The Impact of Music on Consumers' Reactions to Waiting for Services

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This article examines the effects of music on consumers' reactions to waiting for services. An experimental study was conducted to test three different constructs—perceived wait duration, emotional evaluation of the service environment, and emotional response to the wait—as mediators between music and behavioral response to the service organization. Results of the study showed that, regardless of its valence, music ameliorates emotional evaluation of the service environment which in turn positively affects approach behavior towards the service organization. Furthermore, positively valenced music triggers a more positive emotional response to the wait and a stronger approach behavior towards the service organization than negatively valenced music. Although positively valenced music also increases perceived wait duration, the latter does not have a significant effect on consumers' behavioral response to the service organization.

In many services, waiting is becoming a pivotal factor in satisfaction and quality judgement (Dube, Schmitt, and Leclerc, 1991; Taylor, 1994; Taylor and Claxton, 1994). Many providers attempt to reduce the negative effects of waiting by cutting the length of the wait through modifying the service delivery system (Sasser, 1976; Shostack, 1987). When waiting is inevitable, service firms may still reduce the negative effects by manipulating consumers' perceptions of the wait such as by playing music as a background to the service environment (Larson, 1987; Katz, Larson, and Larson, 1991). In this article, we examine empirically the impact of music on consumers' reactions to waiting for services.

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The resource allocation model suggests that music reduces the negative effects of waiting because it distracts attention from the passage of time, and, as a result, consumers perceive the length of the wait to be shorter than that when there is no music (Zakay, 1989; Zakay and Hornik, 1991). On the other hand, there is also evidence showing that the more consumers enjoy a piece of music played during a time period, the longer they tend to perceive the period to be (Kellaris and Kent, 1991). According to this finding, in any waiting situation, playing music in the service environment may actually increase rather than decrease the length of the wait perceived by consumers. Two interesting questions follow. First, if music leads to longer rather than shorter perceived wait duration, should marketers avoid playing music in the service environment whenever they put their customers on hold (Kellaris and Kent, 1991)? Second, if playing music still results in a more positive service evaluation, what other mechanisms could possibly explain this positive effect of music?

Bitner (1992) has argued that music is one key ambient condition of the servicescape. Playing music is like adding a positive feature to the service environment and the outcome is a more positive emotional evaluation of the environment (Baker, Grewal, and Levy, 1992). Alternatively, there is a general consensus that music is a powerful mood influencer (Bruner, 1990; Yalch and Spangenberg, 1990). This mood effect may then influence consumers' emotional response to the wait (e.g., getting less upset with the wait), which has been shown to affect the evaluation of any service encounter that involves waiting (Dube, Schmitt, and Leclerc, 1991; Hui and Tse, 1996). Accordingly, in addition to perceived wait duration (defined as how long one believes one has waited), emotional evaluation of the service environment and emotional response to the wait may also explain any positive impact of music on consumers' behavioral responses to the service organization. One major objective of this study is to explore and empirically test the effects of music on consumers' reactions to waiting for services which include perceived wait duration, emotional evaluation of the service environment, emotional response to the wait, and approach behavior towards the service organization.

Various components of music such as time-related expressions, pitch-related expressions, and texture-related expressions are also expected to influence consumers' cognition, affect, and behavior (Bruner, 1990; Kellaris and Kent, 1991). One music property that has attracted considerable attention from marketing researchers is music valence (i.e., liked vs disliked music; see, for example, Gorn, 1982). Past evidence suggests that music valence may influence both time perceptions (Kellaris and Kent, 1991) and a person's mood state (Baker, Grewal, and Levy, 1992; Yalch and Spangenberg, 1990). Another key objective of this study is to empirically test the impact of music valence on consumers' psychological and behavioral responses to waiting for services.

This article attempts to identify and test the psychological mechanism underlying any positive impacts of music on consumer dissatisfaction with waiting for services. Various potential effects of playing music on consumers' reactions to waiting are identified from the extant literature and they are integrated into a single theoretical model. We then report the results of an experimental study designed to test the model. Managerial implications and future research are also discussed.

CONCEPTUAL BACKGROUND

At least three different effects of music on consumers' reactions to waiting for a service can be identified from extant literature.

Perceived Wait Duration

From the consumers' perspective, one key negative outcome of waiting is time lost. Accordingly, past researchers often considered perceived wait duration as a key construct in explaining consumers' reactions to the wait (see, for example, Hornik, 1984; Chebat, Gelinas-Chebat, and Filiatrault, 1993). The longer a person believes s/he has waited, the more dissatisfied s/he will be with the service. Moreover, there is a general consensus that perceived wait duration, although determined primarily by the objective duration of the wait, is also a function of many situational and personal variables (Hornik, 1984, 1993). For example, Hornik (1984) has found that people who enjoy shopping perceive a wait at the cashier of a retail outlet as shorter than those who do not enjoy shopping. Among others, availability of environmental distractions is often considered as a variable that affects perceived wait duration. Maister (1985), for example, has proposed that "unoccupied time feels longer than occupied time" (p. 115).

