartz, 1991, 1997). In the United States, the presidents serve as an entry point for empirical study of such collective knowledge. Roediger and Crowder (1976) first tested college students' ability to recall presidents and found that students could recall 62% of them. They

showed that subjects' recall produced a standard serial position curve with large primacy and recency effects. The theoretical conclusions of the study have been disputed, but the general findings have always been replicated (e.g., Crowder, 1993; Healy, Havas, & Parker, 2000; Healy & Parker, 2001; Kelley, Neath, & Surprenant, 2013; Neath, 2010; Roediger & DeSoto, 2014): In every era in which presidential recall has been measured, only about half of the presidents have been recalled. Other studies have shown similar types of forgetting for public knowledge that was well known at one time (Fu, Xue, DeSoto, & Yuan, 2016; Rubin, 1998, 2014).

Students in the United States take American history in high school, so they are probably exposed to the names of the presidents at that point, even though they may not study all of them in great detail. The fact that they can

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recall only about half the presidents while in college might then be attributed to difficulty in accessing information that is available in memory (Tulving & Pearlstone, 1966); people may know more than they can recall during a 5-min test (W. Brown, 1923).

One way of assessing knowledge more sensitively is through the use of recognition tests. In a study of recognition of word lists, Murdock (1968) claimed that standard recognition procedures “obviated the need for retrieval of the item” (p. 85) and provided a more direct measure of the availability of memories than did recall measures. However, an exception was found when Tulving and Thomson (1973) discovered that, in some circumstances, people can recall words that cannot be recognized. They showed that after studying word pairs such as *glue-CHAIR* with instructions to remember the word in all capitals, subjects often failed to recognize that *chair* had been in the list but when later cued with *glue* were able to recall *chair*.

This outcome might seem far removed from recall and recognition of presidents, but Muter (1978) showed that the same outcome occurred in recall of famous names. That is, when asked to recognize surnames of people who were famous before 1950, subjects frequently failed to recognize names such as Morton or Young as being famous. Yet when given cues that did not include the surname (e.g., “U.S. jazz composer and pianist: Jelly Roll \_\_\_\_\_” or “U.S. Latter Day Saint leader: Brigham \_\_\_\_\_”), they could recall the famous people named Morton and Young. Mindful of this outcome, in the current study, we included both given names and surnames of presidents (e.g., Zachary Taylor rather than Taylor) to permit greater access to available memories, although we certainly cannot claim that this recognition method provides a pure measure of availability of the contents of memory (no measure of memory does).

In the current study, we asked workers from Amazon Mechanical Turk (MTurk; see Chandler & Shapiro, 2016) to recognize the names of 41 U.S. presidents presented along with 82 lures. Subjects also rated their confidence in the recognition decisions they made. The lures included vice presidents of the United States who did not become president, other famous Americans, and other names, including some typical Anglo-Saxon names (e.g., Thomas Moore).

We predicted that our subjects would recognize presidents much better than they could recall them, but that recognition for many presidents from the 1800s would be low (in the least favorable part of the serial position curve, where recall is lowest; Roediger & DeSoto, 2014). We also predicted that some famous Americans who were not presidents would be recognized as presidents on the basis of the strong familiarity of their names. This prediction arose from research on false fame in a

fame-judgment task developed by Jacoby, Kelley, Brown, and Jasechko (1989). They argued that familiarity of a name in a given context, unopposed by recollection of actual events, could result in an attribution of fame to the person so named. Jacoby, Kelley, et al.’s work was conducted using a list-learning paradigm, and we attempted to extend it to a naturalistic setting in which the targets and some lures referred to famous people. Our hypothesis was that subjects might falsely recognize some famous Americans (e.g., Benjamin Franklin) as presidents when familiarity with the name provided a strong signal of fame that was unopposed by recollection of the person’s actual role in history.

## Method

### Subjects

Three hundred ninety-two subjects began the study, which was conducted online via MTurk. Out of those subjects, 62 did not complete the study, and 4 others indicated that they had used external sources while completing the task. These 66 subjects were therefore excluded, which left a total of 326. This sample size was much greater than in most similar studies using recall measures and college-student subjects. In the final sample, 168 subjects were women, 156 were men, and 2 did not indicate gender. Average age was 36.0 years ( $SD = 12.4$ , minimum = 18, maximum = 75). Only subjects who reported that they were within the United States were permitted to participate, although we did not ask whether they were U.S. citizens. The study took subjects about 16 min to complete.

