

Gender differences in the meanings consumers infer from music and other aesthetic stimuli

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Abstract

Music can convey two meanings: one referential that consists of descriptive associations, and another embodied that is purely hedonic. We reasoned that consumer characteristics such as one's gender and Need for Cognition (NFC) can affect which meaning(s) of ad background music people use when forming product perceptions. Yet, are such meanings and their use unique to music, or could they extend to other forms of aesthetics? Two studies explore these issues, revealing parallel outcomes when background materials contain either music or graphic art designs: high (low) NFC males are sensitive to only referential (embodied) meaning, whereas females use both meanings. Published by Elsevier Inc. on behalf of Society for Consumer Psychology.

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Consider two friends who meet for drinks at a new cafe where sedate music plays in the background. One friend remarks that the cafe is a calming refuge from the events of the day. The other, however, dismisses the place as dispiriting and glum. Could the source of the friends' differing perceptions lie in the meaning each assigns to the café's background music?

Music theorists contend that two coexisting yet distinct meanings can be imparted by music (Meyer 1994). One called referential meaning consists of networks of descriptive ideas that the music may bring to mind. For example, in the opening vignette, the cafe's sedate background music might have evoked thoughts about calm contemplative activity (e.g., a relaxing visit to a spa), prompting the first friend to view the establishment as soothing. Independent of this meaning is a second one known as embodied. Embodied meaning is purely hedonic and can arise simply from the level of stimulation provoked by the music's structural properties, like its energy level (Dowling and Harwood 1986). A moderate

versus either a very high or low stimulation level has been shown to prompt more positive hedonic feelings (i.e., embodied meaning; Smith and Cuddy 1986; Simonton, 2001). Note that music's embodied meaning may explain the second friend's perception that the cafe is dispiritingly glum. The sedate music's low stimulation level may have elicited a fairly negative embodied meaning.

When an ad contains background music, people's perceptions of the touted product can be influenced by one of the meanings imparted by the music. Zhu and Meyers-Levy (2005) found that which meaning exerts this influence can depend on the magnitude of cognitive resources required to process the ad message. To explain, research suggests that more resources are needed to discern and make use of referential as opposed to embodied meaning. Further, one's resources that remain after processing the ad message are likely to be used to discern the music's meaning and apply it to perceptions. Thus, these researchers found that when processing the ad message required few resources, perceptions were based on music's more resource-taxing referential meaning. But when it required many resources, the music's embodied meaning was influential.

The current research expands on this work in three ways. First, we investigate whether factors that are entirely independent of the ad, namely a consumer's gender and the level of mental resources

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(s)he chronically devotes to cognition (i.e., their Need for Cognition; NFC), can affect which meaning of the background stimulus (e.g., music) a person uses when forming product perceptions. Second, we propose that certain segments of consumers may employ not just one but rather both meanings imparted by the stimulus. Based on research which suggests that males (females) generally process and employ data selectively (comprehensively; Meyers-Levy 1989), we propose that males who are high in NFC should base their product perceptions on the background stimulus' referential meaning, low NFC males should base them on its embodied meaning, and irrespective of their NFC level, females should base their perceptions on both of these two meanings. Finally, we investigate a considerably farther reaching issue: Are these meanings and processes truly unique to music? We reasoned that referential and embodied meanings may be conferred by other forms of aesthetics, such as visual designs. Hence, the theorizing underlying the aforementioned effects should operate and affect consumers' perceptions regardless of whether the background stimulus consists of music or a visual design.

We report two studies that investigate these notions. Study 1 tests our thesis using two conceptual replications that both involve music. Our second study tackles our broader question: Can art forms beyond music provoke these same types of meanings, processes, and outcomes? Study 2 explores this by examining whether a graphic art design in the background of a print ad produces parallel gender differences as music does in the meanings that people use.

The different meanings of music

Music theorists have long posited that music can convey two types of meaning (Meyer 1994; Radocy and David Boyle, 1997). One, called referential meaning, emerges from the network of semantic associations or real world concepts that may be elicited by music. For example, music performed in an energetic manner is likely to prompt thoughts about the concept of excited frivolity, while sedate music elicits thoughts about calm contemplative activity (Gabrielsson and Lundstrom 2001). Similarly, acoustic qualities such as voice or musical pitch are typically associated with co-occurring personality characteristics (Berry 1992; Ko, Judd, and Blair 2006). Because vocal pitch declines as people age (Linville 1996), a song performed in a high pitch might evoke associations to childish traits like capricious simplicity, reflecting the real world link between young children's high vocal pitch and common childlike characteristics (e.g., unreliability and inflexibility; Bond, Welkowitz, Goldschmidt and Wattenberg, 1987; Hummert, Mazloff and Henry, 1999). The same song played in a low pitch, however, may reference thoughts about dependable accommodation, a trait associated with more mature, adult-like lower pitched voices (Bond et al. 1987; Eisenberg 1991).

Coexisting with, but separate from referential meaning is a second type of meaning called embodied. Embodied meaning is independent of the external world of context and semantic concepts. Instead, it reflects pure hedonic value or valenced feelings. While these feelings can originate from several factors including innate approach/avoidance tendencies or culture (Mandler 1982), a crucial determinant is the patterns of sound

within the music (Meyer 1994; Radocy and David Boyle, 1997). Research indicates that hedonic feelings can arise simply from the stimulation level embodied in music (North and Hargreaves 1997; Radocy and David Boyle, 1997). Such feelings and hence embodied meaning are more positive if the stimulation level is moderate as opposed to very high or very low (Simonton, 2001; Smith and Cuddy 1986). Several structural properties of music can provoke stimulation. Two are the music's energy level (i.e., determined by tempo, brevity of sound, etc.) and the degree of the sound's novelty (Radocy and David Boyle, 1997). Illustrating the latter, when a familiar song is played in a novel pitch or style, it produces increased stimulation (Hargreaves and Casetell 1987; Simonton, 2001). Thus, if this stimulation is moderate (not especially high or low), the music's embodied meaning should be more positive.

More recently, Zhu and Meyers-Levy (2005) applied these ideas to background music in ads and explored which of the music's two types of meaning individuals employed in their product perceptions. Their findings aligned with work which suggests that more resources are needed to discern and use a descriptive (i.e., referential) meaning versus a feeling-based (i.e., embodied) meaning (Pham, Cohen, Pracejus and David Hughes, 2001; Stapel, Koomen, and Ruys 2002). Specifically, when motivated consumers received a verbal ad message in a simple format that required few resources to process, their perceptions of the product were based on the music's more labor intensive referential meaning. But when the same message was in a complex format that not only imposed heavy demands on one's resources but also usurped resources that otherwise could be devoted to attaching meaning to the music, perceptions reflected the music's less taxing embodied meaning.

