MUSIC, SCENT AND TIME PREFERENCES FOR WAITING LINES

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ABSTRACT

Purpose
Waiting for service by customers is an important problem for many financial services marketers. A new approach proposed is that customer evaluation of the service can be increased with an ambient scent. A cognitive variable is also identified which differentiates customers by the way they value time.
Methodology
Pretests included focus groups which highlighted financial services and a pilot test of 105 subjects. These were followed by a main sample of 607 subjects. Structural equation modelling and multivariate analysis of covariance were used for analysis.
Findings
Two environmental interventions, music and scent, can increase customer satisfaction among customers kept waiting in a line and reduce queue rage.
Research implications
Two original approaches to a rapidly growing service marketing problem are identified.
Practical implications
Service contact points can reduce incidence of "queue rage" and enhance customer satisfaction by either or both of two simple modifications to the service environment or a preventive strategy of offering targeted customers an alternative.
Originality
A new environmental intervention for customers waiting in line and a potential new method of segmentation are proposed.

KEYWORDS

Waiting lines, queues, scent, music, time preferences.

Introduction

Despite the best efforts of financial marketers to create a favorable image of a service organization, the first impression by the consumer of a bank branch may be a line of waiting, frustrated and possibly angry consumers. This problem of waiting for service has become more important for marketers due to the reduced tolerance for waiting among many consumers.

Basic characteristics of financial services mean that waiting lines or queues cannot be avoided (Zeithaml *et al.*, 1985). In some countries this has been exacerbated by widespread closure of bank branches; these closures are the result of ATMs, telephone banking and internet banking. If service provider staff (e.g. bank tellers) are unoccupied or non-service staff are visible to the customer, then many customers become more annoyed, because they feel that those staff should be serving to reduce the queue (Gurney, 1990). Some banks have learnt to conceal any staff not serving customers waiting in a queue because the visible presence of those staff makes many customers more annoyed with their wait.

This study found evidence that anger and frustration was even more likely at bank branches and financial institution service centers than many other service contact points. Focus group members stated that they were likely to become annoyed after four or five minutes waiting in a bank branch. In the words of one respondent: “I think, to me, the banks are such boring, uninteresting places. That's why I can't stand to wait there. Two minutes seems like an eternity.”

Many banks base their promotion strategies on the quality of service they promise, yet the author was denied co-operation in this research by every bank approached. Indeed a bank executive suggested that with the much lower cost of Internet and telephone banking, the bank was not very interested in enhancing the customer experience at branches. As a result the experiment was conducted at a non-bank customer service center where financial transactions occur and customers are required to wait in lines in a similar environment to a bank branch. While the physical layout is the same, a caveat is appropriate as to the applicability of the findings in bank branches.

A strategy sometimes used to alleviate the effects of waiting is to employ distractions such as live entertainment or video. Katz *et al.* (1991) studied customer perceptions of waiting under different conditions in a bank setting. They found that customers overestimate the waiting time and as the perceived waiting time increases, customer satisfaction decreases. Information on expected waiting time does not increase satisfaction but distractions do. However there is conflicting evidence on the effectiveness of using video/TV and it is not always suitable in service environments.

This study investigates two simple environmental changes for their effect on the perception of time spent waiting and consequently on customer satisfaction.

Can a scent change our emotions, like anger and frustration, while we are waiting in a queue or line or could it have any effect on how long we think that we are waiting? How strong is the effect of music on our emotions and can music affect our perception of time? If ambient scent and background music have these effects, does this translate into higher levels of customer satisfaction?

Background and previous research

Customer evaluation of many services is critically influenced by waiting time. Many studies have revealed the negative effect of waiting lines on consumers (Katz *et al.*, 1991; Taylor, 1994; Hui and Tse, 1996, *inter alia*). It is common for consumers to overestimate the time that they spend waiting (Hornik, 1984), especially in banks. As the perceived time of waiting increases, customer satisfaction typically decreases (Katz *et al.*, 1991). Customers do not evaluate service quality solely on the outcome of a service, but also on the process of service

delivery. Some research on customer service satisfaction found that time was more important than quality in determining customer satisfaction in service experiences (Davis and Vollmann, 1990; Friedman and Friedman, 1997). Consumers are increasingly willing to use waiting lines as an indicator of poor service because they value time more than ever. The consequences of the trend to value time more include the explosion of convenience goods, convenience stores, the number of consumers who use convenience as a primary basis for making purchase decisions (Berry *et al.*, 2002) and it is a contributory factor to brand loyalty. Double income time poor families want to outsource household chores (Dudley, 2000).

