



Effects of Ambient Music on Diners' Perception, Emotion, and Behavior

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<p>Abstract:</p> <p>Music has been extensively studied as a potential emotion and behavior influencer. This degree thesis aims to investigate the effects of restaurant background music on diner's perception, emotion, and behavioral intention. The study is built upon the servicescape framework where the perceived service environment elicits customer's emotion, which then influences their behavior. A 2 (fast/slow music) x 2 (familiar/unfamiliar music) between-subject factorial design was employed. Empirical data was collected from a small ethnic restaurant in Helsinki over a two-month period. The restaurant's customers were exposed to the experimental conditions (music) during their meal, and then answered a self-administered questionnaire. The data was tested for direct and mediating effects according to the servicescape framework. Emotion was found to significantly affect behavioral intention and perception of the restaurant staff image. Indication for a preference of slower background music was also observed. Nonetheless, the results do not provide empirical support for the servicescape framework, suggesting that music tempo and familiarity are not influential in the overall effect of the service environment. The study also highlights the need for careful modification of the Mehrabian-Russell model of emotional states across different settings, using the restaurant setting as an example.</p>	
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1 INTRODUCTION

1.1 Background

Kotler (1973) noted that the atmosphere of the place where purchase or consumption takes place is one of the most significant components of the *total product*¹. In Kotler's (1973) view, the atmosphere (also frequently referred to as atmospherics, ambience, service environment, physical environment, etc.) can serve to attract attention, convey a message about the establishment to potential customers, or induce affective states in customers. In the restaurant industry, customers perceive the atmospherics before food consumption and usually before any contact with the service persons (Ha & Jang 2010a). Furthermore, the amount of customer interaction with the physical environment far outweighs the interaction with the restaurant's employees (Lin 2004). Thus, any emotion elicited by the restaurant's atmospherics is likely to influence how the customer perceive the foods and services delivered (Ha & Jang 2010a). Wakefield & Blodgett (1994) suggested that favorable perception of the physical environment generally results in higher customer satisfaction and higher patronage intention.

One of the frequently mentioned and highly customizable components of atmospherics is ambient music. Music has been considered an effective tool for mood induction and non-verbal communication for as long as it has been played (Bruner 1990). Music was found to exert far-reaching impacts on emotion (e.g., Bruner 1990, Kellaris & Kent 1993, Yalch & Spangenberg 2000, Demoulin 2011) and behavior (e.g., Milliman 1986, North & Hargreaves 1998, North et al. 2003, Spangenberg et al. 2005, Andersson et al. 2012.). In Finland, the instalment of music projecting devices is commercially accessible to even very small restaurants. Music is the among the easiest and least costly atmospheric elements to manipulate. And yet, it took a while and a casual remark from a fellow restaurant co-worker for the author to ask a simple question that led to a subjectively ridiculously complex assignment: "Do Finnish diners prefer Finnish music or Thai music in a Thai restaurant?"

¹ Total product includes "the service, warranties, packaging, advertising, financing, pleasantries, images, and other features that accompany the product" - Kotler (1973).

Music is composed of many distinguishable and controllable elements which, according to Bruner (1990), can be generally categorized into time (tempo, rhythm, phrasing), pitch (note frequency, modality, harmony, direction of melodic line, note range), and texture (sound attribute and volume). These elements can be considered intrinsic attributes of music, since they remain rather consistent across individuals and cultures. The perception of music, however, invoking conventional wisdom, subjectively differs across individuals and cultures. Those subjective attributes of music may informally include, for example, likeability, emotional quality, appropriateness, and familiarity. Music familiarity could be considered a simplified theoretical conceptualization of the distinction between Finnish and Thai music, as referred to in an aforementioned question. This study opts to examine the effects of one element from each group: tempo from the intrinsic attribute group, and music familiarity from the subjective attribute group.

1.2 Overview & Scope of the Study

In order to study the influence of ambient music on Finnish restaurant diners, the author employed a widely acknowledged theoretical framework called the servicescape. The servicescape (Bitner 1992) posits that environmental stimuli affect consumer behaviors through their internal responses, namely emotions. Besides the three components of the servicescape (environmental stimuli, behaviors, internal responses), the study also attempted to examine the effects of music on temporal perception, as well as to test out some moderating variables that could potentially interfere with the influence of music. A quantitative experimental research design was used for the study, with self-administered surveys being handed out in a restaurant in Helsinki. Respondents to the surveys were normal customers of the restaurant who had been exposed to different types of music during their meal.

The study concerned primarily the affective effects of music as a part of the service environment, while ignoring other factors such as cognition or physiology. Only two dimensions of emotion as conceptualized by Mehrabian and Russell (1974, as cited by Donovan & Rossiter 1982) were measured. Furthermore, a great emphasis was placed on two particular components of music: tempo and familiarity. The study strictly situated itself in the restaurant service domain, and thus all implications or generalizations of the results

should be regarded as such. Nonetheless, the study consulted a fair number of papers from other service settings (such as retailing and hospitality), and even from other academic domains (such as environmental psychology and healthcare), to enrich its contents.

1.3 Aim & Research Questions

Motivated by the significance and operational ease of ambient music in the restaurant industry, this thesis aims to investigate the influence of music (tempo and familiarity) on diners' perception and behavioral intention, and the role of emotion as a mediator of that relationship. More specifically,

- How does music tempo and familiarity exert its influence on diners' perception, emotion, and behavioral intentions?
 - Is there a statistically significant influence of tempo on diners' temporal perception, servicescape perception, emotion, and behavioral intentions?
 - Is there a statistically significant influence of familiarity on diners' temporal perception, servicescape perception, emotion, and behavioral intentions?
 - Does emotion mediate the influence of music on diners' perception and behavioral intentions?
 - What are the possible moderators of this relationship?

2 LITERATURE REVIEW

The literature review section encircles the relationship between music and other relevant constructs. First, an account of the servicescape theoretical framework and its relationship with music is presented. Then, the section describes the literature on the influence of music on temporal perception, emotion, and behavioral intentions. The section also discusses some possible moderators of those relationships and concludes by proposing a model of interaction for data collection and analysis.

2.1 Music and the Servicescape

Servicescape is a widely acknowledged framework to study human responses to the service environment. It was developed by Bitner in 1992, based on the Mehrabian-Russell model of human-environment interaction. This section first presents the Mehrabian-Russell model and its components, then the servicescape framework and its various dimensions, and finally the interaction between ambient music and the perceived servicescape.

2.1.1 The Mehrabian-Russell Model

Mehrabian and Russell (1974, as cited by Ryu & Jang, 2007) developed a theoretical framework to represent the environment's impact on human emotions and behaviors. This framework shall henceforth be referred to as the M-R model. The M-R model theorizes that emotional responses mediate the relationship between the physical environment and human behaviors, i.e., environmental stimuli first elicit emotional responses, which subsequently elicit behavioral responses. Thus, the three components of the M-R model are the physical environment, emotional states, and behaviors. (Mehrabian & Russell 1974, as cited by Ryu & Jang 2007).

The first component of the M-R model - the physical environment - is proposed to be measured on 2 scales: complexity and novelty. Complexity is the number of stimuli present in the environment, and how they move or change in that environment. Novelty is the quality of being new, intriguing, and surprising. A high-load environment (i.e. high in complexity and novelty) tends to be more affectively arousing and the opposite is true for a low-load environment. Environmental stimuli can, however, be "screened" or "filtered" out. The extent to which environmental stimuli are screened out differs across individuals. "Screeners" are less receptive and tend to filter more irrelevant stimuli, reducing the overall level of emotional arousal. "Non-screeners", on the other hand, draw in more stimuli and are often more emotionally aroused. (Mehrabian & Russell 1974, as cited by Donovan & Rossiter, 1982).

The second component is emotional states. The M-R model proposes that an individual's emotional response to environmental stimuli could be illustrated by 3 dimensions: pleasure, arousal, and dominance. Pleasure refers to the continuum between extreme sadness and extreme happiness, described by adjectives like disgusted/nice, dissatisfied/satisfied, & sad/joyful. Arousal refers to the continuum between non-stimulation and extreme stimulation, described by adjectives like lazy/hectic, boring/excited, & idle/active. Dominance refers to the continuum between complete submission & complete domination, described by adjectives like passive/autonomous, submissive/dominant, & lacking control/in control. This method of dimensioning affect appears predominant in the extant literature, except that dominance is typically not included. The exclusion of dominance from the conceptualization of affect is further discussed in section 2.3. (Mehrabian & Russell, 1974, as cited by Bakker et al., 2014; Ryu & Jang, 2007).

The last component of the M-R model is behavior. Mehrabian & Russell theorizes that individuals adopt either an approach (positive) or an avoidance (negative) stance in response to environmental stimuli. There are four aspects to approach behaviors: (1) a desire to stay in the environment, (2) to explore the environment, (3) to communicate with others in the environment, and (4) a tendency to have higher performance/satisfaction in the environment. Examples of approach behaviors in restaurant settings are longer time spent in the restaurant, tendency to pay more, return intention, and willingness to interact with employees and other customers. Avoidance behaviors are simply the opposite. (Mehrabian & Russell 1974, as cited by Donovan & Rossiter, 1982).

The M-R model has been widely applied across numerous settings both theoretically and practically. For example, Bitner (1992) developed the servicescape theoretical framework to explore the impact of the physical environment in service settings; Ryu & Jang (2007) studied how perception of the environment influences emotions and behaviors in upscale restaurants; Schreuder et al. (2016) integrated the M-R model in developing their framework of different levels of multisensory response to environmental stimuli; Turley & Milliman (2000) reviewed pertinent atmospherics literature and found extensive use of the M-R model in the retail setting.

In Summary, the M-R model posits that environmental stimuli elicit emotional responses, which then elicit approach or avoidance behaviors. Environmental stimuli are measured in terms of novelty and complexity. Emotional responses can be mapped by 3 dimensions: pleasure, arousal, and dominance. Approach behaviors are positive behaviors such as the desire to stay and explore the environment, while avoidance behaviors represent the opposite. The M-R model is the basis for many theoretical frameworks and practical applications across multiple service settings. Finally, the M-R model is also the basis for this graduation thesis on the link between servicescape, emotion, and behavior.

2.1.2 The Servicescape

Bitner (1992) drew upon the M-R model to develop the seminal servicescape theoretical framework to study the effects of the physical environment on both consumers and employees in service settings. The word servicescape itself refers to the built (man-made, as opposed to natural) environment in the service industry. In Bitner's framework, similarly to the M-R model, various servicescape dimensions will initially trigger internal responses (including cognition, emotion, and physiology) from customers and employees, as well as influence the interactions between and among them. Such internal responses will then lead to approach or avoidance behaviors.

