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The Effect of Background Music on Ad Processing: A Contingency Explanation

Music is an increasingly prominent and expensive feature of broadcast ads, yet its effects on message reception are controversial. The authors propose and test a contingency that may help resolve this controversy. Experimental results suggest that message reception is influenced by the interplay of two musical properties: attention-gaining value and music-message congruency. Increasing audience attention to music enhances message reception when the music evokes message-congruent (versus incongruent) thoughts.

MUSIC has been a prominent feature in advertising since the first network radio broadcast aired in 1923 (Hettinger 1933). Early broadcasts used signature "theme music" to introduce commercial sponsors. By the late 1930s, the "singing commercial" had become standard practice. Pepsi's historic "Pepsi-Cola hits the spot" jingle became a jukebox hit in 1941 (Enrico and Kornbluth 1986). Musical ads made a graceful transition to television in the 1950s, and they continue to play an important role in broadcast advertising today. Estimates of the proportion of TV commercials using music have ranged from about 75% (Michlin 1984) to over 90% (Garfield 1988). According to a recent Video Storyboard Tests report, music is used as "the main creative ingredient" in one-third of 500 new TV ads (Tharp 1989).

Advertisers spend large sums of money on the production of musical ads. Creative fees for an original composition can cost over $10,000 (Karmen 1989). The rights to popular songs can cost much more (Alsop 1985); for example, Nike paid $500,000 for the use of The Beatles' song "Revolution" (Cocks 1987).

Industry is risking millions of dollars on the belief that music can help ads sell; yet there is no universally accepted explanation of how this works. Some investigators have suggested that music influences listeners mainly through their feelings. For example, Gorn (1982) viewed the effects of ad music from a classical conditioning perspective, suggesting that consumers' feelings toward a piece of music may transfer to a product when the two are paired in an ad. Another explanation is that the power of music operates by creating moods (Alpert and Alpert 1990; Bruner 1990; Gardner 1985) that enhance product evaluations and facilitate message acceptance.

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Though most of the research literature has focused on emotional responses to ad music, it is also important to consider music's impact on message reception and processing. Creating positive feelings during ad exposure may be desirable but have little impact unless the brand and message are remembered. Therefore, the current research examines ad recall and recognition. Our focus on cognitive aspects of ad performance is justifiable on both theoretical and practical grounds. Remembering information such as brand names and message claims often precedes responses at other levels in the hierarchy of effects. Various measures of memorability are used extensively in the advertising industry to assess ad performance (Stewart, Furse, and Kozak 1983; Wells 1964).

Ad memorability is particularly troublesome in the present media environment (Walker and von Gonten 1989). Given the proliferation of "ad clutter" (Webb and Ray 1979), "zipping" (Yorke and Kitchen 1985) and "zapping" (Heeter and Greenberg 1985), and low attention levels for broadcast media in general (Krugman 1988), advertisers face a growing challenge of attracting attention to their messages (Olney, Holbrook, and Batra 1991).

Many have claimed that music increases the memorability of ads (Hecker 1984); however, support is mixed. A recent *Wall Street Journal* article reported that "advertisers are spending a ton of money on music, [but] it looks like it's backfiring ... in many cases, music tracks actually muddle the commercial message" (Lipman 1991). Correlational studies have found music to enhance (e.g., Hoyer, Srivastava, and Jacoby 1984), inhibit (e.g., Haley, Richardson, and Baldwin 1984; Sewall and Sarel 1986), or have no effect (e.g., Stewart and Furse 1986) on remembering ads. Experimental studies have also produced inconsistent findings: Messages that are sung have been found to produce lower (e.g., Galizio and Hendrick 1972), higher (e.g., Wallace 1991), or equal (e.g., Macklin 1988) recall relative to spoken messages. Several studies have found recall to vary across different types of music (e.g., Belsham and Harman 1977; Tom 1990), but have uncovered no consistent pattern underlying results.

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We propose to illuminate the controversy surrounding recall effects of music by introducing a contingency variable: music-message congruency. Music-message congruency refers to the congruency of meanings communicated nonverbally by music and verbally by ad copy. Attention-gaining background music is hypothesized to enhance recall of brands and messages when the meanings conveyed by music and message are congruent, and interfere with ad processing when music and message convey dissimilar meanings.

Literature Review and Hypotheses

Traditionally, advertising research has treated music as a unitary "sonic mass," examining the effects of its presence or likability. However, Bruner (1990) and Kellaris and Kent (1991) have noted that music is multi-dimensional and called for research on the interplay of these dimensions in marketing contexts. We explore two properties of music that can exert an interactive influence on ad processing.

Music's Attention-Gaining Value

The first musical property that can influence message reception is "attention-gaining value," which refers to the activation or arousal potential of musical sound (Kroeber-Riel 1979). Music's ability to engage a listener's attention can stem from objective traits, such as speed and loudness, or subjective traits, such as surprisingness and interestingness (Berlyne 1974). Slow, soft music should have a low attention-gaining value, whereas fast, loud music can be expected to activate higher levels of attention.

In an advertising context, music may contribute to message reception by attracting and holding attention (Hecker 1984). According to one view, attention-getting music should attract attention to an ad, thereby enhancing message reception. A paradox arises, however, in that listeners sometimes attend to the music so closely that the message is not processed. In these cases, music is a distractor that inhibits message reception and processing. Wakshlag, Reitz, and Zillman (1982) found that music that increased attention to a program inhibited learning from it. Anand and Sternthal (1990) found music to have a distracting effect in a radio advertising context.

As Macklin (1988, p. 225) states, "an individual may attend to the music [and] become so enraptured by [it] that the central message of the advertiser is ignored." She suggests that music is likely to have this distracting effect when it is "extraneous to the main concept or theme" (p. 227). Whether attention-gaining music enhances or distracts from processing may therefore depend on the consistency of meaning conveyed by the music and verbal message.

