

## Chapter 1 Introduction

Online shopping has grown rapidly and gained broad acceptance. US online retail spending reached \$43.7 billion in the first quarter in 2011, up 17.6% from the same quarter a year ago. This growth rate represented the tenth consecutive quarter of positive year-on-year growth, except 2009 when the global financial crisis 2008–2009 hit consumer spending (US Census Bureau, 2011). Meanwhile, more than 185 million Chinese went online to shop in 2010, representing an increase of 42.3%, from 130 million in 2009. China's online market was 140 billion Yuan in 2008, 267 billion Yuan in 2009, and it reached 498 billion Yuan in 2010, when it accounted for 3.2% of China's total retail sales. China's online shopping market is expected to reach 890 billion Yuan in 2011 (China IntelliConsulting Corp., 2011).

Because the online market is very competitive, it is difficult for marketers to seek or achieve price advantage; innovation has become the important strategy to gain competitive advantages. The online environment is different from the physical environment in that consumers search for product information and make purchase decisions in front of the screen. The environment at that moment becomes important because a pleasant atmosphere can induce positive emotions and enhance purchase intention. Background music is one of the important means of creating a pleasant environment and should receive particular attention. Music is an invisible language that stimulates emotions and inner feelings and, therefore, consumer shopping behavior may be influenced by background music. Marketers often use background music matching the visuals to produce better advertising effects (Gorn et al., 1991; Macinnis and Park, 1991). People stay for different durations of time and spend different amounts of money in supermarkets and restaurants under different

background music environments (Milliman, 1982, 1986). People with low involvement are significantly affected by advertising music on TV (Park and Young, 1986). Background music acts as an atmospheric cue that affects consumers.

The influence of environmental stimuli on people's responses based on environmental psychology theory has been empirically confirmed (Bellizzi and Hite, 1992; Yalch and Spangenberg, 1990). Environmental stimuli affect consumer emotional responses and, in turn, approach and avoidance behaviors. Positive effects of pleasure on shopping behavior have been well recognized. However, the effects of arousal have been found to be inconsistent; they may be positive, negative or even non-existent (Kaltcheva and Weitz, 2006). Also, there may be factors having moderating effects on the process of emotional influence. How background music fits the shopping context and how it affects consumers' shopping behavior need further investigation. On the other hand, consumers perceive more risk under the online shopping environment because of the physical distance between buyers and sellers. Therefore, trust becomes more important in the virtual environment than in the physical environment (McCole, 2002). The more trust customers have in an online store, the greater is the purchase intention. The mediating role of trust between pleasure and purchase intention is of interest.

The purpose of this research is to empirically examine the process of the influence of background music tempo on purchase intention in online shopping environment. Situations suitable for playing background music and the mediating role of trust are specifically addressed. Three empirical studies with the same experimental design were conducted to confirm the theoretical framework. Study 1 and Study 2, implemented using two independent student samples, covered different sets of

hedonic and utilitarian product categories. Study 3 used a different sample from the general public. Although background music tempo works for online shopping in the fit context, people may exclude the influence when perceived a biasing effect. Study 4 set a correction instruction to confirm the influence of the correction. Managerial implications are discussed. The contribution of this research is to integrate the moderating role of product category and the mediating role of trust in the influence of background music tempo on purchase intention. Results of this research are expected to help marketers design online shopping environments.



## Chapter 2 Literature review and hypotheses

### 2.1. Environmental stimuli

Designs of store environments can affect shopping atmosphere and enhance the probability of purchase (Kotler, 1973). Gorn (1982) discussed the influence of background music from a classical conditioning perspective. The simple association between a product (conditioned stimulus) and a stimulus such as music (unconditioned stimulus) can affect product preference. While people may have favorable attitudes toward products advertised in the context of unconditioned stimuli, these attitude shifts may simply be a function of mere exposure to advertised products. Classical conditioning suggests that a positive attitude toward an advertised product (conditioned stimulus) may develop through its association with other environmental stimuli (unconditioned stimulus).

This research uses the environmental psychology theory proposed by Mehrabian and Russell (1974): the M-R model. The model is operated in a stimulus-organism-response (S-O-R) framework and offers a description of environmental cues, mediating variables and relevant behaviors in the retailing context. According to the model, environmental stimuli affect consumers' emotional responses and emotion results in an approach or avoidance behavior. A positive emotion causes approach behavior while a negative emotion induces avoidance behavior. A positive emotion may contribute to extra shopping time and unplanned purchases. Stimuli influence people's responses in physical stores (Donovan and Rossiter 1982) as well as in online stores (Eroglu et al., 2003).

People may use their beliefs about servicescapes as surrogate indicators when forming beliefs about service quality (Bitner, 1992). The effects of atmospheric cues on behavioral intention in online shopping are mediated by emotional states of consumers (Koo and Ju, 2010). Music, sign, color, and light in stores can help produce good shopping atmosphere (Stevens, 1980). If the environment in a store makes consumers feel comfortable and induces the feeling of joy when shopping, then their purchase intentions may rise. Because there are no sales persons or other customers in online shopping, the atmosphere plays an even more important role. Environmental stimuli are antecedents of intentional or unintentional behavior (Clitheroe et al., 1998). Background music is one of the important environmental or atmospheric factors (Donovan et al. 1994; Mehrabian and Russell, 1974; Milliman, 1982, 1986).



## **2.2. Effects of music on arousal**

Cognitive processing is affected by environmental cues, such as music. Consumers infer product or service quality based on their feelings. Background music has been found to affect shopping attitudes and behaviors (Sweeney and Wyber, 2002; Yalch and Spangenberg, 2000); its effects on consumers' preferences are subconscious (Gorn, 1982). Music has been considered an efficient and effective means of nonverbal communication for triggering moods (Bruner, 1990).

Distinct musical characteristics, such as tempo and timbre, have effects on emotion and attitude. Different kinds of music stimuli induce different emotions. Background music influences product perception (Zhu and Meyers-Levy, 2005) and purchase behavior (Milliman, 1982) through emotion. Pleasure is easy to induce with happy

music (Alpert and Alpert, 1988). Energetic music evokes excitement, whereas sedate music brings calm emotions and thoughts (Gabrielsson and Lundstrom, 2001). Fast tempo music can induce higher arousal than slow tempo music (Day et al., 2009; Scherer and Oshinsky, 1977; Sweeney and Wyber, 2002; Zhu and Meyers-Levy, 2005). Therefore, we hypothesize:

**Hypothesis 1** (The Background Music Tempo Hypothesis). Background music tempo has a positive influence on arousal of online shoppers.