The preceding work focused on how the resource demands imposed by an ad can affect the meaning of music that people use when forming perceptions. But independent of these demands, consumers' processing proclivities may influence the meanings they use by affecting how individuals process and devote resources to ad background stimuli like music. Along these lines, consumers are known to vary in the level of resources they chronically devote to and the enjoyment they derive from effortful processing, a trait referred to as need for cognition (NFC). A plausible prediction might be that people high in NFC will exhibit greater use of referential meaning of background music, yet low NFC people will make more use of embodied meaning.

Yet, another consumer characteristic seems likely to influence the meaning people extract from background music: gender. A sizable body of work indicates that males and females differ in their processing proclivities. Females prefer to process and respond comprehensively to a wide spectrum of data in their environment, including details or subtle cues (Meyers-Levy 1989). Indeed, some evidence suggests that females' comprehensiveness may be facilitated by the fact that they use their processing resources more efficiently than do males (e.g., O'Donnell and Johnson 2001; Fairweather and Hutt (1972). In contrast, males generally process and respond selectively to a more circumscribed array of data. Evidence of these gender differences has been observed in a variety of domains. For example, females frequently report responses that exhibit greater sensitivity to and deeper apprehension of harder to extract data (e.g., Hall 1978; Meyers-Levy and Maheswaran 1991;

Sengupta and Dahl 2008). Further, even when involvement level is held constant, females appear to process and base their responses on multiple pieces of data, whereas males selectively employ single cues (Meyers-Levy 1989; Meyers-Levy and Sternthal 1991). These observations imply that while males are likely to focus on a single type of meaning, females are more likely to use both referential and embodied meanings of background music.

Pulling these ideas together, the preceding observations not only suggest that both consumers' gender and their NFC are likely influence their sensitivity to and use of the meanings of background stimuli, but these factors are likely to interact. Males, who generally process data selectively, are likely to discern and base their perceptions on a single meaning of the music, one that corresponds with the level of resources they expend during processing (i.e., their NFC level). Thus, the product perceptions of high NFC males are likely to reflect music's more onerous referential meaning, while low NFC males may use music's embodied meaning². Further, because females generally strive to process data comprehensively, they may base their perceptions on both of these meanings and do so regardless of their NFC level.

Study 1 tested these deductions and several others that aimed to clarify the processes at work.

Experiment 1

Overview

Study 1 sought to provide two conceptual replications of our predictions. Hence, we created two radio ads for different products: a test prep service and a florist. The background music embedded in each ad varied on a structural dimension expected to alter the music's stimulation level and thereby produce alternative embodied meanings. In one ad, the music was either low or moderately high in energy level. In the other ad, the music's pitch was either low or higher than normal (moderately so) for the particular song that was used, thereby altering its degree of deviation from the song's typical low pitch. Such manipulations should affect the music's embodied meanings—energetic more favorable than sedate, and a moderately high novel pitch more favorable than a low familiar pitch. Also altered should be the music's referential meanings. The energetic music should reference the notion of excited frivolity, while the sedate music should reference calm contemplation. Further, the moderately high versus low pitch music should reference associations to children's capricious simplicity versus mature adults' dependable accommodation, respectively.

A critical perception measure for each product was chosen strategically to enable detection of which music meaning(s) individuals used during perception. Such measures were selected so that use of the music versions' referential and embodied meanings implied opposing perceptions. Specifically, perceptions

based on the music's referential meaning should be more favorable (i.e., extreme) if this meaning overlapped semantically with the probed perception attribute. For example, perceptions of the test prep service's calm methodical instruction should be greater when the music was sedate (implying calm), not energetic. But in opposition, perceptions based on the music's embodied meaning should reflect the music's stimulation-based hedonic value; hence, they should be more favorable (i.e., extreme) on any such positively valued attribute when the music was moderately stimulating—in this case, energetic versus sedate. Also, due to such opposition, females' predicted use of both meanings implies that the opposite values of the two meanings should somewhat offset each other, resulting in perceptions that are moderate in value.

In addition, participants' thoughts were assessed and coded to allow us to examine whether individuals detected the two referential meanings imparted by the music versions and/or the music's embodied meanings. Based on our theorizing, three-way interactions of gender, NFC, and background music were expected on all of our measures, but the patterns observed on them should differ. To help readers track our hypotheses, it is useful to articulate them for each of our specific measures. We will do this after we describe our experiment next.

Experimental materials and procedure

Stimuli

A test prep service and a florist were used as target products because a pretest (14 males/16 females) indicated that they were equally involving for both genders (i.e., motivating, interesting, important, and relevant; all F 's < 1). Two professionally recorded radio ads were created for each product. In each, the verbal message was constant, and it was silent about the attribute later probed by the critical perception measure. Different instrumental renditions of a song played in the background of each ad. The music in the test prep ad was fairly unfamiliar ("Last Tango in Paris"), and it was performed in either a moderately energetic or a sedate style. The music in the florist ad was a familiar Beatles' song. In one execution its pitch was low and resembled the Beatles' original recording. In the other, the pitch was moderately high.

A pretest established that the two music executions for each ad conveyed the intended embodied and referential meanings. Thirty-five males and 36 females heard and assessed one version of the music for each ad. As expected, familiarity with the song renditions used in the test prep ad was low and equivalent ($M_{\text{energetic}} = 1.57$, $M_{\text{sedate}} = 1.47$, $F < 1$; 1 = not at all familiar and 7 = very familiar). In comparison, familiarity with the song versions used in the florist ad was greater ($M = 1.52$ vs. 2.89; $t(63) = -5.58$, $p < .001$). As intended, the moderately high pitch florist ad song was viewed as more novel than the low pitch version ($M_{\text{high}} = 2.40$, $M_{\text{low}} = 3.48$; $F(1,69) = 7.64$, $p < 0.01$). Moreover, the purely hedonic embodied meaning of the more stimulating rendition of each song was more favorable (i.e., more cheerful, happy, and likable; for test prep ad: $\infty = 78$; $M_{\text{energetic}} = 5.33$, $M_{\text{sedate}} = 4.75$; $F(1,69) = 5.45$, $p < 0.03$; for florist ad: $\infty = 0.72$; $M_{\text{high}} = 4.20$, $M_{\text{low}} = 3.53$; $F(1,69) = 6.42$, $p < 0.02$). Also importantly, the two versions of each song conveyed the anticipated referential meanings. The energetic versus sedate test prep song rendition better conveyed the referential meaning of