Music-Message Congruency

Numerous sources suggest that purely instrumental music can convey very specific meanings that are widely shared across listeners (e.g., Gurney 1880; Meyer 1956; Watson 1942). An early empirical study by Gundlach (1935, p. 642) concluded that "music can elicit in many auditors a fairly uniform characterization solely through factors resident within the musical structure." Rigg (1937) found that most listeners (73%), regardless of musical training, could interpret accurately the intended meanings of unfamiliar musical compositions. More recently, Holbrook and Bertges (1981) demonstrated that untrained and expert listeners share remarkably similar perceptions of the aesthetic expressiveness of classical music performances.

Music can communicate meanings in two distinct ways. First, musical pieces occasionally convey literal meanings by imitating concrete sounds (e.g., bird calls, traffic noises). Second, music has a special ability to convey images, thoughts, and feelings more abstractly as well. As Gurney wrote (1880, p. 349–50):

> [T]he power of Music to suggest external objects and events and intellectual conceptions ... may take place in two ways. First, the actual sounds and motion of the music may perceptibly resemble actual sounds and motions of other things.... The second way in which images of external facts may be suggested by Music is by general qualities.... [T]he same calm and steady musical flow which might suggest a quiet succession of waves has naturally an expression of tranquillity [*sic*] corresponding to the same idea.

Patterns of repeated notes communicate the idea of water flowing in Schubert's *Die Schöne Müllerin*, Debussy's *La Mer*, Respighi's *Fountains of Rome*, and many other compositions. Similar "flowing motion" patterns reinforce the liquid imagery and "cool, refreshing" idea in beverage commercials. Mozart's overture to "The Marriage of Figaro" evokes more complex meanings—lively, romantic, comic, anticipation (Tovey 1937). Music in commercials often communicates similarly complex meanings (for examples, see Scott 1990).

On the basis of music's ability to convey meanings, we propose a "music-message congruency" construct, which can be defined as the extent to which purely instrumental music evokes meanings (i.e., thoughts, images, feelings) that are congruent with those evoked by ad messages. Previous studies have examined variables that are conceptually related to music-message congruency in that they involve some type of stimulus congruity between peripheral and central ad cues. For example, research on picture-word consistency has found brand recall to be higher when the brand name and picture are integrated into a single illustration (Childers and Houston 1984; Lutz and Lutz 1977). Houston, Childers, and Heckler (1987) found recall of product attribute information to be higher when both picture and words communicate the same information. Unnava and Burnkrant (1991) found picture-word congruency to enhance verbal recall when the picture does not evoke distracting imagery. Heckler and Childers (1992) found the presence of relevant (versus irrelevant) pictorial cues to enhance ad recognition.

MacInnis and Park (1991) manipulated a property they label "music's fit with the main theme of the ad." However, in their study, fit was operationalized by manipulating the relevance of the *lyrics* of a song to the main theme of the ad—i.e., the congruency between two types of *verbal* cues (song lyrics and ad copy). Additionally, several psychological studies have explored the impact of consistency of verbal information on recall (e.g., Hastie and Kumar 1979; Srull, Lichtenstein, and Rothbart 1985); however, important differences between these studies and ours will be discussed subsequently.

Though music-message congruency is similar to picture-word consistency and musical fit, it is distinctive in several respects. Music-message congruency differs from picture-word consistency in that it involves aural rather than visual processing and music often conveys meanings in a connotative or evocative fashion, whereas the stimuli used in studies of visual cues have communicated in a more literal, representational manner. Music-message congruency is distinguished from MacInnis and Park's "fit" construct in that it involves nonverbal-verbal congruency (instrumental music with message copy) rather than verbal-verbal congruency (song lyrics with message copy).

Hypotheses

In summary, the impact of increasing the attention-gaining value of background music is expected to interact with music-message congruency in the following way: Increasing audience attention to message-congruent music will reinforce retention of the message because similar content is being communicated through both spoken words and music-evoked thoughts. However, increasing audience attention to music that evokes message-incongruent thoughts will not enhance message retention, and may actually impede it by distracting the audience from processing the content of the spoken message. Hence,

> H_1: The impact of increasing the attention-gaining value of music on recall of (a) brand name and (b) message points will be more positive when music-message congruency is high than when music-message congruency is low.

Because recall and recognition reflect how much is learned and remembered from an ad and tend to covary strongly (Singh, Rothschild, and Churchill 1988), we anticipate an analogous interactive effect of music's attention value and congruency on recognition:

> H_2: The impact of increasing the attention-gaining value of music on recognition of (a) brand name and (b) message points will be more positive when music-message congruency is high than when music-message congruency is low.

Method

Music's attention-gaining value and music-message congruency were varied in a 2 × 2 factorial between-subjects design with a no-music control group. Dependent variables include recall and recognition of brand name and message points. The procedure involved randomly assigning subjects to treatments, giving them a deceptive cover story, exposing them individually to test ads embedded in a radio program, and having them complete a self-administered questionnaire.

Subjects

We recruited 231 young adults from upper-level business classes at an urban university to participate in the main experiment. Most of these subjects (more than 80%) were employed either full- or part-time. Their ages ranged from 20 to 40 years, and gender was about evenly divided (55.6% men, 44.4% women). Subjects came from a variety of urban and suburban neighborhoods, representing 54 metropolitan ZIP code districts. We believe this relatively young sample to be appropriate because this age group constitutes frequent radio listeners (MRI 1989), and they are frequent targets of musical ads (Aaron 1987; Lipman 1991) and consumers of the products represented in the test ads used in this study.

Stimuli and Pretests

The stimuli were 30-second radio ads designed by the authors and professionally recorded. The ads were the product of extensive development and pretesting. We sought two sets of musical selections that differed in attention-gaining value but did not differ in appeal or familiarity. Toward this end, we selected 40 pieces of unfamiliar instrumental music, and asked 110 college students to rate them on attention-gaining value, appeal, and familiarity scales (similar to those reported as manipulation check items in the "Measures" section). We preferred to use unfamiliar music to avoid nonmusical associations and meanings stemming from prior exposures. Subjects were processed in small groups, with each group evaluating only four pieces. On the basis of pretest ratings, we narrowed the field to the set of musical selections listed in Figure 1. Six pieces had high attention value ($\overline{X} = 4.0$), and six had low attention value ($\overline{X} = 2.6$; $F = 35.8$, $p < .001$). The sets did not differ in average appeal or familiarity. Each set contained two classical selections, two foreign, and two in some other genre (e.g., contemporary). We used music of different genres to increase construct and external validities (Cook and Campbell 1979).

