Research Report

BIRDS OF A FEATHER FLOCK CONJOINTLY (?): Rhyme as Reason in Aphorisms

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Abstract—*We explored the role that poetic form can play in people's perceptions of the accuracy of aphorisms as descriptions of human behavior. Participants judged the ostensible accuracy of unfamiliar aphorisms presented in their textually surviving form or a semantically equivalent modified form. Extant rhyming aphorisms in their original form (e.g., "What sobriety conceals, alcohol reveals") were judged to be more accurate than modified versions that did not preserve rhyme ("What sobriety conceals, alcohol unmasks"). However, the perceived truth advantage of rhyming aphorisms over their modified forms was attenuated when people were cautioned to distinguish aphorisms' poetic qualities from their semantic content. Our results suggest that rhyme, like repetition, affords statements an enhancement in processing fluency that can be misattributed to heightened conviction about their truthfulness.*

Aphorisms are succinct statements that offer observations and advice about universal human concerns such as happiness (e.g., "Better to be happy than wise"), health ("An apple a day keeps the doctor away"), and friendship ("Birds of a feather flock together"). Although they enjoy a reputation among laypeople as distillations of age-old psychological wisdom, aphorisms are commonly characterized by psychologists as dubious generalizations to be contrasted with more precise scientific descriptions of human behavior (Gibbs & Beitel, 1995; Teigen, 1986). To this end, many introductory psychology textbooks draw attention to the existence of apparently contradictory pairs of aphorisms such as "Birds of a feather flock together" versus "Opposites attract" and "Out of sight, out of mind" versus "Absence makes the heart grow fonder" (Baron, Byrne, & Kantowitz, 1980; Taylor & Manning, 1975). Presumably, a set of statements about behavior can be considered scientifically "accurate" only if each statement's truth conditions can be operationalized and the statements do not contradict each other (Dowty, Wall, & Peters, 1981). However, the notorious vagueness of aphorisms makes specification of their truth conditions especially difficult. For example, what conditions must be satisfied for the statement "Haste makes waste" to be true? Which forms of urgent action constitute "haste"? How does one distinguish a priori between a situation in which "Haste makes waste" is good advice and one in which "He who hesitates is lost" would be more appropriate? If the persuasive force of an aphorism depended critically on the clarity of its truth conditions, we should find it surprising that people invest any belief in such statements.

Given the murkiness of aphorisms' truth conditions, why might people believe that such statements describe human behavior accurately? One important factor is an aphorism's familiarity (Higbee & Millard, 1983). For example, consider the well-worn observation that "opposites attract." American college students not only are highly familiar with this aphorism, but also judged it to be a more accurate description of companion selection than novel statements that entail the same claim (e.g., "People with divergent interests and personalities tend to be drawn to one another"; McGlone & Necker, 1998). The conflation of familiarity and accuracy in aphorisms is consistent with experimental demonstrations of the influence of repetition on people's judgments of statements with uncertain truth value (Bacon, 1979; Begg, Anas, & Farinacci, 1992; Begg & Armour, 1991; Hasher, Goldstein, & Toppino, 1977). For example, Hasher et al. (1977) found that repetition of unsubstantiated trivia statements (e.g., "Divorce is found only in technically advanced societies") produced a systematic shift in their rated truth value: Repeated statements were judged as more likely to be true than nonrepeated statements. Begg et al. (1992) characterized this and other demonstrations of the "illusory truth" effect as evidence that a fluency heuristic operates in people's judgment of a statement's truth; repetition increases a statement's familiarity, and the processing fluency that familiarity affords the statement is misattributed to belief in its propositional truth (cf. Whittlesea, 1993). Although fluency of this sort might contribute to people's belief in conventional aphorisms such as "Haste makes waste," it does not encourage belief in unfamiliar aphorisms such as "Variety prevents satiety." Yet unfamiliar aphorisms often seem to have a "ring of truth" as well, their dubious truth conditions notwithstanding. What characteristics of unfamiliar aphorisms might contribute to this perception?