Consumers in a modern society have been becoming less tolerant of waiting and of firms that are perceived to "waste" the consumer's time (Katz *et al.*, 1991; Taylor and Claxton, 1994; Hui and Tse, 1996). The media have reported queue rage or anger over waiting in lines as well as telephone rage with increasing frequency and media reports range from counseling for service staff to murders committed over waiting in a line (Fraser, 2005). There are more time pressed demographic groups (such as married, employed women with children and two income families) today than a generation ago. Even those groups that actually have more free time today than a generation ago, perceive that they have less time (Robinson and Godbey, 1997).

A new basis for market segmentation

Previous approaches by marketers to the problem of waiting assume that the negative effects of waiting are the same for all customers and all customers are treated alike. However one of the strongest changes in marketing has been to recognize that all customers are not alike and this study raises the question whether all consumers react the same way to waiting. If they do not, there may be an opportunity for marketers. This study introduces a new concept to the marketing literature on waiting, namely, the need for time management. The need for time management is a cognitive variable involving a structure of beliefs held by the individual at any one time. These beliefs concern their perceptions of time and its value to them. This concept is incorporated into a model to describe the relationship between the need for time management by the individual, their emotions and their evaluation of the service.

The need for time management is based on a Time Structure Questionnaire (TSQ) developed by psychologists Bond and Feather (1988). The TSQ measures the extent to which respondents perceive their use of time as structured and purposive. Bond and Feather (1988) found five dimensions from their factor analysis of the TSQ:

1. sense of purpose;
2. structured routine;
3. present orientation;
4. effective organization; and
5. persistence.

The higher the individual's TSQ score, the more the individual prefers to have their time highly organized, and the greater their need for structure in the management of their time. McDonald (1994) adapted the TSQ to study time use in shopping. He contended that the subjective experience of time is a perceptual characteristic of individuals, which can contribute to more effective retail marketing strategies. In this study, this concept is called the need for time management and it is proposed to adapt the concept to the study of waiting for service. This concept could be used as a new basis for segmenting consumers. By matching the need for time management with readily identifiable demographic characteristics, marketers could identify groups who are more likely to feel aggravated while waiting for a service and more likely to respond to marketing communications that address the growing need of many consumers to have their time respected by marketers.

The following hypotheses are proposed:

H1. Consumers' need for time management is a significant causal factor influencing their reported level of discomfort when waiting in a line.

H2. Consumers' level of discomfort is a significant causal factor that influences their evaluation of the service while waiting in line.

H3. Consumers' need for time management has an effect on their evaluation of the service, with their level of discomfort a mediating factor.

These relationships are illustrated in Figure 1. This model will also be used to test a new approach, using an environmental intervention, to alleviating the anger felt by customers while waiting in lines.

Environmental interventions to modify perceived time

The traditional approach to the problem of customer waiting by service businesses was to use queuing theory and the manipulation of supply and demand. As we observe every day, these approaches have had limited success, and so recently, attention has been directed to understanding why the customer's perception of a wait differs from the actual wait time. Understanding these perceptions opens the door to understanding how the service provider can make a wait seem better or worse, without actually changing the length of a wait. The issue is important because waiting has an effect on customer satisfaction, through its effect on the customer's emotions. The effect of customer satisfaction on factors critical to the success of firms, such as loyalty, is well documented.

Apart from operations management, previous studies on waiting and its effects on customer satisfaction have tended to focus on customer perceptions of the wait and how this might be affected by: filled wait time (Taylor and Claxton, 1994); service provider control (Taylor, 1994; Tom and Lucey, 1995; Baker and Cameron, 1996); waiting duration or queuing information (Hui and Tse, 1996); lighting, color, music, temperature (Baker and Cameron, 1996); music (Chebat and Filiatrault, 1993; Baker and Cameron, 1996). The effect of time fillers on perceived waiting time is generally small and dependent both on the context studied and whether a field or laboratory experiment is used (Antonides *et al.*, 2002).