Zakay's (1989) resource allocation model gives a more comprehensive explanation of the impact of environmental distractions such as music on perceived wait duration. According to the model, the 'time estimate' is said to be a function of the number of "time units" recorded by a cognitive timer which is activated when an individual's attention is paid to the passage of time. In other words, a given time period is often perceived as longer when a person becomes more conscious of the passage of time. Furthermore, Zakay and Hornik (1991) have argued that in any waiting situation, a person will naturally engage in prospective time estimation, for instance, s/he will pay attention to the passage of time and will actively estimate the duration of the wait s/he has experienced. On the other hand, music, especially positively valenced music, will likely distract consumers' attention from the passage of time and will release energy from the cognitive timer. The outcome will be shorter perceived wait duration, which in turn will lead to more positive service evaluation.

However, empirical evidence shown by extant time estimation literature regarding the impact of music on time perceptions is far from conclusive. While there is some empirical support for the resource allocation model (e.g., McKay and Timothy, 1977) that music reduces perceived wait duration, Kellaris and Kent (1991) recently found that the more consumers favor a piece of music played in a time period, the longer they will perceive the period to be. The latter finding, according to Kellaris and Kent (1991), appears to support the storage size model which states that time estimate is a positive function of the amount of information processed during the time period (Ornstein, 1969). Positively valenced music will stimulate more thoughts and feelings than negatively valenced music, and therefore consumers will perceive a time period to be longer when it is filled with positively valenced music than when it is filled with negatively valenced music.

As most of the past studies were not conducted in the context of waiting and their findings were rather equivocal, we formulate the first two hypotheses in a more general manner:

H1: *When there is a wait for service, playing music in the service environment will affect consumers' perceived wait duration, and this will in turn affect their approach behavior towards the service organization.*

H2: *When there is a wait for service, the valence of music played in the service environment will affect consumers' perceived wait duration, and this will in turn affect their approach behavior towards the service organization.*

Emotional Evaluation of the Service Environment

There is a general consensus that the service environment is not only an indispensable component of service production, but also part of the service offering itself (Bitner, 1992). It is a crucial factor that consumers tend to consider in both pre-purchase (Shostack, 1977) and post-purchase service evaluations (Bitner, 1990). According to the widely applied SERVQUAL Scale (Parasuraman, Zeithaml, and Berry, 1988), the service environment is a key factor of the service element "tangibles." In other words, evaluation of the service environment is expected to be a key determinant of consumers' service quality judgement.

Bitner (1992) has identified three different dimensions underlying the service environment (labeled the "servicescape"): ambient conditions, space/function, and signs/symbols. Music is one ambient condition that is expected to influence consumers' reactions to the servicescape. In other words, playing music in the service environment is like adding a favorable feature to a product, and the outcome is a more positive evaluation of the environment. Baker, Grewal, and Levy (1992) have empirically confirmed that music as an ambient factor produces significant effects on consumers' affective response to the retail environment. Moreover, abundant studies in environmental psychology (e.g., Mehrabian and Russell, 1974) and in marketing (e.g., Baker, Grewal, and Levy, 1992) have also shown that emotional evaluation of the environment is a key determinant of one's approach behavior towards the environment. Finally, as a more positive ambient condition, positively valenced music is also expected to give rise to a more positive impact on the evaluation of the service environment than negatively valenced music. We therefore hypothesize that:

H3: *When there is a wait for service, playing music in the service environment will positively affect emotional evaluation of the service environment, and this will in turn result in a more positive behavior towards the service organization.*

H4: *When there is a wait for service, playing positively valenced music in the service environment will result in a more positive emotional evaluation of the service environment and a more positive behavior towards the service organization than playing negatively valenced music.*

If music only affects consumers' emotional evaluation of the service environment, it would produce the same impact on consumers' behavioral responses to the service organization regardless of whether the service encounter involves a wait or not. According to this perspective, any positive impact of music on behavioral responses to the service organization is simply due to the fact that consumers find the service environment more positive while they are going through the service encounter. The next question is whether music would also produce an effect on consumers' evaluation of the wait per se.

Emotional Response to the Wait

Waiting incurs both economic and psychological cost (Osuna, 1985). Not only will a person lose some of his/her valuable asset, for instance, time (the economic cost), s/he will also experience a considerable amount of stress during the wait (the psychological cost). Accordingly, in addition to perceived wait duration, consumers' emotional response to the wait (e.g., Dube, Schmitt, and Leclerc, 1991; Hui and Tse, 1996; Katz, Larson, and Larson, 1991; Taylor, 1994) has been widely accepted as a key construct in explaining the impact of waiting on service evaluation.