### **2.3. Product category as a moderator**

Background music influences online shoppers' emotions. Three dimensions of consumers' emotional responses have been identified: arousal, pleasure, and dominance (Mehrabian and Russell, 1974). Attention has been focused on arousal and pleasure because those dimensions can explain most of the variance in purchase behavior (Donovan et al., 1994; Kaltcheva and Weitz, 2006). While pleasure is consistently positive in relation to shopping behavior, arousal is not. The impact of arousal varies across studies (Kaltcheva and Weitz, 2006). Effects of arousal on approach behaviors may be positive (Sherman et al., 1997), negative (Milliman, 1982), or non-existent (Sweeney and Wyber, 2002). Some researchers have argued that arousal and pleasure are independent dimensions (e.g., Russell and Pratt, 1980). However, other scholars have indicated that arousal influences pleasure (e.g., Crowley, 1993; Mano and Oliver, 1993) and the influence can be either positive or negative, depending on the situation (Laroche et al., 2005). Consumers can experience as pleasant or unpleasant by the subjective state of arousal (Kaltcheva and Weitz, 2006).

Two types of consumer motivations, cognitive and affective, influence the process of product assessment (McGuire, 1974). Two fundamental motivational orientations, task and recreational, lead to different arousal effects (Kaltcheva and Weitz, 2006). Arousal effects decrease in case of consumers with a task-oriented motivation and increase in case of consumers with a recreational motivation. Utilitarian and self-value motivations initiate different involvements (Park and Young, 1986). Utilitarian motivation corresponds to cognition and task, whereas hedonic or self-value motivation corresponds to affection and recreation. Utilitarian motivation causes cognitive involvement while hedonic motivation causes affective involvement. Consumers with cognitive involvement pay more attention to product argument. Consumers with affective involvement tend to express self-value and to be influenced by environmental stimuli to get pleasure. Consumers with different involvements have different attitudes (Park and Young, 1986), which are the basic reasons of purchasing goods or services (Betra and Ahtola, 1991). Product attributes are related to consumers' motivation and involvement. Products that are highly valued on the hedonic dimension rather than on the utilitarian dimension are easier to promote (Chandon et al., 2000). Hedonic products provide fun, pleasure, and excitement, and are defined as products whose consumption is primarily characterized by an affective experience (Dhar and Wertenbroch, 2000). Utilitarian products primarily provide instrumental and functional value and are defined as products whose consumption is more cognition driven, is goal-oriented and accomplishes a functional or practical task (Dhar and Wertenbroch, 2000). Both hedonic and utilitarian products serve as inputs to sales promotion decisions.

Product types determined on the basis of cost, purchase frequency, value proposition, and degree of differentiation can moderate the relationships between consumer characteristics and attitudes toward online shopping (Lian and Lin, 2008). It makes more sense to classify products in terms of hedonic or utilitarian characteristics because they are related to the emotional context. When shopping for hedonic products, consumers are interested in hedonic value, focusing on fun and playfulness. Potential entertainment and emotional values surpass the effect of achievement of any pre-specified end goal (Babin et al., 1994). Consumers find high-energy demand in high-arousal environments pleasant (Kaltcheva and Weitz, 2006). When shopping for utilitarian products, consumers are interested in the utilitarian value of a product and are concerned with making their purchase efficient to achieve their goals with minimum irritation (Childers et al., 2001). Their focus is on completing the shopping activity efficiently and on obtaining the outcome with low energy. Fast and loud background music disrupts reading comprehension (Thompson et al., 2011). They do not feel the pleasure offered by high-arousal environments because they need to make more efforts to evaluate product information and complete their tasks under the interference of peripheral cues (Kaltcheva and Weitz, 2006; Sanbonmatsu and Kardes, 1988).

The usefulness of environmental stimuli for consumers depends on shopping situations. When shopping for hedonic goods, people tend to be biased toward having fun and playfulness (Petty and Wegener, 1999). In a high-arousal environment, people feel more excited and enjoy shopping. The arousal context fits their needs in this situation. However, the same context may not be useful when shopping for utilitarian products because, under this situation, people tend to focus on assessing product



information. The interactive effects between arousal and product category influence consumers' pleasure. Therefore, we predict:

**Hypothesis 2** (The Product Category Hypothesis). Product category moderates the influence of arousal on pleasure such that a positive effect occurs when shopping online for hedonic products but not for utilitarian products.

#### **2.4. Pleasure, trust, and purchase intention**

As mentioned above, the M-R model can be used to interpret the mediating effect of consumers' emotion on the relationship between environmental stimuli and purchase behavior. This has been empirically verified (Sherman et al., 1997). Consumers' positive emotion in stores can induce approach behaviors. Customers are likely to buy more when they are in a happy mood. A positive mood can make consumers stay longer and spend more money in stores (Babin and Attaway, 2000). Emotion is related to the decision-making process in consumption behavior (Gardner, 1985). Consumers in a positive mood tend to feel relaxed and enjoy shopping. Approach behavior takes place when people experience a positive emotion, while avoidance behavior usually follows a negative emotion.

Neuropsychological studies have indicated that positive emotion leads the brain to release more dopamine, enhancing cognitive process efficiency. People in a happy mood are better able to access a rich and elaborately connected network of cognitively positive material (Isen, 2001). Many trust decisions are made in affect-rich contexts, but the influence of emotions on trust has been largely ignored by prior research (Dunn and Schweitzer, 2005). According to the affect-as-information model (Schwarz

and Clore, 1983, 1988) and the affect infusion model (Forgas, 1995), pleasure is likely to lead to positive judgment (Dunn and Schweitzer, 2005). People often unconsciously misattribute their affect to judgment and may perceive their momentary affective states as relevant information when making various kinds of judgments. The affect infusion model defines affect infusion as the process whereby affectively loaded information exerts an influence on the judgmental process. People are likely to make biased judgments in affect-rich contexts. Trust judgments can be influenced by affect (Williams, 2001). Therefore, pleasure has positive effects on trust.

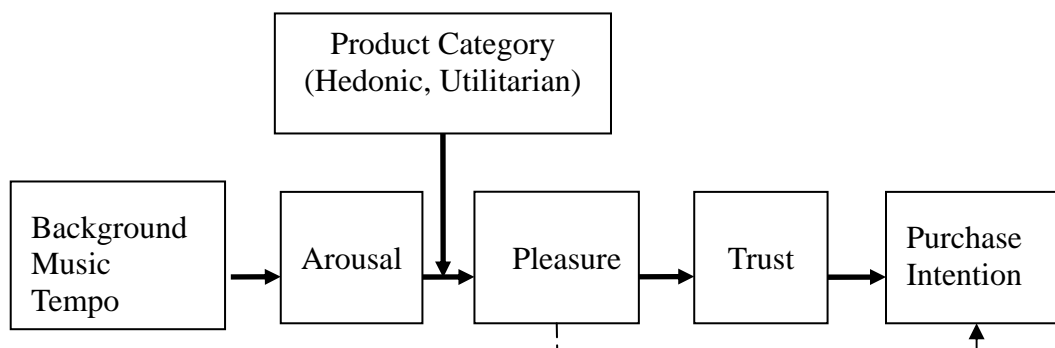
According to the commitment-trust theory of relationship marketing (Morgan and Hunt, 1994), trust is one of the key factors in building and maintaining successful relationships. This theory has been re-examined, and trust has been reconfirmed as the key factor in online retailing (Mukherjee and Nath, 2007). There is a higher perceived risk and uncertainty in online shopping (Forsythe and Shi, 2003; Miyazaki and Fernandez, 2001; van Noort et al., 2007; Yoon, 2002), as customers are not able to have actual contact with sales persons or real products. Consumers often doubt the reliability of online stores and are less likely to buy if they perceive a higher risk (Lim, 2003). Even after product information and familiarity with websites, the two important influential factors for online shopping (e.g., Hoffman and Novak, 1996; Moe, 2003; Schlosser, 2003), have been well addressed, many consumers still hesitate to shop online. A lack of trust has been repeatedly identified as one of the formidable barriers to e-commerce (Wang and Emurian, 2005). Because trust can reduce risk, people are more likely to purchase online if they perceive a higher degree of trust in e-commerce (Corbitt et al., 2003). Establishing an online environment trusted by customers is important for reducing uncertainties caused by distance and separation.