² It could be that high NFC males too detect music's easier to discern embodied meaning. Yet, because they also should detect the music's referential meaning, which is likely to be viewed as more substantive and/or diagnostic than the subjective and ephemeral hedonics of music's embodied meaning, high NFC males in all likelihood will disregard or even suppress the music's embodied meaning. As such, they are expected to use only the music's referential meaning.

excited frivolity (excited, energized, and frivolous, $\alpha=0.72$; $M_{\text{energetic}}=4.80$, $M_{\text{sedate}}=3.72$; $F(1,69)=16.06$, $p<0.001$), but the sedate versus energetic one suggested calm contemplative activity (calm, thoughtful and structured, $\alpha=0.71$; $M_{\text{energetic}}=3.23$, $M_{\text{sedate}}=4.47$; $F(1,69)=26.24$, $p<0.001$). Further, the moderately high pitch florist music rendition better referenced capricious simplicity (fickle, weak, and spacey, $\alpha=0.69$; $M_{\text{high}}=4.03$, $M_{\text{low}}=3.35$; $F(1,69)=6.70$, $p<0.04$), while the lower pitch version better referenced the meaning of dependable accommodation (dependable, mature, and adaptive, $\alpha=0.70$; $M_{\text{high}}=3.68$, $M_{\text{low}}=4.59$; $F(1,69)=8.66$, $p<0.01$). Gender differences were absent on each of the preceding measures. In the interest of expediency, henceforth we will refer to the music renditions that varied in pitch as high(er) versus low pitch.

Finally, 13 males and 12 females assessed the music versions' suitability for each ad (overall fit, compatible, and appropriate, $\alpha=0.86_{\text{test prep}}$ and 0.76_{florist}). On 7-point scales, the alternative song versions were rated as equally suitable (for test prep ad, $M_{\text{energetic}}=3.85$, $M_{\text{sedate}}=3.64$, $F<1$; for florist ad, $M_{\text{high}}=4.47$, $M_{\text{low}}=4.85$, $F<1$).

Dependent measures

Six items probed the critical perception measure for the test prep service, which concerned its provision of calm methodical instruction (e.g., provides a well-defined study plan, reduces stress, etc.; 1 = extremely unlikely, 7 = extremely likely; $\alpha=.88$). Note that this measure overlapped semantically with the referential meaning of the sedate music (i.e., calm contemplative activity). Six items also comprised the critical perception measure for the florist and assessed its steadfast adaptable service (e.g., offers reliably fresh products, goods for diverse occasions, etc.; $\alpha=0.87$). This measure overlapped semantically with the referential meaning of the low pitch music (i.e., dependable accommodation).

Participants' thoughts about each ad were examined and coded for evidence of whether individuals discerned the music's referential and embodied meanings. For each ad, codings included: (1) the number of thoughts that reflected each of the two music versions' referential meanings, and (2) the number of net positive (i.e., positive minus negative) thoughts about the background music, which captured the music versions' embodied meaning.

Procedure

Forty-seven males and 51 females were told they would hear and be asked for their opinions about some radio ads. Each participant heard one version of the test prep and the florist ads. The versions heard were orthogonal. Then, in rotated order, a critical perception measure for each product and a thought-listing task were completed. An 18-item NFC scale was also administered (Cacioppo, Petty and Kao 1984). Finally, participants' gender was assessed.

Hypotheses

Critical perceptions measures

Because males are theorized to process data selectively, we expected them to use only one meaning of music when forming their perceptions. Specifically, high NFC males, who expend more

resources during processing, should base their perceptions on the music's more taxing referential meaning, but low NFC males, who expend fewer resources, will rely on the music's less onerous embodied meaning. However, because females should process the data more comprehensively, they should base their perceptions on both music's referential and embodied meanings and do so irrespective of their NFC.

H1a. High (low) NFC males will perceive the test prep service as providing more calm methodical instruction when the ad background music is sedate (energetic) rather than energetic (sedate). But no treatment effects should emerge on females' perceptions.

H1b. High (low) NFC males will perceive that the florist offers more steadfast adaptable service when the ad background music is low (higher) rather than higher (low) in pitch. But females should exhibit no treatment effects on perceptions of this attribute.

Detection of the music's two referential meanings

Because referential meaning (RM) is quite onerous to discern, only high, not low, NFC males were likely to detect the music versions' RMs for each ad. Thus, high NFC males alone should reveal this by reporting more thoughts that concern each music version's RM. However, because females should be sensitive to both music meanings, they should detect and thus produce more thoughts that concern each music version's RM regardless of their NFC level.

H2a. For the test prep ad, high NFC males will produce more thoughts about (a) the RM of calm contemplative activity when the ad contains sedate versus energetic music, and (b) the RM of excited frivolity when the ad contains energetic versus sedate music. These effects will be absent among low NFC males. Moreover, females' thoughts will reveal the same outcomes as do high NFC males, irrespective of females' NFC level.

H2b. For the florist ad, high NFC males will produce more thoughts about (a) the RM of dependable accommodation when the ad contains the low versus higher pitch music, and (b) the RM of capricious simplicity when the ad features higher versus low pitch music. These effects will be absent among low NFC males. Moreover, females' thoughts will reveal the same outcomes as high NFC males do, irrespective of females' NFC level.

Detection of music's embodied meaning

Because music's embodied meaning is quite easy to discern, males who are low (not high) in NFC are more likely express detection of this meaning (see Footnote 2). Thus, low NFC males alone should express sensitivity to the music's embodied meaning by generating more net positive thoughts about the background music when this meaning is more versus less favorable. By contrast, because females should use both of the music meanings, they should express their detection of the music's embodied meaning in the same way as do low NFC males, and this should occur regardless of females' NFC level.

H3a. For the test prep ad, only low (not high) NFC males will elicit more net positive thoughts about the background music when this music is energetic versus sedate. However, irrespective of their NFC level, females will produce more net positive thoughts about the music when it is energetic versus sedate.

H3b. For the florist ad, only low (not high) NFC males will elicit more net positive thoughts about the background music when it is performed in a higher and novel versus a low non-novel pitch. However, irrespective of their NFC level, females will produce more net positive thoughts about the music when it is higher versus low in pitch.