This paper discusses a new approach using scent, not previously considered in the marketing literature, to reduce the wait time as perceived by the consumer. The study compared the use of scent with the use of music and a control group with no intervention in a service environment.

Music

Music (like scent) acts on the limbic system, the seat of emotions in the brain (Gard, 1997). Previous research has demonstrated a relationship between the use of music and the perception of time (Tom *et al.*, 1997; Antonides *et al.*, 2002). Previous research in this area has generally not accounted for the relationship between music and emotions and the consequent effect on customer evaluations. For the present research it is suggested that music, which is familiar to most customers and is fast, appears to be an appropriate choice for research on waiting (Milliman, 1986; Yalch, 1986) since unfamiliar music has been found to create a perception that time is slowing down (Yalch and Spangenberg, 1988). Of course what is considered to be familiar music depends on the demographic. In this case, the most popular radio station was selected since the music mix was likely to be familiar to many customers.

Ambient scent in the marketing environment

One factor may be relevant but has not been tested, or even discussed, in the literature on waiting for service. A great deal has been published on the effect of the sense of smell on

evaluations and behaviors, but little in the marketing environment, especially regarding ambient or environmental scent, as opposed to the scent attached to a particular object (Mattila and Wirtz, 2001). For many years, retailers have enhanced their sales by the aroma of freshly ground coffee or freshly baked bread and bakery goods. Humans have come to depend on other senses with the result that smell has become rather neglected, and consequently poorly developed. While smell is taken for granted by humans, it can still be quite sensitive. The journal *Nature Genetics* reported that women can smell out the man that will make the best father of their offspring by detecting the odor of a man's genetic make-up. “Women can actually smell genetic differences (in men) … as small as a single gene. It's like being able to see the difference in a snow flake with your bare eyes. People say humans don't have a good sense of smell. What we've shown is that humans do have an exquisite sense of smell, and they can pick up the difference of a single gene” (Jacob *et al.*, 2002).

It is then ironic that the sense of smell has not been investigated in this context, because of all the human senses, the olfactory sense has by far the greatest impact on people's emotions. The limbic system is the most primitive part of our brain and the seat of immediate emotions. Some odors provoke basic emotional reactions because the olfactory lobe is actually part of the limbic system (Hirsch and Gay, 1991, 1992). The nose is directly connected to the olfactory lobe and the limbic system. More than any other sense, smell taps into the feelings marketers want to tap (Wilke, 1995). Studies by Hirsch and Gay (1991, 1992) found that certain scents, even in fairly low concentrations can affect peoples' moods. Concentrations so weak that they are below the threshold of consciousness still affect peoples' moods subconsciously (Hirsch and Gay, 1992). Spangenberg *et al.* (1996) found that pleasant scents or aromas in a retail environment improve the perception of customers as to the evaluation of the store and that customers perceived that they were in the store for a lesser period than actual when a store was scented.

This paper asks whether this effect of scent on the perception of time might be strong enough to assist marketers whose customers must wait in lines. Since we also know that scent affects our emotions, is the effect from a subtle ambient environmental scent sufficient to perceptibly reduce the anger and negative emotions we experience while waiting for service?

On the basis of this review of the literature, the following hypotheses are proposed:

H4a. Groups that experienced pleasant music or scent stimulus while waiting will evaluate service levels more favorably than a control group that did not experience music or scent.

H4b. There will be no difference between the music and scent groups in terms of their effect on the perceptions of service quality.

H5. Compared to a control group, groups exposed to a pleasant scent or music will report lower levels of discomfort while waiting in line for the service.

H6. Consumers' need for time management is not directly affected by the scent or music treatments, but moderates their level of discomfort. Discomfort will have a significant effect in the evaluation of the service.

Research method and analysis

Measures

A survey was developed and tested (in a pilot study) to capture the immediate emotional mood of the subject, their evaluation of the service, their personal preferences for time management and some demographic data. An important construct relates to the current emotional status of the customer, described here as discomfort. Negative affect or emotion has been found to be associated with service evaluations (Folkes *et al.*, 1987; Taylor, 1994). The items used as measures for the construct of discomfort were drawn from a number of different scales (Batra, 1986; Edell and Burke, 1987; Holbrook and Batra, 1987) and

measured on a seven-point scale, anchored by 1="not at all" and 7="very" (Holbrook and Batra, 1987). Six items were adopted (annoyed, frustrated, uncertain, anxious, uneasy, irritated), based on the reported reliability of items in the two studies by Taylor (1994, 1995) and the study by Hui and Tse (1996).

