Perceptual and Conceptual Fluency as Antecedents of the Mere Exposure Effect

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Across three experiments, we investigate the role that perceptual and conceptual fluency play in giving rise to the mere exposure effect in verbal stimuli. In the first experiment, where the critical stimuli were single words, conceptual fluency and perceptual fluency were found to exert additive effects on liking for words. Moreover, conceptual fluency was found to have a greater impact. When more complex verbal stimuli in the form of advertising slogans were used in experiments two and three, an effect of conceptual fluency but not perceptual fluency was found. We also show that the effect of conceptual fluency is moderated by the idiomaticity (idiomatic vs. literal) of the advertising slogans.
Advertising clutter has become a fact of life in an increasingly competitive marketing environment, where share of the consumer’s mind has become a critical success factor. Perhaps as a matter of adapting to this unrelenting barrage of advertising messages, the majority of these messages are processed under conditions of very low involvement. Hawkins and Hoch (1992) aptly described such low involvement situations as occurring “when consumers attend to marketing communications without explicitly intending to evaluate and learn from the message” and that as a result “the consumer does not link the message to personal needs, brand beliefs, or past experiences”. In other words, low involvement processing is characterized by the absence of an evaluation intent and elaboration. Given how commonplace such situations of low involvement processing are and the repetitious nature of advertising messages, how might affective response to these messages change over different repetition levels? Thankfully, decades of research in the mere exposure effect (Zajonc 1968) has deepened our understanding of why and how repeated exposure to a stimulus under low involvement situations enhances our liking for it (e.g. Janiszewski and Meyvis 2001; Lee and Labroo 2004; Nordhielm 2002; Obermiller 1985).

However, the predominant use of non-verbal stimuli in mere exposure studies (such as polygons, photographs) does not adequately inform us of the potential for mere exposure effects to obtain in many marketing communications where the focus may be the brand name, tag line or slogan. In fact, to the best of our knowledge, no study currently exists that looks at whether the mere exposure effect can be obtained with more complex verbal stimuli such as sentences.1 Little is also known about how the perceptual features (i.e. physical features) and conceptual features (i.e. meaning) of verbal stimuli combine to elicit positive affect over different repetition levels.

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1 Studies that have examined complex verbal stimuli have done so in the context of message learning and cognitive response (e.g. Craig, Sternthal and Leavitt 1976), situations that represent higher levels of involvement than is of interest in mere exposure studies.
For example, will repetition of the brand name GRAY enhance liking for it and to what extent might perceptually or conceptually similar brand names such as CRAY or SILVER benefit from that repetition? Moreover, more complex verbal information can often be expressed in a multitude of ways. Might a tag line that is expressed idiomatically, such as “The brand that took Paris by storm” benefit differentially from repeated presentations compared to an equivalent literal tag line, such as “The brand that was extremely popular in Paris”? The goal of the present research is to examine how perceptual and conceptual processing of verbal stimuli give rise to the mere exposure effect. The results of this research tells us how the effectiveness of verbal marketing communications, such as brand names and slogans, might vary as a function of repetition, perceptual processing and conceptual processing.

**MERE EXPOSURE AND THE PERCEPTUAL FLUENCY ACCOUNT**

The mere exposure effect was first reported by Zajonc in 1968 in a series of experiments in which nonsense words, Chinese ideographs and photographs of faces were presented to participants at various frequency levels. Liking for a stimulus was found to be positively related to the number of times the stimulus was exposed. While the robustness of the mere exposure effect is seldom in dispute (see Bornstein 1989 for review), the reasons for its occurrence and the theoretical accounts put forth have been the topic of fervent discussions and scrutiny. A good part of early research had been centered on an intense debate over whether the enhanced affect found is mediated by cognition (Lazarus 1982, 1984) or if it reflects the workings of an independent affective system (Zajonc 1980, 1984). This independence versus cognitive-
mediation debate has come to an impasse and has been overshadowed by the emergence of perceptual fluency as a popular account of the mere exposure effect.

Perceptual fluency may be defined as the ease of processing the perceptual features of a stimulus (Jacoby and Kelley 1987). Prior exposure is thought to create a feature-based representation of the stimulus in memory, with the result that processing of the stimulus on subsequent encounters is facilitated and experienced as subjective ease. When people experience this ease or fluency but have little insight as to the reason for it, they are likely to rely on the most parsimonious explanation for it. In an experimental context that imposes an affective judgment task, the juxtaposition of experienced fluency and affective judgment leads study participants to misconstrue fluency as their affective reaction to the stimulus. Hence, repeated presentation of a stimulus increases perceptual fluency, which in turn increases the likelihood of misattribution to affect. This is the crux of the perceptual fluency/attribution model (Bornstein and D’Agostino 1994). While the model was proposed in the context of the mere exposure effect, its generality extends beyond it (e.g., Nordhielm 2002). First of all, the misattribution of fluency is not peculiar to affective judgments, but may in fact be found on other tasks that the individual is faced with; second, repetition of the stimulus is but one means of creating fluency. For an informative discussion of the ways in which perceptual fluency has been obtained and the various judgments perceptual fluency has been misattributed to, we refer the reader to Janiszewski and Meyvis (2001).

That the perceptual fluency/attribution account should be so named is somewhat of a misnomer, since it unnecessarily suggests the domain of fluency effects to which it applies to be more circumscribed than it really is. Misattribution of fluency arising from conceptual encoding, or conceptual fluency, can potentially lead to mere exposure effects as well (Janiszewski and
Meyvis 2001; Whittlesea 1993). The literature, however, has paid far more attention to perceptual than to conceptual fluency, perhaps owing to the type of stimuli predominant in mere exposure studies. According to Bornstein’s (1989) meta-analysis and review of the mere exposure literature, about 80% of experiments included in the analysis used stimuli that were non-meaningful. (This may be understood in light of early concerns over whether the effect is in fact an affective response that does not involve cognitions.) The sparse literature on conceptual fluency leaves much to be discovered about it, such as its relationship to perceptual fluency, its impact on affect relative to perceptual fluency for the same stimuli, and how stimulus characteristics influence the amount of conceptual fluency generated. We review below findings in the extant literature on conceptual fluency before proceeding to explicate the goals of this research and how it adds to current understanding.