Results

Responses to the NFC scale items were summed to create a NFC score for each participant. Because NFC is a continuous variable, we analyzed the data using the regression procedures outlined by Aiken and West (1991). Participants' NFC scores were mean centered, the gender and background music variables were contrast coded, and we created all two- and three-way interaction terms. Two regression analyses were conducted, one for the test prep ad and one for the florist ad. They included gender, NFC, and background music plus all interactions.

Product Perceptions

For the test prep ad, participants' perceptions of the service's calm methodical instruction revealed the anticipated three-way interaction of gender, NFC, and background music ($\beta = -0.012$, $t = -2.64$, $p < 0.01$). The two-way interaction of NFC and background music was significant for males ($\beta = -0.026$, $t = -4.27$, $p < .001$) but not for females ($t < 1$). Spotlight analyses conducted at one standard deviation above and below the mean NFC scores clarified the interaction. Supporting our theory and as illustrated in Fig. 1, high NFC males perceived the test prep service's calm methodical instruction as greater when the background music was sedate versus energetic and conveyed a more perception-compatible referential meaning ($\beta = -0.63$, $t = 5.001$, $p < 0.001$). Yet, low NFC males perceived the service's calm methodical instruction as greater when the ad music was energetic rather than sedate and thereby implied a hedonically more favorable embodied meaning ($\beta = 0.45$, $t = 3.56$, $p < 0.001$). Females, on the other hand, exhibited no treatment effects on this measure ($ps > 0.29$).

Conceptually comparable outcomes emerged for the florist ad where perceptions of the florist's steadfast adaptable service revealed the same three-way interaction ($\beta = -0.014$, $t = -3.01$, $p < .01$). Again, the two-way interaction of NFC and background music was significant for males ($\beta = -0.024$, $t = -3.93$, $p < 0.001$) but not for females ($t < 1$). As anticipated, high NFC males perceived the florist's steadfast adaptable service as greater when the background music was low in pitch and relayed a more perception-compatible referential meaning than when it was higher in pitch ($\beta = -0.80$, $t = -5.97$, $p < 0.001$). In contrast, low NFC males perceived such service as greater when the ad background music had a novel higher pitch, which conveyed a

hedonically more favorable embodied meaning, than when it had a non-novel low pitch ($\beta = 0.24$, $t = 1.80$, $p < 0.07$). Again, as hypothesized, females' perceptions revealed no treatment effects ($ps > 0.28$).

Coding of thoughts

Three types of thoughts about each ad were classified reliably by two independent coders who were blind to the conditions ($r = 0.82$ to 0.89). Two codings captured the number of thoughts produced about the referential meanings of each music execution for each ad. For the test prep ad, such thoughts concerned the concept of (1) calm contemplative activity, which tapped the referential meaning of the sedate music (e.g., "their comprehensive service put me at ease"), and (2) excited frivolous activity, which captured the referential meaning of the energetic background music (e.g., "exciting, big, and helpful"). For the florist ad, these thoughts concerned the notion of (1) dependable accommodation, reflecting the referential meaning of the low pitch music (e.g., "they would deliver what was promised"), and (2) capricious simplicity, capturing the referential meaning of the higher pitch music (e.g., "basic, not original or sophisticated"). Participants' net positive thoughts about the music also were coded, indicating people's sensitivity to the music's purely hedonic embodied meaning.

Referential meaning indicators

Analysis of thoughts that reflected the referential meaning of the background music versions revealed the anticipated outcomes. For the test prep ad, the three-way interaction of gender, NFC, and background music achieved or approached significance on thoughts related to the referential meaning of both the sedate ($\beta = -0.008$, $t = -2.05$, $p < 0.05$) and the energetic background music ($\beta = 0.007$, $t = 1.74$, $p < 0.09$). Further, males exhibited a two-way interaction of NFC and background music on thoughts concerning both the sedate ($\beta = -0.016$, $t = -3.10$, $p < 0.01$) and the energetic music's ($\beta = 0.021$, $t = 4.04$, $p < 0.001$) referential meanings, but such effects were absent on such thoughts among females ($ps > 0.17$). Followup analysis revealed that high NFC males generated more thoughts about the sedate music's referential meaning of calm contemplative activity when the music was sedate rather than energetic ($\beta = 0.71$, $t = -6.47$, $p < 0.001$). Similarly, they produced more thoughts about the energetic music's referential meaning of excited frivolous service when the ad featured the energetic versus sedate music ($\beta = 0.93$, $t = 8.53$, $p < 0.001$). Both effects were absent, however, among low NFC males ($ps > 0.59$). On the other hand, females revealed only a main effect of background music on the preceding measures: Regardless of their NFC level, females generated more thoughts about the referential meaning of the sedate music when the music was sedate versus energetic ($\beta = -0.51$, $t = -4.567$, $p < 0.001$) and more about the referential meaning of the energetic music when the music was energetic versus sedate ($\beta = 0.65$, $t = 5.97$, $p < 0.001$).

Comparable outcomes emerged for the florist ad. The same three-way interaction emerged on thoughts that reflected the referential meaning of low pitch background music ($\beta = 0.018$, $t = 2.02$, $p < 0.05$) and those that reflected the higher pitch music

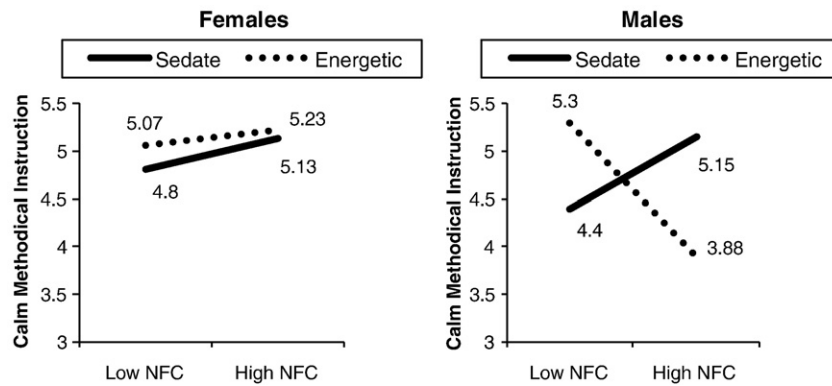


Fig. 1. Experiment 1: effect of gender, NFC, and background music on perceptions of test prep service's provision of calm methodical instruction.