In addition to rating the music, subjects were asked to list their thoughts as they listened. Though the music was instrumental, each piece seemed to evoke specific images that were remarkably similar across listeners. On the basis of the thought listings, we selected products to match the images evoked by the twelve pieces. For example, the fast-paced, dissonant "Concerto for Clarinet and Orchestra" by Corigliano evoked thoughts of excitement and danger and images of a high-speed chase in a James Bond or Indiana Jones type movie. These associations suggested an ad for an adventure film.

We retained nine product categories from this process. The relevance of each product or service category for student subjects was verified in a small scale survey ($n = 40$). Each category was personally relevant to at least 80% of the sample as verified by self-report.

Next, copy was developed for each product. Each message contained the same basic elements in the same format, mentioned the brand three times, and contained about 100 words. Though we attempted to make the ads as similar as possible in terms of how much information they contained, we tested for balance of informational content. Working from written copy, two judges independently counted the number of thoughts imparted by each ad. The two sets of judgments were positively and significantly correlated ($r = .40$, $p < .05$). We summed and averaged the two sets of judgments and used this as the dependent variable in a variance analysis with the individual ad as the unit of analysis. There were no main or interactive effects of attention value or congruency, indicating no statistical variation in informational content between ads across treatment groups.

Test ads were created by voicing copy over music. Copy and music were matched/mismatched to operational-

FIGURE 1
Overview of Design and Stimulus Combinations

ATTENTION GAINING VALUE OF MUSIC	MUSIC-MESSAGE CONGRUENCY: LOW	MUSIC-MESSAGE CONGRUENCY: HIGH
High	• 4,H • 8,H •12,C • 1,E • 5,G • 9,B	• 4,D • 8,E •12,I • 1, A • 5,E • 9,F
Low	• 2,A •10,A •10,F • 3,D • 7,D •11,I	• 2,B • 6,E •10,G • 3,C • 7,E •11,H

Key to Stimulus Combinations:

Musical Selections
1. Concerto for Clarinet and Orchestra by Corigliano
2. "Moonlight—The Nymph's Rondele" from *The Moldau* (by Smetana)
3. "Shaker Loops" by Adams
4. "Les Preludes" by Liszt
5. "Nicaz Dolap" from *Songs and Dances of Turkey*
6. "To Minore tis Avgis" from *Syrtos*
7. "Taksim" from *Songs and Dances of Turkey*
8. "Karsilama" from Syrtos
9. "Triumph"—Lui Man-Sing (traditional Chinese)
10. "Reflections"—Winston (new age)
11. "Saturn"—Holst (classical)
12. "Real Love"—Cymone (instrumental pop)

Ad Copy
A. Adventure Movie
B. State Parks (PSA)
C. Acetaminophen Pain Reliever
D. Polo Club (restaurant)
E. Ethnos Restaurant
F. Ching Dynasty (restaurant)
G. Sonoma Wine Bar
H. Drugs (PSA)
I. Nightspot (singles bar)

ize high/low congruency. Executional attributes such as duration, announcer's voice, recording quality, and loudness were held constant.

The final phase of pretesting involved a manipulation check on music-message congruency using two groups of college students (n = 60). A multi-item measure was used to represent music-message congruency (see "Measures"). ANOVA confirmed the congruency manipulation ($\bar{X}_{HI/LO}$ = 4.01/1.95, F(1, 22) = 75.12, $p < .001$), and reconfirmed the attention-gaining manipulation ($\bar{X}_{HI/LO}$ = 3.73/2.31, F(1,22) = 41.13, $p < .001$).

This multi-phase process resulted in a set of test ads that varied orthogonally in terms of music's attention-gaining value and music-message congruency. Each cell in this 2 × 2 experimental design was operationalized by six test ads. Multiple operations were used to increase the construct validity of the manipulations (Cook and Campbell 1979, p. 65). The specific product-music combinations for each ad are shown in Figure 1.

The test ads as well as dummy ads were embedded in a five-minute excerpt from a radio broadcast, which was taken from a radio documentary on human relationships that aired locally in another state. A humorous decaffeinated coffee commercial, which was heard twice, was the dummy.

Procedure

Subjects were processed individually in a listening lab. Each subject was given a set of headphones, a randomly assigned numbered cassette tape, and a (matching) numbered questionnaire, and then directed to an audio carrel. Printed instructions told subjects to rewind the tape, listen to it once, break the seal on the questionnaire, and complete the questionnaire. Unobtrusive observation of a subset of subjects found no violations of the instructions. The last page of the questionnaire directed subjects to return all materials to the lab attendant. Median processing time was 30 minutes.

Subjects were given a disguised cover story. The purpose of the study was described as "to assess the viability of a new media format for the college market." The questionnaire contained dummy items designed to support the cover story and create a time delay. These included questions on radio listening habits and the broadcast. Following the procedure used in Madden, Allen, and Twible's 1988 study, the questionnaire stated that "since your evaluations of the program might be influenced by the other things you heard, some people have been randomly selected to answer more detailed questions about other aspects of the broadcast. You have been assigned questions about. . . ." This was followed by six categories (e.g., "the sound quality"). A checkmark was placed next to "the advertisements" category on all copies of the questionnaire.

Subjects were asked to recall that one of the ads (dummy) was heard twice, at the beginning and end of the broadcast, and the other ad (target) was heard only once. Attention was drawn to the target ad by stating "the following questions concern the ad you heard only once."