The survey also included five questions on service evaluation that were adapted from the SERVQUAL measure (Zeithaml and Bitner, 1996). These have been validated by previous research on waiting (Taylor, 1994), and used to gauge the evaluation of a service. Responses on these items were tested with confirmatory factor analysis, for their ability to measure the construct of "evaluation of service". These responses were:

- Organization X offers friendly service.
- Organization X gives prompt service.
- Overall, Organization X offers excellent service.
- Organization X performs the service right the first time.
- Organization X is open to customer views.

Based on the previous research of the Time Structure Questionnaire or TSQ (Bond and Feather, 1988), 22 items were selected to evaluate the time structure of respondents. The items selected were:

1. Looking at a typical day in your life, do you think that most things you do have some purpose?
2. Do you often feel that your life is aimless, with no definite purpose?
3. Do you ever feel that the way you fill your time has little use or value?
4. Do you ever feel that the things you have to do during the day just do not seem to matter?
5. Do you get bored with your day-to-day activities?
6. Do you tend to tend to change rather aimlessly from one activity to another during the day?
7. Do you take a long time to "get going"?
8. Do you ever have trouble organising the things you have to do?
9. Do you tend to leave things until the last minute?
10. Do you find that during the day you are often not sure what to do next?
11. Do you plan your activities from day to day?
12. Do you plan your activities so that they fall into a particular pattern during the day?
13. Do you have a daily routine which you follow?
14. Do your main activities during the day fit together in a structured way?
15. Could you tell how many useful hours you put in the week before?
16. Do you spend time thinking about what your future might be like?
17. Many of us tend to daydream about the future. Do you find this happening to you?
18. Do you spend time thinking about opportunities that you have missed?
19. And what about the past? Do you find yourself dwelling on the past?
20. Once you have started an activity do you persist at it until you have completed it?
21. Do you give up easily once you have started something?
22. Do you have any difficulty in finishing activities once you have started them?

One section sought information on the subject's demographic background for the development of possible segmentation profiles. Subjects were asked to identify their marital status, age and gender.

Statistical tests

In addition to the measurement models, such as that used for the service evaluation construct, two structural models were used to test hypotheses one to three. These two structural models concern the possible relationship of an individual's perception of time to their evaluation of the service after a wait in line. One is a mediating model (Figure 1) where the relationship of the subject's time perception to service evaluation is mediated by an element of their emotions (discomfort). This is the model proposed in this study. However, an

alternative or competing model is also tested allowing for a direct relationship between time perception and service evaluation. The statistical technique that will be used to test *H1-H3* is structural equation modeling.

This study uses a two-step modelling approach to deal with two conceptually distinct models, measurement and structural, when testing a full model that includes a number of latent variables. The study employs confirmatory factor analysis to confirm measurement models, such as the link between friendly service and overall service evaluation, and structural equations between the independent latent variables (e.g. the need for time management) and the dependent latent variables (e.g. discomfort) to indicate the structural model (Schumacker and Lomax, 1996). This structural model describes the links between the underlying factors. For this study, they are the need for time management, emotions or discomfort, and service evaluation, as in Figure 1. *H4-H6* were to be tested using either a multi-sample SEM analysis or a MANCOVA (multivariate analysis of covariance).

Pre-tests

Two types of pre-tests were conducted. One consisted of a series of focus groups which are valuable in exploring topics and generating hypotheses. The second pre-test was a pilot test of the main questionnaire to ensure that there were no problems with the survey instrument or the experimental procedure.

Sample size and composition

The total sample size for the main study was *n*=607 cases in addition to a pilot of 105 subjects. The intent was to collect approximately 200 in each of three waiting environments (control, scent and music) to meet the criteria required by LISREL. The composition of the groups appears to be sufficiently diverse, with a wide age range across the groups and representation of both genders in all groups, that it is not likely to affect the results of the main hypotheses. However, testing for the effects of covariates will account for these factors. The scent treatment group of 201 subjects had an average age of 33 (range 15-83) and was 52 per cent male. The music treatment group of 200 subjects had an average age of 33 (range16-76) with 51 per cent male. The control group of 206 subjects had an average age of 35 (range17-68) with 62 per cent male.