Trust is a key influential factor for e-commerce (Reichheld and Schefter, 2000). Trust strength can be considered as the degree of purchase intention (Kennedy et al., 2001). Trust has a positive effect on purchase intention (Gefen et al., 2003; Schlosser et al., 2006) and on repeat purchase intention in online auctions (Chiu et al., 2010). Mahmood et al. (2004) conducted a cross-country empirical study covering 26 nations and found that trust significantly and positively affects online shopping behavior. In addition to perceived usefulness and the ease of use of technology, trust in the e-vendor should receive particular attention (Gefen et al., 2003; McKnight et al., 2002).

While perceived risk decreases purchase intention, a happy emotion can decrease perceived risk (Chaudhuri, 2002; Moe, 2003; Ma and Wang, 2009) and increase purchase intention (Baker et al., 1992). Consumers who derive more pleasure from online environmental stimuli (e.g., background music), therefore, tend to have higher trust in the e-vendor, thus leading to a higher purchase intention. It is implied that consumers' trust in the e-vendor is an important mediator in the impact of pleasure on purchase intention. The direct effect of pleasure on purchase intention may still exist, after trust is included. Because pleasure has positive effects on trust (Dunn and Schweitzer, 2005), a mechanism to increase pleasure through an online environmental design should be useful. We predict:

**Hypothesis 3** (The Trust Mediation Hypothesis). Trust mediates the positive influence of pleasure on purchase intention of online shoppers.

The research framework based on the above discussion is presented in Fig. 1.



**Fig. 1.** Research framework.

## 2.5. Bias and bias correction in judgment

Background music tempo is one of context cue. According to the theories on context effects (Herr, 1986, Higgins, 1996, Chien et al., 2010), context information may bias the judgments of evaluated product. Consumers assess the true quality of a target in a complex context. Their perceptions of the target potentially can be influenced by any of personal and contextual factors in judgment situation (Wegner and Petty, 1995). For example, if consumers feel pleasure in a store, the emotion may bias their judgments of a target to be more positive and may be more negative if they feel bad. As the above research framework, pleasure has a positive influence on trust and purchase intention of online shoppers. The attitude of a target product should be based the relevant information of the product but there are many irrelevant factors in context influencing consumers judgment. One of the context effect is assimilation effect, which makes judgments shift toward the context cue. Another context effect is

contrast effect, which makes judgments shift away from the context cue. Context effects depend at least in part on the overlap between the range of possible values for the context and target stimuli (Chien et al., 2010). However, if consumers are aware that their reactions toward the product are being affected by the overlap in reactions toward the context and target, consumers may effortfully partial out the effect of the context. The bias correction makes assessments of the target less like the context and overcorrection leads to contrast of the target judgments away from the context (the Set-Reset model: Martin, 1986; Martin et al., 1990; the Inclusion-Exclusion model: Schwarz and Bless, 1992; the Flexible Correction Model: Wegener and Petty, 1995).

According to the Set-Reset model, one's representation of an ambiguous target may include some positive and negative elements. Assimilation occurs because of the overlap between reactions to the context and the target (i.e., "setting"). People attempt to assess their own genuine reaction to the target. If they find themselves thoughts because of their exposure to the context stimuli, they may avoid these thoughts. People will partial out the primed thoughts and may even subtract out some of their true reaction to the target (i.e., "resetting") because sometimes it is hard to distinguish the thoughts elicited by the context or the target. The result of resetting may be less assimilation effect or no effect or even contrast effect. The inclusion- exclusion model is similar to the ret-reset model. When people are effort to correct the bias from the context (i.e., resetting or exclusion), target judgments will be less like the context than in no correction settings. According to naive theory, people might use their naïve perceptions of how a biasing effect has influenced them to correct target ratings to compensate for the undue influence of the biasing effect. If people believe the biasing effect is assimilation, they correct judgments in a direction opposite and may produce

a contrast effect. When consumers correct the influence, the effect of stimuli may not work and even be opposite effect.

**Hypothesis 5** (The correction hypothesis). When consumers are aware of being biased by the context, they are more likely to correct their judgments in a direction opposite to the perceived.



## Chapter 3 Empirical Studies

### 3.1. Subjects and design

There are four empirical studies in the research. Four fictitious websites for Study 1 and Study 2 were developed to simulate the online shopping context, with each of the four combinations of background music tempo (fast and slow) and product category (hedonic and utilitarian). Six fictitious websites for Study 3 were developed, with each of the six combinations of background music tempo (fast, slow and no music) and product category (hedonic and utilitarian). As explained in later parts of this article, Allegretto and Sobani Iteyo were selected as the fast and slow music tempo. Video games and household electric appliances were selected in Study 1 and Study 3 as hedonic and utilitarian products for the experiments. Beer and health drinks were selected in Study 2 as hedonic and utilitarian products, respectively, for the experiments. Beer and health drinks were initially selected because the difference could be due solely to the nature of being hedonic/utilitarian. Data were collected by questionnaires. A total of 75 undergraduate students participated in the Study 1 experiment, and another 87 undergraduate students participated in the Study 2 experiment. Product descriptions and other contents were adapted from existing websites. The subjects were randomly assigned to the four websites and the experiments were implemented in a computer classroom. Each subject was given a computer and was isolated from others so that he/she could complete the task independently.

Following empirical Study 1, Study 3 used a different sample to further confirm the research framework and to increase external validity. Empirical Study 3 was carried

out through Internet using a more general sample. The experimental environment in Study 3 is closer to the real online-shopping environment than the experimental environment in Study 1 and 2. Since online shopping consumers are Internet users, who communicate with each other by Internet, snowball sampling was considered an appropriate way to collect data. Simple random sampling is difficult to implement for this family. The sample was formed by sending e-mail invitations and asking receivers to forward the mails to others. A total of 198 subjects (98 males and 100 females) participated in the experiment. Subjects connected to the fictitious web sites through the Internet and were randomly assigned to one of the six websites.