Measures

Dependent measures. Open-ended items measured unaided brand name and message recall. The brand recall items asked "What was this ad for? Was there a specific *brand* mentioned? If so, what was it?" Message recall was prompted by the questions "What major points did the message make? Please list as many as you can remember. What other details do you remember from the ad?" These measures are patterned after those used in previous ad recall studies (e.g., Sewall and Sarel 1986; Singh, Rothschild, and Churchill 1988).

Brand name recall was coded dichotomously as accurate (including phonetically close spellings) or inaccurate recollection. Message recall was scored by isolating written protocols into individual phrases, as per Bettman and Park's 1980 study, and comparing them against the original ad copy. Exact matches and conceptually similar phrases were scored as correct, which served as an index of unaided message recall.

Coding of brand and message recall was done by one of the authors, who was blind to treatment group membership during coding. To check the coding judgments, a graduate assistant naive to the hypotheses recoded 100 of the cases using the same *a priori* criteria. A comparison of the two sets of coding judgments found significant positive correlations between brand ($r = .73$, $p < .001$) and message ($r = .87$, $p < .001$) recall judgments.

Brand and message recognition were measured by checklists, as per Singh, Rothschild, and Churchill's 1988 study. Both checklists contained filler items designed to increase the sensitivity of the measure (Singh, Rothschild, and Churchill 1988). The brand name was embedded in an 18-item checklist and the central message theme in a 20-item checklist including "none of the above" and "I can't recall."

Manipulation and confounding checks. Single-item, 5-point agreement scales were used for manipulation checks on music's attention-gaining value and for confounding checks on music appealingness, familiarity, and message relevance. It should be noted that we used a rating scale measure of attention-gaining value because we know of no *direct* (or observational) measures of auditory attention. Our stimuli are purely auditory and were heard over headphones. Given the unavailability of observational measures, we used stimuli with properties that are known antecedents to attention, employed rating scale measures of attention-gaining value, and measured predicted outcomes of attention-gaining value (i.e., recall and recognition).

A summed six-item, 5-point agreement scale was included to verify the manipulation of music-message congruency. Specific items include "Regardless of how much I liked or disliked the music, it *did* seem appropriate for this ad," "The music did *not* seem to fit the message in this ad" (*), "The message and music both made me think about the same things," "The music was *not* what I would expect to hear in this kind of ad" (*), "The music and the message both seemed to evoke the same general mood," and "The music and message seemed to be well matched in this ad." Items marked (*) were reverse-scored. Reliability of the composite congruency scale was .92 (Cronbach's alpha).

Other questionnaire items. Though our study focuses on cognitive responses to ads, we took measures of attitudes toward the ad (A_{ad}) and brand (A_b) to make sure our manipulations did not create unanticipated attitudinal effects. A_{ad} and A_b were measured after the recall and recognition items. A_{ad} was measured using a five-item, 7-point semantic differential scale taken from MacKenzie, Lutz, and Belch's 1986 study. The items "pleasant/unpleasant, likable/unlikable, interesting/uninteresting, tasteful/tasteless, and good/ bad" were preceded by the prompt "The ad I heard was...." Alpha reliability for the summed scale was .88. A_b was measured using the same five items, but with a different prompt ("The product or service in the ad was..."). Alpha reliability for the summed A_b scale was .91.

The questionnaire included several debriefing items designed to assess the extent of hypothesis guessing and compliance with instructions. No subjects correctly guessed the hypotheses, and no consequential violations of the instructions were observed. Demographic items and questions concerning musical interests, listening habits, and training were included.

Results

Posttest Manipulation and Confounding Checks

Manipulation checks conducted at the end of the experiment[1] confirmed that the high and low congruency treat-

[1]Perdue and Summers (1986, p. 320) note that *pretest* manipulation checks (such as those reported previously) are the best gauges of manipulation *strength*, because by the time *post-experimental* checks are taken, the "effects of the manipulation may have already dissipated substantially." Consistent with this, we found that the "spread" between manipulation check means taken after our experiment were somewhat smaller than those in our pretests: 2.4 and 3.1 for low and high attention-value treatments ($F(1,159) = 10.68$, $p < .001$), 3.3 and 3.8 for low and high congruency treatments ($F(1,159) = 10.08$, $p < .002$). Still, both pre- and posttest measures indicate successful, unconfounded manipulations of the constructs of interest.

ments differed significantly in perceived music congruency ($F(1,159) = 10.08$, $p < .002$), but did not differ in perceived music attention value ($F = 3.1$), appeal ($F = .18$), familiarity ($F = 2.2$), or personal relevancy ($F = .30$). Similarly, the high and low attention-value treatments differed significantly in perceived attention value ($F(1,159) = 10.68$, $p < .001$) but not in perceived music congruency ($F = .26$), appeal ($F = .02$), familiarity ($F = .89$), or personal relevancy ($F = 3.5$). Consistent with our expectations, the treatments did not produce significant main or interactive effects on attitudes toward the ad (A_{ad}) or brand (A_b). Therefore, the experimental manipulations appear to be both successful and unconfounded.

MANOVA

Because the four outcome variables are conceptually related as measures of ad reception/processing, we expected them to be statistically intercorrelated. Cross-tabulations of recall and recognition scores found four of the six pairs of dependent variables to be significantly and positively associated (at $p < .05$). The association of message recall with message recognition was positive, but not significant ($p = .11$), and the association of brand recall with message recognition was not statistically significant.

Because intercorrelated variables were to be analyzed, we performed a multivariate variance analysis (MANOVA) to avoid Type I error inflation. MANOVA adjusts for the intercorrelation among dependent variables when calculating significance levels (Hair, Anderson, and Tatham 1987). The results are summarized in Table 1.

As anticipated in our hypotheses, music's attention-gaining value interacted with music-message congruency to produce a significant effect on cognitive measures of ad performance (Wilk's lambda = .93369, $F(4,161) = 2.86$, $p < .025$). Neither experimental factor produced a significant main effect.