### Materials

Materials were 123 first and last names (e.g., Thomas Jefferson) of both presidents and nonpresidents. Individuals were referred to by full, given first names and not nicknames (e.g., James Carter, not Jimmy Carter). The list of presidents contained 41 of the 43 presidents. We included the names John Adams and George Bush (father-son pairs with the same name) only once.

The list of nonpresidents comprised 82 names, which means that one third of the test consisted of targets. We included more lures than targets to encourage a conservative criterion, in an attempt to deter subjects from simply identifying all famous names as belonging to presidents. We created the list of lures by combining vice presidents who did not become president with other famous names from American history (e.g., political or military leaders). We also included names of people who were not famous to assess whether some subjects would respond “president” to every name or respond randomly

(but neither happened). The final list of nonpresidents included 28 vice presidents and 54 other lures (the full list can be downloaded from the Open Science Framework, <https://osf.io/8z2an/>).

### Procedure

Subjects consented to the study procedures on their computers and were asked a series of demographic questions. We excluded no subjects on the basis of their responses to these questions. Following this, subjects completed the vocabulary subtask of the Shipley (1940) test as a measure of general knowledge.

Subjects were then given the presidential-recognition test. They were presented with 123 names, in a random order and one at a time, and were asked to indicate whether the individual had served as president by clicking one of two buttons on the screen, labeled “PRESIDENT” and “NOT A PRESIDENT.” Next, subjects were asked to rate their confidence in their decision on a visual scale ranging from *not at all confident* to *entirely confident*. The scale ranged from 0 to 100, but no numbers were shown—only the text anchors. The sliding cursor was placed at zero at the beginning of each confidence rating.

President decisions and confidence ratings were self-paced, and the 123 names were presented in a new random order for each subject. At the end of the recognition test, subjects were asked whether they had used any external sources while completing the study (subjects were told that there was no penalty for saying yes), and they were also asked the name of the first president they remembered as serving in office during their lifetime.

Data analysis did not begin until the final sample had been collected, although we did monitor data collection to ensure there were no bugs in the computer program. The study was programmed with Adobe Flash (Weinstein, 2012). The software program used to conduct the study can be downloaded from the Open Science Framework. It can be run online or in the lab. Statistical analyses were conducted with JASP (Version 0.7.1; Love et al., 2015). All variables and conditions are reported here or in the supplement on the Open Science Framework (<https://osf.io/8z2an/>), which also contains additional methodological details. The study was approved by the Washington University in St. Louis Institutional Review Board.

### Results

On the whole, subjects showed good performance on the presidential-recognition task. They were highly likely to correctly identify presidents (hit rate = .88, 95% confidence interval, or CI = [.86, .89]) and unlikely to falsely recognize the nonpresidents (false alarm rate = .09, 95%

CI = [.08, .10]). In a previous study (Roediger & DeSoto, 2014), we found that a sample of MTurk subjects recalled 43% of the presidents when they were given a 5-min time limit. In comparison, subjects in the present study could recognize many more presidents than subjects in the previous study could typically recall. Nevertheless, hit rates for presidents correlated with correct recall rates from our previous study (Roediger & DeSoto, 2014),  $r(39) = .69$ ,  $p < .001$ , 95% CI = [.49, .82], which suggests that presidents who are well recalled are also well recognized.