The present study focuses on the role that aesthetic properties of an aphorism can play in people's (specifically, readers') perceptions of its truthfulness. Although these statements' reputation as kernels of psychological wisdom may be dubious, their reputation as verbal art forms is well deserved. Aphorisms employ many of the aesthetic devices exalted in poetry, including metaphor (e.g., "Oppression is the mother of liberty"), alliteration ("Fortune favors the fool"), assonance ("A rolling stone gathers no moss"), and rhyme ("Haste makes waste"; Gibbs & Beitel, 1995; Odlin, 1986). Traditionally, literary scholars have classified these devices as aspects of aphoristic form that are separate from propositional content (e.g., Goodwin & Wenzel, 1979). In his seminal work on structuralist poetics, Culler (1975) acknowledged this distinction by suggesting that the rhetorical effectiveness of an aphorism depends on the "observable accuracy of its meaning" (i.e., content) and "the aesthetic pleasure afforded by its form" (p. 143).

Although the distinction between content and form clearly has analytic value, it has not been established that readers routinely separate the contributions that these components make to their overall appreciation of an aphorism (McGlone & Tofighbakhsh, 1999). For example, consider how readers might respond differently to "Variety prevents satiety" and a slightly modified version of this statement, "Variation prevents satiety." The two statements do not differ appreciably in propositional content, but the former has an aesthetic element (i.e., repetition of the stressed vowel and subsequent speech sounds in two or more words, or rhyme; Brogan, 1994) that the latter

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does not. If readers distinguish between the propositional content of the aphorism and its poetic form, then there should be no difference in the perceived accuracy of the rhyming and nonrhyming versions. However, rhyme, like familiarity, can increase the fluency with which words forming a statement are recognized and understood (Meyer, Schvaneveldt, & Ruddy, 1975; Rubin, 1995). For example, Meyer et al. (1975) found that people are faster to judge that a string of letters presented visually is a word if it is preceded by a rhyming prime word than if it is preceded by a nonrhyming prime. This effect is observed even when the prime word is presented auditorily, suggesting that lexical activation (as opposed to simple graphemic correspondence) is the locus of facilitation (Hillinger, 1980). If, as Begg et al. (1992) have argued, people base their judgments of a statement's accuracy in part on the fluency with which the statement is processed, then the fluency that rhyme affords an aphorism may confer upon the statement a perceived truth advantage over a semantically equivalent nonrhyming version. Such an advantage would indicate that the traditional analytic distinction between a statement's "rhyme and reason" (i.e., form and content) is not always appreciated by readers; in some circumstances, rhyme may be treated *as* reason.

In this article, we report an experiment exploring the influence of poetic form on people's perceptions of aphorisms' accuracy as descriptions of human behavior. This experiment tested two distinct hypotheses. First, we hypothesized that people would misattribute the processing fluency produced by an aphorism's rhyming form to heightened conviction about the statement's accuracy (following Begg et al., 1992), relative to a semantically equivalent nonrhyming version of the aphorism. Second, we predicted that this misattribution would be attenuated when people were prompted to attribute processing fluency to its actual source (cf. Schwarz & Clore, 1996; Whittlesea, Jacoby, & Girard, 1990). Specifically, we expected that people advised to distinguish aphorisms' poetic qualities from their propositional content would be less prone to exhibit the "rhyme as reason" effect.

METHOD

Participants

For participating in this experiment, 120 Lafayette undergraduates received extra credit in a course they were taking. Twenty participated in the materials check and 100 in the experiment proper. All were native English speakers.