ANOVA

Given the positive MANOVA finding for the interaction, follow-up univariate analyses were performed on each ad performance measure (Hair et al. 1987). Though some of our dependent measures were not normally distributed, our data contained no problematic violations of the underlying assumptions of analysis of variance (ANOVA).[2] (It should be noted that the F test is robust to deviations from normality, especially given relatively large sample sizes. See Lindman 1974.) ANOVA results are summarized in Table 1, and descriptive data appear in Table 2.

H_1 recall effects. H_{1a} concerning brand recall was supported. The interaction of music's attention-gaining value with music-message congruency, $F(1, 164) = 3.94$, $p < .05$, is illustrated in Figure 2. The effect size (ω^2) for this interaction is .02 (Keppel 1982). Attention-gaining music has a positive effect on brand name recall ($t = -2.75$, d.f. = 82, $p < .01$) under the high music-message congruency condition, and no effect under the low congruency condition. Brand recall differed between low ($\overline{X} = .29$) and high ($\overline{X} = .55$) congruency groups under the high attention-gaining condition ($t = -2.49$, d.f. = 82, $p < .015$) but not under the low attention-gaining condition.

H_{1b} concerning message recall was also supported. The interaction of attention value and congruency, $F(1, 164) = 4.64$, $p < .04$, $\omega^2 = .02$, is illustrated in Figure 3. Music's attention-gaining value has a positive effect on message recall ($\overline{X} = 1.48$ vs. 2.40) under the high music-message congruency condition ($t = -2.66$, d.f. = 82, $p < .01$). The slight decrement in recall seen across attention value levels under the low congruency condition ($\overline{X} = 1.48$ vs. 1.38) is not significant ($t = .30$). Though there is no recall difference between congruency groups under the low attention value condition, a significant difference ($\overline{X} = 1.38$ vs. 2.40) emerges when attention value is high ($t = -2.48$, d.f. = 82, $p < .01$).

H_2 recognition effects. H_{2a} concerning brand recognition was not supported ($p = .12$). The failure to find between-group differences in this measure may have been caused by the sensitivity of the measure. Brand recognition can be a relatively "easy" test of memory (Singh et al. 1988), especially after exposure to only a few ads and a relatively brief delay. Only 16.8% of our subjects failed to recognize the target brand on a checklist.

H_{2b} concerning message recognition was supported. A significant interaction of music's attention-gaining value with music-message congruency was found, $F(1,164) = 5.54$, $p < .02$, $\omega^2 = .03$, as shown in Figure 4. There is a positive effect of attention-gaining music on message recognition under the high congruency condition ($t = -1.78$, d.f. = 82, $p < .04$), and no effect when congruency is low ($t = 1.55$, n.s.). High ($\overline{X} = .48$) and low ($\overline{X} = .67$) congruency groups differ statistically in terms of message recognition under the low attention-gaining music condition ($t = 1.78$,

[2]Two methodological issues pertaining to this analysis merit comment: The first concerns the assumptions underlying the ANOVA model. As Lindman (1974, p. 21) points out, "none of the assumptions [underlying ANOVA] are ever fully satisfied by data;" however, the F test is extremely robust. First, ANOVA assumes that the dependent variables are normally distributed. The only notable departure from normality in our data is nonzero kurtosis, particularly in the message recognition measure (Ku = -1.92). However, when these kurtoses were incorporated into Box and Anderson's (1955) approximate F test, results were identical to those of the conventional F test. (For a discussion of the robustness of the F test, see Lindman 1974, pp. 31–33.) Second, ANOVA assumes equal variances among experimental groups. Cochran's test for homogeneity of variance revealed no significant differences across cells for any of the four dependent measures. Third, ANOVA assumes independent observations. Because our subjects were randomly assigned to treatments and had no knowledge of one another's responses (because of individual processing), our data adhere to this assumption.

The second issue concerns the error terms used in the analyses of variance. The error terms in the reported ANOVAs represent the variance across subjects within cells of the experiment. Technically this involves pooling two sources of variance: variance across stimuli within a cell and across subjects exposed to a given stimulus. To examine the appropriateness of this pooling of variance, we conducted the "pooling test" suggested by Keppel (1982, p. 264). This test revealed that there were statistically significant differences across stimuli within cells, for both brand and message recognition (but not for brand or message recall). Hence, we followed Keppel's suggestion and reanalyzed the interactive effect of congruency and attention value on these two recognition variables, using the within-cell variance across *stimuli* (d.f. = 24–4 = 20) as the error term. When this was completed, the F test was statistically significant for message recognition ($F(1,20) = 8.4$, $p < .01$) and *not* significant for brand recognition ($F(1,20) = 1.1$, p .3). This is essentially the same result that occured in the original "pooled" analysis. Because the results are the same and the original pooled analysis is more widely understood and simpler to present, it is reported for all four dependent variables.

TABLE 1
Overview of Variance Analyses

Independent Variable	Dependent Variable	MANOVA Results: Wilk's lambda	MANOVA Results: F	MANOVA Results: d.f.	MANOVA Results: p<	ANOVA Results: F	ANOVA Results: d.f.	ANOVA Results: p<
Attention-Gaining Value of Music	Brand recall	.95799	1.76	(4,161)	n.s.	3.94	1,164	n.s.
	Message recall					3.07	1,164	n.s.
	Brand recognition					3.92	1,164	.05
	Message recognition					<1	1,164	n.s.
Music-Message Congruency (MMC)	Brand recall	.96707	1.37	(4,161)	n.s.	2.73	1,164	n.s.
	Message recall					4.64	1,164	.033
	Brand recognition					<1	1,164	n.s.
	Message recognition					<1	1,164	n.s.
Attention by MMC Interaction	Brand recall	.93369	2.85	(4,161)	.025	3.94	1,164	.05
	Message recall					4.64	1,164	.033
	Brand recognition					2.51	1,164	n.s.
	Message recognition					5.54	1,164	.02

TABLE 2
Cell Means and Standard Deviations for Experiment[1]

	Attention-Gaining Value					
	Low		High			
Dependent Variable	Low Congruency (n=42)	High Congruency (n=42)	Low Congruency (n=42)	High Congruency (n=42)	Total (N=168)	Control Group (n=64)
Brand Recall	.286	.262	.286	.548	.345	.516
	(.457)	(.445)	(.457)	(.504)	(.477)	(.504)
Message Recall	1.476	1.476	1.381	2.405	1.685	1.953
	(1.518)	(1.311)	(1.431)	(1.849)	(1.583)	(1.786)
Brand Recognition	.786	.714	.810	.929	.810	.891
	(.415)	(.457)	(.397)	(.261)	(.394)	(.315)
Message Recognition	.667	.476	.500	.667	.577	.734
	(.477)	(.505)	(.506)	(.477)	(.495)	(.445)

[1]Table entries are means (standard deviations).

d.f. = 82, $p < .04$), but not under the high attention-gaining condition (t = -1.55, n.s.).