Research venue

The service provider selected for the study was a government service center where drivers' licenses and registrations are issued. Data were collected only when the duration of the wait met a pre-defined level of 15 minutes, measured at an individual level. The period of 15 minutes was chosen on the basis of several criteria: focus group research, data provided by the co-operating service provider and a pilot study. Data were collected from three different branches or locations over 12 months to account for differences between locations as a source of variation in the data.

Procedure for conduct of surveys

At peak queue times in a customer service center, a questionnaire was administered while the customers were waiting in line. The customer survey was distributed in four different versions, varying the sequence of questions. This was done to account for any potential effect from the order of the questions.

Choice of contexts and interventions

After the pilot study, the final survey instrument was presented to 206 subjects in the control group, with no interventions used. After eliminating cases with missing data (list-wise deletion), the data from 187 respondents were used as input into a Structural Equation Model

(specifically LISREL) to establish relationships independent of the two experimental treatments. For reasons explained earlier, familiar, fast music appeared to be a suitable choice based on the literature. A radio station with high ratings playing contemporary music was selected. In order to dispense a suitable fragrance into the service environment, a device was needed which would infuse a large area with a consistent aroma at regular intervals. A calming blend fragrance of mainly lavender, blended with sagebrush and nutmeg was chosen since this has been found to reduce anger (Burns *et al.*, 2002).

Findings

The measurement models

A series of measurement models, each testing constructs and related measures, were evaluated separately from the structural models. The constructs were service evaluation, emotions or discomfort, and the five dimensions of the need for time management. In the case of the service evaluation measurement model, for example, a confirmatory factor analysis using 203 observations found that the model has a good fit to the data in terms of all the criteria used. The chi-square value (2.28) is not large compared to the number of degrees of freedom (2). This result is not statistically significant (p=0.32), which is an indicator of good fit. The RMSEA (root mean square error of approximation) for the model is 0.026. This is certainly less than 0.05, which further indicates a good fit of data and model. (Schumacker and Lomax, 1996) The GFI, AGFI, NFI and CFI (at 0.96, 0.92, 0.95, 0.98) all exceed 0.9 which further reinforces that the model fits the data. A good fit of the model to the data were also found for the measurement model for emotions reported during the wait and for the measurement models for the five constructs underlying the need for time management.

Results for structural model with time in control case

Comparison of direct effect versus mediating models. This structural model was employed to test the hypothesis that subjects' need for time management had an (indirect) effect on service evaluation, and that the subject's emotions mediate the relationship between the need for time management and service evaluation. These emotions are described as discomfort in this study and include anger and concern or anxiety. The initial model was evaluated using LISREL with a mediating model specified. The mediating model states that the emotion of discomfort mediates the relationship between the need for time management and service evaluation.

H1-H3 were tested by an alternative or competing models approach. The mediating model described above was compared with a direct effects model to see which model was a better fit to the data. This direct effects model allows for the need for time management to have a direct effect on the subject's evaluation of service, without the mediating effect of emotions. The results of the LISREL analysis demonstrate that the subject's need for time management has a negative effect on emotions, and that emotions have a negative effect on service. For example, if a customer who prefers a tight schedule and prefers to follow a regular routine, is kept waiting for a long time then they are more likely to become annoyed at the wait than individuals who are more flexible in their use of time. These emotions of annoyance and anxiety in turn cause the customer to have a worse perception of the service. The analysis showed that the need for time management had an indirect effect on service. Therefore, the main hypothesis that the subject's emotions mediate the relationship between the need for time management and service evaluation is supported. The criteria for goodness of fit show that this model is a good fit to the data. The chi-square value (41) is not large compared to the number of degrees of freedom. This result is not statistically significant (p=0.02), which is an indicator of good fit. The RMSEA (0.04) is less than 0.05 and the GFI, AGFI, NFI and CFI (at 0.96, 0.92, 0.95, 0.98) all exceed 0.9 which further reinforces that the model fits the data (see Table I for path coefficients).

The Beta results in LISREL refer to the relationships between the latent variables. In order to establish if the direct effects model is a better fit to the data, we are interested in the beta result between the latent factors, the need for time management and service evaluation.