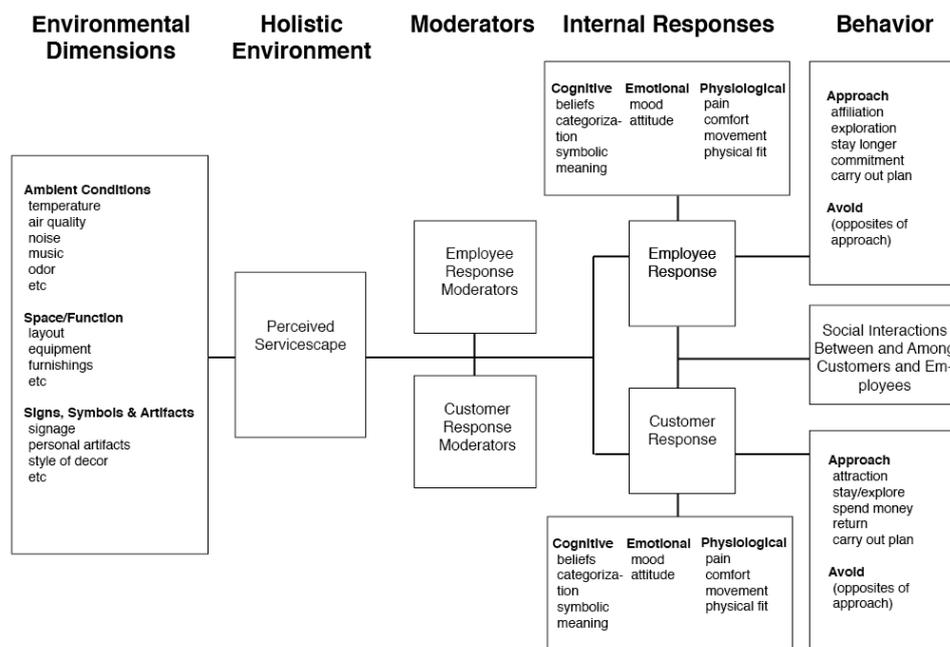


Figure 1: the Servicescape model

Originally, Bitner (1992) distinguished between 3 relevant servicescape dimensions: (1) ambience, (2) spatial layout and functionality, and (2) signs, symbols, and artifacts. Ambience refers to both perceptible background characteristics such as lighting, music, temperature, scents; and imperceptible ones such as gases or chemicals. Ambience is particularly influential when it is very arousing, when people spend prolonged periods in the environment, or when it contradicts expectations. Spatial layouts and functionality are how objects are arranged and their capabilities to facilitate activities in the servicescape. Time pressure, task complexity, and amount of self-service required of the customers enhance the importance of spatial layouts and functionality. Signs, symbols, and artifacts include, for example, labels, logos, decorations, tableware style, textual instructions, and so on. This dimension is particularly salient in first encounters, new types of service, service re-positioning, or in highly competitive industries.

Since its conception, the servicescape theoretical framework has instigated several research streams that aim at understanding the interaction between organisms and physical environments in different service settings (for e.g., see Chen et al. 2015, Dedeoglu et al. 2018, Edvardsson 2010, Ha & Jang 2010a, Harris & Ezeh 2008, Jacob et al. 2009, Kim & Moon 2009, Rosenbaum & Massiah 2011, Schreuder et al. 2016, Sullivan 2002, Turley & Milliman 2000, Wakefield & Blodgett 1994). During the process, the servicescape has also undergone multiple modification and expansion proposals such that the framework now encompasses more than just the manufactured physical stimuli, but also the social and natural stimuli within the physical space of service establishments (Edvardsson et al. 2010, Rosenbaum & Massiah 2011). For example, Edvardsson et al. (2010), Zomerdijk and Voss (2010), and Ryu and Jang (2007) all asserted the importance of the interaction among customers and between customers and employees. Rosenbaum & Montoya (2007) demonstrated that customers do respond to the ethnicity, verbal, and nonverbal cues of a service establishment's employees and clientele. Through this process customers evaluate whether or not this specific service place is congruent with their identity, leading to subsequent approach-avoidance behaviors. These aspects could well be regarded as a part of a social dimension of the servicescape theoretical framework.

Rosenbaum & Massiah (2011) proposed that alongside the physical dimension (which is an aggregate of the three original dimensions developed by Bitner, 1992), the social & natural dimension should also be considered. In Rosenbaum & Massiah's (2011) perspective, the social dimension comprises four sub elements, namely the interaction between employees and customers, the interaction between customers themselves, the social density of the servicescape (whether the place is crowded or not), and the displayed emotions of other people. The natural dimension comprises natural or wildlife elements that trigger humans' subconscious biophilia tendency – a desire to connect with “the rest of life”. The natural dimension can potentially offer mental restoration for humans. These dimensions are less controllable and measurable than the physical dimension, yet they still contribute to the overall experience of being in the servicescape, and eventually the servicescape's ability to evoke approach-avoidance behaviors.

Lastly, Bitner (1992) proposed that, although each of the above dimensions and its components can be perceived separately, it's the holistic perception of the environment that determines an individual's internal responses. In fact, Schreuder et al (2016) reviewed relevant environmental psychology literature and pointed out that, rather than assessing individual environmental stimulus separately, the brain integrates data from several different senses to improve perceptual efficiency. Our overall perception of environmental stimuli is not simply a sum of individual perceptions, but rather a complex integration process. During this process, senses can cognitively and emotionally influence each other, that is, for example, what we hear can influence what we see or smell and vice versa.

In summary, the servicescape framework is the collection of various physical, social, and natural dimensions of the environment of a service establishments. Built upon the M-R model, the servicescape framework theorizes that those dimensions evoke cognitive, emotional, and physiological responses from individuals, which in turn produce approach/avoidance behaviors. Dimensions of the servicescape can be perceived separately, but it's the holistic perception of the servicescape that determines internal responses. For the purpose of this paper, the social and physical dimensions of the servicescape, including (1) staff image, (2) layout, (3) seating comfort, (4) ambience, (5) aesthetics, and (6) cleanliness, are chosen for surveying and analysis.

2.1.3 Music and the Servicescape

Music is an inherent part of the servicescape and can have significant impacts on retailer image. In fact, the perception of ambient music characteristics is known to translate into perception of the service environment itself. For example, classical music, being generally considered sophisticated, causes an environment to be perceived as more sophisticated as well (Areni & Kim 1993, North & Hargreaves 1998, and North et al. 2003). Similarly, Wilson (2003) reported mediating effects of musical styles on the overall perception of a service environment. Magnini & Thelen (2008) noted an improvement in the perception of a restaurant's decoration in the presence of music. Yalch & Spangenberg (1993) found that shoppers perceived an environment more favorably when certain types of music were played. Hui et al. (1997) proposed that music encourages approach behaviors by improving customers' emotional evaluation of the service environment. Many managers in the service industry are also aware of the effects of background music on overall perception of the service environment. They believe that music can supplement/substitute other aspects of the service environment and is integral in establishing the service experience of their businesses (Areni 2003).

Areni (2003), Jacob (2006), & Jacob et al. (2009) pointed out that music is most effective when it creates a mood consistent with the consumption context. For example, romantic music in a florist shop or drinking music in a bar significantly increased customers' spending (Jacob 2006, Jacob et al. 2009). North et al. (1999) found that playing German/French music led to higher sales in German/French wine respectively. Spangenberg et al.'s (2005) study indicated that the existence of aroma and music congruency in a store resulted in higher opinion of the store and better revisit intention. Mattila & Wirtz (2001) experimented on the interaction between scent and music and found that customer's shopping experience was enhanced when the arousal level of scents matched the arousal level of music (high arousal scent with high arousal music and vice versa). Demoulin (2011) tested this congruency effect in the restaurant setting and found that music congruency with the atmosphere produced higher levels of pleasure. Overall, the consensus among the extant literature is that consumers are more likely to respond favorably if there are certain degree of congruency between ambient music and the service environment. North

(2012) & North et al. (2016) argued that this congruity effect stems from music's ability to prime certain concepts in memory, which in turn influence behaviors.

Lastly, music also plays a part in the social dimension of the servicescape. Soothing background music can increase the amount of conversation, smiling, and eye contact between individuals (see for e.g., Stratton & Zalanowski 1984, Mezzano & Prueter 1974, Dubé et al. 1995). It is also popular belief among managers that background music makes an environment feel not deserted and makes customers feel that they are not forgotten or abandoned (Areni 2003).

In summary, music exerts interesting effects on other components of the servicescape. Music can improve the perception of a service environment and/or channel its perceived characteristics to the surrounding environment. The effect of music is most positive and noticeable where there is congruency between music and other servicescape components. Music can also influence the direction and amount of social interaction inside an environment.

2.2 Music and Temporal Perception

Different musical attributes (etc. tempo, genre, volume, modality, and familiarity) have been shown to exert some degree of influence on the perception of time (e.g., Kellaris & Kent 1992, Chebat et al. 1993, Yalch & Spangenberg 2000, Oakes 2003). This section briefly discusses the literature on the subject.

Kellaris & Kent (1992) tested the effects of music modality (major, minor, or atonal) on consumers' time perception. They found a significant effect, that is, the same musical piece played in different modes was perceived to have lasted for different durations. The major mode produced the longest duration estimates, which also diverged the furthest from the actual duration. The minor mode came in the middle, while the atonal mode produced the shortest duration estimates, which were also more accurate than both of its peers. Kellaris & Kent's (1992) paper challenged the conventional wisdom that time "flies" when we are having fun, in that the music modes with significantly more positive affective evaluations (the major and minor modes) were perceived as having lasted

longer; while the least favorite one (the atonal mode) were perceived as having lasted shorter. Kellaris & Kent (1992) suggested that this finding might have two underlying mechanisms. First, the relative pleasantness of the major and minor modes diverted more of the listeners' attention towards it, leading to a reduction in the duration-judging cognitive resources, as well as a misperception that more music was heard. Second, since major and minor music modes are more familiar to the general public than the atonal mode, it was easier for one to recall the piece of music they heard. Informational accessibility then misled one to believe that the music's duration was longer.

The two mechanisms affecting temporal perception discussed by Kellaris & Kent (1992) generally overlaps with the Resource Allocation and the Storage-size time perception models suggested in earlier literature (e.g., Frankenhauser 1959 & Ornstein 1969, cited by Oakes, 2003; Zakay 1989). The Resource Allocation model states that the diversion of cognitive resources elsewhere reduces the quality of our internal clock, leading to inaccurate estimates. The storage-size model, on the other hand, suggests that the more information about the activity is retained in memory, the longer we would estimate its duration to be. These two models seem to address the discrepancy between concurrent and retrospective temporal perception: One may well experience a hectic interval as short-lived, but then in retrospection it seems prolonged (Kellaris & Kent 1992). This discrepancy between concurrence and retrospection needs accounting for in research into temporal perception.