($\beta = -0.019$, $t = -1.96$, $p = 0.05$). While males displayed a two-way interaction of NFC and background music on thoughts concerning the referential meanings of both the low pitch ($\beta = -0.023$, $t = -3.91$, $p < 0.001$) and the higher pitch music ($\beta = 0.017$, $t = 2.59$, $p < 0.05$), such interactions were absent among females ($t < 1$). Followup examination of males' responses revealed that high NFC males generated more thoughts about the low pitch music's referential meaning of dependable accommodation when the background music was low rather than higher in pitch ($\beta = -0.778$, $t = -6.15$, $p < 0.001$), but they produced more thoughts about the higher pitch music's referential meaning of capricious simplicity when the background music pitch was higher versus low ($\beta = 0.75$, $t = 5.27$, $p < 0.001$). As expected, these differences were absent among low NFC males ($ps > 0.16$). Yet, females' thoughts of each type exhibited only a main effect of background music. Regardless of their NFC level, females produced more thoughts about the referential meaning of the low pitch music when the music's pitch was low versus higher ($\beta = -0.386$, $t = -3.07$, $p < 0.01$), and they elicited more thoughts about the referential meaning of the higher pitch music when such music was higher versus low in pitch ($\beta = 0.641$, $t = 4.65$, $p < 0.001$).

Embodied meaning indicator

To assess detection of the background music's purely hedonic embodied meaning, we analyzed participants' net positive thoughts about the music. Three-way interactions of gender, NFC, and background music emerged on such thoughts for both the test prep ($\beta = -0.008$, $t = -2.00$, $p < 0.05$) and the florist ($\beta = -0.011$, $t = -1.96$, $p = 0.05$) ads. In both cases, the interaction of the latter two factors emerged among males (test prep, $\beta = -0.01$, $t = -1.79$, $p < 0.08$; florist, $\beta = -0.018$, $t = -2.37$, $p < 0.05$), but not females ($ps > 0.29$). As expected, low but not high NFC males expressed sensitivity to the music's stimulation-based embodied meaning: Low NFC males produced more net positive thoughts about the music when the test prep ad featured energetic versus sedate music ($\beta = 0.44$, $t = 3.73$, $p < 0.001$), and when the florist ad featured higher (novel) versus low pitch music ($\beta = .52$, $t = 3.22$, $p < 0.01$). No such differences emerged among high NFC males ($ps > 0.15$). Contrary to expectations, however, females always displayed low levels of such thoughts, suggesting minimal use of the music's embodied meaning ($ps > 0.29$).

Discussion

The results of experiment 1 add to our understanding of how consumers respond to background music in ads. They reveal that the meaning(s) of music that consumers detect and use when assessing the advertised product can depend on both consumers' gender and NFC. Consistent with the view that females strive to process data more comprehensively than do males (e.g., Meyers-Levy 1989), we found that regardless of the resource level females expended during processing, they detected and used both the referential and embodied meanings imparted by the background music. Males, however, focused selectively on only one of these meanings, where the selected meaning varied as a function of the resources they expended. Higher NFC males detected and based their perceptions on the music's more laborious referential meaning, while lower NFC males used the music's more readily accessible embodied meaning.

While such results contribute to our understanding of how people respond to music, certain issues remain. Two concern weaknesses in our data. Although our indicator of people's detection of the music's embodied meaning (i.e., net positive thoughts about the music) showed that males' thoughts followed the anticipated pattern, contrary to predictions, females always appeared to manifest low sensitivity to embodied meaning. In retrospect, females' seeming disuse of the music's embodied meaning might have been more apparent than real. That is, it could be that females were simply reluctant to express their true use of embodied meaning because this meaning that is based on subjective, easily alterable feelings could be seen as rather insensible compared to semantic (referential) associations, which are more substantive and widely shared. To address this possibility, study 2 employed a more appearance-based product for which subjective (embodied) feelings might be seen as more justifiable. Another weakness in study 1 was that for each of our products, we included a perception measure that tapped the referential meaning of only one version of the background music (i.e., for test prep, only the sedate, not energetic, music; for the florist, only the low, not higher, pitch music). Including multiple measures that tap all referential meanings would render our findings more compelling.

Still, another pivotal issue remains: Does only music relay referential and embodied meanings, or could other art forms

impart the same two meanings and operate similarly? Study 2 investigated this question as it applied to visual arts. This art form struck us as a good choice because some research suggests that the very lines, forms, and other abstract qualities of visual art can convey alternative types of meaning (Krietler and Krietler 1972).

Thus, experiment 2 examined whether, like music, a visual graphic design embedded in an ad background can relay referential and embodied meanings that both operate as they do for music and produce comparable outcomes. Some data support the idea that certain elements in graphic designs can communicate consensually shared referential meanings (e.g., Dondis 1993; Peracchio and Meyers-Levy 2005, Takahashi 1995). For example, research indicates that while curved lines or forms reference concepts like gracefulness or flexibility (Hatcher 1974; Takahashi 1995), irregular or cut-up lines denote ideas like vibrancy (Kress and van Leeuwen 1996; Triggs 1995) or “hip” rebelliousness favored by those in-the-know (e.g., hipsters).

Agreement also exists that certain graphic elements can promote feelings of tension or stimulation—the key ingredient of embodied meaning (Dondis 1993). Art psychologists contend that smooth, continuous, or gently curved forms lack much tension, but the opposite is true of forms that exhibit some deformation, such as irregular or discontinuous lines (Arnheim 1974; Krietler and Krietler, 1972). Moreover, consistent with the thesis that moderate as opposed to very low or high stimulation promotes a more positive feeling and hence embodied meaning, moderate and thus resolvable tension in art is claimed to not only heighten interest, but it also elevates positive hedonic feelings (Krietler and Krietler, 1972).

Based on these notions, we embedded in the background of a print ad an abstract graphic design that had either curved or irregular elements. We examined whether the genders responded as they did in study 1 to the meanings relayed by these aesthetic elements. The ad featured two versions of the same abstract graphic design with a gentle curved form. In one version, the curved design was intact and was expected to reference the notion of graceful harmony due to the curvature (Kumar and Garg 2010). The other version displayed the same design, but it was sliced into irregularly cut vertical strips that masked the curvature, flaunted convention, and should evoke a referential meaning of a free-thinking hip mentality. Recall that the irregularly sliced versus intact curved design also should elicit more stimulation, fostering a more favorable embodied meaning.

Experiment 2

Experimental materials and procedure

Stimuli

The target ad was for a furniture store, which was pretested and found to be equally involving for 14 males and 16 females ($p > 0.23$). Two versions of the ad were created that varied only in their background graphic. The graphic always featured a richly-hued, gently curving swirling design, but either the curvature was visible and intact or it was sliced into irregular vertical strips that obscured the curves (see Appendix A and B for sample ads). The irregular sliced graphic design was expected to be more

stimulating; hence it should impart a more favorable embodied meaning than the intact curved design.