**CONCEPTUAL FLUENCY**

Conceptual fluency is defined in a manner analogous to perceptual fluency, that is, as the ease of processing the meaning of a stimulus, or the fluency of conceptually driven processing (Whittlesea 1993). Any event that activates a concept in memory by virtue of automatic spreading activation (Collins and Loftus 1975; Neely 1977) can potentially generate conceptual fluency when the target is subsequently processed. Thus, conceptual fluency can be generated by various means, such as repeated presentation of the same stimulus item (e.g., Janiszewski and Meyvis 2001), presentation of a semantically-equivalent item (e.g., broad-WIDE), a semantically-related item (e.g., sugar-SWEET; Lee and Labroo 2004; Rajaram and Geraci 2000), or a sentence context that is predictive of the target item (e.g., The stormy seas tossed the-
BOAT). The last of these methods was employed by Whittlesea (1993), in an experiment that is credited as the first to empirically demonstrate the effects of conceptual fluency. Participants in that study were presented with sentence stems that were either predictive of the target word (e.g., The anxious student wrote a TEST) or neutral with respect to it (e.g., Later in the afternoon she took a TEST). Each sentence stem was presented for two seconds, after which the target word was presented on its own. Participants were then asked to judge if target words were pleasant or neutral. The results showed that target words preceded by predictive sentence stems were more likely to be judged pleasant than those preceded by neutral sentence stems. Hence, conceptual fluency created by predictiveness of context led to a “mere exposure” effect. One critique of this result has been that the predictive sentence context creates an expectancy as to what the target word might be, and confirmation of that expectancy may have a reinforcing effect thus generating positive affect. (One might recall that the widely accepted definition of mere exposure effect makes reference to an enhancement in liking due to repeated, unreinforced exposures to a stimulus.) Hence it may not be fluency per se that enhanced affect in Whittlesea’s study.

Lee and Labroo (2004, experiment 1) recently addressed the alternative explanation of positive reinforcement for Whittlesea’s findings. They presented subjects, as Whittlesea did, with sentence contexts that were predictive or non-predictive of the last word of the sentence. However, to overcome the problem of the reinforcing effect of a predictive context, target words were not the last words of sentences, but were words presented following these sentences. These target words were either the same as, semantically-related to, or unrelated to the last word of the sentence. Lee and Labroo argued that, when the sentence context was predictive, the type of fluency that would be experienced in each of these conditions were: conceptual and perceptual fluency (identical word), conceptual fluency only (semantically-related word), and no fluency
When the sentence context was neutral, perceptual fluency, conceptual fluency, and no fluency would be experienced in the respective conditions. It is possible, however, that one would experience conceptual and perceptual fluency in the neutral context/same word condition. When the last word of the sentence is processed, its meaning ought to have been activated in memory, even if its occurrence was not predicted from the sentence stem. When the same word is then presented as the target word, conceptual fluency would be experienced along with perceptual fluency. Lee and Labroo reported that affective judgments in this condition were statistically equivalent to that in the control condition. Hence, it seems possible that no fluency was experienced in that condition, making the conclusion that conceptual fluency can affect affective judgments somewhat tenuous.

A few other studies have investigated the effects of conceptual fluency on other dependent measures. Masson and Caldwell (1998), for instance, showed that individuals who generated words from a semantic cue, were more likely to subsequently judge studied words to have been onscreen for a longer duration (experiments 1 and 2) and to have been obscured by a lighter mask (experiment 2b). Rajaram and Geraci (2000) exposed study participants to brief presentations (150 msec) of words that were either semantically-related or unrelated to target words, and found an effect of conceptual fluency on ‘know’ judgments but not ‘remember’ judgments. Shapiro (1999) demonstrated that incidental exposure to an ad depicting a product in its typical setting can lead to conceptual fluency as reflected in the greater likelihood of the product’s inclusion in a stimulus-based consideration set. More recently, Janiszewski and Meyvis (2001) examined how conceptual fluency varies over different repetition levels as a function of stimulus complexity, by comparing the choice likelihood of two stimuli differing in terms of complexity of meaning.
In addition, the truth effect (Hasher, Goldstein, and Toppino 1977)–increases in judged validity of a statement with repeated exposures–may also be a phenomenon resulting from the misattribution of fluency to judgments of truth. Studies investigating the truth effect, however, have typically involved exact repetitions of statements, and both perceptual and conceptual fluency may thus have contributed to the effect. One exception to this is Hawkins, Hoch, and Meyers-Levy (2001). While the explanation for their findings was not couched in terms of conceptual fluency, the results are consistent with it. The study had the following set-up: At exposure, participants were presented with sets of related product feature claims (e.g., “The cylinders in ACE locks are more difficult to pick than any other lock”, “Keys for the ACE lock can be duplicated only at ACE’s manufacturing factory”). Within each set, the claims were related by virtue of implying the same general benefit (e.g., “When it comes to security, ACE provides the best door locks”) for the same product. At test, they rated these claims and the implied benefits on truth and on familiarity. General benefits were conceptualized as superordinate concepts in a hierarchy with feature claims as specific instances of a superordinate concept. Exact repetition of a feature claim was found to enhance truth judgments of the general benefit it implied, but it did not affect truth judgments of related feature claims. Familiarity judgments exhibited a similar pattern of results. These results may be understood in terms of the greater conceptual overlap between a feature claim (e.g., pick resistant) and the related general benefit (e.g., security), than between two related feature claims (e.g., pick resistant and factory keys). In other words, one is likely to experience greater conceptual fluency when processing a general benefit statement, than when processing a related feature claim, thereby leading to differences in likelihood of attribution to judgments of truth and of familiarity. To illustrate the point, consider the following analogy: on encountering the word BEAGLE, the concept DOG is
more likely to be activated by way of spreading activation, than CHIHUAHUA. On subsequently encountering DOG and CHIHUAHUA, greater fluency is likely to be experienced with the former than with the latter.

Hence, while investigations of conceptual fluency have not been extensive, an understanding of conceptual fluency is beginning to emerge, in terms of how it might be generated, and the judgments it can affect. However, as discussed above, the role of conceptual fluency in giving rise to the mere exposure effect awaits stronger empirical evidence. Moreover, there have not been any published investigations of how perceptual and conceptual fluency for the same stimuli change over different repetition levels (also noted by Janiszewski and Meyvis 2001). The relative contributions of perceptual fluency and conceptual fluency for verbal stimuli such as words and sentences have also not been examined despite the prevalence of consumer information that is presented in verbal text format. We investigate these and related issues in the present paper. Our research objectives are detailed in the following section.