Chebat et al. (1993) found that music tempo acted as a moderator among the relationship between mood, attention and temporal perception. In their experiment, both slow and fast music had a neutralizing effect on the positive correlation between attention and time estimates. That is, under the no-music condition, higher attention to the visual stimuli presented correlated with shorter time estimates. However, this correlation disappeared when any kind of music was played in the background. Such finding contradicts with Ornstein's (1969, cited by Oakes 2003) storage-size model of time perception in that more attention to the activity (which results in more data recorded in memory) does not produce longer time estimates. Chebat et al. (1993) suggested that in this case music was a distraction enhancer, re-allocating even more resources away from our cognitive timer, leading to shorter time estimates.

Yalch & Spangenberg (2000) noted interesting effects of music familiarity on perceived shopping time in retail settings. In their study, the respondents evaluated several shopping items while the familiarity of the background music was being manipulated. Yalch & Spangenberg (2000) found that, even though the duration spent in the environment was identical, the respondents perceived to have stayed in the environment for longer if they were exposed to less familiar music, and for shorter if they were exposed to more familiar music. Respondents felt that time was slower with less familiar music. This finding may sound contradictory to Kellaris & Kent's (1992) findings, but as the 1992 study employed a song specifically written for the experiment (which had never been heard by the respondents prior to the experiment), where Yalch & Spangenberg (2000) employed music playlists provided by a professional environmental music supplier (which included contemporary top-40 songs), their findings may in fact reflect different aspects of the complex nature of music. As noted by Kellaris & Kent (1993), it is inherently difficult to isolate or compare causal relationships across different studies when different musical pieces are used.

Oakes (2003) empirically highlighted the relationship between musical tempo and temporal perception during waiting period. He found that wait duration was perceived to be significantly shorter with slow background music when the actual wait duration was relative short (4-15 minutes). This effect, however, evaporated in longer waits (>15 minutes), possibly due to the rise in the frustration with the wait itself. In all other experimental conditions (control, fast music, and slow music in long waits), perceived duration well exceeded actual duration. There was also no significant statistical difference between the time estimates in those conditions. This could have potentially been caused by the study being disguised as a satisfaction survey: students who participated in the study were very likely to be dissatisfied with the wait to register their courses and might have deliberately overestimated the wait duration in hope for improvement to the course registration procedures.

Overall, the current literature suggests that different dimensions of music do exert significant influence on temporal perception. However, it is important to note that this influence is complex and can oftentimes produce confounding implications, which are reflected in

the inconsistencies of the extant literature. Special considerations should be paid to the two temporal perception model (the Resource Allocation Model, and the Storage-sized Model), as well as the concurrent/retrospective perspectives when conducting research into this area.

2.3 Music and Emotional States

Emotional States, according to Mehrabian-Russell (1974, cited by Ryu & Jang 2007) and Bitner (1992), mediate the relationship between environmental stimuli and behavioral responses. This section gives an overview of the emotional states according to the M-R model, then moves on to describe the influence of music on emotional states, and finally provides evidence that emotion mediates the relationship between environmental stimuli and behaviors.

The M-R model suggests that any human emotion can be theoretically mapped by 3 axes: pleasure (degree of pleasantness), arousal (degree of stimulation), and dominance (degree of control, Mehrabian & Russell 1974, as cited by Ryu & Jang 2007). Several subsequent studies, however, have dismissed the dominance dimension while providing empirical and theoretical support for the proposition that the two other dimensions (pleasure & arousal) are more consistent, can adequately depict a person's emotional states, and can better predict behavioral outcomes (Donovan & Rossiter, 1982; Prendergast & Man, 2002; Russell, 1978; Russell, 1979; Russell & Pratt, 1980). For example, Prendergast & Man (2002) analyzed customer's psychological attributes as a part of restaurant image and concluded that their psychological measurements correspond strongly to the pleasure and arousal dimensions, and very weakly to the dominance dimension. Donovan & Rossiter (1982) tested the M-R model in retail settings and concluded that pleasure and arousal are strong determinants of approach/avoidance behaviors, while the dominance dimension is more of a cognitive than emotional construct and does not strongly relate to behaviors. Thus, this paper only considers the pleasure and arousal dimension of emotional states in surveying and analysis.

Bruner (1990) reviewed some of the earliest studies on the relationship between mood and music. He concluded that all three main structural factors of music (time, pitch, and

texture) significantly influenced mood. For example, a tempo between 70-100 beats per minutes is more likely to produce favorable emotions (time); high-pitched note is considered more exciting than low-pitched note (pitch), woodwind instruments produce awkward/mournful feelings while piano sounds are considered brilliant/tranquil (texture). Bruner (1990) proposed that music is associated with certain meanings and affective reactions, and consequently can be used to evoke certain affective and behavioral responses in consumers.

Since Bruner (1990), the empirical evidence on the emotional influence of music has proliferated significantly. For example, Kellaris & Kent (1993) found main effects of tempo on pleasure and arousal: faster tempo in classical music led to higher pleasure (but not arousal), while faster tempo in pop music led to higher arousal (but not pleasure). Additionally, other musical attributes (tonality and texture) were also found to exert significant influence on the pleasure and arousal dimensions in Kellaris & Kent's (1993) study. Similarly, Dubé et al. (1995) found that music has significant effects on customers' level of pleasure and arousal. Oakes (2003) found that slow music produced more favorable emotional response as opposed to fast music in waiting line of students. Nonetheless, if the wait duration exceeded 15 minutes, music would become an intrusive distraction and produced negative responses instead. Jang et al. (2011) found that a high level of authenticity of ethnic restaurant atmospherics leads to positive emotions, while lower authenticity leads to negative emotions. Furthermore, music has been shown to reduce stress and enhance relaxing feelings in hospital patients before their medical procedures (Lee et al. 2004; Tansik & Routhieaux 1999; Jiang et al. 2016). According to Jiang et al. (2016), music preference is the most important mediator of the stress-relieving effect of music.

Demoulin (2011) noted an arousal reduction and a pleasure enhancement when background music was congruent with the servicescape: congruent music makes the diners calmer and more relaxed. Oakes (2007) concluded through his literature review that music congruity improves advertisements' affective perception. Mattila & Wirtz (2001) examined the interaction between scent and music and noted that the intensity congruency between the two enhances pleasure. Babin et al. (2004) demonstrated that a harmonious environment improves affective response. All these findings can be related to how music congruency causes the servicescape to be more positively evaluated, which apparently

leads to the conclusion that music, emotions, and perception of the servicescape are positively correlated with each other.

Another often-researched aspect of the affective influence of music is music familiarity. Familiar music was reported to have a greater impact on arousal than unfamiliar music (Yalch & Spangenberg 2000). In a partially similar way, Petruzzellis et al.'s (2014) study found that famous music enhances arousal feelings while impairing pleasure feelings. Petruzzellis et al. (2014) suggested that this occurrence stemmed from (1) a recognition effect where individuals recognize the famous musical pieces and recall memories associated with it, and (2) an over-exposure effect where individuals are satiated with listening to the piece. This is in line with Bruner's (1990) argument that, although well-known songs are unarguably an effective way to evoke emotions and attract attentions, repetition can make them much less enjoyable than intended. Familiarity may indeed breed contempt. In the extant literature the construct of music familiarity is often confounded with feelings of liking for the music (Michel et al. 2017). Indeed, several studies have demonstrated that music familiarity and music liking have an inverted U relationship: more exposure to a song generally makes it more liked, while over-exposure introduces the opposite effect (for e.g., Brentar et al. 1994, Hargreaves 1984, Hunter & Schellenberg 2011, Verrier 2012, Zissman & Neimark 1990). This phenomenon represents the mere exposure effect and the satiation effect, as developed by Zajonc (1968) and Zajonc et al. (1972). The satiation effect can commence rather quickly in laboratory settings where respondents are forced to continuously listen to music, as noted by Schellenberg et al. (2008). On the other hand, in natural settings where people mostly acquire exposure frequency to a piece of music incidentally, the effect manifests itself much later.

Last but not least, a number of studies have supported the M-R view that emotion is a mediator of the environment-behavior relationship. For example, Jang et al.'s (2011) study indicated that emotions elicited by environmental stimuli, both positive and negative, can effectively predict behavioral intentions. However, Jang & Namkung (2009) found a mediating effect of positive emotions, but not negative emotions. Sweeney & Wyber (2002) suggested that music preference (feelings of liking for the music) mediates the effects of the music on approach behaviors. Demoulin (2011) proposed that the pleasure and arousal dimensions mediate the relationship between music congruency with the

servicescape and overall evaluation of the service environment/quality. Ryu & Jang (2007) tested the M-R assumption in restaurant settings and found strong evidence for the mediating effects of emotions. Ryu & Jang (2007) also cautioned against a negligence of the role of emotions due to over-attending to other more conspicuous cognitive elements such as food price/quality and restaurant location. On the other hand, some researchers, such as Chebat & Michon (2003), argued that it is not emotions that mediate the effects of the servicescape on perceptions and behaviors, but rather the overall perception of the environment mediates the effects of ambience on emotions and behaviors.

In summary, music is known to significantly diminish or enhance emotions. This effect is the combined creation of several aspects of the music, namely tempo, pitch, texture, tonality, congruency, preference, and familiarity. Music familiarity is intrinsically associated with feelings of liking for the music, but too high a level of familiarity can cause satiation and distaste. Although music is generally agreed to be influential on emotions, the specific relationship between different musical attributes and emotions are unclear and oftentimes empirically contradictory. Finally, according to the M-R model and to Bitner (1992), emotion is hypothesized to be a mediator of the relationship between the servicescape and behavioral responses. The empirical evidence for emotion's mediating effects have, nonetheless, been quite inconsistent.

2.4 Music & Behavioral Intentions

This section briefly discusses the definition of behaviors in the M-R model, then examines several papers pertaining to the influence of music on behavioral intentions.

Behavioral responses, according to the M-R model, are broadly categorized as being either approach or avoidance. Approach behaviors denote the desire to stay, explore, and affiliate with the environment, while avoidance behaviors refer to the desire not to stay, explore, or affiliate with the environment (Donovan & Rossiter 1982). Generally, restaurateurs seek to promote approach behaviors and reduce avoidance behaviors. In the present study, for the ease of data collection and measurement, behavioral intentions, rather than actual behaviors, are considered. Behavioral intentions are defined as the “conscious plans to perform or not perform some specific future behavior” (Warshaw & Davis 1985).

The effects of music on behaviors are diverse and of great interest for researchers in service and restaurant settings. For example, Ryu & Jang (2007) rated ambience (including music, aroma, and temperature) as the most influential aspect of restaurant servicescape on diners' behaviors. Sweeney & Wyber (2002) proposed that music, through the enhancement of emotions and evaluation of merchandise quality, promotes approach behaviors in retailers. On the other hand, loud or inappropriate music encourages avoidance behaviors (Smith & Curnow 1966, cited by Milliman 1986). Yalch & Spangenberg (2000) found that familiar background music caused their respondents to spend less time on the activity at hand. Kontukoski et al. (2015) showed that musical pieces considered to be "sweet" or "sour" could prime an individual to prepare drinks with high sweetness/sourness respectively. Wilson's study (2003) found that the presence of music alone, irrespective of its genre and attributes, could increase willingness to pay and willingness to interact.