Eleven male and 19 female pretest participants assessed whether the two versions of the graphic conveyed the anticipated meanings. Indeed, the purely hedonic embodied meaning was more favorable for the irregularly sliced versus the intact curved graphic design ($\infty = 0.83$; $M_{\text{sliced}} = 4.87$, $M_{\text{intact}} = 3.82$; $F(1,28) = 5.09$, $p < 0.04$). The two graphics also conveyed the expected referential meanings. Specifically, respondents perceived the irregularly sliced design as more freely-thinking hip (more hip, unconventional, and dynamic, $\infty = 0.76$; $M_{\text{sliced}} = 5.53$, $M_{\text{intact}} = 4.76$; $F(1,28) = 5.28$, $p < 0.03$), but the intact curved design better referenced graceful harmony (more harmonious, fluid, and integrated, $\infty = .68$; $M_{\text{intact}} = 4.56$, $M_{\text{sliced}} = 3.71$; $F(1,28) = 4.39$, $p < 0.05$).

On the same measures used in Study 1, 26 pretest individuals (13 males) viewed an ad with one of the two ad background designs and assessed its suitability for the ad. The two designs were rated as equally suitable for the ad ($M_{\text{intact}} = 4.72$, $M_{\text{sliced}} = 4.79$; $F < 1$).

Dependent measures

We selected one critical perception measure that aligned with the intact curved design’s referential meaning of graceful harmony. As in study 1, the alternative design version’s referential and embodied meanings implied opposing perceptions on this probed attribute. Specifically, participants assessed the extent to which the store was gracefully elegant (offered a smooth-flowing store layout, complementary harmonious styles, elegant atmosphere, and sophisticated image; 1 = not at all; 7 = very much). A second perception measure aligned with the irregularly sliced ad background design’s referential meaning of a free-thinking hip mentality. This entailed assessing the store’s spiritedly stylish atmosphere (its attraction for free-spirited customers, a busy free-thinking crowd, hip customers, and reputation for futuristic furnishings). The items for each measure loaded on separate factors and were averaged to form a gracefully elegant index and a separate spiritedly stylish atmosphere index ($\infty = 0.78$ and 0.87). All items were intermixed during assessment. In addition, participants’ thoughts about the target ad were examined and coded reliably ($r = 0.80$ to 0.89) for: (1) the number that reflected the referential meaning of the intact curved background design (e.g., graceful harmony: “Everything is in harmony”), (2) those that reflected the referential meaning of the irregularly sliced design (e.g., free-thinking hip mentality: “young and hip”), and (3) net positive thoughts about the ad background design.

Procedure

In groups of up to 10 people, 133 students (66 males) first examined a filler ad. Then they viewed the target furniture store ad and completed perception and thought-listing measures for it. Finally, participants’ NFC and gender were assessed.

Hypotheses

Because perceptions of the store’s gracefully elegant atmosphere overlap semantically with the referential meaning of the intact curved design (i.e., graceful harmony), participants who employ the referential meaning of the graphic design to form their

product perceptions (i.e., high NFC males) should perceive the store as more extreme (i.e., higher) on graceful elegance when they view the intact curved versus the irregularly sliced design. However, individuals who make use of the design's embodied meaning (i.e., low NFC males) should perceive the store as more extreme on this attribute when they view the (opposite) irregularly sliced graphic design. Further, because females should use both the referential and embodied meanings that possess opposite implications for this measure, they should perceive the store similarly across the two designs.

H4. High NFC males will perceive the store atmosphere as more gracefully elegant when the ad background features the intact curved versus irregularly sliced design. Yet, low NFC males will view the atmosphere as more gracefully elegant when the ad background displays the more stimulating and thus more hedonically favorable irregularly sliced versus intact curved design. In contrast, all females should perceive the store atmosphere similarly on this measure, regardless of the ad background design.

Our second perception measure assessed the store's spiritedly stylish atmosphere. This attribute was chosen because it overlapped semantically with the referential meaning of a free-thinking hip mentality as imparted by the irregularly sliced ad background design. However, because the alternative meanings of the two ad designs offer similar implications for this perception attribute, we anticipated only a main effect of ad background design on such perceptions. Specifically, the referential meaning of the irregularly sliced versus intact curved design overlaps more greatly with the idea of a spiritedly stylish atmosphere. But similarly, the irregularly sliced versus intact curved design should prompt a higher stimulation level, rendering its embodied meaning more favorable. Thus, on this measure, regardless of whether individuals based their views on the design's referential meaning (i.e., high NFC males), its embodied meaning (i.e., low NFC males), or both meanings (i.e., all females), they should perceive the store atmosphere as more spiritedly stylish when the design is irregularly sliced versus curved.

H5. Regardless of their NFC, all males and females should perceive the atmosphere of the furniture store as more spiritedly stylish when the ad background contains the irregularly sliced versus intact curved design.

Paralleling study 1, participants' detection of each background design's referential meaning was assessed by examining their thoughts that reflected each of these meanings (i.e., graceful harmony for the intact curved design, and free-thinking hip mentality for the irregularly sliced design). Corresponding with the outcomes of experiment 1, because high but not low NFC males should detect and use the ad background design's referential meaning, only the former group of males should produce more thoughts about these meanings. However, because regardless of their NFC level, all females should discern the ad design's referential meaning, females should generate heightened thoughts about each design's referential meaning.

H6. High NFC males will produce (a) more thoughts about the notion of graceful harmony when the ad contains the intact curved versus the irregularly sliced ad background design, and (b) more that pertain to a free-thinking hip mentality when the background features the irregularly sliced versus curved intact design. These effects should be absent, however, among low NFC males. However, the same outcomes anticipated for high NFC males also should emerge on the thoughts produced by females, but this should occur regardless of their NFC level.

Finally, to assess participants' detection of the ad background design's embodied meaning, we also examined their net positive thoughts about the ad background design. We expected that low but not high NFC males would express discernment of the design's embodied meaning. But regardless of their NFC level, all females would discern the design's embodied meaning.

H7. Low NFC males will produce more net positive thoughts about the ad background when it features the irregularly sliced versus the curved intact design, but this effect should be absent among high NFC males. However, regardless of their NFC level, all females' net positive thoughts about the ad background will be greater when the background features the irregularly sliced versus the curved intact design.