Materials

Initially, 50 rhyming and 50 nonrhyming aphorisms were selected from published aphorism collections using the following criteria: (a) The aphorism was an advisory or descriptive statement about human behavior (as opposed to a value judgment or opinion, which people might be hesitant to judge as accurate or inaccurate); (b) it was not similar in meaning to another selected aphorism; and (c) it was unfamiliar to the authors. For each extant (i.e., textually surviving) rhyming aphorism (e.g., "What sobriety conceals, alcohol reveals"), a modified version was created by replacing one of the rhyming words with a close synonym that did not rhyme with any of the other words in the statement (e.g., "What sobriety conceals, alcohol unmasks"). For each extant nonrhyming aphorism (e.g., "Benefaction is the most difficult weapon to conquer"), a modified version was created by replacing a content word with a close synonym that did not rhyme with any of the other words in the statement (e.g., "Benefaction is the most difficult weapon to overcome").[1] The extant nonrhyming aphorisms and their modified counterparts were included in the stimulus materials to control for the possibility that a perceived truth advantage for an extant rhyming aphorism over a nonrhyming version might be attributable not to rhyme per se, but rather to modification of the statement's textually surviving form. We expected that if the latter were true, we would observe a truth advantage for the extant nonrhyming aphorisms over their modified counterparts as well.

On the basis of a pilot experiment ($n = 20$), we chose 30 pairs (original plus modified version) from each of the rhyming and nonrhyming aphorism sets. A pair was selected only if all participants indicated that (a) they could not recall having read or heard the original aphorism in the past and (b) they did not perceive a difference in meaning between the original and modified versions. Examples of the selected pairs are presented in Table 1. Two lists were created from these materials. Each list contained 60 aphorisms: 15 extant rhyming aphorisms in their original form and 15 in modified (i.e., nonrhyming) form, and 15 extant nonrhyming aphorisms in their original form and 15 in modified form. Only one version of each extant aphorism appeared in each list. Although the order in which the aphorisms appeared was randomized, a given aphorism and its modified form were in the same position in their respective lists.

Design and Procedure

This experiment employed a 2 × 2 × 2 design with aphorism type (extant rhyming or nonrhyming) and version (original or modified) as within-subjects factors and instruction condition (control or warning) as a between-subjects factor. Upon arrival in the laboratory, participants were randomly assigned to one of the aphorism lists and an instruction condition. The first page of each questionnaire indicated that the experiment was part of a larger study exploring the psychological theories implied by English aphorisms and provided instructions for the accuracy ratings. Participants were instructed to read each aphorism carefully and then to rate the degree to which they perceived the aphorism as "an accurate description of human behavior," on a scale from 1 (*not at all accurate*) to 9 (*very accurate*). In the control-instructions condition, the instructions did not include any mention of or admonition concerning the distinction between aphorisms' poetic qualities and their ostensible accuracy. In contrast, instructions in the warning condition specifically cautioned participants to base their accuracy judgments "only on the claim that the statement makes about behavior, not the poetic quality of the statement's wording." This caveat was presented in boldface type in the instructions, and was further emphasized by the observation that "a statement might strike you as quite poetic, but not particularly accurate; on the other hand, a statement might strike you as quite accurate, but not particularly poetic."

After participants in both conditions completed the accuracy ratings, they were asked the following yes/no question: "In your opinion, do aphorisms that rhyme describe human behavior more accurately than those that do not rhyme?" After responses to this question were

1. Although it would have been ideal to construct modified rhyming versions of the extant nonrhyming aphorisms (thus putting assignment of statements to the rhyming and nonrhyming conditions under the experimenter's control), it was impossible in most cases for us to create such versions that adequately preserved the meaning of the originals.

Table 1. *Examples of the aphorism pairs*

Original version	Modified version
Extant rhyming aphorisms	
Woes unite foes.	Woes unite enemies.
What sobriety conceals, alcohol reveals.	What sobriety conceals, alcohol unmasks.
Life is mostly strife.	Life is mostly struggle.
Caution and measure will win you treasure.	Caution and measure will win you riches.
Variety prevents satiety.	Variation prevents satiety.
Extant nonrhyming aphorisms	
Fools live poor to die rich.	Fools live poor to die wealthy.
Power grows mightier with each trial.	Power grows mightier with each challenge.
Short pleasure, long repentance.	Short pleasure, long regret.
He who rides a tiger is afraid to dismount.	He who rides a tiger is afraid to get off.
Good intentions excuse ill deeds.	Good intentions excuse ill acts.

recorded, participants were debriefed regarding the true purpose of the experiment. On average, the experimental sessions lasted 25 min.