Music is well known to marketing researchers as a mood influencer (Bruner, 1990). According to the mood congruence proposition (Schwarz and Clore, 1983), a more positive mood is expected to spill over to the evaluation of various aspects of the service encounter including one's emotional response to the wait (Chebat, Gelinas-Chebat, and Filiatrault, 1993). Accordingly, in addition to a more pleasant service environment, music may also produce an effect to lower the total amount of stress experienced by consumers during the wait. In the same vein, positively valenced music, as a stronger mood influencer, should trigger a more positive consumer emotional response to the wait than negatively valenced music. We therefore hypothesize that:

H5: *When there is a wait for service, playing music in the service environment will affect positively emotional response to the wait, and this will in turn result in a stronger approach behavior towards the service organization.*

H6: *When there is a wait for service, playing positively valenced music in the service environment will result in a more positive emotional response to the wait and a stronger approach behavior towards the service organization than playing negatively valenced music.*

It is important to note that emotional evaluation of the service environment should be distinguished from emotional response to the wait. Both constructs refer to consumer prefer-

ences and evaluations which, unlike mood, would require a specific target to be meaningful (Fiske and Taylor, 1991, p. 411). Alternatively, we argue here that music will produce a positive feeling (mood) during the service encounter which will then positively affect consumers' emotional responses to at least two crucial aspects of the service encounter: the service environment and the wait per se. While emotional evaluation of the service environment is primarily a function of various ambient, design, and social factors (Baker, Grewal, and Levy, 1992), emotional response to the wait is a function of many environmental and nonenvironmental factors such as the service stage at which the wait occurs (Dube, Schmitt, and Leclerc, 1991) and whether consumers know in advance how long they will have to wait (Hui and Tse, 1996; Katz, Larson, and Larson, 1991).

Assuming waiting is intrinsically an aversive experience, one is likely to perceive the service environment somewhat negatively when one experiences a wait. For example, an impatient consumer in the waiting line may naturally find the service environment stressful. Accordingly, a more positive response to the wait may also result in a more positive evaluation of the service environment. Our last hypothesis is therefore formulated as follows:

H7: *Emotional evaluation of the service environment is a positive function of emotional response to the wait.*

Finally, Hornik (1993) has found that the more positive (negative) a person's mood is, the shorter (longer) s/he will perceive the duration of a time period to be. Accordingly, music valence is expected to influence perceived wait duration through consumer emotional response to the wait. We therefore hypothesize that:

H8: *Perceived wait duration is a negative function of emotional response to the wait.*

A summary of our hypotheses can be represented by the model shown in Figure 1.

METHODOLOGY

An experiment was conducted to examine the impact of music on consumer' psychological and behavioral reactions to waiting in the setting of a bank branch. Experimental manipulation included four musical stimuli that vary according to ten levels of music valence (positive and negative) and a no music control group.

Subjects

Subjects were undergraduate business students in a Canadian university, with a roughly equal number of males (59) and females (57) and an average age of 24.3 years. The 116 subjects were invited to participate in a study of consumer satisfaction with banking ser-

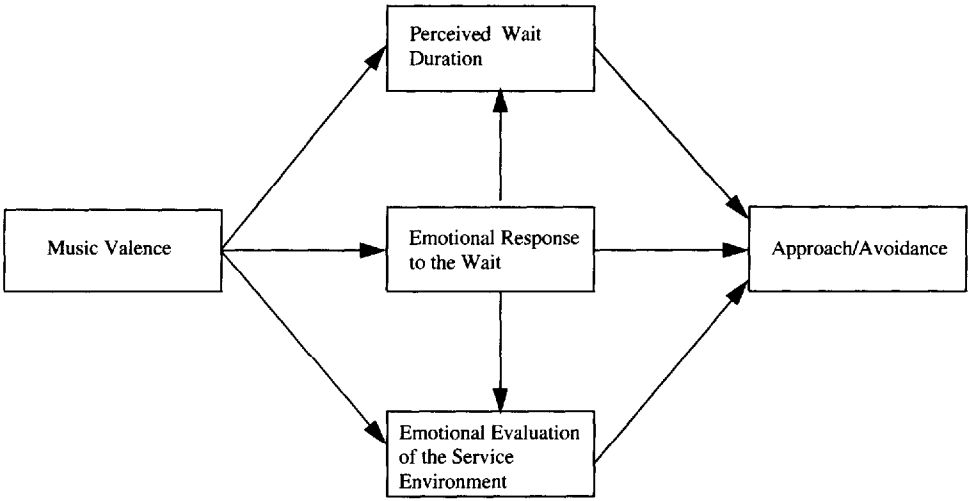

Figure 1. **The Effects of Music on Customer's Reactions to Waiting for Services**

vices and were randomly assigned to one of the five experimental conditions (four musical and one no-music control) in groups.