Results

As in study 1, we followed Aiken and West's (1991) approach when analyzing the data. Participants' NFC scores were summed and mean centered, gender and ad background design were contrast coded, and we created all two- and three-way interaction terms. Regression analyses were conducted with all three factors and their interaction terms as predictors.

Store perceptions

Participants' perceptions of the store's gracefully elegant atmosphere revealed the anticipated interaction of gender, NFC, and ad background design ($\beta = -0.013$, $t = -2.20$, $p < 0.05$). As Fig. 2 illustrates, the interaction of NFC and ad background design was significant among males ($\beta = -0.022$, $t = -2.84$, $p < 0.01$), but not females ($t < 1$). Follow-up analysis generally supported our hypotheses. High NFC males based their store perceptions on the background design's referential meaning, perceiving the store as more gracefully elegant when the ad background featured the intact curved versus the irregularly sliced design ($\beta = -0.46$, $t = -3.00$, $p < 0.01$). Yet, low NFC males inferred and used the ad background design's embodied meaning, rating the store as more extreme on this measure when the ad featured the irregularly sliced versus intact curved design ($\beta = 0.39$, $t = 2.51$, $p < 0.05$). For reasons that are not unclear, high versus low NFC females reported less favorable perceptions of the store's graceful elegance ($\beta = -0.37$, $t = -2.10$, $p < 0.05$). But despite this and consistent with predictions, the perceptions of both high and low NFC females did not vary significantly as a function of the ad background design ($ps > 0.11$). This concurs with the view that they based their perceptions on both the design's referential and embodied meanings.

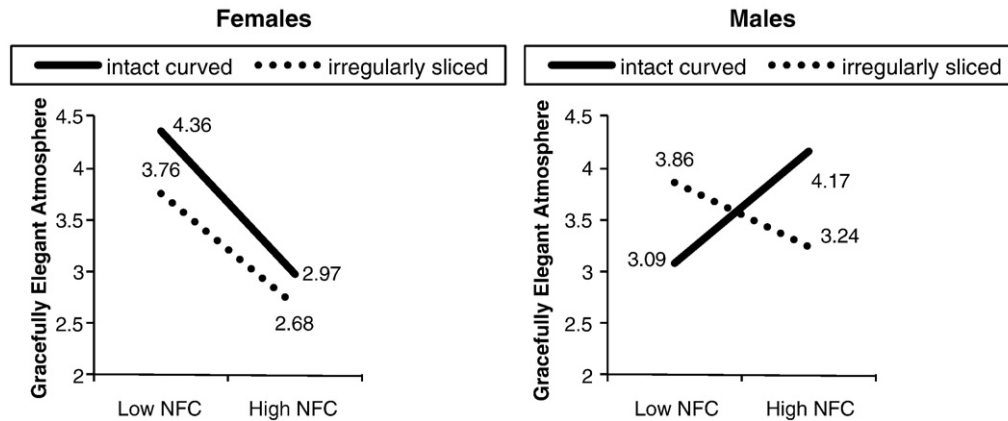


Fig. 2. Experiment 2: effect of gender, NFC, and background design on perceptions of store's gracefully elegant atmosphere.

Next, we analyzed participants' perceptions of the store's spiritedly stylish atmosphere. Here only a main effect of ad background design emerged ($\beta=0.27, t=2.14, p<0.05$); all males and females perceived that the store had a more spiritedly stylish atmosphere when the ad contained the irregularly sliced versus the intact curved design. This was expected because the referential and embodied meanings of the designs conveyed the same implications on this attribute.

Referential meaning indicators

The number of participants' thoughts that reflected the intact curved ad background design's referential meaning of graceful harmony revealed a three-way interaction of gender, NFC, and ad background design that approached significance ($\beta=-0.005, t=-1.73, p=0.09$). Further examination indicated that, as expected, the interaction of NFC and ad background design was significant for males ($\beta=-0.009, t=-2.11, p<0.05$) but not for females ($t<1$). Specifically, high NFC males generated more thoughts about the referential meaning of the intact curved background design when the ad featured the intact curved versus the irregularly sliced ad background design ($\beta=-0.46, t=-5.17, p<0.001$). This effect was not observed among low NFC males ($p>0.21$). However, females displayed an anticipated main effect of ad background design on such thoughts ($\beta=-0.24, t=-2.84, p<0.01$). Regardless of females' NFC, they generated more thoughts about the referential meaning of the intact curved ad background design when the ad featured the intact curved versus irregularly sliced design.

The same three-way interaction emerged on participants' thoughts that reflected the irregularly sliced ad background design's referential meaning of a free-thinking hip mentality ($\beta=.007, t=2.00, p<0.05$). Again, the two-way interaction of NFC and ad background design was significant for males ($\beta=.011, t=2.02, p<0.05$) but not for females ($t<1$). As predicted, high NFC males produced more thoughts about the referential meaning of the irregularly sliced ad design when the ad featured that graphic versus the intact curved one ($\beta=.33, t=3.35, p<0.01$). This difference was absent, however, among low NFC males ($t<1$). As for females, they exhibited only an anticipated main effect of ad background design ($\beta=0.31, t=3.10, p<0.01$); regardless of their NFC, females

generated more thoughts about the referential meaning of the irregularly sliced ad background design when the ad featured that design versus the intact curved design.

Embodied meaning indicator

Participants' sensitivity to the ad background design's embodied meaning was examined by analyzing their net positive thoughts about the design. A three-way interaction of gender, NFC, and ad background design emerged on such thoughts ($\beta=0.007, t=1.99, p<0.05$). The interaction of the latter two factors was marginally significant for males ($\beta=-0.01, t=-1.82, p=0.07$) but not for females ($t<1$). Followup examination of these data supported predictions for both genders. Low NFC males produced more net positive thoughts about the background design when the ad contained the irregularly sliced versus the intact curved design ($\beta=0.25, t=2.55, p<0.05$), but no such effect emerged among high NFC males ($t<1$). On the other hand, females' net positive thoughts about the design revealed only a main effect of ad background design ($\beta=0.26, t=2.58, p<0.05$). Regardless of their NFC level, females produced more such thoughts when the ad background featured the irregularly sliced versus the intact curved design.