**RESEARCH QUESTIONS**

The experiments reported in this paper share the following characteristic: We do not artificially constrain the type of processing (perceptual vs. conceptual) that study participants engage in. Rather, individuals are given sufficient opportunity to encode both the perceptual and conceptual characteristics of the stimulus. We then assess the contributions of perceptual and conceptual fluency at test, by manipulating the degree of overlap in perceptual or conceptual characteristics of the test item with the study item.
The first research question we address using the above paradigm is the nature of the relationship between conceptual and perceptual fluency for verbal stimuli. The question is one of whether they exert independent (and additive) effects on judgment or if they interact to affect judgments. An interactive relationship might work on the principle of sufficiency, where either high perceptual fluency or high conceptual fluency is sufficient to enhance liking, with the presence of both adding nothing beyond the presence of one. An interactive relationship might also take the form of synergistic effects arising from the presence of both forms of fluency, with the result that liking is enhanced by the presence of both, beyond what would be predicted by their separate and independent contributions. The weight of evidence, however, suggests that the relationship is one of independence. Neuroimaging studies show that perceptual priming and conceptual priming to be mediated by different regions of the brain, with the former being associated with reduced activity of neurons in the posterior neocortex, and the latter with reduced activity in the left prefrontal cortex (Moscovitch 2000). Moreover, dissociations in performance on perceptual and conceptual priming tasks have been observed in patients with brain lesions. Patients with Alzheimer’s disease, for instance, exhibit impaired conceptual priming but intact perceptual priming, while the reverse is observed with patients with right occipital lesions (Gabrieli 1998; Keane, Gabrieli, Fennema, and Growd 1991). Further evidence of independence comes from behavioral studies of normal adults that have shown dissociations in performance on data-driven and conceptually-driven memory tasks (e.g., Blaxton 1989; Roediger and Blaxton 1987). (The former is defined as involving a preponderance of perceptual processes and the latter a preponderance of conceptual processes.)

Finally, Lee and Labroo (2004, experiment 2a and 2b) presented evidence of an independent and additive relationship between perceptual and conceptual fluency using pictorial
stimuli. We build on their work by testing the generalizability of their finding to verbal stimuli. In addition, because there has been some doubt as to whether the low conceptual fluency/high perceptual fluency condition in their experiment is indeed so, we hope to provide convergent evidence for an independence relationship between perceptual and conceptual fluency by using an alternative operationalization.  

The second question we seek to answer is that of the relative contributions of conceptual and perceptual fluency over different repetition levels. Whittlesea (1993, p. 1250) alluded to the possibility that conceptual fluency effects might be larger than for perceptual fluency, based on the observation of effect sizes across various experiments that separately manipulated perceptual and conceptual fluency. There is also experimental evidence presented by Hawkins and Hoch (1992) that speaks to this issue. They demonstrated that the truth effect is obtained under conditions of deep processing of trivia statements, where the meaning of a statement is processed, but not under conditions of shallow processing, where only the perceptual features of a statement are processed. To the extent that the truth effect and the mere exposure effect are both driven by fluency effects, these results suggest that conceptual fluency is likely to play a greater role compared to perceptual fluency, at least in the case of verbal stimuli. This issue, however, has not been systematically examined within the same experiment, for the same set of stimuli. The experiments reported in the present paper therefore represent a first attempt at demonstrating the relative impact of conceptual fluency and perceptual fluency for verbal stimuli (words in experiment 1, and sentences in experiment 2a).

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2 Similar to what was discussed earlier, Lee and Labroo described a condition as involving low conceptual fluency and high perceptual fluency, if a product (e.g. Kraft ketchup) presented in a non-predictive context in the exposure phase is again presented for evaluation in the judgment phase. An alternative interpretation is that both high conceptual and high perceptual fluency drive evaluation in that condition, since the identical product is presented at both exposure and judgment phases and given that processing of the stimulus was not constrained to just perceptual processing.
Finally, we take the lead of Janiszewski and Meyvis (2001) in examining how stimulus characteristics influence the amount of conceptual fluency generated. In particular, we look at how two sentences that are equivalent in meaning, but which differ in how they are expressed, idiomatically versus literally, lead to different levels of conceptual fluency and liking at different levels of exposure.

Idiomatic phrases differ from their literal paraphrases in that idioms are fixed expressions conventionally thought of as having pre-existing representations in memory. An idiom maps as a whole onto a particular meaning, and it is, in that sense, akin to a long word. When an idiom is presented, it makes contact with its representation in long-term memory, thereby activating its meaning. The meaning of a literal phrase, on the other hand, is based on the meaning of its constituent parts. Hence, when a literal phrase is presented, its meaning is constructed given activation of its constituent words. The fact that idiomatic phrases have existing representations allows for the meaning of an idiomatic phrase to be more readily activated over repeated presentations relative to its literal counterpart. At test, when the meaning of these phrases is presented, greater conceptual fluency is likely to be experienced when an idiomatic phrase had been encountered at exposure, than if its literal paraphrase had been. Evidence that speaks to this issue comes from studies that investigate the priming of unitized concepts. Schacter and McGlynn (1989) defines unitized concepts as memory representations that function as an integrated unit and which can be activated in an all or none manner. Examples of unitized concepts include common linguistic idioms (e.g., sour grapes) as well as highly associated word pairs or phrases (e.g., salt and pepper). Relevant to our hypothesis is their finding that larger priming effects are found with unitized concepts than non-unitized ones (Graf and Schacter 1989; Schacter 1985; Schacter and McGlynn 1989; Shimamura and Squire 1984).
In summary, we expect to find greater conceptual fluency and hence more favorable affect when idiomatic expressions are repeated at exposure than when literal ones are repeated. This difference should be more marked with initial exposures. With sufficient exposures, conceptual fluency for idiomatic and non-idiomatic sentences is likely to asymptote to the same level.

We examine the issues discussed above in a series of three experiments, all of which employ verbal stimuli. The form that the relationship between conceptual and perceptual fluency takes (independent and additive versus interactive) is investigated in experiment 1. The question of whether perceptual or conceptual fluency has a stronger effect on affective response is investigated in experiment 1 (where target stimuli are words) and in experiment 2a (where target stimuli are sentences). Finally, the moderating role of idiomaticity of expression on conceptual fluency is examined in experiment 2b.

**EXPERIMENT 1**

Conceptual fluency and perceptual fluency are manipulated orthogonally in this experiment, in order that we might ascertain if the two forms of fluency have additive or interactive effects on affective judgments. In addition, we manipulate conceptual fluency in a manner that avoids the possible confounding effect of positive reinforcement that may alternatively account for Whittlesea’s (1993) findings. Rather than manipulate conceptual fluency by way of predictiveness of context, we do so by varying the overlap in meaning between test items at exposure and at test.
Method

*Design and Study Participants.* Experiment 1 had a 2 (Perceptual fluency: High vs. Low) X 2 (Conceptual fluency: High vs. Low) X 2 (Number of exposures: 1 vs. 5) within-subject design. Participants were 28 undergraduate business students at a large university, who participated in the study for course credit.

*Stimuli.* The stimulus set consisted of homographs, or words that have two or more possible meanings. An example of a homograph would be the word RIGHT, which presented in the absence of a context, could mean the opposite of LEFT, or it could mean CORRECT. Forty-eight homographs were selected according to the following criteria: (1) they had to be between three and seven letters long (2) they had to have synonyms that were also between three and seven letters long. All 48 homographs were presented in the exposure phase, each presented either once or five times.

In order to constrain the meaning of the homographs, they were presented in the context of sentences. The sentences were between six and ten words long and the homographs always appeared as the last word of these sentences. For example, a participant might see the sentence, “There are prizes for guesses that are right.” A subset of these sentences was drawn from Masson and MacLeod (1992).