Development of Experimental Stimuli

A first selection of musical extracts was made by a musicologist to develop 36 musical extracts while controlling for the following parameters: flowing rhythm, consonant harmony, major mode, medium or high pitch, presence of orchestration, and a soft or medium volume. The expert also selected musical extracts that she judged to be of low or moderate familiarity for lay people between 20 and 30 years of age.

Fifteen "experts" (7 males and 8 females) from the same population as the main study listened to the 36 musical extract and indicated their liking of each using a single-item scale (1-9 rating) of pleasure-displeasure. The experts also indicated their level of familiarity with each of the musical extracts on a 9-point bipolar scale. Four musical extracts, two high and two low on the pleasure scores, were selected. All the extracts have relatively low familiarity scores and cover a broad range of tempo (measured by beats per minute).

Procedure

Subjects were shown a video which was made in a branch of a real bank with either one of the four selected musical extracts as background or no music background. They

were told that "everything they are going to see and hear from the video is exactly the same as in the real setting." Subjects were asked to imagine themselves standing in front of the waiting line, being the next person to be served for a routine bank transaction. The video showed a female teller, the customer who is currently being served, and different views of the branch environment as one would normally look at while standing in line. The "wait" lasted for four minutes and the video ended as the protagonist was to be served. Sound volume was kept at the same level for all the experimental groups. After viewing the video, subjects completed a questionnaire which "measures their feelings about the bank."

Ecological Validity of the Stimuli

The use of video in similar studies has been found to be ecologically valid in diversified settings (e.g., Carpman, Grant, and Simmons, 1985). Recently, Bateson and Hui (1992) have demonstrated the validity of video for theory testing that requires specific environmental settings. In our study, the use of video allows strict experimental control of environmental cues. This point is particularly important in studies related to services, and to buyer-seller interactions in particular. The high people content, as Bateson and Hui (1992) have stated, including both personnel and consumers, introduces much experimental uncertainty in field studies. Both the variability in mood of all parties and the frailty of operating systems compound this problem.

Subjects of the main study rated the scenarios as fairly consistent with reality (a mean of 5.07 on a 7-point scale from not at all to very much) and said that they would not be too surprised to encounter the scenario in real life (a mean of 2.58 on a 7-point scale from not at all to very much). Importantly, these two ratings did not differ across the five experimental conditions ($F(3, 92) = .61$ and .82 respectively, $p = ns$).

Dependent Measures

The questionnaire asked subjects to report: (a) the duration of the wait in minutes and seconds using an open-ended question (perceived wait duration); (b) the extent (from "very much" to "not at all") to which they find the bank setting stressful, tense and rushed (emotional evaluation of the service environment); (c) the extent (from "very much" to "not at all") to which they feel frustrated, irritated, and dissatisfied with the wait (emotional response to the wait); and (d) the extent (from "very much" to "not at all") to which they like the bank, how likely (from "certainly yes" to "certainly no") they will recommend the bank to their friends, and how likely (from "very likely" to "very unlikely") they will stay as customers of the bank (approach behavior towards to the service organization). Seven-point scales were used for (b), (c) and (d). Cronbach's α (.78, .83 and .84, respectively) indicated that the reliability of the three measures is acceptable.

RESULTS

Results obtained from a principal-component analysis indicated that the measures of emotional evaluation of the service environment, emotional response to the wait, and approach behavior towards the service organization captured three correlated but distinctive constructs. The analysis produced a three-factor solution (with eigenvalues greater than 1.00) which explained 74.0 percent of the total variance in the items.

Confirmatory factor analysis was then used to serve as a more stringent test on the discriminant validity of the three constructs. The three-factor model, when tested by the program LISREL 7 (Jöreskog and Sörbom, 1989), produced a chi-square value of 30.53 with 24 degrees of freedom (p = .168), which indicate a good fit (the parameter estimates are given in Table 1). On the other hand, the goodness-of-fit of the one-factor solution dropped below the acceptable level (χ^2 = 159.10, df = 27, p = .000). We could therefore conclude that the three constructs do have discriminant validity (cf. Baker, Grewal, and Levy, 1992).

Comparison of Group Means

As there is evidence suggesting that music tempo may influence time estimation (Zakay, Nitzan, and Glicksohn, 1983), we included tempo as a covariate when testing the impact of music valence (positive vs negative music) on the dependent constructs. Results indicated

TABLE 1

Confirmatory Factor Analysis[a]

Factor Loadings	*Factor 1*	*Factor 2*	*Factor 3*
Emotional Evaluation of the Service Environment:			
Stressful	.837		
Tense	.721 (7.06)		
Rushed	.655 (6.51)		
Emotional Response to the Wait:			
Frustrated		.739	
Irritated		.894 (8.23)	
Dissatisfied		.741 (7.53)	
Approach Behavior toward the Service Organization:			
Liking			.762
Words-of-mouth			.820 (8.27)
Loyalty			.813 (8.23)
Correlations between Factors			
Factor 1	1.000 (4.82)		
Factor 2	.522 (3.90)	1.000 (4.31)	
Factor 3	.602 (4.33)	.521 (3.85)	1.000 (4.50)

Notes: [a]Standardized estimates.
Numbers in parentheses are the t-values of the estimates.
Estimates without t-values are fixed parameters.