Music has also been firmly established as being able to influence customers' purchase behavior and willingness-to-stay in service environments. More specifically, Milliman (1982) found that higher tempo increased in-store traffic flow while reducing customers' spending in retail settings. Later, Milliman (1986) studied the effects of background music tempo in a restaurant and suggested that slower music encourages diners to stay for longer and consume more beverages. The author proposed that slower music creates a calmer and more relaxing atmosphere (Milliman 1986). Caldwell & Hibbert (2002) put forth a positive correlation between music preference (liking for the music) and stay duration/purchase amount in restaurants, and at the same time argued that music preference outshines music tempo as a predictor of stay duration and purchase amount. Sullivan (2002) noted an increase in restaurant diners' stay duration when music volume was soft, and when popularity was high. Sullivan (2002) also found that the presence of any music at all increased stay duration and spending. On the other hand, Guéguen et al. (2004) found that higher music volume led to higher consumption level in bars. This inconsistency can be attributed to the different service settings of the two study (restaurant versus bar). North & Hargreaves' (1998) study in a cafeteria suggested that music genres can potentially affect sales. North et al. (2003) and Wilson (2003) confirmed that suggestion by showing that classical music led to higher spending intentions as well as higher

actual spending. Lastly, Andersson et al. (2012) discovered a positive influence of music on purchase behavior, which was moderated by gender: females preferred slow tempo music, while males preferred fast tempo music.

In a previous section, music congruency with the servicescape and/or the product offerings have been shown to improve overall evaluation of the servicescape. This beneficial congruity effect carries over when we look at music's potential to promote approach behaviors. Sullivan (2002) argued that "it is not the presence of music that is important, it is the perception of whether that music is typical for that environment". Indeed, Jacob (2006) and Jacob et al. (2009) reported that when background music is congruent with the service context (e.g., drinking-related music in a bar, or romantic music in a florist shop), customers tend to spend more time and money. Similarly, North et al. (1999) provided empirical evidence that music congruency with product correlates with increased sales: French music resulted in higher sales of French wine; while German music resulted in higher sales of German wine. North et al. (2016) found evidence for a positive influence of music congruency on product choice. They argued that music achieves this through a priming effect where certain ideas and concepts primed by music subsequently influence product choice (North et al. 2016). Spangenberg et al. (2005) proposed that music-aroma congruency in service environments improves re-visit intentions, while the lack of such congruency may damage store image evaluation and behavioral intentions.

Overall, music exerts a plethora of interesting effects on consumer behaviors. Many aspects of music such as tempo, volume, familiarity, genre, and preference, have been extensively studied. Music is notably shown to influence consumers' willingness-to-pay/stay, desire to affiliate and interact, recommendation intentions, purchase/consumption behaviors, and return intentions. For the purpose of the present study, 4 specific types of behavioral intentions, namely return intention, recommendation intention, willingness-to-stay, and willingness-to-pay, are taken into account. These types of behavioral intentions are chosen due to their practicality towards the operation of restaurants (see Stevens et al. 1995).

2.5 Moderators

This section briefly presents the three possible moderators of the relationship between the servicescape, emotions, and behaviors: motivational orientations, gender, and diners' level of familiarity with the restaurant.

Motivational Orientations

It is proposed that motivational orientations, i.e. whether the consumer is task-oriented (valuing utilitarian value) or recreationally oriented (valuing hedonic value), moderate the effect of emotions on perception of the environment and consumer behaviors (Babin & Attaway 2000; Kaltcheva & Weitz 2006; Ha & Jang 2010b). Utilitarian consumers want to settle the purchase activity quickly and effortlessly as they attain satisfaction from the outcome of the purchase, rather than from the purchase activity itself. On the other hand, hedonic consumers find the purchase activity intrinsically rewarding, and thus would demand more arousing attributes from the shopping environment. This discrepancy between the two motivational orientations, according to Kaltcheva & Weitz (2006), results in the service environment being perceived differently between them. Thus, in the present study it is proposed that diners' motivational orientations moderate the relationship between the servicescape and behavioral response.

Gender

Gender has been found to be an important moderating variable of the influence of servicescape elements on consumer behaviors (e.g., Kellaris & Rice 1993, Andersson et al. 2012, Spangenberg et al. 2006, Grewal et al. 2003). It is generally believed that females prefer lower volume and tempo than males (Andersson et al. 2012). This difference is not just a cultural phenomenon but may be rooted much deeper in fundamental brain structure differences (Kellaris & Rice 1993). Thus, the present study suggests a possible moderating effect of gender on how the servicescape affects behavior.

Diners' level of familiarity with the restaurant

A customer's familiarity with a service provider scales with the number of service encounters (Alba & Hutchinson 1987). Less familiar customers tend to use extrinsic cues such as price, decoration, location, and reviews to evaluate service quality; while more

familiar customers can draw from their own previous experiences to make evaluations (Rao & Monroe 1988). Similarly, in the restaurant industry, customers' level of familiarity with a restaurant can cause them to react differently to the same aspects of that restaurant (Ha & Jang 2010b). This, according to Söderlund (2002), stems from the different frames of reference that high and low familiarity customers use to evaluate service performance. Customers' familiarity may also reflect their motivational orientations, since inexperienced first-time customers tend to place great value on the hedonic aspects of restaurants (Ha & Jang 2010b). Furthermore, increased familiarity with the restaurant concerned in the present study may also correlate with increased familiarity with the Thai music played in the restaurant as well, since this restaurant has historically exclusively played only popular Thai songs. Thus, the present study proposes that the influence of music on behavior is moderated by diners' level of familiarity with the restaurant.

2.6 The Research Model

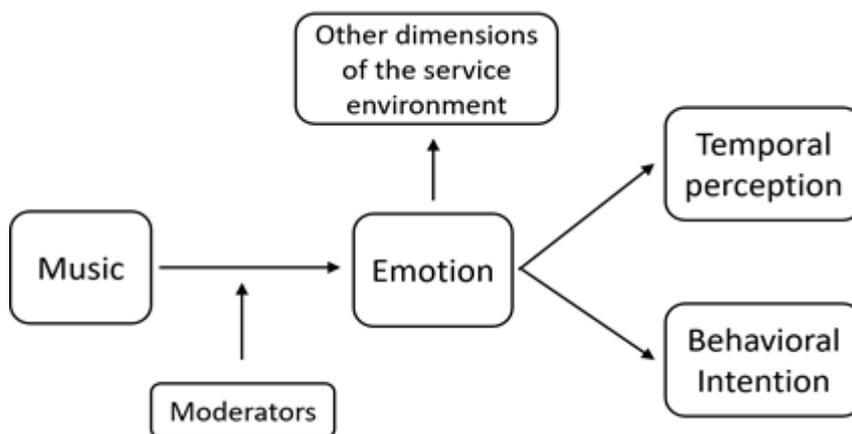


Figure 2: Proposed model of interactions

Figure 2 presents the proposed model of interactions upon which the data collection and analysis of this thesis is grounded. This model seeks to shed light on the nature of the influence of music tempo and familiarity on diners' perception (temporal perception & perception of other servicescape dimensions), emotion, and behavioral intention. In the model, music is hypothesized to exert a statistically significant influence on diners' emotion, which subsequently shapes their perception and behavioral intention. Thus, emotion

is hypothesized to be the mediator of such relationship. Lastly, a number of possible moderators, e.g. diners' motivational orientation, gender, and familiarity with the restaurant, is also hypothesized to affect the relationship between music and emotion.

3 METHODOLOGY

This section gives a detailed account of the research design, the data collection process, the formulation of the survey, and the compilation of the music playlists, which are the main experimental manipulation of the study.

3.1 Research Design

The aim of this study is to examine the effects of musical tempo and familiarity on diners' perception, emotion, and behavioral intention. Thus, the study employs a 2 (fast music vs. slow music) x 2 (familiar music vs. unfamiliar music) between-subjects experimental research design. Hence a total of 4 experimental conditions: (1) fast and familiar music, (2) fast and unfamiliar music, (3) slow and familiar music, and (4) slow and unfamiliar music.

3.2 Data Collection

The data collection period spanned over a period of nearly 8 weeks, from 5th September 2018 to 28th October 2018. The data collection site is a 4-table 16-seat Thai restaurant in Helsinki, Finland. This restaurant offers à la carte service with a mix of traditional Thai food and some Thai-Finnish fusion dishes. The menu price ranges from 13.5 to 15.5 euro per main course. The Restaurant is decorated with flowers, candles and a variety of Thai-themed decorative items. Music is projected via a small electronic speaker located near the ordering counter. Since the dining area is quite small (roughly 20 square meters), and all tables center around the ordering counter, the music can be clearly heard at a consistent volume across tables. Normally, popular Thai & US/UK playlists from YouTube is played in the restaurant.

Only a single experimental music condition would apply on any given collection day. The specific music condition chosen for each day was determined at the author's discretion, which also accounted for other restaurant employees' comfort (some employees objected to using non-Thai music during their shifts) as well as the current data collection progress of the study. Surveys were only handed out after 14:00, since from 11:00-14:00 the restaurant is usually busy and customers often hurry to work after their meal. Ambient music (the independent variable) would be played for at least 15 minutes before surveys were handed out to any respondents to ensure that customers had been adequately exposed to it. In case customers arrived in group, each group member would be offered a separate survey and instructed to carry it out independently. Customers who had already answered the survey previously would be excluded to ensure independent observation. Immediately after a customer had finished their meal, they would be approached by the data collector and asked to fill in the survey in exchange for a piece of sweet/cookie of their choice. According to King et al. (2010), this time window is appropriate to evaluate customer's emotional reaction following their meal. Additionally, surveys handing out immediately after the guests have finished their meals provide a more concurrent perspective of temporal perception, reducing the confounding implications presented when respondents recall the duration of a distant event (Oakes 2003).

3.3 Survey Formulation

3.3.1 Survey items

This section presents a list of items used in the survey as well as their origin. Questions were adopted/adapted from relevant materials found from the literature review. All items were formatted as 7-point semantic differential scales, unless otherwise indicated. The order of the items listed below does not necessarily resemble the order they appeared in the final survey, since questions measuring neighboring constructs was mingled to avoid the feeling of repetitiveness from respondents. The full version of the field surveys can be found in Appendix 1.