In order to confirm bias correction, three fictitious websites (no music, fast tempo music and fast tempo music with correction instruction) for Study 4 was developed to simulate online shopping for video games. Allegretto was selected as the fast music tempo. 78 undergraduate students were randomly assigned to the three websites in computer classrooms and isolated to complete the task independently.

To check the manipulation of product category and background music tempo, three straightforward questions were asked. The utilitarian versus not utilitarian and the hedonic versus not hedonic questions regarding products were measured on a seven-point semantic scale, whereas “the music tempo is fast” question was measured on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

### **3.2. Procedure**

Participants were asked to shop online at the fictitious websites. The procedure was first described to them by one of the authors. Upon entering the websites, participants could see the product information and hear the background music, and then they



considered what to buy. After a decision had been made, each participant was asked to complete a questionnaire. Upon completion of the experiment, the participant's contribution was gratefully acknowledged.

In Study 4, participants in correction group were asked to “ please try to make sure that your perceptions of the background music do not influence your attitude of the store” and then complete a questionnaire. The correction manipulation was following Wegner and Petty (1995) to let people be aware the context bias and engage in correction processes.

### **3.3. Independent variables**

#### *3.3.1. Background music*

Following Gorn (1982), Milliman (1982) and Wu et al. (2008) we considered a music tempo of 94 beats per minute (BPM) or more as fast and 72 or less as slow. The volume of the music played was uniform across fast and slow tempo conditions. Six songs with only instrumental music (three with a fast tempo and another three with a slow tempo) were selected for a pretest. Twenty-three subjects listened to the six songs in that pretest. Each song was played for about 1 min. After listening to a song, participants evaluate the song as fast or slow on a five-point semantic scale (fast to slow). The faster the music tempo was, the lower was the score The song with the slowest tempo was Sobani Iteyo's (mean = 4.43) and the one with the fastest tempo was Allegretto (mean = 1.73) The mean tempo values were statistically significant ( $p < 0.01$ ) Therefore, Sobani Iteyo and Allegretto were selected as the two level of the independent variable of background music tempo.

### 3.3.2. Product categories.

Voss et al. (2003) developed short scales for the hedonic and utilitarian dimensions of consumer attitude. To identify products suitable for reflecting the hedonic and utilitarian attributes, another two pretests, one for Study 1, Study 3 and Study 4 and the other for Study 2, by using Voss et al.'s (2003) scales, were conducted. In the pretest for Study 1, 29 subjects judged eight product categories (video games, MP3, household electric appliances, bicycles, computers, travel, DVD video recorders, and toys) based on the ten items in Voss et al.'s (2003) scales (five for each of the two dimensions) on the seven-point semantic scale. The more hedonic or utilitarian a product was, the lower was the score assigned by the participant. Reliability of measurements for the hedonic and utilitarian dimensions was satisfactory (coefficient alphas were 0.90 and 0.89, respectively). The category of video games had the smallest hedonic mean value, and the category of household electric appliances had the smallest utilitarian mean value. Mean values of hedonic attribute for video games and household electric appliances were 2.67 and 4.48, respectively, and were significantly different ( $p < 0.001$ ). Mean values of utilitarian attribute for video games and household electric appliances were 4.45 and 1.43, respectively, and were also significantly different ( $p < 0.001$ ). According to the pretest results, video games and household electric appliances were selected as hedonic and utilitarian products, respectively, in Study 1 and Study 3.

Study 2 used different product categories to further confirm the research framework. Six types of drinks (beer, health drinks, soft drinks, mineral water, juice and milk) were initially selected because the difference could solely be based on the product nature of being hedonic or utilitarian. To select the types of drinks that can well reflect

the difference between hedonic and utilitarian nature, we conducted another pretest using another 37 subjects. Coefficient alphas for the hedonic and utilitarian dimensions were 0.8 and 0.9, respectively, implying acceptable reliability. Beer had the lowest score on the hedonic dimension, and health drinks had the lowest score on the utilitarian dimension. Mean values of the hedonic attribute for beer and health drinks were 2.17 and 4.6, respectively, and were significantly different ( $p < 0.001$ ). Mean values of the utilitarian attribute for beer and health drinks were 4.47 and 2.89, respectively, and were also significantly different ( $p < 0.001$ ). Thus, beer and health drinks were finally selected as hedonic and utilitarian products, respectively, in Study 2.

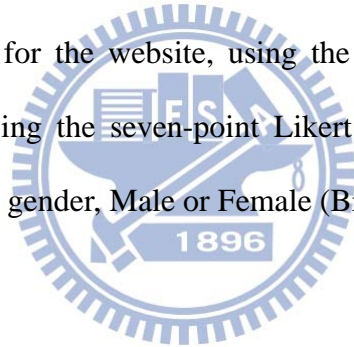
### **3.4. Dependent variables**

The two studies used the same measures for the constructs of arousal, pleasure, trust, and purchase intention. Emotional responses toward online store were measured via the PAD (Pleasure, Arousal, Dominance) scale (Mehrabian and Russell, 1974). There were six items for arousal measured on a seven-point semantic scale (excited to calm) and another six items for pleasure (pleasant to bored). The more the arousal or pleasure was, the higher was the score. Trust measures from Morgan and Hunt (1994) were applied. There were six items on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Purchase intention was measured with the scale from Dodds et al. (1991). There were two items on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).



### 3.5. Control Variables

There are 7 control variables which have been considered an effective means for shopping behavior in the study. The purpose of using control variables is to exclude the effects of explanatory variables other than those in the model so that errors can be reduced. Control variables are used as means to reduce errors, regardless of their statistical significance or not. The effects of the explanatory variables in the model may not be significant if control variables were not included. The 7 control variables were as follows: (1) having owned the product, Yes or No; (2) having the experience of buying the product, Yes or No; (3) having used the product, Yes or No; (4) having the experience of online shopping, Yes or No (Shim et al. 2001); (5) finding the background music suitable for the website, using the seven-point Likert scale; (6) liking the music or not, using the seven-point Likert scale (Caldwell and Hibbert 2002); and (7) defining their gender, Male or Female (Brown et al. 2003).



### 3.6 Results

#### 3.6.1. Manipulation checks of product category and background music

The last three questions (utilitarian/not utilitarian; hedonic/not hedonic; music tempo is fast) were asked to check the manipulation of product category and background music. In Study 1, the mean values of the utilitarian attribute for video games and household electric appliances were 4.07 and 2.40, respectively, which were significantly different ( $p < 0.001$ ). Those of the hedonic attribute for video games and household electric appliances were 3.11 and 4.03, respectively, also significantly different ( $p = 0.004$ ). Therefore, the manipulation of product categories was successful. The mean values of music tempo for fast and slow tempo groups were

4.97 and 2.82, respectively, and they were significantly different ( $p < 0.001$ ), thereby verifying the appropriateness of the music tempo manipulation.