TABLE 2

Mean Ratings of Dependent Constructs Across Different Experimental Groups

	Positively Valenced Music[a]	*Negatively Valenced Music*[b]	*No Music*
Perceived wait duration[c]	7.02	5.94	4.93
Emotional evaluation of the service environment[d]	4.70	4.29	3.33
Emotional response to the wait[e]	3.71	2.92	2.95
Approach behavior toward the service organization[f]	3.87	3.23	2.87

Notes: [a]Mean of the two positively valenced musical extracts.
[b]Mean of the two negatively valenced musical extracts.
[c]In minutes.
[d]1-7 ratings. Higher ratings imply more positive evaluations of the service environment.
[e]1-7 ratings. Higher ratings imply more positive emotional responses to the wait.
[f]1-7 ratings. Higher ratings imply more positive approach behaviors toward the service organization

that the covariate did not have any significant effect on the dependent constructs, and we therefore decided to (a) drop music tempo in further analysis, and (b) pool the four music groups into two according to music valence (i.e., one positively valenced music group and one negatively valenced music group).

The mean ratings of the two music groups and the no music control group are given in Table 2. Significant effects on all the four dependent constructs—perceived wait duration ($F(2, 113) = 3.83$, $p < .05$), emotional evaluation of the service environment ($F(2, 113) = 5.75$, $p < .01$), emotional response to the wait ($F(2, 113) = 4.21$, $p < .05$), and approach behavior towards the service organization ($F(2, 113) = 5.03$, $p < .01$)—were obtained when they were analyzed as a function of music valence with the no music group as one level.

As shown in Table 2, the group with positively valenced music reported the most positive emotional evaluation of the service environment (the scale was recoded in the positive direction), the most positive emotional response to the wait (the scale was also recoded in the positive direction), the strongest approach behavior towards the service organization, and the longest perceived wait duration. The scores of the negatively valenced music group were in between those of the positively valenced music group and the no music group, except for emotional response to the wait, where the score of the negatively valenced music group was virtually the same as that of the no music group. Pair-wise analysis using the Scheffe procedure indicated that there were significant differences in perceived wait duration, emotional evaluation of the service environment, and approach behavior towards the service organization between the positively valenced music and the no music groups. There were also significant differences in the scores of (a) emotional evaluation of the service environment between the negatively valenced music and the no music groups, and (b) emotional response to the wait between the positively valenced music and the negatively valenced music groups.

In summary, our results indicate that music produces significant effects on all the four dependent constructs and these effects are moderated by whether consumers like or dislike the music. Subjects tended to report longer perceived wait durations but more positive emo-

tions when there was music, especially positively valenced music. The question remaining to be answered was then whether service evaluation will become more negative as a result of longer perceived wait duration or whether it will become more positive because of more positive emotional evaluation of the service environment and emotional response to the wait (Kellaris and Kent, 1992). Results obtained from our study appear to support the latter as music valence produced a positive rather than negative effect on consumers' approach behavior towards the service organization.

Structural Equations Model

To examine the mediating effects of the three constructs—perceived wait duration, emotional evaluation of the service environment, and emotional response to the wait—we tested the structural equations model shown in Figure 2. The model included two dummy variables—PMUSIC (1 for positively valenced music; 0 otherwise) and MUSIC (1 for negatively valenced music; 0 otherwise)—to represent the two music groups and the no-music control group. Due to the two categorical variables, a pseudovariable (i.e., "one") was added to the model and the augmented moment matrix was used in the LISREL estimation (Jöreskog and Sörbom, 1989). The pseudovariable "is needed for com-