Part 1: Temporal perception, demographics, & moderators (5 items)

Actual & perceived time spent: customer's perceived time spent in the restaurant was measured by an item adapted from Spangenberg et al.'s (1996) study; while the actual time spent at the restaurant were recorded by the data collector. This question was positioned first in the survey to ensure the most concurrent perspective possible. Consequently, the comparative recorded time spanned from the moment the respondent stepped into the restaurant to the moment they began their survey. The perceived time spent question was open-ended, with "minutes" as the answering cue.

Demographics: data about the respondents' age (open-ended) and gender (male or female) were collected as possible moderators.

Restaurant familiarity: one multiple choice item measured the customer's familiarity with the restaurant, ranging from 1 to 7 and above visits.

Motivational Orientation: one multiple choice question asked for the diners' motivational orientation comprising a utilitarian option (save time and effort), a hedonic option (enjoy the evening), and an open-ended option.

Part 2: Emotional states (8 items)

Eight items were adapted from Donovan & Rositter (1982) and Ryu & Jang (2007) to measure the pleasure and arousal emotional states from the Mehrabian-Russell model. The anchoring words were as follow: unhappy – happy, disappointed – delighted, annoyed – pleased, bored – entertained (pleasure); indifferent – surprised, relaxed – stimulated, calm – excited, sleepy – wideawake (arousal).

Part 3: Servicescape social dimensions (4 items)

Four items were adapted from Dedeoglu et al. (2018) to measure the perception of staff image.

Part 4: Servicescape physical dimensions (14 items)

Layout: 2 items were adapted from Wakefield & Blodgett (1996), and 1 item was adapted from Ryu & Jang (2007) to measure customers' perception of the layout functionality.

Cleanliness: 2 items were adapted from Wakefield & Blodgett (1996) to measure customers' perception of the restaurant's level of cleanliness.

Ambience: 3 items were adapted from Kim & Moon (2009) to measure three constructs of ambience conditions (lighting, temperature, and aroma).

Aesthetics: 3 items were adapted from Kim & Moon (2009) to measure customers' perception of the restaurant's aesthetics.

Seating comfort: 3 items were adapted from Kim & Moon (2009) to measure the level of seating comfort.

Part 5: Behavioral intentions (4 items)

Four items were adapted from Ryu & Jang (2007) to measure customers' behavioral intentions, including return intention, word-of-mouth intention, willingness to pay more, and willingness to stay for longer.

Part 6: Manipulation check and perception of music (5 items)

Manipulation check: 2 items were used to verify that the familiarity and tempo of the music in the restaurant had been successfully manipulated

Music perception: 3 items measuring music pleasantness were adapted from the study conducted by Harris & Ezeh (2008).

3.3.2 Survey translations & modifications

The survey was translated from English into Finnish by 2 native Finnish-speaking persons who, at the time of translation, were attending tertiary education. No spelling, lexical, or

grammatical mistakes were found during the pre-test with 5 regular diners. However, during the data collection process, the author was advised by one of the respondents that the Finnish translation of question 4 from part 3 (the service staff looks attractive / palveluhenkilöstö on viehättävää) bore a feminine nuance while the service staff was exclusively male. This came as a daunting moment of realization since the author had by then recognized that several respondents left that question blank or gave inconsistently lower choices compared to other questions concerning the service staff. Nonetheless, it was encouraging to know that the author (who was also the data collector and the service staff) wasn't that unattractive. Unless such answer pattern resurfaced in subsequent responses, of course. The question was then converted into "palveluhenkilöstö on hyvännäköinen".

3.4 Music Playlist

The total duration of each music playlist was set so that it would exceed virtually all customers' stay duration. This ensured that the respondents would not be exposed to repetitions of the same song, since the awareness of such repetitions might prompt confounding implications (Oakes 2003), such as the satiation effect (Zajonc et al. 1972) and negative feelings from both employees and customers (Areni 2003). Through personal observation, the author set this duration at 90 minutes, which approximated 30 songs per playlist.

The two experimental manipulation variables of this study are the degree to which customers are familiar with the music, and the tempo of such music. The 2x2 between-subject design of those two variables resulted in a total of 4 experimental conditions: fast and familiar music, slow and familiar music, fast and unfamiliar music, and slow and unfamiliar music. The tempo dimension of the musical stimuli was determined at the author's discretion due to the inconsistencies of existing online tempo-identification websites. The author had conducted several cross-confirmations with his peers to ensure that there was a clear distinction between the fast and slow conditions.

The familiarity dimension of the musical stimuli was determined by choosing between Thai songs (unfamiliar to Finnish diners) and songs performing well on Finnish music chart (familiar to Finnish diners). Thai songs were chosen for the unfamiliar music

playlist due to considerations of the restaurant owner's request. The author arbitrarily determined which specific Thai songs to include. A total of 46 Thai songs were selected (24 slow songs, 22 fast songs). Since most chosen Thai songs were on average longer than 3 minutes, the 90-minute threshold was upheld.

Songs performing well on Finnish music chart, which shall henceforth be referred to as "Finnish music" for the sake of simplicity despite the inclusion of songs from other countries, were methodically selected from the music charts provided by The Finnish National Group of IFPI. First, a list of highest-selling albums in Finland from 2010 onwards were compiled (IFPI Finland 2018a). The year restriction served to ensure that the music remained relevant for contemporary Finnish diners. Songs from those albums were then categorized as being fast, slow, or inappropriate. Inappropriate songs were those which (1) comprised mostly rap or were too intense (restaurant owner's request), (2) were moderate in tempo (insufficient distinction for the tempo manipulation), or (3) were clearly not popular (insufficient distinction for the familiarity manipulation). The un-popularity of such songs was quantified by how much reference to them the author could find via a simple online search, and how many views they had acquired on a popular online video platform (Youtube). Forty-three songs were selected in this manner (30 slow songs, 13 fast songs). Subsequently, weekly top-chart songs from 2013 to August 2018 were categorized using the same criteria mentioned above (IFPI Finland 2018b). Only songs that have been on the weekly chart for 15 times or more were included. Seventeen songs were selected in this manner (17 fast songs). The full list of the songs used in the study is included in appendix 2.

4 DATA ANALYSIS

4.1 Background

The data analysis process of this study comprises five phases: (1) a descriptive phase to summarize and report the data, (2) Mann-Whitney U tests to validate the experimental manipulation, (3) principal component analyses to reduce the number of variables for further analyses, (4) a multivariate analysis of variance (MANOVA) to test the effects of

music tempo and music familiarity on diners' temporal perception, emotions, & behavioral intentions, (5) a series of regression analyses to test the effects of emotions on diners' perception/behavioral intentions, the mediating effects of emotion on the relationship between music and behavioral intentions, and the effects of the proposed moderators.

The data were analyzed with IBM SPSS Statistics version 20. Raw data were entered into the software as they appeared in the physical surveys, with the following exceptions:

- Cases with missing items were removed
- Cases with exposure time to the experimental manipulation less than 15 minutes were removed
- Perceived times were converted into minutes if applicable
- Gender was coded as 1 (male) and 2 (female)
- Restaurant familiarity was coded as 1 (1st time customer), 2 (2nd-3rd time customer), 3 (4th-6th time customer), and 4 (7th+ time customer)
- Motivational orientation was coded as 1 (utilitarian) and 2 (hedonic). Other open-ended answers given were also categorized as being utilitarian (in a hurry, lunch time, near workplace, hungry, convenient, lazy, does not want to cook by oneself) or hedonic (meeting/spending time with friends/relatives, good food).

4.2 Descriptive Analysis

A total of 116 responses were collected, of which 16 were eliminated due to incompleteness or insufficient exposure to ambient music, resulting in 100 usable responses. The experimental conditions for those 100 responses were 25 (slow-familiar), 28 (slow-unfamiliar), 23 (fast-familiar), 24 (fast-unfamiliar). 48% of the respondents are males and 52% are females. Respondents' age ranges from 8 to 65, with the median age of 33. Most (80%) of the participants are between 24 and 41 years old. On average, before being asked to fill in the survey, a diner was exposed to the experimental music for 45.36 minutes (standard deviation = 18.4, min = 17, max = 126), while his/her perceived time was 42.86 (standard deviation = 18.7, min = 15, max = 120). First time customers made up 41% of the total respondents, while 2nd-3rd time customers, 4th-6th time customers, and 7th+ time customers accounted for 26%, 16%, & 17% respectively. 78% of the respondents came to the restaurant for hedonic purposes, and 22% for utilitarian purposes.

4.3 Mann-Whitney U Test

Since the two manipulation check items measuring perceived music familiarity (*I am familiar with the music played here*) and perceived music tempo (*in your opinion, how slow/fast is the music*) are ordinal and non-normally distributed between groups, the non-parametric Mann-Whitney U test is appropriate to compare the means of those 2 items across the different music conditions (Nachar 2008). The test found a significant difference in perceived music familiarity scores across the familiar-unfamiliar music conditions ($U = 196.5$, $N_1 = 48$, $\mu_1 = 5.44$, $N_2 = 52$, $\mu_2 = 2.08$, $p < 0.001$), as well as a significant difference in perceived music tempo scores across the slow-fast music conditions ($U = 668$, $N_1 = 51$, $\mu_1 = 3.7$, $N_2 = 47$, $\mu_2 = 4.52$, $p < 0.001$). The results show that manipulation in both music familiarity and tempo was successful, although the distinction between music familiarity levels were much stronger than the distinction between music tempo levels.

4.4 Principal Component Analysis

Two principal component analyses (PCA) were conducted to reduce the dimensionality of the observed variables and help control type I error inflation for subsequent analyses (Jolliffe 2011). PCA can also help reduce the error due to survey translation and to respondents' own interpretation of the survey items.

The first PCA was conducted on 8 emotional state variables (part 2 of the survey). The Kaiser-Meyer-Olkin (KMO) value for those variables was 0.823, indicating an adequate number of samples for the PCA. The variables also passed the Bartlett's test of sphericity ($p < 0.001$), suggesting that there were correlations among them and a PCA was appropriate for dimensionality reduction. The varimax rotation method was chosen because the pleasure and arousal dimension, according to Mehrabian & Russell (1974, cited by Donovan & Rossiter 1982), are orthogonal dimensions. Results for this PCA can be found in table 1. The results found two components with eigenvalues larger than 1 explaining 66.38% of the variance. These 2 components can be easily identified as pleasure and arousal. The unhappy/happy and indifferent/surprised items cross-loaded on both components and thus were removed. Surprisingly, the relaxed-stimulated item loaded negatively

onto the first component (pleasure). This could be explained by “relaxed” being interpreted as a pleasurable emotion in restaurant settings. Thus, the item was reverse-coded into stimulated-relaxed and loaded highly onto the pleasure component. After the first PCA, 2 new variables were created representing the pleasure dimension (disappointed-delighted, annoyed-pleased, bored-entertained, stimulated-relaxed) and the arousal dimension (sleepy-wideawake, calm-excited). The new variables were created by summing up the individual scores of its composing elements.