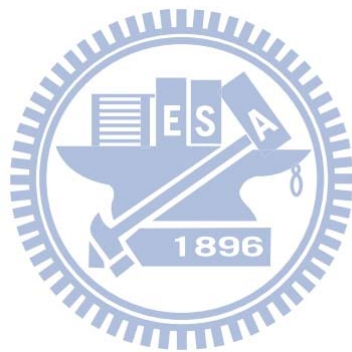
Manipulation of product categories was checked successfully in Study 2. Mean values of the utilitarian attribute for beer and health drinks (3.75 and 2.81) were significantly different ( $p < 0.001$ ). Those of the hedonic attribute (2.70 and 3.94) were also significantly different ( $p < 0.001$ ). Moreover, mean values of fast and slow music tempo groups (5.47 and 2.52) were significantly different ( $p < 0.001$ ), indicating that the music tempo manipulation was appropriate.

The manipulation of the product categories has been checked successfully in Study 3. The mean values of the utilitarian attribute for hedonic and utilitarian products were 4.09 and 2.17, respectively, which were significantly different ( $p < 0.001$ ). Those of the hedonic attribute, 2.34 and 4.06, were also significantly different ( $p < 0.001$ ), indicating the manipulation of product categories was successful.

### *3.6.2. Reliability and validity*

Confirmatory factor analysis (CFA) was used to assess reliability and validity of measurements for arousal, pleasure, trust, and purchase intention, based on the combined sample of Studies ( $n = 360$ ). Items with significant loadings on more than one construct were eliminated to achieve unidimensionality. The final results are reported in Table 1. The fit indices of  $\chi^2 = 506.29$  ( $p < 0.001$ ), GFI = 0.86, NNFI = 0.92, CFI = 0.93, and RMSEA = 0.09 indicated that the CFA model fit was acceptable (Koo and Ju, 2010). Composite reliability coefficients ( $\geq 0.89$ ) and coefficient alphas ( $\geq 0.89$ ) were all satisfactory. The constructs and the associated items were all significantly related ( $t$ -values  $> 1.96$ ). Discriminant validity was assessed by

comparing all pairwise squared correlations among the constructs against their respective average variances extracted (Koo and Ju, 2010). As shown in Table 2, average variances extracted for any two constructs were greater than the square of their correlation. Therefore, discriminant validity was supported. An alternative way of assessing discriminant validity is to examine if the confidence interval for the correlation between the two constructs does not include 1.0 (Anderson and Gerbing, 1988). As none of the 95% confidence intervals for the construct correlations included 1.0, discriminant validity was established.



**Table 1**

Confirmatory factory analysis results.

Construct	Item	Factor loading	<i>t</i> -value	Composite reliability	Coefficient alpha	Average variance extracted
Arousal	1	0.756	16.29	0.89	0.89	0.75
	2	0.826	18.53			
	3	0.891	20.85			
	4	0.813	18.12			
Pleasure	5	0.868	20.58	0.95	0.95	0.62
	6	0.850	19.91			
	7	0.880	21.19			
	8	0.930	23.30			
	9	0.888	21.36			
	10	0.775	17.30			
Trust	11	0.655	13.58	0.90	0.90	0.61
	12	0.785	17.42			
	13	0.677	14.18			
	14	0.785	17.40			
	15	0.868	20.34			
	16	0.892	21.28			
Purchase intention	17	0.943	22.59	0.93	0.93	0.87
	18	0.922	21.77			

*Note.* Model fit results:  $\chi^2 = 506.29$  ( $p < 0.01$ ), GFI = 0.86, NNFI = 0.92, CFI = 0.93, RMSEA = 0.09

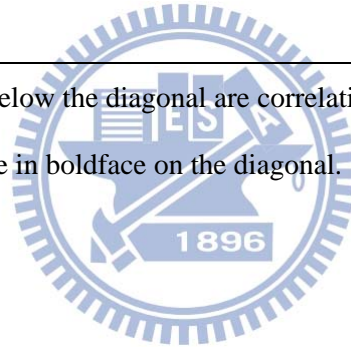
**Table 2**

Test for discriminant validity.

Construct	(1)	(2)	(3)	(4)
Arousal (1)	<b>0.55</b>			
Pleasure (2)	0.050 (0.254)	<b>0.56</b>		
Trust (3)	0.33 (0.057)	0.24(0.057)	<b>0.62</b>	
Purchase intention (4)	0.33 (0.056)	0.27(0.071)	0.77(0.574)	<b>0.89</b>

*Note.* The figures that appear below the diagonal are correlation coefficients (standard errors).

Average variances extracted are in boldface on the diagonal.



### 3.6.3. Analysis - Study 1

A regression model, with a dummy variable defined for the two groups of online shoppers receiving fast and slow tempo music and the seven control variables, was used to test for the Background Music Tempo Hypothesis ( $H_1$ ) (the mean arousal for the former is higher than that for the latter). The results are shown in Table 3. It appears that the mean arousal for the fast tempo group was significantly higher than that for the slow tempo group at the 0.1 level (the estimate of the mean difference = 0.399,  $p = 0.08$  with the one-tailed test). Moreover, the influence of arousal on purchase intention was significant (slope = 0.384,  $p = 0.004$ ). Therefore, the indirect effect through arousal was 0.1533 (= 0.399\*0.384). However, given arousal, background music tempo had a negative but insignificant direct effect (-0.33191) on



purchase intention. It follows that the total effect was  $-0.1786 (= 0.1533 - 0.33191)$ , which was insignificant ( $p = 0.297$ ). The direct and indirect effects of background music tempo on purchase intention have canceled each other out, producing an insignificant total effect. The regression results are reported in Table 4 given below. When assessing mediation mechanism between a predictor and an outcome, evidence of the predictor–outcome relation is not required (e.g., Frazier et al., 2004). The results obtained in our studies belong to one of the situations mentioned in Frazier, Tix, Barron, and Frazier (2004, p.126). Since the hypothesis is on the basis of theory and seven control variables are included to partial out their effects on arousal, a larger level of significance can be tolerated (Labowitz, 1968). Background music tempo is shown to have a positive influence on arousal and thus  $H_1$  was supported.

Moderated regression analysis was used to test for the Product Category Hypothesis ( $H_2$ ) (product category moderates the influence of arousal on pleasure such that a positive effect occurs when shopping online for hedonic products but not for utilitarian products). A dummy variable  $D$  was introduced to represent two levels of product category, such that  $D = 0$  for hedonic products and  $D = 1$  for utilitarian products. The moderated regression model, including control variables, is given as follows:

$$\begin{aligned} \text{Pleasure} = & \beta_0 + \gamma_1 C_1 + \gamma_2 C_2 + \gamma_3 C_3 + \gamma_4 C_4 + \gamma_5 C_5 + \gamma_6 C_6 + \gamma_7 C_7 + \beta_1 \text{arousal} + \beta_2 D \\ & + \beta_1 \text{arousal} \times D + \varepsilon_1, \end{aligned} \quad (1)$$

**Table 3**

Results of regression for examining the effects of music tempo on arousal in Study 1 and Study 2.