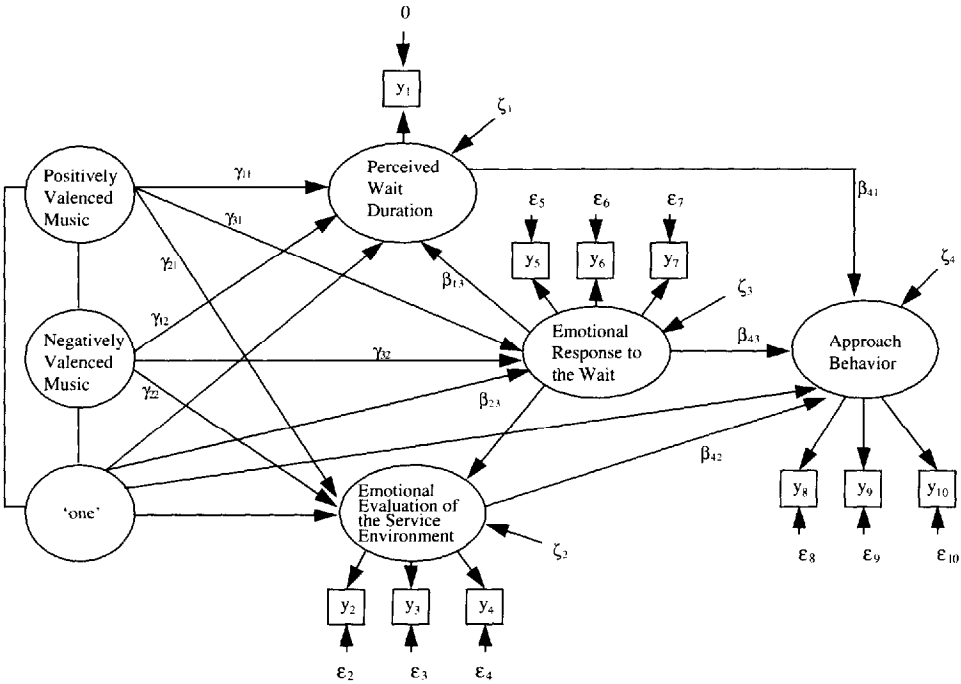

Figure 2. **The Structural Equations Model**

puting the correct likelihood function and standard errors of estimates" (Bagozzi and Yi, 1989, p. 272).

The model produced a chi-square value of 58.23 with 51 degrees of freedom, an adjusted goodness of fit index of .876, and a root mean square residual of .129. The probability level of the chi-square value (p = .227) indicated an excellent fit of the model. The parameter estimates and their corresponding t-values are as shown in Table 3. We also tested an alternative model that allowed a direct effect from both music variables (PMUSIC and MUSIC) on approach behavior towards the service organization. This model produced a chi-square value of 55.39 with 49 degrees of freedom (p = .246), which was not significantly different from that of the original model tested ($\chi^2(2) = 2.84$, p = *ns*). Both added paths were found to be nonsignificant (t-values = 1.32 and .19, p = *ns*). These results suggest that controlling for the effects of perceived wait duration, emotional evaluation of the service environment, and emotional response to the wait, the experimental manipulations did not produce a significant effect on approach behavior toward the service organization. In other words, the three mediating variables—perceived wait duration, emotional evaluation of the service environment, and emotional response to the wait—together could adequately explain the impact of music and music valence on approach behavior towards the service organization.

TABLE 3

Standard LISREL Estimates

Parameters	*Estimates*	*t-values*
λ_{11}	6.869	fixed parameter
λ_{22}	4.297	fixed parameter
λ_{32}	4.226	25.94
λ_{42}	4.970	26.25
λ_{53}	3.656	fixed parameter
λ_{63}	3.507	26.68
λ_{73}	3.316	23.15
λ_{84}	3.207	fixed parameter
λ_{94}	3.692	29.10
$\lambda_{10,4}$	4.002	27.12
γ_{11}	.230	3.22
γ_{21}	.137	2.62
γ_{31}	.151	2.23
γ_{12}	.098	1.35
γ_{22}	.141	2.66
γ_{32}	−.000	−.01
β_{41}	−.085	−1.28
β_{42}	.487	3.65
β_{43}	.272	2.68
β_{13}	−.266	−2.31
β_{23}	.370	4.32
ψ_{11}	.168	7.50
ψ_{22}	.062	4.88
ψ_{33}	.135	5.98
ψ_{44}	.064	4.99

Perceived Wait Duration (H1 and H2)

As shown in Table 3, the estimated values of γ_{11} (.230) and γ_{12} (.098) are both positive although only the prior is significant (t-values = 3.22 and 1.35 respectively). These results indicate that the presence of music, especially positively valenced music, resulted in longer rather than shorter perceived wait durations. Moreover, the effect of perceived wait duration on approach behavior toward the service organization, albeit in the expected direction, was not significant (β_{41} = –.085, t-value = –1.28). We could therefore conclude that perceived wait duration was not a significant mediator between music and approach behavior towards the service organization, hence rejecting H1 and H2.