Table 1: Factor loadings of the emotional dimensions using PCA (PCA 1)

Items	Components	
	Pleasure	Arousal
Disappointed-delighted	.914	
Annoyed-pleased	.906	
Bored-entertained	.778	
Reverse coded: stimulated-relaxed	.764	
Calm-excited		.835
Sleepy-wideawake	.314	.697
Unhappy-happy	.565	.482
Indifferent-Surprised	.581	.427

*Loadings smaller than 0.3 was omitted

The second PCA with varimax rotation was conducted on all items on part 3 (social dimension), 4 (physical dimension), 5 (behavioral intention), and 6 (music perception) of the surveys, excluding the manipulation check items. The KMO value and Bartlett’s p value was 0.798 and < 0.001 respectively, indicating relatively good fit for a PCA. Results for this PCA are presented in table 2. Six components were found with eigenvalues > 1 explaining 67.3% of variance. If an item’s loading score on a particular component is 0.2 point larger than all other components, that item is considered to be loaded onto that component, otherwise the item is considered cross-loaders and is removed. Six new variables are computed representing (1) *aesthetics & dining comfort* (easy to find the restroom, attractive interior design, comfortable seats, pleasing and appropriate color scheme, nice decoration), (2) *staff image* (helpful staff, polite and friendly staff, neat and well-dressed staff), (3) *perceived music attributes* (perceived music volume, perceived music pleasantness, perceived music appropriateness), (4) *layout* (layout makes it easy to move around,

easy to get in/out of seats, comfortable distance between chair-table), (5) *ambience* (appropriate lighting, comfortable temperature, pleasant aroma), and (6) *behavioral intentions* (return intentions, recommendation intentions, willingness-to-pay).

Table 2: Factor loadings of perception & behavioral intention using PCA (PCA 2)

Items	Components					
	Aesthetics & dining comfort	Staff image	Music attributes	Layout	Ambience	Behavioral intentions
Interior design	.799					
Color scheme	.787					
Decoration	.684			.339		
Restroom	.602					
Comfortable seats	.578			.319		
Neat, well-dressed staff		.886				
Polite, friendly staff		.866				
Helpful staff		.840				
Music pleasantness			.899			
Music appropriateness			.872			
Music volume			.772			
Easy to get in/out of seats				.764		
Chair-table distance	.314		.304	.714		
Layout - move around	.380			.616	.389	
Temperature					.827	
Aroma	.318				.772	
Lighting	.426				.655	
Return intention						.806
Recommendation intention	.307					.813
Willingness-to-pay						.754
Clean walkways	.471			.399		
Willingness-to-stay				.400		.499
Clean dining area	.584				.389	
Layout - request service	.437				.374	
Attractive staff	.337	.520				

*Loadings smaller than 0.3 was omitted

4.5 Multivariate Analysis of Variance

A Two-way Multivariate Analysis of Variance (MANOVA) was employed to test the effects of music tempo and familiarity on diners' temporal perception, perception of the servicescape, emotions, and behaviors, as well as the interaction across different levels of tempo and familiarity. First, a new "time difference" variable was computed by the equation: *Time difference = perceived time – actual time*. The independent variables for the MANOVA were music tempo and music familiarity (each of which comprised 2 levels), while the dependent variables were time difference, arousal, pleasure, aesthetics & dining

comfort, staff image, music attributes, layout, ambience, and behavioral intentions. Descriptive statistics such as mean, standard deviation, and N for each group of the dependent variables are presented in appendix 3. Levene’s test of equality of error variances (see table 3) demonstrated that the dependent variables have equal variances across groups, except for the pleasure variable. Shapiro-Wilk tests of normality indicated that, unfortunately, most of the variables were not normally distributed between groups (see appendix 4). However, as analyses of variance are quite robust against violation of the normality assumption (Schmider et al. 2010), results of the MANOVA should still be valid. Since analyses of variance in general are sensitive to outliers (French et al. 2008), a test for outliers using Mahalanobis distance was conducted and 2 outliers were identified and removed from the MANOVA.

Table 3: Levene's test of equality of error variances for the MANOVA

	F	df1	df2	p
Time difference	.555	3	94	.646
Arousal	.620	3	94	.604
Pleasure	6.265	3	94	.001
Aesthetics and dining comfort	1.428	3	94	.240
Staff image	2.090	3	94	.107
Perceived music attributes	2.129	3	94	.102
Layout	1.450	3	94	.233
Ambience	.716	3	94	.545
Behavioral intentions	1.938	3	94	.129

The MANOVA’s results (see table 4) found a significant effect of music tempo on the dependent variables ($F = 2.286$, $p = 0.024$). No significant effects were found for music familiarity and for the interaction of music tempo and music familiarity. Subsequent examination of the univariate test results (see table 5) suggested that music tempo had a significant effect on perceived music attributes ($F = 8.505$, $p = 0.004$). The mean and median for perceived music attributes under slow music tempo were 16.65 and 18 respectively, while that of perceived music attributes under fast music tempo were 14.4 and 15.

Table 4: MANOVA Results

Effect	F	Hypothesis df	Error df	Wilk's Lambda
Music tempo	2.286 ^b	9	86	.024
Music familiarity	1.621 ^b	9	86	.122
Music tempo * music familiarity	1.161 ^b	9	86	.330

Table 5: Follow-up ANOVAs after MANOVA

	Dependent Variable	F	p
Music tempo	Time difference	.244	.622
	Arousal	.002	.965
	Pleasure	2.229	.139
	Aesthetics and dining comfort	1.315	.254
	Staff image	.576	.450
	Perceived music attributes	8.505	.004
	Layout	.034	.854
	Ambience	.004	.950
	Intentions	.265	.608

Since no significant correlation was found between music and diners' emotions/behaviors/temporal perceptions, there was no further need to conduct mediation/moderation regression analysis in the next section.

4.6 Regression Analysis

A series of multiple linear regression analyses were employed to test the effects of emotion on diners' perception and behaviors. The independent variables in all regressions were arousal and pleasure, while the dependent variables were, chronologically, aesthetics & dining comfort, staff image, layout, ambience, behavioral intentions, and time difference. Table 6 shows the correlation matrix of each regression conducted. Due to multiple separate comparisons, Bonferroni correction was applied resulting in a critical p-value of $0.05/6 = 0.0083$. Similar to the MANOVA, an outlier test using Mahalanobis distance was conducted and the same 2 outlier cases were removed. Other assumptions of multiple linear regression, i.e. normality, linearity and homoscedasticity, were examined with the histograms and the scatter plots of the standardized residuals in a manner recommended by Gaurav Bansal (n.d.). Results of the regressions are shown in table 7. The multiple regressions found significant effects of emotion on perceived staff image ($F = 5.12$, $p = 0.008$, adjusted $R^2 = 0.078$) and behavioral intentions ($F = 8.326$, $p < 0.001$,

adjusted $R^2 = 0.131$). Thus, emotions explained 7.8% and 13.1% of the variability in perceived staff image and behavioral intention respectively. The regression equation for the 2 effects are as follow:

$$Y_{staff} = 18.018 + 0.11A + 0.055P$$

$$Y_{behavior} = 12.897 + 0.207A + 0.146P$$

Where A = score of the arousal variable, and B = score of the pleasure variable

In the relationship between emotion and staff image, only the pleasure dimension significantly predicted staff image ($p = 0.03$), while in the relationship between emotion and behavioral intentions, both arousal and pleasure dimensions significantly predicted behavioral intentions ($p = 0.045$ & $p = 0.002$ respectively).

Table 6: Correlation matrix of each regression analysis

		Arousal	Pleasure
Pearson Correlation	Aesthetic & dining comfort	.198	.176
	Perceived staff image	.227	.245
	Perceived layout	.130	.252
	Perceived ambience	.103	.244
	Behavioral intentions	.240	.335
	Perceived time - actual time	.075	-.018
Sig.	Aesthetic & dining comfort	.025	.042
	Perceived staff image	.012	.007
	Perceived layout	.102	.006
	Perceived ambience	.156	.008
	Behavioral intentions	.009	.000
	Perceived time - actual time	.233	.432

Table 7: Multiple linear regression results

Dependent variable	R^2	F	p
Aesthetics & dining comfort	.061	3.085	0.05
Staff image	.097	5.120	.008
Layout	.072	3.707	.028
Ambience	.064	3.261	.043
Behavioral intentions	.149	8.326	< .001
Time difference	.006	.306	.737

5 DISCUSSION & CONCLUSIONS

Overall, the results do not provide support for the influence of music tempo and familiarity on diners' emotion and subsequently behavioral intention. Despite the successful manipulation of music tempo and familiarity, no significant effects of music were evident on diners' temporal perception, perception of the servicescape, emotions, and behaviors. Nonetheless, emotion (both pleasure and arousal) was found to have a significant impact on behavioral intention, that is, higher scores in the emotional state scale generally resulted in more favorable behavioral intention. This overall finding that music exerts no influence on diners' perception, emotion and behavioral intention is inconsistent with the vast literature upholding the effects of music (e.g., Milliman 1986, Bruner 1990, North & Hargreaves 1998, Yalch & Spangenberg 2000, Areni 2003). However, since there is often a discrepancy in the music parameters used across the literature, rather than arguing against the servicescape framework, the current finding merely suggests that music tempo and familiarity are not major contributors of music's effects in restaurants. Furthermore, the results may as well resonate with Sullivan's (2002) argument that the attributes of ambient music do not matter as much as its perceived appropriateness with a given environment. According to Sullivan (2002), restaurant patrons typically expect some sort of background music without much prejudice towards its attributes, provided that the music is not plainly intrusive (such as being uncomfortably loud). As almost half of the survey respondents are first-time customers and therefore should have little to no expectation of the "right" type of ambient music, Sullivan's (2002) proposal seems to explain the finding of the present study. It was unfortunate that because a control condition (one where no ambient music was played) was not included in the experimental design, the proposal cannot be empirically confirmed.

Another interesting finding from the present study is a slight improvement in diners' evaluation of ambient music under slow tempo. If slow music is to correlate with lower levels of arousal, this finding means that patrons may appreciate relaxation more than stimulation in a restaurant. This notion couples relatively well with the relaxed-stimulated spectrum loading highly on the pleasure dimension, rather than the arousal dimension, in the principal component analysis. This discrepancy between a specific service setting (restaurant) and the general Mehrabian-Russell literature could serve as an alert for choosing

survey items in future restaurant research. Diners' appreciation of slow music, besides being reflected through the quantitatively collected data, also prompted them to voice their opinions. One respondent indicated a neutral surprise by the fast-familiar music played in the restaurant at the time, noting that he listened to it attentively. This particular patron was certainly more emotionally aroused than he expected to be. Another group of three patrons specifically asked for slow-unfamiliar music, explaining that they prefer its calmness to the stimulation of fast-familiar music. Lastly, one diner wrote on the survey that they didn't even notice or think of the ambient (slow-unfamiliar) music until asked to do so by the survey, which is a sign of low arousal as well. It is also wise to note that unawareness of the music does not mean one is not affectively influenced by it.