	Study 1	Study 2
Control variables		
Having owned the product <sup>a</sup>	0.1465	-0.0126
Having the experience of buying the product <sup>a</sup>	-0.2673	-0.1065
Having used the product <sup>a</sup>	-0.3376	0.1275
Having the experience of online shopping <sup>a</sup>	0.1929	-0.0075
Degree of liking the music	-0.0031	-0.0465
Suitability of the background music	-0.2086	0.0302
Gender <sup>a</sup>	0.3354	-0.0640
Background music tempo <sup>a</sup>	0.3990*	0.3019*

<sup>a</sup> Dummy coded.

\*  $p < 0.1$ , \*\*  $p < 0.05$  (one-tailed test).

**Table 4**

Regression results for examining the effects of music tempo on purchase intention for Study 1.

dependent var.	Arousal	Purchase	Purchase
independent var.		intention	intention
Control variables			
Having owned the product <sup>a</sup>	0.1465	-0.1809	0.1246
Having the experience of buying the product <sup>a</sup>	-0.2673	-0.0534	0.1561
Having used the product <sup>a</sup>	-0.3376	0.3320	-0.2022
Having the experience of online shopping <sup>a</sup>	0.1929	0.5220**	-0.5961**
Degree of liking the music	-0.0031	0.0866	0.0878
Suitability of the background music	-0.2086	-0.1481	-0.0680
Gender <sup>a</sup>	0.3354	-0.1836	0.0547
Background music tempo <sup>a</sup>	0.3990*	-0.1786 <sup>b</sup>	-0.3319
Arousal			0.3843***

<sup>a</sup> Dummy coded .

<sup>b</sup> The total effect -0.1786 (= 0.399\*0.3843 - 0.3319).

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$  (one-tailed tests for examining the mediation effects).

where  $C_1$ – $C_7$  represent the control variables mentioned earlier,  $\beta_3$  represents the interaction between arousal and product category, and  $\varepsilon$  denotes the error term. Examining the moderating effect of product category on the relationship between arousal and pleasure is equivalent to testing if  $\beta_3$  is zero.

Regression results are reported in Table 5. Because  $\hat{\beta}_3$  was statistically significant ( $\hat{\beta}_3 = -0.689$ ;  $p < 0.001$ ), there existed the moderating effect of product category. The subsequent analysis indicated that the influence of arousal on pleasure was significant (slope = 0.808,  $p < 0.001$ ) for hedonic products like video games but insignificant (slope = 0.119 (=0.808 – 0.689),  $p = 0.195$ ) for utilitarian products like household electric appliances. It appears that arousal has a positive effect on pleasure for hedonic products but not for utilitarian products. Therefore,  $H_2$  was supported. The following three regression models were used to examine the Trust Mediation Hypothesis ( $H_3$ ) (trust mediates the positive influence of pleasure on purchase intention of online shoppers), after controlling for  $C_1$ – $C_7$ :

$$\text{purchase intention} = \beta_{20} + \gamma_{21}C_1 + \gamma_{22}C_2 + \gamma_{23}C_3 + \gamma_{24}C_4 + \gamma_{25}C_5 + \gamma_{26}C_6 + \gamma_{27}C_7 + \beta_{21}\text{pleasure} + \varepsilon_2, \quad (2)$$

$$\text{trust} = \beta_{30} + \gamma_{31}C_1 + \gamma_{32}C_2 + \gamma_{33}C_3 + \gamma_{34}C_4 + \gamma_{35}C_5 + \gamma_{36}C_6 + \gamma_{37}C_7 + \beta_{31}\text{pleasure} + \varepsilon_3, \quad (3)$$

$$\text{purchase intention} = \beta_{40} + \gamma_{41}C_1 + \gamma_{42}C_2 + \gamma_{43}C_3 + \gamma_{44}C_4 + \gamma_{45}C_5 + \gamma_{46}C_6 + \gamma_{47}C_7 + \beta_{41}\text{pleasure} + \beta_{42}\text{trust} + \varepsilon_4, \quad (4)$$

The regression results are also reported in Table 5.  $H_3$  was supported as the positive effect of pleasure on purchase intention was significant ( $\hat{\beta}_{21} = 0.432$ ;  $p = 0.002$ ); the effect became smaller but still significant ( $\hat{\beta}_{41} = 0.247$ ;  $p = 0.027$ ) after trust was included. In addition, pleasure had a significant positive effect on trust ( $\hat{\beta}_{31} = 0.253$ ;  $p = 0.014$ ), and trust had a significant positive effect on purchase intention ( $\hat{\beta}_{42} = 0.729$ ;  $p < 0.001$ ), controlling for pleasure. The influence of pleasure on purchase intention was found to be partially mediated by trust.

#### 3.6.4. Analysis - Study 2

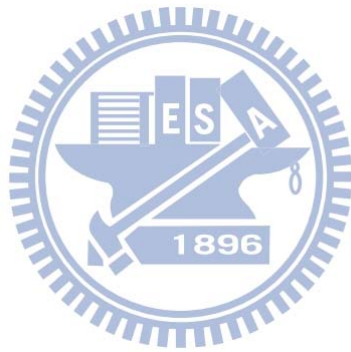
Mean difference between arousal in fast and slow tempo groups, given the control variables, was significant at the 0.1 level (estimated difference = 0.3019,  $p = 0.094$ , see also Table 3). The Background Music Tempo Hypothesis ( $H_1$ ) was thus supported. Background music tempo has a positive influence on the arousal of online shoppers.

Results of the moderated regression analysis are reported in Table 6.  $\hat{\beta}_3$  was significant ( $\hat{\beta}_3 = -0.358$ ;  $p = 0.044$ ), showing the moderating effect of product category. Further analysis indicated that the influence of arousal on pleasure was significant (slope = 0.507,  $p < 0.001$ ) for hedonic products like beer, but insignificant for utilitarian products like health drinks (slope = 0.149 (= 0.507 – 0.358),  $p = 0.158$ ).

The conclusion is the same as in Study 1. Arousal has a positive influence on pleasure for hedonic products but not for utilitarian products. The Product Hypothesis ( $H_2$ ) was thus supported.