In the judgment phase, participants again saw 48 sentences between six and ten words long with target words at the end of sentences. A target word was either (1) a homograph word seen at exposure (2) a synonym of a homograph word seen at exposure (3) a homograph word seen at exposure but with a different meaning implied, or (4) a new word unrelated to any of the homograph words seen earlier.
For example, if the following sentence was presented at study:

“His inheritance made him very rich.”

One of the following four sentences was presented at judgment:

“He won the lottery and became rich.”
“He won the lottery and became wealthy.”
“The chocolate cake was very rich.”
“The chocolate cake was very tasty.”

The first of these sentences represents the high conceptual fluency/high perceptual fluency condition, since the target word has the same meaning and shared the same perceptual features as the homograph word presented at study. The second sentence represents the high conceptual fluency/low perceptual fluency case because the target word is a synonym of the word seen at study. In the third sentence, the target word is the same word as that at study, although a different meaning is implied by the context and represents the low conceptual fluency/high perceptual fluency condition. Finally, a target word unrelated to that seen at study is presented in the last sentence and we therefore have a low conceptual fluency/low perceptual fluency. (Please see table 1 for examples of sentences used.) Which of the four sentences was presented was randomly determined by the computer program. A pretest (N = 49) was also run to ensure that the baseline evaluations of the target words (i.e. without prior exposure) did not differ across the four conditions. Participants rated the pleasantness of the target words, presented in the same sentence contexts as in the main experiment, on seven-point scales. One group of participants rated all of the target words used in the high conceptual/high perceptual condition, another group rated all target words in the high conceptual fluency/low perceptual fluency condition, and so on. The mean ratings did not differ across the four conditions, providing
assurance that there was no a priori difference in perceived pleasantness ($M = 4.19$ vs. $4.32$ vs. $4.19$ vs. $4.07$, $F(3, 45) = .68, p = .57$).

Dependent Measure. After each sentence is presented, participants indicated if they found the target word to be ‘pleasant’ or ‘neutral’.

A variety of measures has been used with success to elicit the mere exposure effect (cf. Bornstein 1989). The decision to use a pleasant/neutral task here is in keeping with Whittlesea (1993). Also, a choice between ‘pleasant’ and ‘neutral’ was deemed more appropriate than one between ‘pleasant’ and ‘unpleasant’ because, although the former would present no problems in the case of words for which there is high fluency (we predict that participants would misattribute the fluency to pleasantness and hence respond ‘pleasant’), in the case of words for which there is low fluency or an absence of fluency, participants may find neither of ‘pleasant’ or ‘unpleasant’ to be appropriate responses. A ‘pleasant/neutral’ judgement would therefore be more congruent with high and low fluency. An effort was also made to avoid using words that may be connotatively negative, which could overwhelm any positive effects of fluency and limit our chances of detecting significant effects.

Procedure. The entire study was administered on computer and each individually-run session lasted about thirty minutes. In the exposure phase of the experiment, participants were informed that sentences would appear one at a time on the screen and that they were to read each sentence as it appeared. The exposure duration for each sentence was 2.5 seconds, with a one-second interval between sentences. Half of these were presented just once, while the other half
were repeated five times. For each individual, the computer program randomly assigned half the sentences to the one exposure condition and the remaining half to the five exposures condition. Following this, participants engaged in a five-minute filler task consisting of math problems.

In the test phase, participants were told that they would once again be presented with sentences; unlike before, however, after each sentence was presented, the last word of the sentence would remain on the screen. The words ‘pleasant’ and ‘neutral’ appeared below the target word, and participants were to indicate their liking for the word by pressing the key corresponding to their choice. Although the task was self-paced, with each target word remaining on the screen until a response was made, participants were advised not to deliberate too long on each word before making their choice. Also, in order to ascertain that everyone had understood the instructions correctly and to allow them to familiarize themselves with the task, five sentences that were not part of the set of 48 were presented for practice.

At the conclusion of the session, participants were asked to describe what they thought the experiment investigated. There was no evidence of hypothesis awareness.

Results

Subjects provided responses on a total of 48 trials – six trials for each of the eight conditions. The mean proportion of trials on which a pleasant response was given was computed for each subject for each condition. Hence, the data used in the analysis are the mean proportions of pleasant responses.

The data were first submitted to a three-way ANOVA with the following factors: Conceptual fluency, Perceptual fluency, and Number of exposures. There was a significant main effect of Conceptual fluency ($F(1, 215) = 4.34, p < .05$). Participants were more likely to call
target words *pleasant*, when the target word had the same meaning as a word presented in the exposure phase ($M_{\text{high conceptual}} = .42$, $M_{\text{low conceptual}} = .36$). Thus Conceptual fluency had a positive impact on affect. There was also a marginally significant effect of Number of exposures with the five exposures condition ($M = .42$) leading to a higher likelihood of choosing *pleasant* compared to the one exposure condition ($M = .36$; ($F(1, 215) = 3.08, p < .10$). This effect was further qualified by a significant Perceptual fluency by Number of exposures interaction ($F(1, 215) = 4.15, p < .05$). Note that the Conceptual fluency by Perceptual fluency interaction was not significant, suggesting that the two exert independent effects. The means for the various conditions are presented in table 2.

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Insert table 2 about here.
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A closer look at the Perceptual fluency by Number of exposures interaction with simple main effects tests revealed a significant difference between high and low perceptual fluency within the five exposures condition ($F(1, 215) = 4.92, p < .05$), but not within the one exposure condition ($F < 1$). Hence, perceptual fluency’s impact on affect was observed only when the target words had been repeated five times.

Discussion

Experiment 1 had two main objectives: To investigate the relationship between conceptual and perceptual fluency effects on affective judgments, and to investigate the relative impact of the two forms of fluency where target stimuli are words. With respect to the first objective, we had hypothesized that conceptual and perceptual fluency would exert independent and additive effects in giving rise to the mere exposure effect. This hypothesis was borne out by
the data. Repeating both perceptual and conceptual features of a stimulus did not lead to greater affect than can be explained by the separate contributions of perceptual and conceptual fluency. This may be surprising in light of the Gestalt notion that the whole is greater than the sum of its parts, but it is certainly consistent with findings of neuroimaging studies and studies involving patients with brain lesions, and may reflect the way our cognitive system is wired to process information.

With respect to the second objective, we found stronger conceptual than perceptual fluency effects on affect. An effect of conceptual fluency was found with just one repetition of the stimulus, whereas perceptual fluency was only evident at the five exposures level. It therefore appears that it may not take multiple exposures for fluency to be sufficiently enhanced to produce the mere exposure effect. There is, of course, the caveat that this finding is crucially dependent on the type of stimuli used. Meaningful words were used in this experiment, and the dominance of meaning processing over feature processing is reasonable in that light. For other types of stimuli, an effect of perceptual fluency might well be obtained with a single exposure. In Obermiller (1985), for instance, melodies were used and the mere exposure effect was evident even at the one exposure level.