There are three statistics reported for each relationship. The first line is the parameter estimate. For the relationship between emotions and service, this is −0.55. The second line (0.1) is the standard error. The third line (−5.5) reports the *t*-value. If this value is more than or equal to +/−1.96 then the result is statistically significant. The *t* values clearly reveal a significant relationship between service evaluation and emotions. There is also a significant relationship between emotions and the need for time management. However there is no relationship between the need for time management and service evaluation. Therefore the direct model does not fit the data as well as the mediating model. LISREL also reports that the squared multiple correlations for the structural equations for service in this mediating model is 0.30. This means that the model explains 30 per cent of the variation in service evaluation. The same statistic for emotions is 0.21. This means that the model explains 21 per cent of the variation in service evaluation.

The structural model supported all of the first three hypotheses. Specifically, the data supported *H1* that the subject's need for time management is a significant causal factor influencing their reported level of discomfort when waiting in a line. Support was also found for *H2* that the subject's level of discomfort is a significant causal factor that influences their evaluation of the service while waiting in line.

Finally, there was support for *H3* that the subject's need for time management has an effect on their evaluation of the service, with their level of discomfort a moderating factor.

Multi-sample analysis to compare treatments

One approach to evaluate the effect of the interventions, scent and music, would have been a multi-sample analysis using structural equation modeling. When the structural model is run with the data from the scent and music interventions, there is also a good fit between the model and data, as there is in the control case. However, the relationships between the variables become unstable when these interventions are used. It appears that there is an interaction effect between the interventions (scent and music) and the relationship between the latent variables the need for time management, discomfort and the customer evaluation of service. It may be that the effect of these interventions is stronger than any relationship of the need for time management to emotions in rating service quality. In any case, a multi-sample analysis in LISREL requires similarity between the models for the sample groups being compared (Hair *et al.*, 1995). As a result, the multi-sample LISREL analysis comparison of means was not conducted. Instead, a MANCOVA (multivariate analysis of covariance) was used to test the different effects of the scent and music treatments.

MANCOVA, structural models and interventions

In order to evaluate the effect of the interventions, scent and music, a multivariate analysis of covariance (MANCOVA) was conducted. The fixed or independent variable was context or intervention. The three intervention scenarios are the control case, the use of scent or of music. In Table II and Figure 2 the control case was context 1, scent was context 2, and music was context 3. The dependent variables are service evaluation and emotions or discomfort. The covariates were age, gender and the service required. In Figure 2, a higher mean for service evaluation indicates a higher rating for service while a lower mean for emotions indicates less discomfort, i.e. anger and frustration.

The effect of interventions. The results show that service evaluation is significantly improved when scent is introduced compared to no intervention and a further significant improvement is obtained when music is played to customers. These results are statistically significant at the $p \leq 0.05$ level (0.017 and 0.001 respectively in Table II, Pairwise Comparison). In the case of emotions or discomfort, scent does reduce the level of anger reported by the customer, but the difference is not statistically significant. Age was found to be a significant covariate with service evaluation. Age is positively related to the customer evaluation of service ($p \leq 0.009$). Gender is a marginally significant effect in the customer evaluation of service ($p \leq 0.052$). No covariate is a significant effect on the reported level of anger.

The hypotheses relating to the scent and music interventions (*H4* and *H5*) were supported. *H6* must be rejected, i.e. we cannot reject the possibility that the subject's need for time management is directly affected by the scent or music treatments. A competing structural models approach in LISREL was employed to test if a direct effects model or a mediating model was a better fit to the data. The results of the analysis demonstrated that the subject's need for time management has a negative effect on emotions, and that emotions have a negative effect on service. For example, if a customer who prefers a tight schedule and prefers to follow a regular routine, is kept waiting for a long time then they are more likely to become annoyed at the wait than individuals who are more flexible in their use of time. These emotions of annoyance and anxiety in turn cause the customer to have a worse perception of the service. This result is consistent with the approach taken by Mattila and Wirtz (2001) when they posited that emotional states are significant mediators between environmental stimuli and people's behaviour.

Conclusions and suggestions for future research

The three latent variables

This research found that the need for time management indirectly influences customer satisfaction when the customer is waiting for service by a negative effect on emotions which have a negative association with service evaluation. This offers a new perspective and opportunity for marketers. For example, a bank that can identify high value customers with a high need for time management may wish to offer them a different 800 telephone number with a shorter response time.