RESULTS

Initial analyses did not reveal main effects or interactions involving stimulus list, so subsequent analyses collapsed across this factor. Separate analyses of variance were conducted on the ratings data treating participants (F_p) and items (F_i) as random factors. Analyses of the accuracy ratings indicated that, overall, there were no reliable differences in mean ratings between extant rhyming and nonrhyming aphorisms (5.51 and 5.45, respectively) or original and modified versions (5.63 and 5.35), $p > .10$ in both cases. However, participants in the control-instructions condition generated slightly higher ratings overall than those in the warning condition (5.68 and 5.26), $F_p(1, 98) = 2.79$, $p < .08$, and $F_i(1, 58) = 2.63$, $p < .12$. This marginal effect was moderated by a reliable Aphorism Type × Version × Instruction Condition interaction, $F_p(1, 98) = 7.84$, $p < .01$, and $F_i(1, 58) = 5.58$, $p < .02$. The relevant means are presented in Figure 1. Planned analytical comparisons (Keppel, Saufley, & Tokunaga, 1992) were used to investigate differences among the means. As we predicted, participants who were not cautioned to distinguish aphorisms' semantic content from their poetic qualities (the control-instructions condition) assigned higher accuracy ratings to the original rhyming aphorisms than their modified counterparts (6.17 and 5.26), $F_p(1, 98) = 12.77$, $p < .01$, and $F_i(1, 58) = 8.62$, $p < .03$; however, they assigned comparable ratings to the original and modified nonrhyming aphorisms (5.79 and 5.51), $F_p(1, 98) = 1.21$, $p > .10$, and $F_i(1, 58) = 0.82$. The fact that the difference in ratings between aphorism versions was reliable for the extant rhyming aphorisms, but not the nonrhyming aphorisms, suggests that the difference is attributable specifically to manipulation of rhyme in the former and not simply to the modification of their textually surviving form.[2]

Participants in the warning condition exhibited a markedly different pattern of accuracy ratings. The original rhyming aphorisms were assigned reliably lower accuracy ratings in this condition than in the control condition (5.42 and 6.17), $F_p(1, 98) = 4.79$, $p < .05$, and $F_i(1, 58) = 4.26$, $p < .05$. In addition, in the warning condition, there were no reliable differences in participants' ratings for original and modified versions of the extant rhyming aphorisms (5.42 and 5.17), $F_p(1, 98) = 0.96$, and $F_i(1, 58) = 0.65$, or of the extant nonrhyming aphorisms (5.14 and 5.36), $F_p(1, 98) = 0.75$, and $F_i(1, 58) = 0.52$. Thus, bringing the distinction between an aphorism's poetic qualities and semantic content to participants' attention had the desired effect of thwarting their tendency to conflate fluency with perceived accuracy. However, there is no evidence that this tendency in the control condition stemmed from an explicit belief that rhyming aphorisms are more accurate than nonrhyming ones. When asked if they held such a belief, all participants in both conditions responded "no" (and many gave us quizzical looks).

DISCUSSION

In *The Gay Science*, Nietzsche (1878/1986) attributed the origin of poetry to a primitive belief that rhythm and rhyme could confer magical powers to the words of prayers, carrying them "closer to the ears of the gods." Although this superstition was dismissed long ago in most cultures, Nietzsche observed that "even now . . . the wisest among us are still occasionally fooled by rhythm—if only insofar as *we sometimes consider an idea truer because it has a metrical form and presents itself with a divine spark and jump*" (pp. 139–140, emphasis added). Our results offer some support for Nietzsche's claim: Participants conflated the rhyme and perceived accuracy of aphorisms unless they were explicitly instructed to distinguish the statements' semantic content from their poetic qualities. This occurred despite the fact that participants did not read the aphorisms aloud, which would