Experiment 1 demonstrated that perceptual and conceptual fluency combine to engender the mere exposure effect with the latter having a stronger impact, at least in the case of individual words. To date, the mere exposure effect has not been demonstrated using more complex verbal stimuli such as sentences. In experiments 2a and 2b, we further investigate the role of perceptual and conceptual fluency when the target stimuli are sentences (in particular, advertising slogans). For expedience, the stimulus sets used in both experiments were drawn from a larger set consisting of idiomatic slogans and their meaning-equivalent literal counterparts. The objective
behind the inclusion of idiomaticity as a factor, however, is different for the two experiments. In experiment 2a, we are interested in finding out the relative contribution of perceptual and conceptual fluency where the stimuli are sentences. As we reasoned earlier, we expect conceptual fluency to have a much larger influence on affect relative to perceptual fluency, when stimuli are sentences. Idiomaticity is manipulated at test in experiment 2a, as a means of operationalizing conceptual fluency—in one condition, liking for idiomatic slogans is measured following exposure to their meaning-equivalent literal counterparts so that we may ascertain the effect of conceptual fluency on affect. The objective of experiment 2b, on the other hand, is to examine the role of idiomaticity as a potential moderator of conceptual fluency effects, and for this reason, idiomaticity is manipulated at exposure. We examine whether the amount of conceptual fluency arising from repeated exposure to a slogan, and hence liking for it, is dependent on whether the slogan is expressed idiomatically or literally.

**EXPERIMENT 2A**

Literal advertising slogans were presented zero, one, five and eight times at exposure in this experiment. For half of the participants, the same set of literal slogans was presented at test. For the remaining half, idiomatic slogans were presented. These idiomatic slogans were equivalent in meaning to the literal slogans seen at exposure and were pretested to be equally liked compared to their literal counterparts. Hence, there is high conceptual and perceptual fluency in the former condition because test slogans are equivalent in form and meaning to slogans seen at exposure. There is high conceptual fluency and low perceptual fluency in the latter condition because test and exposure slogans are equivalent only in meaning and not in form. If perceptual fluency in the processing of sentences has a role to play in enhancing affect,
one would find higher pleasantness judgments in the high perceptual/high conceptual condition than in the low perceptual/high conceptual condition. To ascertain the effect of conceptual fluency on affect, the critical comparisons would be among the different exposure levels within the low perceptual/high conceptual fluency condition.\(^3\)

Method

*Design and Study Participants.* The design was a 4 (Number of exposures: 0 vs. 1 vs. 5 vs. 8) X 2 (Fluency combination: High perceptual/high conceptual vs. Low perceptual/high conceptual) mixed factorial design. The first was a within-subject factor, and the second a between-subjects factor. Study participants were 109 students from an undergraduate business program at a large university. They participated in the experiment for course credit.

*Stimuli.* The stimuli were developed based on the findings of two pretests, an idiom comprehension pretest and a liking pretest. A third pretest was conducted to identify a suitable exposure duration for each slogan in the stimulus set.

The idiom comprehension pretest was administered to a total of 98 individuals separated into two groups, with each group receiving a different set of 50 idiomatic expressions. They were asked to write the equivalent meaning of each idiom in literal terms. These responses were then coded for correctness and all idioms for which less than 80% of the sample correctly interpreted were discarded. Based on this pretest, a total of 45 idioms were retained.

Literal paraphrases for this pruned set of idioms were constructed, and both idioms and their literal counterparts were then put in the context of advertising slogans. The liking pretest

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\(^3\) One might argue that a better design for examining the relative contributions of perceptual fluency and conceptual fluency is to cross the two factors. While it was possible to do this in experiment one where the target stimuli were single words, it is impossible to do the same for sentences. In particular, it is not possible to create a low conceptual/high perceptual fluency condition in the case of sentences.
was run on 86 individuals using this set of idiomatic and non-idiomatic advertising slogans. They were asked to rate each slogan on a five-point scale anchored by ‘Dislike very much’ and ‘Like very much’. Based on participants’ responses, the number of idiomatic-literal pairs were culled to 32, with the resulting set of idiomatic and literal slogans having mean liking scores that were not significantly different ($M_{idiomatic} = 2.91$, $M_{literal} = 2.87$; $F < 1$).

The third pretest to determine the suitable exposure duration was administered on computer to a separate group of 50 participants. A program presented each of the slogans in the culled set one at a time on the screen. Participants were asked to read and grasp the meaning of each slogan as they appeared and to press a key as soon as they had done so. They were further required to keep one finger on the key and to keep their attention focused on the screen throughout the task. The program recorded the time elapsed from the onset of presentation of each slogan to the time a key press was made. The mean response time for idiomatic slogans had a confidence interval of $3.17 +/-.08$ seconds, and that for literal slogans was $3.20 +/-.08$ seconds.

Based on the pretests, a final set of 16 pairs of idiomatic and literal slogans was selected for use in the main study. (Please see table 3 for examples of slogans used.) At exposure, each individual saw 16 literal slogans, with four of each type assigned to each of the zero, one, five and eight exposures conditions. (Assignment of slogans to condition was counterbalanced across participants.) The result was a total of 56 slogans presented in randomized order in the exposure phase. In deciding upon a reasonable exposure time for each slogan, we sought a balance between the need to allow sufficient time to read each slogan and the need to ensure that the length of time was not so excessive as to allow participants to read a slogan repeatedly at any given exposure or so excessive as to lead to boredom. Based on the results of the reading time
pretest, the exposure time was set at 3.5 seconds. There was a one second delay between offset of a slogan and onset of the next.

Procedure. Each experimental session lasted approximately 30 minutes. No more than four participants were run in a given session and each individual participated in a separate room.

On arrival at the laboratory, participants were told that the experiment was part of research investigating how consumers process advertising slogans. They were further asked to keep their attention focused on the center portion of the computer screen where slogans would appear. After the presentation of the slogans, participants engaged in a five-minute filler task consisting of math questions. In the final test phase of the experiment, participants were asked to indicate, for each slogan presented, if they found it to be pleasant or neutral by pressing the key corresponding to their choice. Two keys on the keyboard were clearly marked ‘P’ and ‘N’. They were instructed to keep one finger on each key throughout the task and to not deliberate for too long before making their judgment. Presentation of test slogans in randomized order was preceded by four practice trials.