A limitation of the study is that the relationships between the three variables, the need for time management, discomfort and evaluation of service become unstable when the interventions of music and scent are used. It appears that there is an interaction effect between the interventions and the relationship between the latent variables. Another limitation is that demographic data need to be identified which are related to the cognitive variable, the need for time management. It will then be possible to identify relevant customers. The most convenient data may depend on the organization. Finally, taking the survey itself is a distraction which may influence time perception. While music had a more significant effect on customer reactions in this study, scent also had a significant effect and it may be easier to implement since it is non-intrusive.

Future research

Future research should investigate the effect of different types of music on customers waiting for service. Is the effect of familiar music on time perception more important than the calming effect of classical music? More importantly, the research should be replicated across different service situations. In this study, the scent was released at a low level so that it was almost imperceptible but in a large room full of customers a slightly more noticeable scent level may have a more positive effect. What is the effect of congruency between scent and music, as noted by Mattila and Wirtz (2001), in the context of waiting and negative emotions? Other questions include:

- How does video compare with music and scent in the effect on customers waiting for service?
- In what situations is physical discomfort from standing important as a mediating factor in customer reactions?
- Does the value of a service affect customer reaction in some situations while a customer is waiting for service?
- Is nationality or ethnic group significantly associated with the need for time management?
- In what circumstances is it important to offer consumers a choice between types of transaction lines, such as the choice of paying more in order to get faster service?

Recruiting new customers is estimated to cost a business between five and ten times the cost of retaining an existing customer. Many businesses now appreciate that customer satisfaction is a key factor in reducing customer turnover. What is less widely appreciated is the importance of having “very satisfied” customers and not “just satisfied” customers (Heskett *et al.*, 1994). The problem of customer reactions to queues or waiting lines is too complex to be resolved with a single solution. Where they are appropriate, all of the approaches discussed in this paper need to be implemented by service providers. In a world where consumers perceive themselves to be time poor and where their first impression of an organization is often from its waiting lines, businesses must remember that in the words of John Milton: “they also serve who only stand and wait” (“On his blindness”, in *The Oxford Dictionary of Quotations* (1953)).