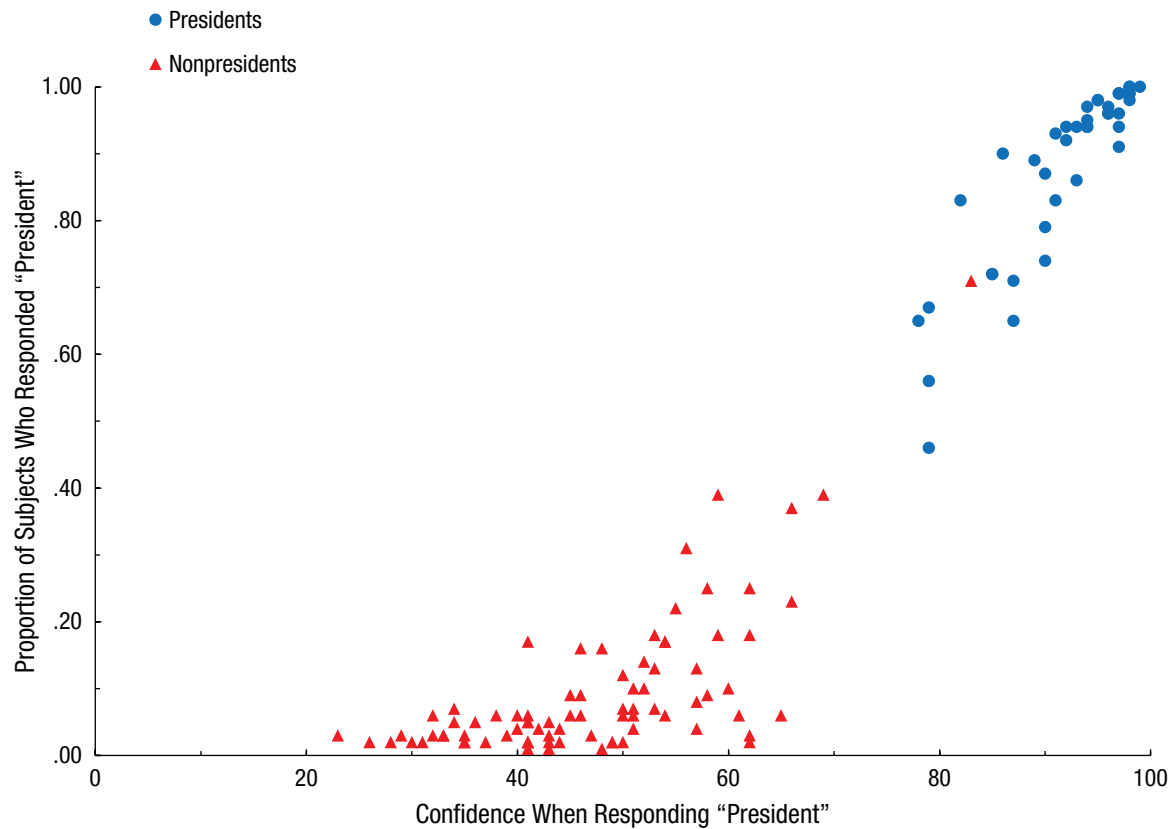
Overall, the proportion of correct responses on the recognition test (the number of correct responses—hits and correct rejections—divided by 123) was correlated with the Shipley score,  $r(324) = .60$ ,  $p < .001$ , 95% CI = [.53, .67], which shows that presidential-recognition success was positively associated with a subject’s vocabulary knowledge. It is possible that these correlations would be higher if not for the ceiling effect in recognition.

False alarm rates were similar for vice presidents ( $M = .09$ , 95% CI = [.08, .10]) and for other nonpresidents ( $M = .10$ , 95% CI = [.08, .11]), paired-samples  $t(325) = 1.86$ ,  $p = .06$ , 95% CI for the difference = [.00, .01]. This outcome may seem surprising, but we excluded vice presidents who went on to become president, and among the other famous Americans we included were names that are probably more familiar to many people than are vice presidents from distant eras (cf. Patrick Henry as a lure with Schuyler Colfax, a vice president).

Confidence ratings showed typical patterns for hits and false alarms. Subjects were confident for hits to presidents ( $M = 92$  of 100 on the confidence scale, 95% CI = [91, 93]) and much less confident for false alarms to nonpresidents ( $M = 61$ , 95% CI = [58, 64]). False alarm confidence was similar for the two types of nonpresidents: vice presidents ( $M = 59$ , 95% CI = [56, 63]) and other lures ( $M = 62$ , 95% CI = [59, 65]),  $t(223) = 1.30$ ,  $p = .20$ , 95% CI for the difference = [−1, 6] (102 subjects were excluded from this analysis because they did not falsely recognize one or both types of lure). Because of the similarity in false alarm rates and confidence for the two types of lures, we collapsed across them in further analyses.

Figure 1 shows the proportion of subjects who identified each of the 123 test items as the name of a president (on the ordinate) and subjects’ average confidence in that judgment (on the abscissa). Each data point represents one name (circles for presidents, triangles for nonpresidents). As shown in the figure, those names that were more likely to be recognized as presidents received higher confidence ratings, on average, when the judgment of “president” was assigned,  $r(121) = .95$ ,  $p < .001$ , 95% CI = [.93, .97].

On the whole, there was a correlation between recognition accuracy and confidence between items,  $r(121) = .48$ ,  $p < .001$ , 95% CI = [.34, .61], which shows



**Fig. 1.** Scatterplot showing the association between the proportion of subjects who identified each name as that of a president and their average confidence in that identification. Each data point represents a name, and different symbols are used for presidents and nonpresidents. Alexander Hamilton was the nonpresident outlier.

that targets and lures that received higher confidence ratings were more likely to be correctly categorized. However, the strength of the correlation was quite different for the two types of items. The correlation between the hit rate and response confidence for presidents was high,  $r(39) = .93$ ,  $p < .001$ , 95% CI = [.87, .96], and the correlation between the correct rejection rate and response confidence for nonpresidents was lower,  $r(80) = .40$ ,  $p < .001$ , 95% CI = [.20, .57]. This correlation between confidence and accuracy is a common pattern (although exceptions exist to this outcome in other situations; DeSoto & Roediger, 2014). As we will show, in this study, “deceptive” lures were falsely recognized with high confidence. These items helped to reduce the positive correlation between confidence and accuracy for nonpresidents.