Comparisons with Nonmusical Control Ads

The inclusion of no-music control groups in our design allows us to compare the performance of musical ads with nonmusical versions of the same ads. Though we had no *a priori* hypotheses concerning the relative performance of musical versus nonmusical ads, we examined this issue in a series of exploratory analyses. Control group means appear as horizonal dash lines on Figures 2, 3, and 4.

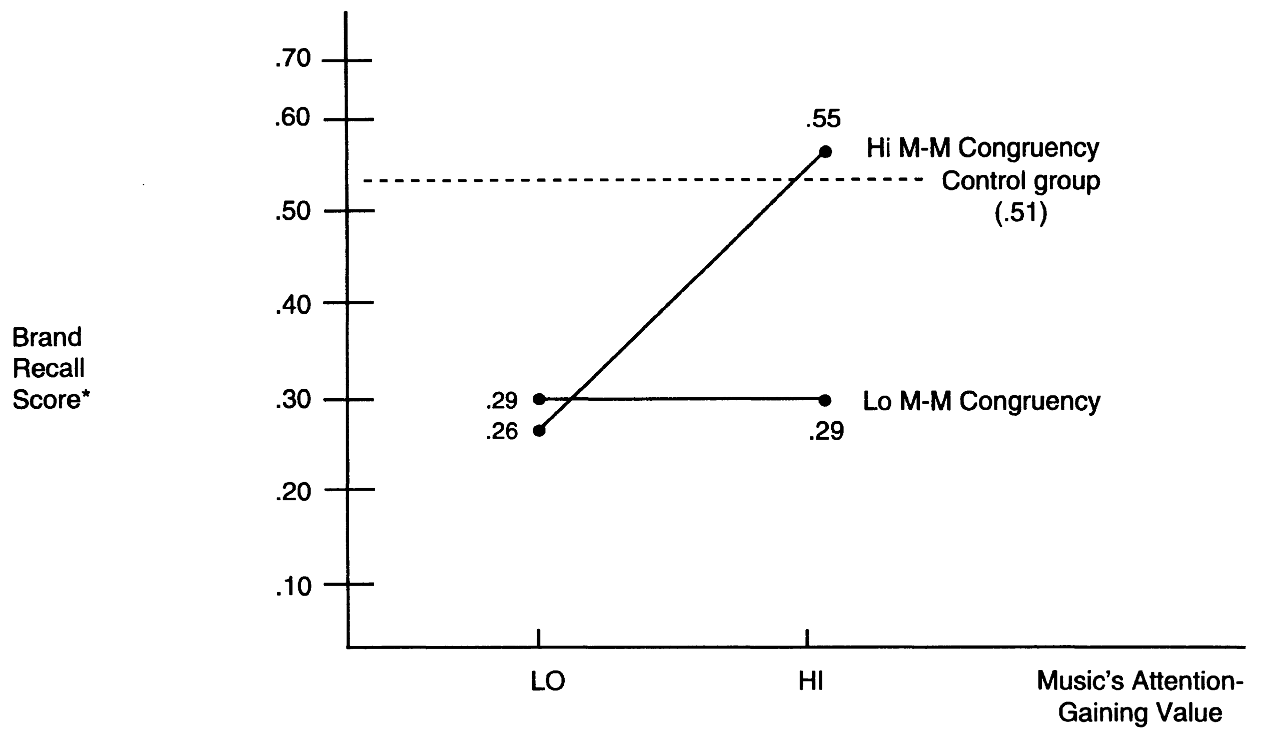
The nonmusical "control" versions of the test ads performed significantly better on brand recall ($\overline{X}_{control}$ = .51, minimum t for contrasts = 2.38, d.f. = 104, $p < .02$) than all the musical ads except the high-attention value/ high-congruency ads ($\overline{X}$ = .55). The nonmusical control ads scored equally as well as the "high-high" ads (t = -.32, n.s.) on brand recall. There were no statistical differences between the nonmusical ads and the treatment ads in terms of message recall (t's for all contrasts n.s.).

Though there were no statistical effects of musical treatments on brand recognition, the nonmusical control ads ($\overline{X}$ = .89) actually performed *better* than the low-attention value/high-congruency musical ads ($\overline{X}$ = .71; t = 2.35, d.f. = 104, $p < .02$) on this measure. On the message recognition measure, the nonmusical control ads ($\overline{X}$ = .73) performed better than both the low-attention value/high-congruency ($\overline{X}$ = .48, t = 2.77, d.f. = 104, $p < .007$) and high-attention value/low-congruency ads ($\overline{X}$ = .50, t = 2.51, d.f. = 104, $p < .014$).

Discussion and Conclusion

We examined the proposition that ad recall and recognition are enhanced by attention-gaining background music that communicates message-congruent meanings (relative to attention-gaining music that communicates message-incongruent meanings). This proposition received fairly consistent, but not uniform, empirical support. The interaction between music-message congruency and music's attention-gaining value was of the predicted shape and statistically significant

FIGURE 2
Interactive Effect of Music's Attention-Gaining Value with Music-Message Congruency on Brand Recall



F (1,164) = 3.94, $p < .05$

*Each cell mean represents the aggregation of six test ads.