General discussion

This research investigated three core questions: (1) Can characteristics of consumers, in particular their gender and NFC, affect which meaning(s) of ad background music people use when forming product perceptions? (2) Do certain consumers actually use both music's referential and embodied meanings? (3) Can these two types of meanings be relayed not just by music but by assorted forms of aesthetic stimuli that operate via similar principles and exert the same consequences on consumers? Two studies suggest affirmative answers to each of these questions. Indeed, we found that both consumers' gender and their NFC affected the meaning(s) of ad background stimuli they used. Equally interestingly, this was true regardless of whether the ad background featured music (study 1) or an alternative aesthetic element like a visual design (study 2). Presumably because females are inclined to attend to more data during processing, they based their product perceptions on both of the background

stimulus' meanings. Yet, because males tend to be more selective processors, they based their perceptions on just one meaning—one that was determined by the resources they expended during ad processing (i.e., their NFC). Specifically, high NFC males based their perceptions on the background stimulus' referential meaning that was relatively onerous to discern, low NFC males used the stimulus' less taxing embodied meaning, and females' rendered their perceptions on both the stimulus' referential and embodied meanings. Notably, such findings were robust. They emerged across three diverse products, regardless of whether the background stimulus was either music or a graphic design, when embodied and referential meanings were altered via either energy level, pitch, or (dis)continuity of visual curvature, and across a variety of perception measures and on thoughts. Such triangulation reduces the viability that an alternative explanation accounts for our findings.

These findings contribute to theory and practice in several vital ways. First, they highlight the importance of two consumer characteristics often used in segmentation: consumers' gender and their NFC—a correlate of consumer involvement. NFC determines the magnitude of resources a person expends when interpreting an aesthetic cue like music, whereas gender determines how those resources are allocated. Thus, our work clarifies both why and how these characteristics can affect the particular meaning(s) of background aesthetic stimuli that consumers may discern and use when rendering perceptions. Our research also offers the first evidence that certain consumers (i.e., females), are likely to employ not just one, but both meanings relayed by such stimuli. A second highly provocative insight we uncovered was that the meanings and outcomes produced by background music are in fact not unique to that art form. We showed that the meanings and processes that operate when an ad background features music also occur when instead it contains graphic art. Yet, it is likely that the same is true for many art forms marketers employ, including film, typography, sculptural forms, and special effects. In this way, our work adds to the growing literature on art and aesthetics (e.g., [Cho and Schwarz 2008](#)). A third enlightening aspect of our work is its indication that at times people's responses (i.e., perceptions) may be the simultaneous product of both cognitive and metacognitive inputs. The semantic content of referential meaning is the cognitive input. But the stimulation-based feelings that produce embodied meaning seem to be derived from metacognitive input, for they are interpreted (i.e., processed) sensations that arise from people's processing. A final contribution of our work centers on an irony that is revealed: Seemingly trivial peripheral elements in communications that may be used simply for their entertainment or decorative value in fact can exert crucial and potent influences. This appears to be true regardless of whether people devote a high or low level of resources to processing. In either case, minor aesthetic elements can shape consumers' perceptions and may even stimulate product purchase ([Yang, Zhang, and Peracchio 2010](#)).

Our research also suggests several interesting avenues for future research. It may be that deductions from our work could breathe new life into a cornerstone theory in consumer research, the Elaboration Likelihood Model (ELM; [Petty and Cacioppo 1986](#)). The ELM offers a framework for understanding how peripheral

cues such as ours as well as central (i.e., substantive) ones are processed. However, our research potentially extends on the ELM by suggesting three hypotheses: (1) When consumers' resources are somewhat constrained, the embodied meaning (hedonic value) of virtually any type of peripheral cue may influence judgments, (2) when resources are more abundant, the referential (i.e., semantic) meaning of such cues might be discerned and used to bolster central information and influence judgments, and (3) when resources are even more plentiful, both of these meanings may influence judgments. It would be worthwhile to test these notions as they apply to not just aesthetic cues, but also to the traditional kinds of peripheral cues explored in ELM-inspired research, say the spokesperson or source of a communication.

Whereas our research offered some compelling evidence that aesthetic elements delivered in modalities other than music (i.e., graphic design) also can convey referential and embodied meanings, future research should explore additional means by which aesthetic elements might relay these two meanings. To illustrate, texture might represent another such aesthetic modality. Consider a structure (e.g., a building) with a brushed stainless steel exterior that might appear in the background of an ad. The steel structure could bring to mind negative referential associations concerning noisy or grimy industrial equipment. Yet, the structure's moderately rough or stimulating texture is likely to elicit a hedonically pleasing embodied meaning.

Another important question that still must be addressed concerns how females might respond to a peripheral aesthetic cue (e.g., music or graphic design) if they experienced a resource limitation. We speculate that females' use of the cue may differ depending on the severity of this limitation. If it is moderate, females might process and use both the cue's embodied and referential meaning. But because the meanings would likely receive modest elaboration, their affect on perceptions may be too weak to detect. Yet, if the resource limitation is severe, it may be that, similar to males, females would detect and use only the cue's embodied meaning.

Finally, while we showed that aspects of musical sounds (i.e., its energy level or pitch) can convey referential and embodied meanings, it may be that the component sounds of nonword brand names also could operate as aesthetic elements that impart such meanings. To exemplify, consider the nonword brand name "Viagra," which was meaningless before it was adopted to designate the now well known erectile dysfunction medication. The sound of the brand name's initial syllable "Vi" is likely to conjure up a positive referential meaning due to associations to the concept of life or enlivening, which evolve from the syllable's presence in words like "vigor" and "vitality" and its origin of the Latin word for life (i.e., *vitum*). Further, sound symbolism research ([Klink 2000](#)) suggests that the initial "v" sound of the brand name (a long vowel sound, like the sounds made by j, s, x, and z) should evoke a moderate level of stimulation. Hence, the brand name's embodied meaning also should be positive. Given the brand name's fitting referential meaning for a drug that addresses impotence and the positivity of both its referential and embodied meanings, it could be that aesthetic elements of the product's brand name may have played a role in the brand's strong success.

Appendix A

Galaxy Furnishings. Helping you to
define you by the space you live in.




- Galaxy Furnishings, because your living space reflects your purpose and personality
- Specializing in creating homes that enliven, nurture, and serve as a catalyst for your dreams
- Our professional designers help you to express your unique tastes and generate innovative home furnishing solutions
- Offers one-stop shopping—furniture, lighting, wall coverings, fabrics, decorative conversation pieces, etc.
- Variety of payment plans help you make the most of today
- The place to invigorate your mind and let your creativity flow
- Visit us at www.galaxyfurnishing.com or one of three convenient metro-area locations

Galaxy Furnishings

Appendix B

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