Ten presidents were recognized less than 80% of the time, and even when subjects did recognize them, recognition confidence was relatively lower for these individuals than for other presidents. Chester Arthur (hit rate = .46, 95% CI = [.40, .51]) was the least recognizable president (95% CIs for hit and false alarm rates were calculated using the Wilson interval; L. D. Brown, Cai, & DasGupta, 2001). Clearly, using standard recognition

procedures does not enable subjects to correctly recognize all the presidents.

More interesting for theoretical purposes is the false recognition of famous men who never became president. Alexander Hamilton was falsely recognized at a remarkably high rate (.71, 95% CI = [.66, .76]), and he was recognized with high confidence (83, 95% CI = [79, 86]). In fact, Hamilton was identified as a president more often than two actual presidents: Chester Arthur (hit rate = .46) and Franklin Pierce (hit rate = .56, 95% CI = [.51, .62]). Hamilton was identified as a president at similar rates as Presidents Fillmore, Harrison, Tyler, Harding, Taylor, Hayes, and Van Buren. Additionally, confidence when labeling Hamilton as president was greater than confidence when calling Arthur, Pierce, Tyler, or either of the Harrisons a president. These high false alarm rates are surprising when contrasted with false recall in the large MTurk study reported previously (Roediger & DeSoto, 2014). Out of 497 subjects tested in that study, only 24 falsely recalled Hamilton, the same as with Franklin (for an intrusion proportion of .05). Thus, a recognition test invites false responding in this paradigm to a much greater extent than a recall test, as

is also frequently observed in list-learning experiments (Roediger & McDermott, 1995).

To establish the reliability of our results, we split our sample of 326 subjects into two groups of 163 each (using alphabetical subject-identification codes assigned randomly by the computer program). We then correlated the mean hit rates and false alarm rates for the two samples. Pearson correlations were similar in each case—hit rates:  $r(39) = .98, p < .001, 95\% \text{ CI} = [.96, .99]$ ; false alarm rates:  $r(80) = .97, p < .001, 95\% \text{ CI} = [.96, .98]$ . Thus, the results seem quite stable.

## Discussion

In the study reported here, a sample of MTurk subjects recognized 88% of the presidents, which is much higher than recall of presidents from either MTurk samples or university students (Roediger & DeSoto, 2014). Still, recognition was far from perfect, and the hit rate for some presidents who held office in the 1800s was quite poor, with six of them being recognized 70% of the time or less. We believe our subjects were trying to do the task well, because recognition of many presidents was quite high (Washington, Lincoln, the Roosevelts, Kennedy, Nixon, Bush, and Obama were recognized 99% of the time, on average). In addition, subjects rarely incorrectly identified unfamiliar lures as presidents.

The fact that the false alarm rate to so many nonpresidents was so low makes the exceptions all the more interesting. Jacoby, Kelley, et al. (1989) proposed that familiarity of a name can be mistaken for the fame of the individual, but all their work was conducted using lists of fictitious names that were familiar owing to their recent presentation in the experiment. We applied their observations to famous people, specifically U.S. presidents and others of note in American history, thus extending the study of fame judgments to more natural situations (also see Muter, 1978).

Hamilton was falsely recognized as president 71% of the time, and this is likely because of the many important roles he played, including those of a founding father of the United States, coauthor of *The Federalist Papers*, and Secretary of the Treasury, as well as his duel with Vice President Aaron Burr. Our survey was conducted in May 2015, 1 month before the announcement that Hamilton's image would be replaced on the \$10 U.S. currency with the picture of a woman, and prior to the July 2015 Broadway debut of the musical *Hamilton*. These developments in popular culture may heighten familiarity of Hamilton's name, but might also lead to recollection of the fact that he was not president.