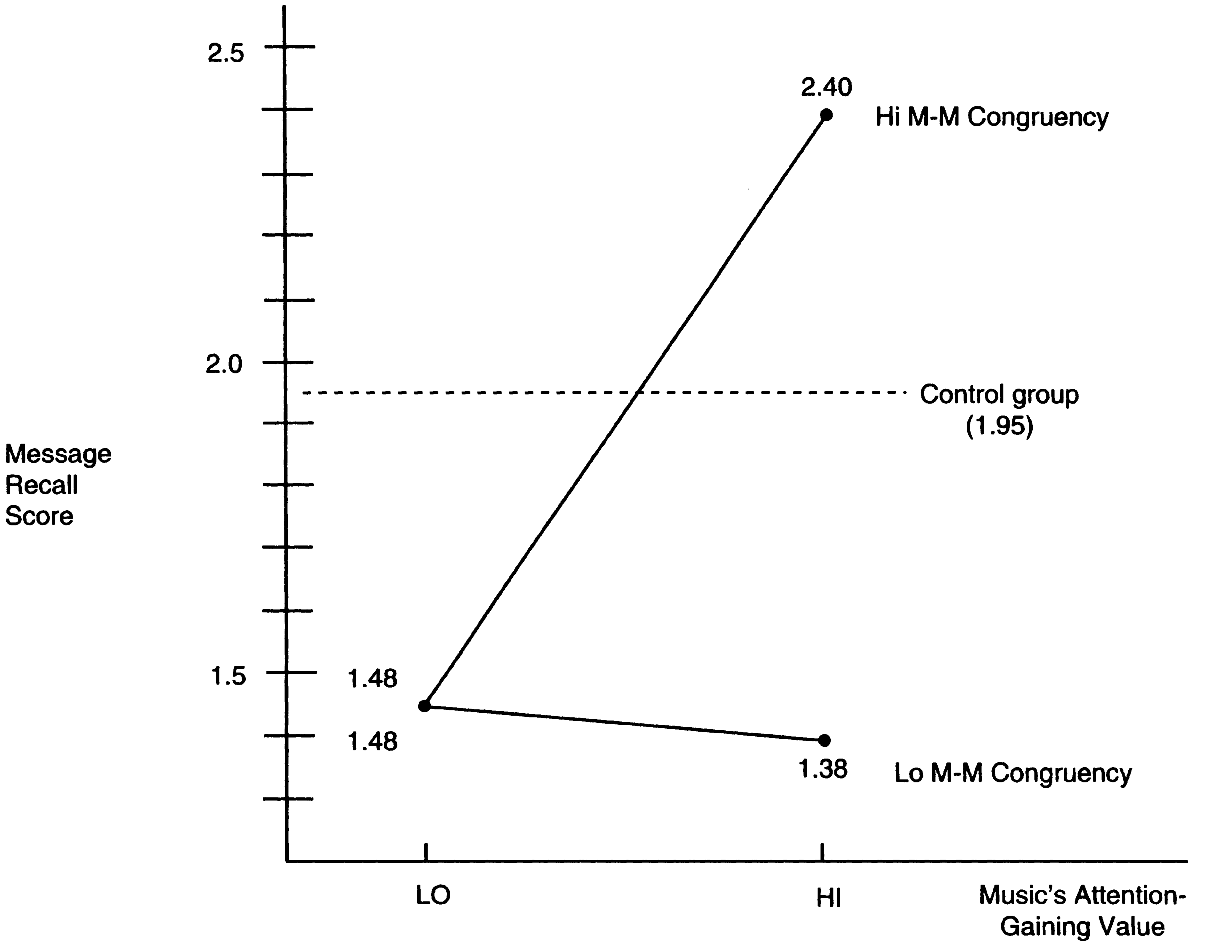
($p < .025$) in the MANOVA on all four memorability measures, as well as the individual variance analyses (ANOVAs) for brand recall, message recall, and message recognition. Though a plot of the results for brand recognition appeared to follow the same pattern, this interaction was not statistically significant. This result might be explained partially by the relative difficulty of the processing tasks demanded by different measures of ad memorability. Brand name recognition is probably the easiest task among memorability measures (see Singh, Rothschild, and Campbell 1988). Most of our subjects (more than 83%), regardless of treatment group, had no trouble recognizing the advertised brand. As a result, there was little variation in this measure.

Still, our study suggests that music-message congruency can moderate the influence of music's attention-gaining value on at least some aspects of ad recall and recognition. When congruency is high, attention-gaining music seems to contribute positively to these outcomes. When congruency is low, attention-gaining music seems to serve more as a distraction from ad processing. This interactive phenomenon may help explain some of the conflicting findings reported in previous research on the relationship between background music and ad effectiveness. Perhaps studies reporting positive effects of music on message reception employed music of higher congruency and attention value than those reporting negative effects. This would parsimoniously explain why music sometimes facilitates and sometimes interferes with message reception.

Our study has some interesting parallels to an earlier psychological study by Hastie and Kumar (1979) concerning stimulus congruity. Their study presented information that varied in internal consistency. Recall was found to be higher for moderately incongruous information. On the surface, our findings seem to contradict this earlier finding; however, the apparent contradiction can be explained in terms of differences in stimuli and exposure conditions. Hastie and Kumar's subjects were allowed to scrutinize elements of information presented *sequentially*, whereas our subjects had to sort out two auditory signals (background music and spoken message) that were *simultaneously* vying for their attention. Therefore, we predict (and our data seem to confirm) that when background music is both attention-gaining and message-incongruent, it will pull listeners' attention away from the message, thereby harming recall. Boltz, Schulkind, and Kantra (1991) found that the effect of "mood incongruent" music on recall of filmed events depended on whether the music was presented *concurrently* or *sequentially* with the scene's outcome. Future research could investigate the effect of presenting a message and incongruent/ high attention value music *sequentially* in ads.