Dependent Measures. The pleasantness judgment task served as the dependent measure for affect. The mean proportion of pleasant responses for each condition was computed for each participant and these made up the data analyzed. We further collected response times on the pleasantness judgment task, which we use as a proxy measure for processing fluency. The mean response time for each condition was also computed for each individual and analyzed.
Results

*Affect.* The data for affect were submitted to an ANOVA with two factors--Number of exposures and Fluency combination--and with the first of these as a repeated measures factor. This analysis revealed only a significant main effect of Number of exposures ($F(3, 321) = 12.75, p < .0001$). This main effect was further examined with pairwise comparisons among means in the various exposure conditions. All of these comparisons were significant at alpha = .05, with the exception of the comparison between one and five exposures, and between five and eight exposures ($M_{(0)} = .40, M_{(1)} = .49, M_{(5)} = .55, M_{(8)} = .60$). Hence, repeated exposure to the slogans led to an increase in positive affect toward them.

The absence of an effect of Fluency combination suggests that it did not matter if the test slogans matched exposure slogans perceptually and conceptually or if they merely matched exposure slogans conceptually. Hence, perceptual fluency did not lead to enhanced affect over and beyond conceptual fluency. The effect of Number of exposures on affect, on the other hand, suggests that conceptual fluency did exert an effect on affective judgments. Conceptual fluency alone thus appeared to have given rise to the mere exposure effect in this experiment.

*Fluency.* The time taken for participants to respond is taken as a proxy for processing fluency. The data were analyzed the same way as for affect judgment, and this yielded only a main effect of Number of exposures ($F(3, 321) = 34.33, p < .0001$). Pairwise comparisons of means among the different exposure levels found significant effects for every comparison at alpha=.05, except for the comparisons between zero and one exposure, and between five and eight exposures (see figure 1). Participants were evidently able to process the slogans more
fluently with repeated exposure, given the decline in response times (in \textit{msec}) with repetition
\((M_{(0)} = 3517, M_{(1)} = 3369, M_{(5)} = 2735, M_{(8)} = 2618).\)

\[ \text{-------------------------------------------} \]
\[ \text{Insert figure 1 about here.} \]
\[ \text{-------------------------------------------} \]

\textit{Affect–Fluency Relationship.} For greater confidence in the assertion that participants’
affective responses were influenced by processing fluency, we examined the relationship
between participants’ responses on the affect measure and their response times. Because the
former is a dichotomous variable, a correlation analysis was not appropriate. Instead, we
conducted a binary logistic regression with response time as a single regressor.\(^5\) This yielded a
significant standardized coefficient of -.16 \((p = .005)\), thereby suggesting that more fluent
processing of slogans was accompanied by a greater likelihood of calling the slogans ‘pleasant’.

\textbf{Discussion}

The finding that affect was enhanced with repetition tells us that the mere exposure effect
can be obtained with stimuli as complex as sentences. That the effect was as large when the same
items were repeated in form and meaning, as when only meaning was repeated, is evidence that
it is driven by conceptual fluency but not perceptual fluency. In addition, the pattern of results
for response times mirrored that for affect judgment, with fluency having very similar effects on
response times and pleasantness judgment. Moreover, more positive affect was found to be
associated with faster response times. This corroborates a fluency-based explanation of the

\[^4\] Analyses conducted on the reciprocal \((1/[X + 1])\) transformation of the raw latency scores, as suggested by Fazio
\((1990), \text{yielded consistent results.}\)

\[^5\] We excluded from this analysis data from the zero exposure condition, given that processing fluency is not
expected in that condition.
findings. There is, however, a caveat to be noted, and that is that the response time measure used here is but a proxy measure for processing fluency. The time measured includes the total time taken to process the slogan and to make a decision as to the pleasantness of the slogan. Our conclusions would be erroneous in the unlikely event that only the second component was systematically affected by our manipulations.

In experiment 1 where target stimuli were words, stronger conceptual than perceptual fluency effects were observed. In experiment 2a, even weaker perceptual fluency effects relative to conceptual fluency effects were found. In fact, whereas perceptual fluency was found to exert an influence on affect at five exposures in experiment 1, no effect of perceptual fluency even at eight exposures was found in experiment 2a. It is possible that eight exposures may not have been sufficient and that a higher number of exposures would have enabled us to observe an effect of perceptual fluency. Nonetheless, the finding here does underscore the fact that the mere exposure effect is driven to a larger extent by conceptual fluency than by perceptual fluency when stimuli are words and sentences. Although this finding is new, it is consistent with what has been established by studies such as Kintsch et. al (1990)–that the encoding of perceptual features leaves a memory trace that is less durable than the encoding of meaning.

We turn next to the question of whether conceptual fluency, and hence liking over varying repetition levels, differs for idiomatic slogans compared to their literal counterparts (that are equivalent in meaning). In other words, does the manner in which meaning is conveyed, idiomatically versus literally, moderate the amount of conceptual fluency experienced at different levels of exposures? This is an important question to ask given that idiomatic expressions feature frequently in advertising copy. Some recent examples include:

—“The world is your oyster. We help you find the pearls.” (Franklin Templeton Investments)
—“The Snap sofa. Change it whenever the mood strikes you.” (La-Z-Boy)

—“Because you already have enough on your plate.” (Borsheim’s Bridal Registry)

Practitioners appear to hold the implicit assumption that the use of figurative language, of which idioms is one type, makes a communication more effective. There is indeed some evidence that the use of figurative language by virtue of being more artful, leads to better liking and deeper elaboration (Toncar and Munch 2001). In experiment 2b, we control for any baseline differences in likeability of idiomatic slogans and their literal counterparts, and focus instead on how differences in liking might arise from differences in conceptual fluency due to repeated exposure. Given the related finding by Schacter and McGlynn (1989) that unitized concepts, such as idioms, show larger priming effects compared to non-unitized ones, we expect to find that greater fluency and affect will be experienced for idiomatic slogans than for literal ones. This benefit to idiomatic slogans should be more marked at lower levels of repetition. Given sufficient repetitions, however, the fluency experienced when processing literal slogans ought to approach that for idiomatic slogans.

**EXPERIMENT 2B**

Given that perceptual fluency was not found to have an effect on affect in experiment 2a, we do not further examine perceptual fluency in this experiment. For all individuals, if an idiomatic (literal) slogan is seen at exposure, its literal (idiomatic) counterpart is seen at test. Because there is no perceptual match between exposure and test slogans, only conceptual fluency (rather than both perceptual and conceptual fluency) should be experienced.
Method

*Design and Study Participants.* The experiment had a 2 (Exposure slogan type: Idiomatic vs. Literal) X 4 (Number of exposures: 0 vs. 1 vs. 5 vs. 8) within-subject design. Participants were 244 undergraduate students and were a mix of students enrolled in Marketing and Psychology courses at a large university. Individuals participated in the study for course credit.