Jacoby and his colleagues (Jacoby, Kelley, et al., 1989; Jacoby, Woloshyn, & Kelley, 1989) proposed that familiarity leads to false fame only when it is unopposed by

recollection of specific details. Thus, we suggest that the high rate of false recognition of Hamilton can be interpreted within Jacoby and colleagues' attributional theory: Hamilton is a highly familiar name in American history, and this familiarity is so powerful that he was mistakenly recognized as president in our study. A complementary idea arising from false memory research is that familiar lures can sometimes be rejected via recollection of distinguishing events (e.g., Gallo, 2006; Gallo, Bell, Beier, & Schacter, 2006; Rotello & Heit, 1999). We suggest that this recall-to-reject strategy failed in the case of Hamilton (and a few others). That is, Hamilton is a highly familiar name, but we suggest that subjects were unable to recollect exactly what his role was; hence, he was falsely recognized as being president.

Other than Hamilton, four other individuals were falsely recognized as presidents more than 25% of the time—Hubert Humphrey (false alarm rate = .39, 95% CI = [.34, .45]), Benjamin Franklin (.39, 95% CI = [.34, .45]), John Calhoun (.37, 95% CI = [.32, .42]), and Thomas Moore (.31, 95% CI = [.26, .36]). Why the false familiarity in these cases? We can only speculate, but the same framework described for Hamilton can probably be used for three of these cases. Humphrey served as vice president and ran for president in 1968. Also, the fact that both his names begin with the letter *H* may make him confusable with Herbert Hoover. Franklin was a famous American involved in the events surrounding the founding of the country, and he served as ambassador to France. John Calhoun was a senator and vice president for 7 years. These factors may account for their general familiarity in American history, but if subjects could not recollect their roles, then false recognition as president may have occurred because subjects could not oppose the familiarity with knowledge of their actual roles. These accounts of false fame in our recognition task were formulated after the fact, of course, and need to be tested in additional experiments designed for that purpose.

One surprise is the high false alarm rate for Thomas Moore. People with this name have served in the U.S. House of Representatives, but none are famous. Our best guess is that the Anglo-Saxon structure of his name, the frequency of both parts of the name, and possibly his confusability with Sir Thomas More, the counselor to King Henry VIII, may have contributed to the name's familiarity and false recognition.

In determining fame, we suggest that familiarity must occur in the context of the quality being judged (free-floating familiarity will not do; Elvis Presley will not be recognized as a president). Thus the individuals (except for Moore) falsely recognized as president are those with ties to American history. The same individuals would be unlikely to be recognized if the task were, say, to recognize famous musicians from the 1960s, as this group does



not contain similar historical names (except perhaps for Paul Revere & the Raiders). Thus, we propose that familiarity is context sensitive; that is, some global familiarity of a name (say, Winston Churchill) is not enough for it to be falsely recognized as famous in a specific context (e.g., as a U.S. president). Creating an appropriate account of such context-sensitive familiarity must also await future research.

The data as a whole show a strong relation between the proportion of subjects who identified a name as that of a president (whether correctly or incorrectly) and subjects' confidence, on average, in that identification, as shown in Figure 1 ( $r = .95$ ). These data fit well with Koriat's (2008, 2012) consensuality principle: The more consensual a judgment (i.e., the more people who make it), the greater the confidence they tend to have when making it. Similar observations can be seen in list-learning experiments (DeSoto & Roediger, 2014).

In sum, our study shows that Americans have good recognition of early and recent presidents, but, confirming studies using recall, some presidents of the 19th century are not recognized well. In fact, several famous Americans are judged to have been president at the same or greater levels than actual presidents. We have interpreted the results using Jacoby and colleagues' (Jacoby, Kelley, et al., 1989; Jacoby, Woloshyn, & Kelley, 1989) attributional framework for recognition, as complemented by Gallo and colleagues' (Gallo, 2006; Gallo et al., 2006) recall-to-reject process (see also Rotello & Heit, 1999). In addition, the results fit well with Koriat's (2008, 2012) consensuality principle relating the tendency to correctly recognize a name to the confidence with which the judgment is made.

### Action Editor

D. Stephen Lindsay served as action editor for this article.

### Author Contributions

Both authors contributed to the concept and design of the study. H. L. Roediger, III, led theoretical development, provided project oversight, and guided data interpretation. K. A. DeSoto was responsible for programming the study, as well as collecting, analyzing, and interpreting the data. The authors wrote the manuscript jointly.

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The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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### Open Practices



All data and materials have been made publicly available via the Open Science Framework and can be accessed at <https://osf.io/8z2an/>. The complete Open Practices Disclosure for this article can be found at <http://pss.sagepub.com/content/by/supplemental-data>. This article has received the badges for Open Data and Open Materials. More information about the Open Practices badges can be found at <https://osf.io/tvyxz/wiki/1.%20View%20the%20Badges/> and <http://pss.sagepub.com/content/25/1/3.full>.

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