Our primary focus here is on comparing the effects of different types of background music. However, one of the most striking findings is that the no-music ads performed

FIGURE 3
Interactive Effect of Music's Attention-Gaining Value with Music-Message Congruency on Message Recall

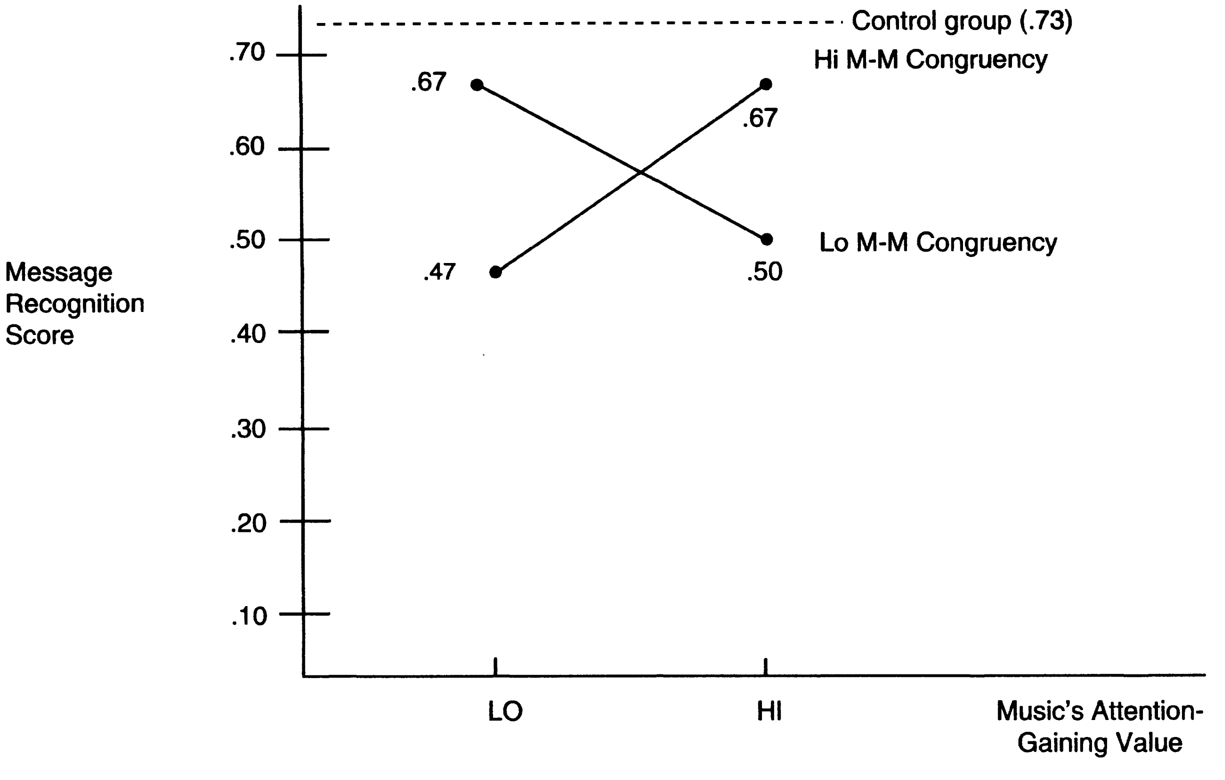


$F\ (1,164) = 4.64,\ p < .033$

about as well as (and in some cases better than) the musical ads in terms of recall and recognition. As discussed previously, music is used almost universally in broadcast ads, partially because of the widely held belief that it is an effective aid to recall (Hecker 1984). Lipman (1991) recently argued that this practice reflects the "bandwagon" mentality of some advertisers and agencies and that music may actually interfere with message reception. The findings of this study offer some support for these concerns. It is premature, however, to conclude that background music should be excluded from broadcast ads. Even music that interferes with message recall and other cognitive processes could enhance ad effectiveness through an emotional route, such as mood elevation (Gardner 1985) and affect transfer (Lutz 1985). In addition, music's distracting effects may have benefits over repeated exposures (Anand and Sternthal 1990).

The present study has several limitations that should be addressed in further research. First, our stimulus music was purely instrumental and generally unfamiliar to listeners. The moderating effect of music-message congruency should be tested with other types of music, including vocals and well-known songs, to assess generality. Second, our hypotheses were tested in a radio advertising context. The generality of the findings to TV advertising should be explored further. Third, our sample was limited to one population group—college students. Though this group was an appropriate target audience for each test ad, their membership in the "MTV generation" may affect the way they respond to both auditory and visual elements of broadcast ads. Fourth, though our measures of memorability are consistent with those used in past academic research (e.g., Sewall and Sarel 1986; Singh, Rothschild, and Churchill 1988), they differ somewhat from those typically used in commercial copy testing, both in terms of how the questions were phrased and the time lag between exposure and testing. Additional research should examine whether music has varying effects on alternative measures of ad recall, and particularly whether delaying measurement (e.g., day-after recall) dimin-

FIGURE 4
Interactive Effect of Music's Attention-Gaining Value with Music-Message Congruency on Message Recognition



F (1,164) = 5.54, $p < .02$

ishes or augments the effects observed in this study. Finally, further research should introduce additional elements of real-world ad exposure, such as environmental distraction and repetition, to see if and how they might alter the effects observed in this study.

With these limitations in mind, we suggest two tentative implications of our findings for the use of music in advertising. First, the findings suggest that advertisers should consider the use of music in relation to their communication goals. In cases in which brand awareness and knowledge are primary objectives, the design or selection of music should be approached with extreme caution to avoid music that may inhibit consumers' reception of message and brand name. Second, if an advertiser uses music, it should be pretested for its ability to generate attention and for congruency of music- and message-generated thoughts, images, and feelings. Tentatively, our results would seem to suggest the selection of highly attention-gaining, highly congruent music over other categories of music.

In general, this study supports Bruner's (1990) contention that music, rather than being a homogeneous "sonic mass," is a complex, multidimensional stimulus that can affect marketing outcomes in various and sometimes surprising ways. This is an important area for continued research.

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