Finally, diners' feelings of pleasure significantly predicted their perception of staff image in the regression analysis. This result may as well reinforce the importance of the service staff on customer satisfaction suggested by, for e.g., Baker et al. (2002), Raajpoot et al. (2008), & Dedeoglu et al. (2018). Drawing on such literature and the finding of the present study, and because emotion is an important determinant of satisfaction (Westbrook & Oliver 1991), there seems to be a bidirectional relationship between perceived staff image and emotion. That is, better evaluation of the service staff can enhance patron's emotion and vice versa.

Limitation

The research design of this thesis has a number of limitations. First, the arbitrary method to determine a song's tempo (fast or slow) was unreliable, leading to a relatively weak distinction of music tempo, as compared to music familiarity. The effects of the difference in musical style, as shown by North et al. (1999) & Wilson (2003), were not accounted for, which could potentially influence the study's results. There was also no counter-balance for the effects of days of the week, resulting in a disproportionate concentration of surveys on Friday & Saturday (51% of all surveys). This may help explain why 78% of the respondents came to the restaurant for hedonic purposes. Since diners' motivational orientation can alter how they evaluate the service experience (Kaltcheva & Weitz 2006), the lack of counter-balancing reduces the results' reliability. Furthermore, a control condition (no music) was not included in the experimental design to test if the presence of

music irrespective of its attributes could exert any influence, as suggested by Areni & Kim (1993). Findings from the present paper should not be generalized beyond the restaurant setting, since different consumption contexts can imply different desirable attributes. This is best illustrated by the shift of the relaxation-stimulation feelings from the arousal dimension to the pleasure dimension in this study. Lastly, translation errors might have confounding implications, especially in measuring diners' emotional states, because emotional adjectives can be hard to translate and may bear unexpected nuances.

Recommendations for future research

Future research into the ambient effects of music could focus on testing other attributes of music, such as genre, pitch, texture, or the level of congruency with the overall service environment, to see if any particular pattern of interaction should surface. The inclusion of different settings such as retail, showroom, waiting room, and public area in future research may as well allow us to determine the expected or most effective music for each category of environment. Alternatively, one can also take into account other types of internal responses, namely cognition, or employ other model of human-environment interaction than the Mehrabian-Russell model.

6 REFERENCES

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APPENDIX 1: FIELD SURVEYS

English version (2 pages)

*I'm a student at Arcada University of Applied Sciences. This survey is a part of my graduation thesis. All data collected is strictly anonymous and confidential.

*Survey ID: _____

*Thank you very much for participating!

Part 1: Background questions

- 1) How much time do you think you have spent in the restaurant? Just give us your best guess without looking at the clock: _____ (minutes)
- 2) Please specify your age: _____
- 3) Are you: male female
- 4) How many times have you eaten at this restaurant?
 1 (1st time) 2-3 4-6 7+
- 5) What is your reason for eating out today?
 Save time & effort Enjoy the evening Others: _____

Part 2: On a scale from 1 - 7, circle the option that best describes your overall feelings.

- | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|
| | | | | Neutral | | | | |
| 1) Unhappy | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> | Happy |
| 2) Relaxed | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> | Stimulated |
| 3) Disappointed | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> | Delighted |
| 4) Sleepy | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> | Wideawake |
| 5) Annoyed | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> | Pleased |
| 6) Calm | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> | Excited |
| 7) Bored | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> | Entertained |
| 8) Indifferent | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> | Surprised |

Part 3: On a scale from 1-7 (1 = strongly disagree, 7 = strongly agree), circle the option that best describes your opinion of this restaurant's service staff

- | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | | | | Neutral | | | |
| 1) The service staff is helpful. | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> |
| 2) The service staff is polite and friendly. | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> |
| 3) The service staff is neat and well-dressed. | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> |
| 4) The service staff looks attractive. | <u> 1 </u> | <u> 2 </u> | <u> 3 </u> | <u> 4 </u> | <u> 5 </u> | <u> 6 </u> | <u> 7 </u> |

Part 4: On a scale from 1-7, circle the option that best describes your opinion of this restaurant's facilities.

- | | Neutral | | | | | | |
|--|---------|-----|-----|-----|-----|-----|-----|
| 1) The layout makes it easy to request service. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 2) The dining area is kept clean. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 3) The overall lighting level is appropriate. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 4) The temperature is comfortable. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 5) The aroma is pleasant. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 6) It is easy to find and get to the restroom. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 7) This restaurant has attractive interior design. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 8) The seats are comfortable . | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 9) The layout makes it easy to move around. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 10) This restaurant has clean walkways. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 11) It is easy to get in and out of the seats. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 12) The color scheme is pleasing and appropriate. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 13) The distance between chair and table is comfortable. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 14) This restaurant is nicely decorated. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |

Part 5: On a scale from 1-7, circle the option that best describes your current intentions.

- | | Neutral | | | | | | |
|---|---------|-----|-----|-----|-----|-----|-----|
| 1) I would like to come back in the future. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 2) I would recommend this restaurant to my friends. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 3) I am willing to stay longer than I planned. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 4) I am willing to spend more than I planned. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |

Part 6: On a scale from 1-7, circle the option that best describes your opinion of the music played.

- | | Neutral | | | | | | |
|---|---------|-----|-----|-----|-----|-----|-----|
| 1) I am familiar with the music played here. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 2) In your opinion, how slow/fast is the music?
(1 = very slow, 4 = medium, 7 = very fast) | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 3) The music was played at an appropriate volume. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 4) The music was pleasant to listen to. | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |
| 5) The music was appropriate | _1_ | _2_ | _3_ | _4_ | _5_ | _6_ | _7_ |

Finnish version (2 pages)

*I'm a student at Arcada University of Applied Sciences. This survey is a part of my graduation thesis.
All data collected is strictly anonymous and confidential.

*Kysely ID: _____

* Kiitos paljon, että osallistuite!

Osa 1: Yleisiä kysymyksiä

- 1) Kuinka kauan uskot viettäneesi aikaa ravintolassa? Anna paras arviosi ilman että tarkistat kellosta: _____ (minuuttia)
- 2) Minkä ikäinen olette?: _____
- 3) Oletko: mies nainen
- 4) Montako kertaa olette syöneet tässä ravintolassa?
 1 2-3 4-6 7+
- 5) Minkä takia lähditte tänään ulos syömään?
 Säästätte aikaa Nautitte illasta Muu syy: _____

Osa 2: Asteikolla 1 – 7, ympyröikää vaihtoehto, joka parhaiten kuvaa teidän tunnetilaa.

	Neutraali							
1) Onneton	_1_	_2_	_3_	_4_	_5_	_6_	_7_	Iloinen
2) Rentoutunut	_1_	_2_	_3_	_4_	_5_	_6_	_7_	Jännittynyt
3) Pettynyt	_1_	_2_	_3_	_4_	_5_	_6_	_7_	Tyytyväinen
4) Väsynyt	_1_	_2_	_3_	_4_	_5_	_6_	_7_	Pirteä
5) Ärsyyntynyt	_1_	_2_	_3_	_4_	_5_	_6_	_7_	Mieltynyt
6) Rauhallinen	_1_	_2_	_3_	_4_	_5_	_6_	_7_	Innostunut
7) Tylistynyt	_1_	_2_	_3_	_4_	_5_	_6_	_7_	Viihtynyt
8) Yhdentekevä	_1_	_2_	_3_	_4_	_5_	_6_	_7_	Yllättynyt

Osa 3: Asteikolla 1 – 7 (1 = Täysin eri mieltä, 7 = Täysin samaa mieltä), ympyröi vaihtoehto, joka mielestäsi parhaiten kuvaa tämän ravintolan palveluhenkilöstöä.

	Neutraali						
1) Palveluhenkilöstö on avuliasta.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
2) Palveluhenkilöstö on kohteliasta ja ystävällistä.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
3) Palveluhenkilöstö on siistiä ja hyvin pukeutunutta.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
4) Palveluhenkilöstö on hyvännäköinen.	_1_	_2_	_3_	_4_	_5_	_6_	_7_

Osa 4: Asteikolla 1-7, ympyröi numero, joka kuvaa parhaiten mielipidettäsi tämän ravintolan tiloista.

	Neutraali						
1) Asetelman ansiosta palvelua saa helposti.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
2) Ruokailualue pidetään puhtaana.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
3) Valaistus on tyydyttävä kaiken kaikkiaan.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
4) Lämpötila on sopiva.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
5) Tuoksu on miellyttävä.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
6) WC-tilaan löytää ja pääsee helposti.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
7) Ravintolan sisustus on viehättävä.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
8) Istuimet ovat mukavia.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
9) Asteleman ansiosta liikkuminen tiloissa on helppoa.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
10) Ravintolan käytävät ovat puhtaita.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
11) Istuimista liikkuminen on helppoa.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
12) Ravintolan värimaailma on miellyttävä.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
13) Tuolin ja pöydän välinen tila on sopiva.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
14) Ravintola on hyvin koristeltu.	_1_	_2_	_3_	_4_	_5_	_6_	_7_

Osa 5: Asteikolla 1-7, ympyröi numero, joka parhaiten kuvaa tämänhetkisiä tunteitasi ravintolaa kohtaan.

	Neutraali						
1) Haluan tulla takaisin tulevaisuudessa.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
2) Suosittelisin tätä ravintolaa ystäväilleni.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
3) Voin jäädä pidemmäksi aikaa kuin suunnittelin.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
4) Voin käyttää enemmän rahaa kuin suunnittelin.	_1_	_2_	_3_	_4_	_5_	_6_	_7_

Osa 6: Asteikolla 1-7, ympyröi numero joka parhaiten kuvaa mielipidettäsi ravintolassa soitetusta musiikista.