2. A second possibility is that the perceived truth advantage was attributable in part to modification of the rhyming aphorisms' meter. It proved difficult in many cases for us to create modified versions of these aphorisms in which rhyming words were replaced with synonyms that had the same number of syllables and stress pattern as the replaced words, thereby preserving both the meanings and the meter of the statements; however, we were able to do this for 14 of the 30 rhyming aphorisms used (see examples in Table 1). We found no differences in the pattern of accuracy ratings for these aphorism pairs and those in which the modified version preserved only the meaning of the original. Thus, we tentatively conclude that the meter confound did not contribute appreciably to the effect reported.

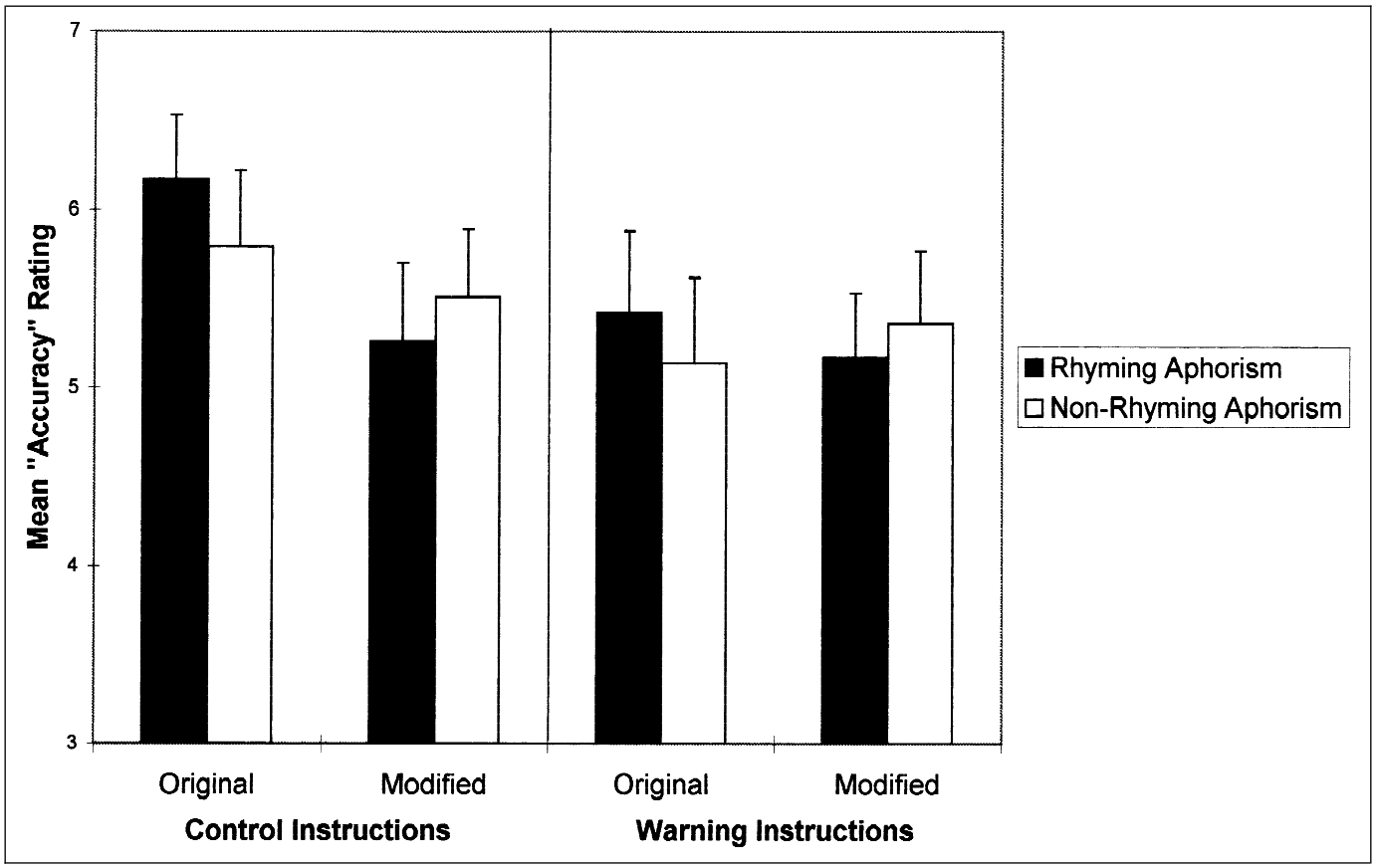

Fig. 1. Mean accuracy ratings by aphorism type, version, and instruction condition.

have made those that rhymed especially salient. Among the prosodic poetic devices (e.g., alliteration, assonance), rhyme is the first that children learn to appreciate and one that adults routinely notice even during silent reading (Hayes, Chemelski, & Palmer, 1982). Thus, it is not surprising that participants discriminated between the rhyming and nonrhyming aphorisms in the stimulus lists. What *is* surprising is that they discriminated between these forms in terms of accuracy, even though none of them reported believing that rhyme confers a truth advantage on such statements. Psychologists have documented that people are often unaware of factors that influence their judgments (e.g., Nisbett & Wilson, 1977). However, barring an unconscious belief in the magical power of rhyme on the part of our participants, what accounts for the rhyme-as-reason effect?

We suggest that this effect is a product of the enhanced processing fluency that rhyme affords an aphorism such as "What sobriety conceals, alcohol reveals" relative to a semantically equivalent nonrhyming version. Although enhanced processing fluency is often the consequence of repeated exposure to a stimulus (Begg et al., 1992; Jacoby & Kelley, 1987), it can also be produced by factors in the present