*Stimuli.* The stimulus set used here consisted of idiomatic-literal slogan pairs similar to those used in experiment 2a. To identify suitable slogans, a liking pretest was run with a group of 44 participants (from the same population as the main study) to ensure that idiomatic slogans do not differ from their literal counterparts in terms of baseline liking. Half of the pretest participants received the idiomatic slogans, while the other half received the literal slogans. They were asked to indicate their liking for the slogans on five-point scales (where 1 = ’dislike very much’ and 5 = ’like very much’). A total of 24 idiomatic-literal slogan pairs were identified as suitable for use, based on the criterion of equivalent liking between idiomatic and literal slogans (overall $M = 2.97$, $M = 3.05$, respectively; $F < 1s$).

At exposure, half the study participants saw the idiomatic versions of 12 slogans and literal versions of the remaining 12 slogans. The other half received the converse versions. Of the set of 24 slogans seen by each individual, three idiomatic and three literal slogans were assigned to each of the zero, one, five, and eight exposures conditions. The assignment of slogans to exposure condition was counterbalanced across participants. As a result, there were eight replicate slogan sets prepared. In all, each individual saw a total of 84 slogans presented in a random order.

*Procedure.* The study was conducted in a laboratory in groups of two to eight individuals. Each computer at the laboratory was set up to run a different replicate version of the stimuli. On
arrival, participants were randomly assigned to a computer. Presentation of the slogans was followed by a five-minute filler task. In the test phase, they were given a booklet containing the 24 critical slogans. They were told to read each slogan and to indicate if they found it to be pleasant or neutral. Below each slogan were the words ‘pleasant’ and ‘neutral’, and they were to circle one. They were also asked to base their responses on their first impression of the slogans and to not deliberate for too long before making a choice. The entire experimental session lasted approximately 25 minutes.

Results

The mean proportion of pleasant responses for each condition was computed for each participant and these data were analyzed using a two-way ANOVA with Slogan type (idiomatic vs. literal at exposure) and Number of exposures (0 vs. 1 vs. 5 vs. 8) as the independent variables. There was a significant main effect of Slogan type: idiomatic slogans ($M = .43$) were better liked than literal slogans ($M = .39$; $F(1, 243) = 6.86, p < .01$). There was also a significant main effect of Number of exposures ($M = .34, .42, .46,$ and .43, for 0, 1, 5, and 8 exposures respectively; $F(3, 729) = 16.97, p < .001$). And finally, the interaction between Slogan type and Number of exposures was also significant ($F(3, 729) = 13.56, p < .0001$; see figure 2).

More detailed analyses of the interaction revealed a main effect of repetition within both the idiomatic slogans ($F(3, 729) = 20.96, p < .0001$) and literal slogans ($F(3, 729) = 11.86, p < .0001$) conditions. For idiomatic slogans, all pairwise comparisons between exposure levels were significant ($M(0) = 0.34, M(1) = 0.49, M(5) = 0.50, M(8) = 0.41$; all $Fs > 20.26$, all $ps < .0001$), with
the exception of the one versus five exposures comparison ($F < 1$). Pairwise comparisons between exposure levels were also performed for the literal slogans condition ($M_{(0)} = 0.35, M_{(1)} = 0.35, M_{(5)} = 0.43, M_{(8)} = 0.46$). Within this condition, comparisons of the zero versus one exposure ($F < 1$) and the five versus eight exposures ($F(1, 729) = 1.89, p = .17$) were not significant; and all remaining comparisons were significant (all $F$s > 21.48, all $p$s < .0001). Additional simple main effects tests yielded significant differences between idiomatic and literal slogans within every exposure level (all $F$s > 4.5, all $p$s < .05), except the zero exposure level condition ($F < 1$).

Hence, there was an asymmetry in the pattern of results for idiomatic and literal slogans. With idiomatic slogans, we found a sharp boost in affect after just one exposure, but no further increase is observed when the number of exposures is bumped up to five. In fact, by eight exposures, a downturn in affect is evident—the likely consequence of tedium or boredom setting in. With literal slogans, on the other hand, there is no apparent increase in affective response after just one exposure. Such an increase is observed only after five exposures, and by eight exposures, no further statistically significant increase obtains.

Discussion

That linguistic variations of the same meaning can have very different impact on the reader in terms of comprehension and memorability is unsurprising, but how that might play a role in the mere exposure effect has up until now been unexplored. Experiment 2b takes a step towards better understanding this by looking at how the processing of figurative expressions, specifically idiomatic ones, differ from literal expressions, and the implication that has for conceptual fluency and affective response. Based in part on evidence in the extant literature that show unitized concepts to be more easily primed, we hypothesized that there will be greater
conceptual fluency when processing idiomatic slogans relative to literal slogans, at least with initial exposures. At higher levels of exposure, the amount of conceptual fluency for both idiomatic and literal slogans is likely to reach the same ceiling and affect may therefore asymptote to the same level. The results of experiment 2b found support for the hypothesis of greater conceptual fluency for idiomatic slogans relative to literal ones. Moreover, this effect was larger at one exposure than at the five exposures level. By eight exposures, however, the advantage to idiomatic slogans had disappeared and liking for idiomatic slogans had decreased below that for literal ones. Hence, a downturn in affect rather than an asymptote was found.

This inverted-U relationship between exposure and affect is not uncommon within the mere exposure literature, but it is a feature that the perceptual fluency-attribution model does not readily account for. If processing fluency is assumed to be monotonically related to exposures, then the downturn in affect may potentially be accounted for by either incorporating the countervailing variable of boredom, or by assuming that the likelihood of misattributing fluency to affect begins to decrease at some point. In the case of the latter, perhaps beyond some number of exposures, one correctly identifies the source of the fluency and becomes less likely to misattribute fluency to liking. A further potential explanation, the dual-process theory (Groves and Thomson 1970), does not make the assumption of a monotonic relationship between exposure and fluency, but instead proposes fluency to be the result of neural activity that is a function of sensitization and habituation. In a series of experiments manipulating stimulus complexity, familiarity and presentation schedule, Janiszewski and Meyvis (2001) found support for the dual-process theory as a viable account of fluency effects. Unfortunately, the present experiment does not provide a critical test of these competing explanations, and we therefore leave clarification of this issue to future research.
GENERAL DISCUSSION

Minimal processing and repeat exposures to the same advertisement characterize much of consumer encounters with advertising (Hawkins and Hoch 1992; Krugman 1965). This along with the fact that advertisements almost invariably feature verbal information, such as a brand name, a slogan or a tag line, begs the question of whether the mere exposure effect can be demonstrated for such verbal stimuli. Up until now, no study had examined if the effect can be obtained with more complex verbal stimuli such as slogans. The results of the three experiments reported here indicate that it can indeed be found for both individual words as well as slogans. Repeated exposure to such stimuli can enhance liking for them and this effect is driven largely by the greater ease with which the meaning of the stimuli can be processed. Moreover, not all linguistic variants of the same underlying meaning are created equal as far as the mere exposure effect goes. As we demonstrated in the last experiment, advertising slogans expressed idiomatically exhibit greater rates of increase in liking compared to their literal equivalents, at least with initial exposures. This benefit to idiomatic expressions diminishes at higher levels of exposure as tedium sets in sooner than for literal expressions.