Emotional Evaluation of the Service Environment (H3 and H4)

On the other hand, both music variables (PMUSIC and MUSIC) produced a significant positive effect on emotional evaluation of the service environment (γ_{21} = .137, t-value = 2.62; and γ_{22} = .141, t-value = 2.66), which in turn gave rise to a significant positive effect on approach behavior towards the service organization (β_{42} = .487, t-value = 3.65). In other words, music made the service environment seem more positive to subjects, and this in turn resulted in a stronger approach behavior toward the service organization. To test whether valence moderates the impact of music on emotional evaluation of the service environment, we tested an alternative model by restricting γ_{21} and γ_{22} to be equal. This restricted model produced a chi-square value of 58.25 with 52 degrees of freedom (p = .256). The chi-square difference test indicated that the fit of the two nested models was not significantly different ($\chi^2(1)$ = .02, p = *ns*). Hence we could not reject the hypothesis that the two parameters are equal. These results (a) confirmed H3 that emotional evaluation of the service environment is a key mediator between music and approach behavior towards the service organization; but (b) rejected H4 as valence does not moderate the impact of background music on emotional evaluation of the service environment.

Emotional Response to the Wait (H5 to H8)

Approach behavior towards the service organization was also found to be a positive function of emotional response to the wait (β_{43} = .272, t-value = 2.68). In other words, a more positive emotional response to the wait would lead to a stronger approach behavior towards the service organization. Moreover, between the two music groups, only the one with positively valenced music produced a significant positive effect on emotional response to the wait (γ_{31} = .151, t-value = 2.23; γ_{32} = –.000, t-value = –.01). When γ_{31} and γ_{32} were restricted to be equal, the modified model produced a chi-square value of 66.57 with 52 degrees of freedom (p = .084) and this indicated (a) a significantly poorer fit of the restricted model than the unrestricted model ($\chi^2(1)$ = 8.34, $p < .001$) and, (b) the two parameters, γ_{31} and γ_{32}, were significantly different. These results support (a) H5 that emotional response to the wait is a key mediator between music and service evaluation, and (b) H6

that positively valenced music will produce a stronger effect on emotional response to the wait than negatively valenced music.

Emotional response to the wait also produced (a) a significant positive effect on emotional evaluation of the service environment (β_{23} = .370, t-value = 4.32), and (b) a significant negative effect on perceived wait duration (β_{13} = −.266, t-value = −2.31). In other words, a more positive emotional response to the wait will result in a more positive emotional evaluation of the service environment and a shorter perceived wait duration, supporting H7 and H8. As shown in Figure 2, positively valenced music produced (a) a positive direct effect (a positive γ_{11}), and (b) a negative indirect effect on perceived wait duration through emotional response to the wait (a positive γ_{31} and a negative β_{13}).

DISCUSSION AND CONCLUSIONS

A summary of the hypothesis testing results is given in Table 4. These results allow us to draw a number of conclusions that deserve particular attention from both marketing researchers and practitioners.

Past researchers (e.g., Zakay and Hornik, 1991) have argued explicitly or implicitly that music distracts consumer attention from the passage of time and therefore reduces perceived wait duration. However, the findings obtained from the present study indicate that perceived wait duration may not be as powerful in registering the impact of environmental

TABLE 4

Summary of Hypothesis Testing

Hypothesis	*Results*	*Explications*
H1 and H2	Rejected	Perceived wait duration is a positive rather than negative function of music (both γ_{11} and γ_{12} are positive) and approach behavior is not a significant function of perceived wait duration (t-value of β_{41} is not significant).
H3	Confirmed	Approach behavior is a significant positive function of emotional evaluation of the service environment (β_{42} is positive and significant), which in turn is a significant positive function of both positively and negatively valenced music (both γ_{21} and γ_{22} are positive and significant).
H4	Rejected	Positively and negatively valenced music do not produce significantly different effects on emotional evaluation of the service environment (γ_{21} and γ_{22} are not significantly different).
H5 and H6	Confirmed	Approach behavior is a significant positive function of emotional response to the wait (β_{43} is positive and significant). However, only positively valenced music produces a significant positive effect on emotional response to the wait (γ_{31} and γ_{32} are significantly different and only the prior is significant).
H7	Confirmed	Emotional evaluation of the service environment is a significant positive function of emotional response to the wait (β_{23} is positive and significant).
H8	Confirmed	Perceived wait duration is a significant negative function of emotional response to the wait (β_{13} is negative and significant).

manipulations such as music on consumers' reactions to the wait. When actual wait duration is held constant, music may ameliorate service evaluation without reducing perceived wait duration. In fact, our subjects tend to report longer perceived wait duration when there is music playing in the bank environment. Like Kellaris and Kent (1991), we find that when positively valenced music is played in the bank, subjects report longer perceived wait duration than with either negatively valenced music or no music. This finding supports the prediction of the storage size model (Ornstein, 1969) that positively valenced music will lead to more information processing and longer perceived wait durations than negatively valenced music. Of course, these conclusions are rather tentative in nature as we held the actual wait duration constant at four minutes across all the experimental conditions. Music may have differential effects on perceived wait duration and service evaluation depending on actual length of wait.