stimulus environment. For example, manipulations of fluency such as adjusting the figure-ground contrast or presentation duration of a stimulus produce misattributions akin to those generated by repetition manipulations (Reber, Winkielman, & Schwarz, 1998; Whittlesea, 1993). When these manipulated factors are brought to people's attention, misattribution of processing fluency to other psychological dimensions (e.g., liking, familiarity) is attenuated (Whittlesea et al., 1990). In the same fashion, our participants misattributed processing fluency to a perceived truth advantage of rhyming aphorisms over nonrhyming versions; however, when they were cautioned to distinguish an aphorism's poetic form from its semantic content, the advantage was significantly reduced.

Although we have explored the rhyme-as-reason effect within the narrow domain of antiquated sayings, it clearly can occur in contemporary communications as well. Consider defense attorney Johnnie Cochran's celebrated plea to the jury during O.J. Simpson's criminal trial: "If the gloves don't fit, you must acquit!" Journalists have focused almost exclusively on the mnemonic value of rhyme in this statement: Rhyme increased the likelihood that jurors would rehearse, remember, and thus apply Cochran's directive (Buckley, 1997). However, the fluent quality of the statement undeniably overshadows its dubious proposition—after all, the jury was obligated to consider all of the presented evidence, not just the tight gloves! We wonder how persuasive the jury might have found this proposition had Cochran proclaimed, "If the gloves don't fit, you must find him not guilty!"

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REFERENCES

Bacon, F.T. (1979). Credibility of repeated statements: Memory for trivia. *Journal of Experimental Psychology: Human Learning and Memory, 5*, 241–252.

Baron, R.A., Byrne, D., & Kantowitz, B.H. (1980). *Psychology: Understanding behavior*. New York: Holt, Rinehart, & Winston.

Begg, I.M., Anas, A., & Farinacci, S. (1992). Dissociation of processes in belief: Source recollection, statement familiarity, and the illusion of truth. *Journal of Experimental Psychology: General, 121*, 446–458.