These findings have implications particularly for firms’ advertising strategies. They suggest, for instance, that in the case of advertising repetition that involves a brand name, it is to the firm’s advantage to encourage consumers to process the meaning of the brand name, since enhancements in affect are likely to come by way of conceptual fluency. As a competitive strategy, a firm is well-advised to consider how its brand name, or other verbal information such as advertising slogan and product benefits, might be similar to its competitors’ in meaning.
While this serves to minimize confusion as to the identity of brands for consumers, it also mitigates the possibility of any benefit from advertising accruing to competitors, even when such confusion is unlikely. In the case of a new product introduction, the selection of a brand name or the product’s positioning should also be made taking into account conceptual similarity to competitive products. Finally, idiomatic expressions are often used in advertising copy, reflecting advertisers’ belief in the general superiority of idiomatic expressions over literal ones. This assumption is likely to hold only under limited conditions. As we found here, the initial advantage afforded by conceptual fluency of idiomatic slogans over literal slogans is not sustained with greater number of repetitions. Hence, the use of idioms in ad copy has the potential to enhance liking, but only where the average exposure frequency for the target audience is fairly low.

**FUTURE RESEARCH**

Studies of processing fluency to date have always imposed some sort of judgment or choice task on participants, and effects of fluency on the task are then examined. Under these circumstances, effects of fluency have been robustly demonstrated on a variety of tasks including judgments of affect, repetition, fame, and truth. The generalizability of these findings to real world situations can be problematic because it is not clear as yet that attributions are made spontaneously. When a brand name, for example, is fluently processed, does one necessarily reflect on that fluency and attribute it to some internal state or property of the brand name, without being prompted to do so? And if an attribution does take place, will that fluency be attributed to having previously encountered the brand, or to liking the brand, or to the fame of
the brand, with equal likelihood? It is likely that certain attributions will have primacy in terms of that likelihood.

Finally, as we noted earlier, the relative contributions of perceptual fluency and conceptual fluency to the mere exposure effect is likely to depend on the type of stimuli in question. In the case of verbal stimuli, we are very much conditioned to derive meaning when processing words and sentences, and the stronger conceptual than perceptual fluency effects might therefore be reasonable. In the case of pictorial stimuli, however, stronger perceptual than conceptual fluency effects might be found, and future research might wish to address that potential difference.
TABLE 1
EXPERIMENT 1: EXAMPLES OF STIMULI

The second column contains sentences seen in the exposure phase. In the judgment phase, participants saw one of the four sentences in each cell of column 3. The four fluency conditions – (1) high conceptual/high perceptual, (2) high conceptual/low perceptual, (3) low conceptual/high perceptual, (4) low conceptual/low perceptual – are represented by the first, second, third and fourth sentences in each cell, respectively.

<table>
<thead>
<tr>
<th>Homograph</th>
<th>Study Sentence</th>
<th>Test Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>beat</td>
<td>The song had a lively beat.</td>
<td>1. The audience moved to the music's beat.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. The audience moved to the music's tempo.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. The record he set was hard to beat.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. The record he set was hard to break.</td>
</tr>
<tr>
<td>bright</td>
<td>His excellent grades proved he was bright.</td>
<td>1. The gifted boy was extremely bright.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. The gifted boy was extremely smart.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. The sun's rays made the room bright.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. The sun's rays made the room warm.</td>
</tr>
<tr>
<td>broad</td>
<td>The athlete had shoulders that were broad.</td>
<td>1. The pathway to the house is very broad.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. The pathway to the house is very wide.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. The essay outline was much too broad.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. The essay outline was much too vague.</td>
</tr>
<tr>
<td>coat</td>
<td>The chemist put on a lab coat.</td>
<td>1. To keep warm he wore a coat.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. To keep warm he wore a jacket.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. The wall was given a new paint coat.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. The wall was given a new paint color.</td>
</tr>
<tr>
<td>correct</td>
<td>There are prizes for guesses that are correct.</td>
<td>1. All answers to the questions were correct.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. All answers to the questions were right.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. The document had errors he had to correct.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. The document had errors he had to delete.</td>
</tr>
</tbody>
</table>
## TABLE 2

EXPERIMENT 1: EFFECT OF PERCEPTUAL FLUENCY, CONCEPTUAL FLUENCY AND NUMBER OF EXPOSURES ON AFFECT

<table>
<thead>
<tr>
<th>No. of exposures</th>
<th>Mean proportion of pleasant responses</th>
<th>High conceptual fluency</th>
<th>Low conceptual fluency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High perceptual fluency</td>
<td>Low perceptual fluency</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>0.36</td>
<td>0.40</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>0.51</td>
<td>0.42</td>
</tr>
</tbody>
</table>
### TABLE 3
EXPERIMENT 2A: EXAMPLES OF SLOGANS USED

<table>
<thead>
<tr>
<th>Exposure slogans</th>
<th>Test slogans – Low perceptual/High conceptual fluency condition*</th>
</tr>
</thead>
<tbody>
<tr>
<td>With PORT stereo, you get great sound that won’t cost a lot of money.</td>
<td>With PORT stereo, you get great sound that won’t cost you an arm and a leg.</td>
</tr>
<tr>
<td>You get more value for your money with full-featured STRIDE scanner.</td>
<td>You get more bang for your buck with full-featured STRIDE scanner.</td>
</tr>
<tr>
<td>Get a year of free membership at JAMS fitness club, with no additional commitments.</td>
<td>Get a year of free membership at JAMS fitness club, with no strings attached.</td>
</tr>
<tr>
<td>You will be very pleased with the silky texture of DASH chocolates.</td>
<td>You will be over the moon with the silky texture of DASH chocolates.</td>
</tr>
<tr>
<td>Getting rid of stubborn stains is an easy task with FLASH detergent.</td>
<td>Getting rid of stubborn stains is a piece of cake with FLASH detergent.</td>
</tr>
</tbody>
</table>

* Test slogans used in the High perceptual/high conceptual fluency condition were identical to slogans seen at exposure.
FIGURE 1

EXPERIMENT 2A: EFFECT OF NUMBER OF EXPOSURES ON AFFECT AND FLUENCY
FIGURE 2

EXPERIMENT 2B: EFFECT OF NUMBER OF EXPOSURES AND SLOGAN TYPE ON AFFECT

![Graph showing the effect of number of exposures on the mean proportion of pleasant responses for idiomatic and literal slogans. The graph illustrates an increase in mean proportion with an increase in the number of exposures, with idiomatic slogans generally having a higher mean proportion compared to literal slogans.]
REFERENCES