Based on their study results, Kellaris and Kent (1991) have raised a very interesting issue: Would music be an effective tool to alleviate the negative impact of waiting on service evaluation if it increases rather than decreases perceived wait duration? Our study provides a preliminary answer to the question. Music tends to increase perceived wait duration but this is unlikely to produce a negative impact on approach behaviors towards the service organization. Other researchers such as Folkes, Koletsky, and Graham (1987), Hui and Tse (1996), and Katz, Larson, and Larson (1991) have also reported the similar finding that there is a weak relation between perceived wait duration and consumer satisfaction. A direct relation between perceived wait duration and service evaluation may look intuitively appealing, but there is very little empirical support for it.

Our findings reveal that the positive impact of music on approach behavior towards the service organization is mediated largely by emotional evaluation of the service environment and emotional response to the wait. More interestingly, valence moderates the impact of music on emotional response to the wait but not that on emotional evaluation of the service environment. On the one hand, music will ameliorate emotional response to the wait only when the music is liked by consumers. On the other hand, music, regardless of its valence, will make the service environment look more positive to consumers in waiting lines. Since classical music has been shown to contribute to a prestige-image ambient environment (Baker, Grewal, and Levy, 1992; Baker, Grewal, and Parasuraman, 1994), it is not at all surprising to see that even disliked classical music is able to improve consumers' emotional evaluation of the service environment. However, waiting is intrinsically aversive to consumers and therefore a more powerful environmental stimulus such as liked music is needed to produce any significant effect on consumers' emotional response to the wait.

Our results also indicate that music affects perceived wait duration directly and indirectly through emotional response to the wait. Music appears to influence perceived wait duration through both consumers' cognition and affect. The indirect effect supports Hornik's (1993) argument that temporal judgement such as perceived duration of a time period is a function of one's emotional state. While past researchers (e.g., Kellaris and Kent, 1992) have focused on consumers' processing of temporal and nontemporal information when studying the impact of music on time estimation, our study results indicate that at least in the context of waiting, music also affects time estimation through changing consumer emotional state. These results support a hybrid model that music changes time estimates through both

cognitive (amount of information processing) and affective (emotional response to the wait) processes.

MANAGERIAL IMPLICATIONS

One major implication of our findings is that service managers should not consider music as an environmental distraction (i.e., a tool that can make their customers believe that the wait is shorter than it actually is) when using it as an alternative strategy to combat waiting. Our findings show that in the context of waiting, music does not act as a distractor to reduce perceived wait duration but operates through induction and transfer of mood and emotion. A piece of music may increase perceived wait duration but it may still be an effective tool to minimize any negative consequence of waiting.

It is also important for service managers to notice that music as a mood influencer may perform two distinct functions in changing consumers' reactions to waiting for services. First, music adds one ambient feature to, and changes consumers' emotional evaluation of, the service environment. This suggests that whether there is customer waiting or not, music affects customers' emotional reactions to the servicescape and their approach/avoidance behaviors towards the service organization (Bitner, 1990). Second, music reduces the psychological cost of waiting (Osuna, 1985) by triggering less negative emotional responses to the wait than when there is no music. In addition to the emotional impact of different categories of music (e.g., foreground vs background, classical vs Top 40, etc.), it is also important for service marketers to distinguish between liked and disliked music within each music category (e.g., liked classical music vs disliked classical music). As revealed by our research findings, liked music not only stimulates a more positive feeling with the service environment, it also helps to improve consumers' emotional response to the wait. Moreover, although other ambient features such as temperature, color, and scant may have no effect on perceived wait duration, they may anyhow be effective tools to combat waiting as long as they affect consumer emotional state during the wait.

The distinction between waiting management (strategies employed to cut down real waiting duration) and perceptions management (strategies employed to influence consumer perceptions of the wait) has attracted considerable attention from both researchers and practitioners (Katz, Larson, and Larson, 1991). Compared with waiting management, perceptions management is likely to be more cost effective, and for a lot of service organizations where waiting is inevitable (e.g., summer time at the Disneyland), perceptions management may also be the only available tool to combat waiting. Our findings suggest that perceptions management should not be limited to the manipulation of perceived wait duration, which is assumed by many marketing researchers (e.g., Hornik, 1984; Chebat, Gelinas-Chebat, and Filiatrault, 1993). To measure consumers' reactions to waiting and the effectiveness of perceptions management, service managers should not just consider how long their customers believe they have waited, but also their emotional response to the wait. For example, in a study of bank customers' reactions to waiting, Katz, Larson, and Larson (1991) asked their respondents to report both perceived wait duration and their emotional response to the wait such as whether they consider the wait to be acceptable or unacceptable. Such mea-

sures will give more insights to service managers who attempt to reduce consumer dissatisfaction with waiting without actually cutting short the duration of the wait.

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