An analysis similar to that in Study 1 was performed to test for the hypothesized mediation effect of trust. The results are also presented in Table 6. Pleasure had a significant positive effect on purchase intention ( $\hat{\beta}_{21} = 0.288$ ;  $p = 0.034$ ) when trust

was not included in the model, but not when trust was included ( $\hat{\beta}_{41} = 0.051$ ;  $p = 0.352$ ). Moreover, pleasure was found to have a significant positive effect on trust ( $\hat{\beta}_{31} = 0.322$ ;  $p = 0.005$ ), and the influence of trust on purchase intention was significant ( $\hat{\beta}_{42} = 0.735$ ;  $p < 0.001$ ). Therefore, trust completely mediated the positive influence of pleasure on purchase intention. H<sub>3</sub> was thus supported.



**Table 5**

Regression results for Study 1.

dependent var. independent var.	Pleasure	Trust	Purchase intention	Purchase intention
Control variables				
Having owned the product <sup>a</sup>	-0.093	0.349	0.236	-0.019
Having the experience of buying the product <sup>a</sup>	-0.096	0.108	0.054	-0.025
Having used the product <sup>a</sup>	0.091	-0.010	-0.165	-0.157
Having the experience of online shopping <sup>a</sup>	-0.179	-0.102	-0.435	-0.361
Degree of liking the music	0.130	0.047	0.072	0.038
Suitability of the background music	-0.205	-0.130	-0.041	0.054
Gender <sup>a</sup>	0.072	0.326	0.036	-0.202
Arousal	0.808 <sup>***</sup>			
Product category <sup>a</sup>	3.292 <sup>***</sup>			
Arousal × Product category <sup>a</sup>	-0.689 <sup>***</sup>			
Pleasure		0.253 <sup>*</sup>	0.432 <sup>**</sup>	0.247 <sup>*</sup>
Trust				0.729 <sup>***</sup>

<sup>a</sup> Dummy coded .\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$  (one-tailed tests for examining the mediation effects).

**Table 6**

Regression results for Study 2.

dependent var. independent var.	Pleasure	Trust	Purchase intention	Purchase intention
Control variables				
Having owned the product <sup>a</sup>	-0.030	-0.110	-0.070	0.011
Having the experience of buying the product <sup>a</sup>	0.193	0.556	0.684	0.275
Having used the product <sup>a</sup>	-0.102	-0.567	-0.564	-0.147
Having the experience of online shopping <sup>a</sup>	0.290	0.229	0.283	0.114
Degree of liking the music	0.103	0.169	0.135	0.011
Suitability of the background music	-0.036	0.026	0.086	0.067
Gender <sup>a</sup>	-0.201	-0.083	-0.398	-0.338
Arousal	0.507 <sup>***</sup>			
Product category <sup>a</sup>	1.343 <sup>*</sup>			
Arousal × Product category <sup>a</sup>	-0.358 <sup>*</sup>			
Pleasure		0.322 <sup>**</sup>	0.288 <sup>*</sup>	0.051
Trust				0.735 <sup>***</sup>

<sup>a</sup> Dummy coded .\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$  (one-tailed tests for examining the mediation effects).



### 3.6.5. Analysis - Study 3

The main effect of music ( $F(2,195) = 12.09, p < 0.001$ ) showed that background music tempo created different arousal. Fast tempo music can induce higher arousal than slow tempo music ( $M_f = 4.54$  vs  $M_s = 3.97, p = 0.001$ ) and also higher than no music ( $M_f = 4.54$  vs  $M_n = 3.71, p = 0.01$ ). There was no significant difference of arousals between the slow tempo and no music groups ( $M_s = 3.97$  vs  $M_n = 3.68, p = 0.204$ ). Background Music Tempo Hypothesis ( $H_1$ ) was thus supported.

Results of moderated regression analysis are reported in Table 7. Since  $\hat{\beta}_3$  was significant ( $\hat{\beta}_3 = -0.554, p < 0.001$ ),  $H_2$  was supported. Further analysis indicated that the influence of arousal on pleasure was significant (slope = 0.694,  $p < 0.001$ ) for the hedonic products (video games), but insignificant for the utilitarian products (household electric appliances) (slope = 0.14,  $p = 0.11$ ). The same conclusion as in Study 1 and Study 2, i.e. arousal has positive effect on pleasure for hedonic products but not for utilitarian products, was obtained. The results are presented in Table 7.

Pleasure was found to have a significant positive effect on trust ( $\hat{\beta}_{31} = 0.166, p = 0.003$ ). Pleasure had a significant positive effect on purchase intention ( $\hat{\beta}_{21} = 0.287, p < 0.001$ ) when trust was not included in the model and the effect became smaller but still significant ( $\hat{\beta}_{41} = 0.14; p = 0.016$ ) after trust was included. Moreover, the effect of trust on purchase intention was significant ( $\hat{\beta}_{42} = 0.881, p < .001$ ). There was evidence supporting mediation effect; trust completely mediated the positive influence of pleasure on purchase intention.  $H_3$  was thus supported.

Table 7

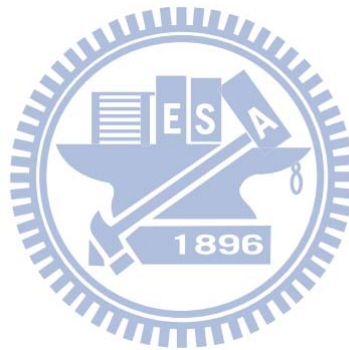
Regression results for Study 3.

dependent var. independent var.	Pleasure	Trust	Purchase intention	Purchase intention
Control variables				
Having owned the product <sup>a</sup>	-0.636 <sup>***</sup>	0.210	0.368	0.184
Having the experience of buying the product <sup>a</sup>	-0.241	-0.011	-0.355	-0.345
Having used the product <sup>a</sup>	0.679 <sup>***</sup>	0.011	0.153	-0.143 <sup>*</sup>
Having the experience of online shopping <sup>a</sup>	0.749 <sup>***</sup>	0.033	-0.055	-0.084
Gender <sup>a</sup>	-0.006	0.203	0.298	0.118
Arousal	0.694 <sup>***</sup>			
Product category <sup>a</sup>	2.165 <sup>***</sup>			
Arousal × Product category <sup>a</sup>	-0.554 <sup>***</sup>			
Pleasure		0.166 <sup>**</sup>	0.2868 <sup>***</sup>	0.140 <sup>*</sup>
Trust				0.881 <sup>***</sup>

<sup>a</sup> Dummy coded .\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$  (one-tailed tests for examining the mediation effects).

### 3.6.5. Analysis - Study 4

Reliability of measurements for purchase intention was satisfactory (coefficient alpha was 0.87). The main effect of music ( $F(2,75) = 4.54, p = 0.014$ ) showed that background music tempo created different purchase intention. Fast tempo music can induce higher purchase intention than no music ( $M_f = 4.10$  vs  $M_n = 3.60, p = 0.059$ ) when no correction instruction was given. However, Fast tempo music induce lower purchase intention than no music ( $M_c = 3.17$  vs  $M_n = 3.60, p = 0.1$ ) when correction instruction was given. There was significant difference of purchase intention between the correction and no correction groups ( $M_c = 3.17$  vs  $M_f = 4.10, p = 0.001$ ) in fast tempo music. Correction Hypothesis ( $H_4$ ) was thus supported.