	Neutraali						
1) Musiikki oli minulle tuttua.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
2) Oliko musiikki mielestäsi nopeaa vai hidasta? (1 = hyvin hidasta, 4 = medium, 7 = tosi nopeaa)	_1_	_2_	_3_	_4_	_5_	_6_	_7_
3) Musiikki soi sopivalla äänellä.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
4) Musiikkia oli mukavaa kuunnella.	_1_	_2_	_3_	_4_	_5_	_6_	_7_
5) Ravintolan musiikki oli sopivaa.	_1_	_2_	_3_	_4_	_5_	_6_	_7_

APPENDIX 2: MUSIC PLAYLISTS

Slow & familiar playlist

Song	Artist	Selection	Song	Artist	Selection
Älä Äitee Sure	Lauri Tähkä Elonkerjuu	Album	Minä ja hän	Jenni Vartiainen	Album
Bum Bum Bum	Nipa Neumann	Album	Minä sinua vaan	Jenni Vartiainen	Album
Don't You Remember	Adele	Album	Missä muruseni on	Jenni Vartiainen	Album
Elossa Taas	Katri Helena	Album	Nuoruus On Seikkailu	Jari Sillanpää	Album
Ennustus	Chisu	Album	Päivät on täällä hitaita	Jenni Vartiainen	Album
Eva	Nightwish	Album	Pariisi-Helsinki	Kaija Koo	Album
Halvalla	Jenni Vartiainen	Album	Sinä Ja Minä	Jari Sillanpää	Album
Jealous Sky	Jari Sillanpää	Album	The Moment of Our Love	Nipa Neumann	Album
Jos Menet Pois	Erin	Album	Tie	Chisu	Album
Jos on valmis, ei sitä tartte kysyäkään	Chisu	Album	Tule meille jouluksi	Jenni Vartiainen	Album
Kaukaa	Jenni Vartiainen	Album	Valkeaa Unelmaa	Katri Helena	Album
Kaunis rietas onnellinen	Jari Sillanpää	Album	Vanha jo nuorena	Chisu	Album
Kylmä Ilman Sua	Jonne Aaron	Album	Vanha Sydän	Kaija Koo	Album
Lintu ja Lapsi	Jonne Aaron	Album	Vapaa	Erin	Album
Mennään Hiljaa Markkinoille	Kaija Koo	Album	Veneretki	Chisu	Album

Fast & familiar playlist

Song	Artist	Selection	Song	Artist	Selection
Animals	Maroon 5	Top-chart	Mitä tänne jää	Erin	Album
Beibi	Haloo Helsinki!	Top-chart	New Way Home	Isac Elliot	Top-chart
Cheap Thrills	Sia	Top-chart	Onnellinen	Robin	Album
Despacito	Luis Fonsi	Top-chart	Outside	Calvin Harris	Top-chart
Erämaan viimeinen	Nightwish	Album	Rockabye	Clean Bandit	Top-chart
Erilaiset	Robin	Album	Rolling in the Deep	Adele	Album
Frontside Ollie	Robin	Album	Rumour Has it	Adele	Album
Get lucky	Draft Punk	Top-chart	Satulinna	Jonne aaron	Album
Honey	Evelina ft. Mikael Gabriel	Top-chart	Shape of You	Ed Sheeran	Top-chart
Hula Hula	Robin	Top-chart	Suudellaan	Lauri Tähkä Elonkerjuu	Album
Jippikayjei	Jonne Aaron	Album	Take Me To Church	Hozier	Top-chart
Jos Mä Oisin Sä	Katri Helena	Album	Tuhlaajapoika	Nipa Neumann	Album
Kylmii Väreitää	Evelina	Top-chart	Vapaus käteen jää	Haloo Helsinki!	Top-chart
Liekeissä	Jari Sillanpää	Album	Waiting For Love	Avicii	Top-chart
Madafakin darra	Roope Salminen & Koirat	Top-chart	Wake Me Up	Avicii	Top-chart

Slow & unfamiliar playlist

Song	Artist	Song	Artist
ครึ่งหนึ่งไม่ถึงตาย	Klear	ทิ้งไว้กลางทาง	Potato
Somebody to love	Bird Thongchai	คนทางนั้น	Gift
Please	Atom ชนกันต์	แหลก	Season Five
ทางของฝุ่น (dust)	Atom ชนกันต์	คำถามซึ่งไร้คนตอบ	Getsunova
เก็บรัก	Ammy The Bottom Blues	ไม่มีชื่อแม่ตั้งแต่เริ่มต้น	ไผ่ พงศธร
กำแพง	Ammy The Bottom Blues	อยากรู้หัวใจตัวเอง	วีโอเลต วอเทียร์
ได้ไหมดาว	Nok, Tery	อยากเป็นคนนั้น	AB Normal Feat.Mariam B5
ยังคิดถึง... (same)	Marc Tatchapon	ขอเวลาสิม	Aun Feeble heart, Ouiai
เมื่อวาน	ไอ้ต ปราโมทย์	โตแล้ว	Ammy The Bottom Blues
ถ้าฉันหายไป (Skyline)	เอ็ด ภัทรวิ	คนบ้า	Ammy The Bottom Blues
ฟัง..(ลำพัง)	Getsunova, Lydia	ระหว่างที่รอเขา	ปิ๊อบ ปองกุล, อีร์ไซยเดช
ถอย	Gliss	เรื่องจริง	Sin Singular

Fast & unfamiliar playlist

Song	Artist	Song	Artist
รักน้องคนเดียววาว	UrboyTJ	รอสายคนโสด	หญิงลี ศรีจุมพล
ใจความสำคัญ	Musketeers	ตั้งก้าว (thank you)	Kamikaze
Dancing	Musketeers	หญิงลัลลา	หญิงลี ศรีจุมพล
เคลิ้ม (slot machine)	Kloem	Number one	Bankk Cash feat.หญิงลี
แตกต่างกันเหมือนกัน	Getsunova	หลอเลย	พลพล
อ้าว	Atom ชนกันต์	ที่เหลือคือรักแท้	ป้าง นครินทร์
ขอใจเธอแลกเบอร์โทร	หญิงลี ศรีจุมพล	555	Wonderframe
โอเคปะ? (Yes or no?)	Flame (เฟลม) feat. นุช วิลาวัลย์ อาร์สยาม	เตือนแล้วนะ (love warning)	Third Kamikaze
คุกเขา	Cocktail	พริบตา	Bird Thongchai, Stamp
โสดกะปรีบกะปรอย	ปอ อรรถนพ	หยุดตรวจ	Telex Telexs
คุณและคุณเท่านั้น	แกงส้ม	คุกกี้เสี่ยงทาย (Koisuru fortune cookie)	BNK48

APPENDIX 3: DESCRIPTIVE STATISTICS OF MANOVA

Descriptive Statistics					
	Music tempo	Music familiarity	Mean	Std. Deviation	N
Time difference	1	1	-2.80	7.246	25
		2	-3.37	8.793	27
		Total	-3.10	8.013	52
	2	1	-2.27	9.150	22
		2	-2.29	6.669	24
		Total	-2.28	7.862	46
	Total	1	-2.55	8.105	47
		2	-2.86	7.808	51
		Total	-2.71	7.912	98
Arousal	1	1	7.4400	2.08327	25
		2	8.0370	2.51887	27
		Total	7.7500	2.31682	52
	2	1	8.2273	2.48676	22
		2	7.2917	2.27423	24
		Total	7.7391	2.39847	46
	Total	1	7.8085	2.29023	47
		2	7.6863	2.41239	51
		Total	7.7449	2.34328	98
Pleasure	1	1	21.0000	6.91014	25
		2	22.2222	5.55624	27
		Total	21.6346	6.21203	52
	2	1	22.7273	4.65149	22
		2	23.6667	2.80786	24
		Total	23.2174	3.78836	46
	Total	1	21.8085	5.96234	47
		2	22.9020	4.49558	51
		Total	22.3776	5.25144	98
Aesthetics & dining comfort	1	1	28.8000	3.24037	25
		2	26.4444	4.12621	27
		Total	27.5769	3.87726	52
	2	1	28.5909	5.27039	22
		2	28.7083	4.93857	24
		Total	28.6522	5.04300	46
	Total	1	28.7021	4.26265	47
		2	27.5098	4.62330	51
		Total	28.0816	4.47138	98
Staff image	1	1	20.3200	1.14455	25
		2	20.0741	1.41220	27
		Total	20.1923	1.28397	52
	2	1	20.4091	1.09801	22
		2	19.5833	1.50121	24
		Total	19.9783	1.37419	46
	Total	1	20.3617	1.11171	47
		2	19.8431	1.46113	51
		Total	20.0918	1.32452	98

Perceived music attributes	1	1	15.9200	3.72961	25
		2	17.3333	3.03822	27
		Total	16.6538	3.42931	52
	2	1	13.5000	4.21731	22
		2	15.2917	4.13342	24
		Total	14.4348	4.22507	46
	Total	1	14.7872	4.10692	47
		2	16.3725	3.70384	51
		Total	15.6122	3.96280	98
Layout	1	1	17.5600	2.94505	25
		2	17.6667	2.58695	27
		Total	17.6154	2.73792	52
	2	1	17.5000	3.54226	22
		2	17.5000	3.09277	24
		Total	17.5000	3.27787	46
	Total	1	17.5319	3.20225	47
		2	17.5882	2.80839	51
		Total	17.5612	2.98818	98
Ambience	1	1	18.2400	2.55408	25
		2	17.9259	3.39599	27
		Total	18.0769	2.99572	52
	2	1	17.5455	3.48776	22
		2	18.5417	2.81269	24
		Total	18.0652	3.15807	46
	Total	1	17.9149	3.01323	47
		2	18.2157	3.11970	51
		Total	18.0714	3.05702	98
Behavioral intentions	1	1	18.0800	2.11975	25
		2	17.6667	2.66025	27
		Total	17.8654	2.40122	52
	2	1	17.1818	3.09587	22
		2	18.0417	2.07426	24
		Total	17.6304	2.61923	46
	Total	1	17.6596	2.63155	47
		2	17.8431	2.38640	51
		Total	17.7551	2.49561	98

APPENDIX 4: SHAPIRO-WILK RESULTS

Shapiro-Wilk test results for MANOVA

	Experimental condition	Shapiro-Wilk	
		df	Sig.
Perceived music attributes	Slow familiar	25	.020
	Slow unfamiliar	27	.005
	Fast familiar	22	.457
	Fast unfamiliar	24	.103
Arousal	Slow familiar	25	.015
	Slow unfamiliar	27	.127
	Fast familiar	22	.223
	Fast unfamiliar	24	.187
Pleasure	Slow familiar	25	.003
	Slow unfamiliar	27	.006
	Fast familiar	22	.042
	Fast unfamiliar	24	.014
Aesthetic and dining comfort	Slow familiar	25	.703
	Slow unfamiliar	27	.613
	Fast familiar	22	.044
	Fast unfamiliar	24	.097
Staff image	Slow familiar	25	.000
	Slow unfamiliar	27	.000
	Fast familiar	22	.000
	Fast unfamiliar	24	.001
Layout	Slow familiar	25	.007
	Slow unfamiliar	27	.007
	Fast familiar	22	.012
	Fast unfamiliar	24	.037
Ambience	Slow familiar	25	.010
	Slow unfamiliar	27	.000
	Fast familiar	22	.002
	Fast unfamiliar	24	.001
Behavioral intentions	Slow familiar	25	.044
	Slow unfamiliar	27	.046
	Fast familiar	22	.078
	Fast unfamiliar	24	.100
Time difference	Slow familiar	25	.111
	Slow unfamiliar	27	.497
	Fast familiar	22	.100
	Fast unfamiliar	24	.270