Figure 1 Time structure-service evaluation direct (structural) model

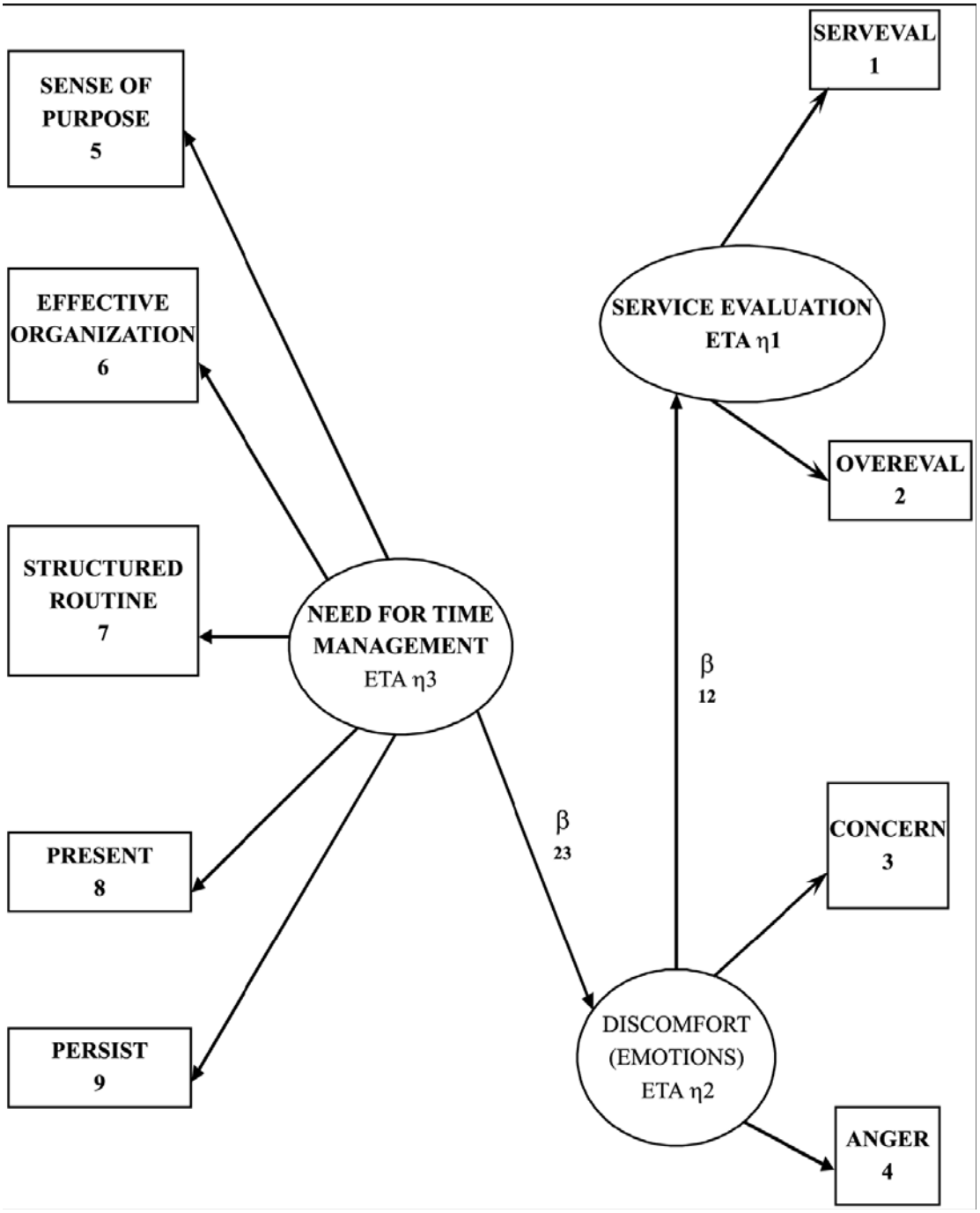

Figure 2 MANCOVA estimated means for contexts

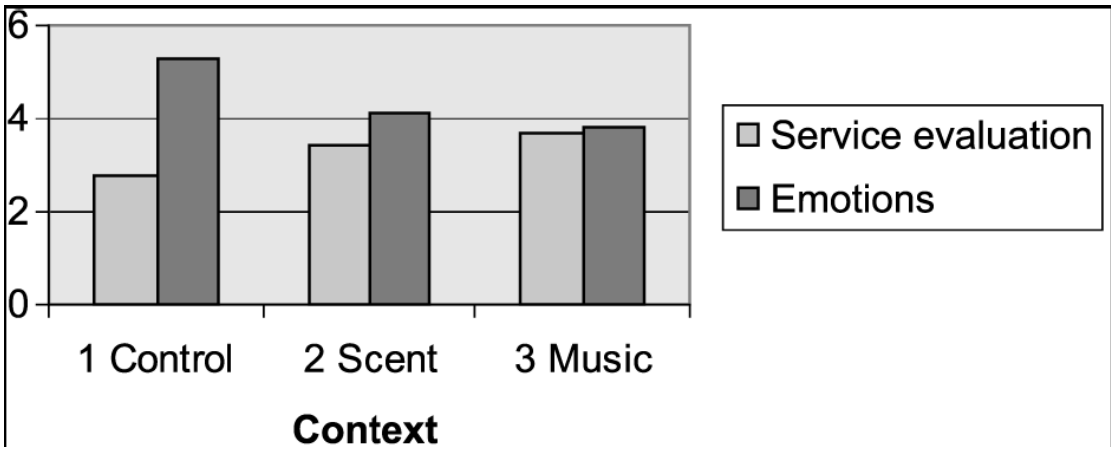

Table I Beta for direct effects model

	Service	Emotions	Time management
Service		−0.55 (0.1) −5.5	−0.01 (0.08) −0.13
Emotions			−0.46 (0.08) −5.6
Time management			

Table II MANCOVA pairwise comparisons (context estimates)

Dependent variable	(I) Context	(J) Context	Mean difference (I-J)	Std. error	Statistical significance[a]
Service evaluation	1	2	0.303*	0.109	0.017
		3	0.917*	0.109	0.000
	2	1	−0.303*	0.109	0.017
		3	0.614*	0.110	0.000
	3	1	−0.917*	0.109	0.000
		2	−0.614*	0.110	0.000

Notes: [a] Adjustment for multiple comparisons: Bonferroni; * The mean difference is significant at the 0.05 level; Based on estimated marginal means

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