Begg, I.M., & Armour, V. (1991). Repetition and the ring of truth. *Journal of Experimental Psychology: General, 121*, 446–458.

Brogan, T.V.F. (1994). *The new Princeton handbook of poetic terms*. Princeton, NJ: Princeton University Press.

Buckley, C. (1997). *Wry martinis*. New York: Harper Perennial.

Culler, J. (1975). *Structuralist poetics*. Ithaca, NY: Cornell University Press.

Dowty, D.R., Wall, R.E., & Peters, S. (1981). *Introduction to Montague semantics*. Boston: Reidel.

Gibbs, R.W., & Beitel, D. (1995). What proverb understanding reveals about how people think. *Psychological Bulletin, 118*, 133–154.

Goodwin, P.D., & Wenzel, J.W. (1979). Proverbs and practical reasoning: A study in socio-logic. *Quarterly Journal of Speech, 65*, 289–302.

Hasher, L., Goldstein, D., & Toppino, T. (1977). Frequency and the conference of referential validity. *Journal of Verbal Learning and Verbal Behavior, 16*, 107–112.

Hayes, D.S., Chemelski, B.E., & Palmer, M. (1982). Nursery rhymes and prose passages: Preschoolers' liking and short-term retention of story events. *Developmental Psychology, 96*, 211–222.

Higbee, K.L., & Millard, R.J. (1983). Visual imagery and familiarity ratings for 203 sayings. *American Journal of Psychology, 96*, 211–222.

Hillinger, M.L. (1980). Priming effects with phonemically similar words: The encoding-bias hypothesis reconsidered. *Memory & Cognition, 8*, 115–123.

Jacoby, L.L., & Kelley, C.M. (1987). Unconscious influences of memory of a prior event. *Personality and Social Psychology Bulletin, 13*, 314–336.

Keppel, G., Saufley, W.H., & Tokunaga, H. (1992). *Introduction to design and analysis* (2nd ed.). New York: W.H. Freeman.

McGlone, M.S., & Necker, R. (1998). *The perils of paraphrase*. Unpublished manuscript, Lafayette College, Easton, PA.

McGlone, M.S., & Tofighbakhsh, J. (1999). The Keats heuristic: Rhyme as reason in aphorism interpretation. *Poetics, 26*, 235–244.

Meyer, D.E., Schvaneveldt, R.W., & Ruddy, M.G. (1975). Loci of contextual effects on visual word recognition. In P.M. Rabbit & S. Dornic (Eds.), *Attention and performance, Volume V* (pp. 98–118). London: Academic Press.

Nietzsche, F. (1986). *The gay science*. New York: Mentor. (Original work published 1878)

Nisbett, R.E., & Wilson, T.D. (1977). Telling more than we can know: Verbal reports of mental processes. *Psychological Review, 84*, 231–259.

Odlin, T. (1986). Language universals and constraints on proverbial form. *Proverbium, 3*, 125–151.

Reber, R., Winkielman, P., & Schwarz, N. (1998). Effects of perceptual fluency on affective judgments. *Psychological Science, 9*, 45–48.

Rubin, D.C. (1995). *Memory in oral traditions: The cognitive psychology of epic, ballads, and counting-out rhymes*. Oxford, England: Oxford University Press.

Schwarz, N., & Clore, G.L. (1996). Feelings and phenomenal experiences. In E.T. Higgins & A. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 433–465). New York: Guilford.

Taylor, D.A., & Manning, S.A. (1975). *Psychology: A new perspective*. London: Van Nostrand.

Teigen, K.H. (1986). Old truths or fresh insights? A study of students' evaluations of proverbs. *British Journal of Social Psychology, 25*, 43–49.

Whittlesea, B.W.A. (1993). Illusions of familiarity. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 6*, 1235–1253.

Whittlesea, B.W.A., Jacoby, L.L., & Girard, K. (1990). Illusions of immediate memory: Evidence of an attributional basis for feelings of familiarity and perceptual quality. *Journal of Memory and Language, 29*, 716–732.

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