## Chapter 4 Discussion

The empirical studies provide consistent support for the hypotheses. Fast tempo background music can lead to higher arousal than slow tempo background music. The music stimuli influence consumers' affective responses in the online environment. Product category moderates the effect of arousal on pleasure in such a way that the positive influence is significant in the case of hedonic products only. Therefore, arousal has no significant effects on online shopping behavior for utilitarian products. In addition, the positive influence of pleasure on purchase intention is mediated by trust. Our findings are consistent with those of Kaltcheva and Weitz (2006), which indicated that recreation-oriented shoppers prefer a more exciting atmosphere, whereas task-oriented shoppers prefer simpler merchandise presentations. The results have empirically demonstrated the extent to which background music can work; it creates a high-arousal environment to first enhance pleasure and then purchase intention, but is helpful for hedonic products only. Background music tempo has no impact on purchase intention for utilitarian products because it may actually impede the evaluation of product information. Background music is, therefore, not recommended for utilitarian products. Context effects, background music tempo, bias consumers' purchase intention in the fitting context. However, they correct the biasing effect when they perceive the influence of background music tempo. It may produce a contrast effect.

### 4.1. Theoretical contribution

Prior research has mostly applied the S-O-R framework to examine the effects of

background music on approach behavior through the mediation of emotion. In this study, we have added product category (hedonic versus utilitarian) as a moderator and trust as a mediator to help clarify how background music influences online shopping. The empirical results provide interesting insights. Trust does mediate the influence of pleasure on purchase intention. Background music tempo has an effect on hedonic but not utilitarian products.

The first theoretical contribution of this study is to offer a new direction for designs of online shopping environments. When creating an affect-rich context by adding background music, product attributes should be taken into account. Not considering product attributes is one of the reasons why creation of the arousal emotion has been found to have inconsistent effects on purchase intention in prior research. For example, Sherman et al. (1997) and Donovan and Rossiter (1982) found a positive effect of arousal on purchase intention while Milliman (1982) found a negative effect. Considering background music tempo and product attributes together can demonstrate the effect of stimuli more specifically. Fast tempo music is positively related to pleasure, but only for hedonic products.

The second theoretical contribution of this study is to indicate that trust mediates the relationship between pleasure and purchase intention in online shopping. Trust can be increased by pleasure in affect-rich contexts because pleasure leads to positive judgment. Increased trust helps reduce consumers' perceived risk and encourages positive buying decisions. The mediation role of trust to explain the influence of pleasure on purchase intention in online stores has rarely been discussed in previous research. It has been empirically confirmed in this study.

## 4.2. Practical contribution

Some important practical implications are noteworthy. Instead of using the price-based competition strategy, online marketers should pay more attention to the design of online shopping environments. The online store atmospherics play in creating positive reactions from consumers under certain conditions. Marketers should focus on creating environments that fit the shopping situation. They may find the effect of background music particularly useful as it is relatively inexpensive to design, create and control the desired environment.

Before selecting background music, online marketers should consider their product attributes. Fast tempo background music is recommended for hedonic products. Arousal caused by fast tempo music can increase pleasure and then enhance the value perceived by the consumers. A high-arousal environment is suitable in this situation. Other means like website designs with saturated colors, such as intense orange and red (Kaltcheva and Weitz, 2006), can be used in conjunction with background music tempo to trigger further arousal. However, the strategy of using fast tempo background music does not work for utilitarian products. Consumers may not feel comfortable because they need to make more efforts to evaluate product information under a high-arousal environment. Marketers should focus on knowledge characteristics such as specialization, preciseness, and diversity, and system characteristics such as interactivity, responsiveness, and communication richness (Koo and Choi, 2010). Hedonic and utilitarian products should be placed separately on different web pages to attain better effects.

Pleasure leads to online shopping intention because trust is heightened by pleasure. A suitable atmosphere can enhance pleasure. Consumers will be more favorably

disposed toward products when they are in a good mood (Gardner, 1985). Fast background music tempo is recommended for hedonic products only; for utilitarian products, pleasure may be increased by a simple merchandise layout, coupled with a highlighted introduction (Kaltcheva and Weitz, 2006). There are ways to increase trust. The perceived ease of use of websites should be improved (Gefen et al., 2003). Consumers usually pay attention to assurance, policies, guarantees and security mechanisms on a vendor's website (Chau et al., 2007).

These features influence consumers' trust in websites positively (Martín and Camarero, 2008). Trust may also be strengthened through a guarantee of the quality of the products sold. On-time delivery can also lead to a higher level of trust. As consumers feel safer, their decision to buy becomes easier to make. Maintaining consumers' trust is likely to lead to good word-of-mouth and heighten intention to buy a product in the future. In conclusion, an effective strategy to increase consumers' purchase intention for hedonic products in online stores is to use fast tempo music, coupled with ways to increase trust.

Consumers may correct the judgment to remove perceived biasing effect when identifying the biasing factor. Marketers should avoid using the priming cue that consumers are able to self-activate a correction process. Consumers with knowledge identifying a bias are more likely to correct it. If marketing strategies like endorsers and advertisements appear too frequently for the same product, consumers may perceive the endorser bias and engage in correction spontaneously. Consumers may identify celebrity endorsers producing bias and feel products more expensive because of the cost of endorsers. Background music is a suitable cue to prime because of the cost and less biasing perception. By knowing the correction, marketers could better

control the strategies affecting consumer judgments and accurately predict the outcomes.

#### **4.3. Limitations and Directions for Further Research**

This study offers explanations for some important aspects of online shopping. While guidelines have been provided for creating effective online shopping environments and increasing consumers' trust, there are limitations to this study. First, only two product categories were used as representatives of hedonic products and two others for utilitarian products. More products of each type could be used in future studies to further confirm our conclusion. Secondly, the four experiments in this study were conducted on fictitious websites. Similar experimental research using real online stores would further increase the validity of the results. Thirdly, there are many types of music, like classical, POP and rock music, but the study only pay attention on tempo varied. The other attributes of music should be considered. Finally, only the background music and the product categories were considered. Addressing other relevant factors such as design cues (Baker, 1987), social cues (Wang et al., 2007) and different product attributes simultaneously deserves more research in the future.



## References

1. Alpert, J. I., and Alpert, M. I. Background music as an influence in consumer mood and advertising responses. *Advances in Consumer Research*, 16, 1988, 485-491.
2. Anderson, J. C., and Gerbing, D. W. Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103, 3, 1988, 411-423.
3. Babin, B. J., and Attaway, J. S. Atmospheric affect as a tool for creating value and gaining share of customer. *Journal of Business Research*, 49, 2, 2000, 91-99.
4. Babin, B. J., Darden, W. R., and Griffin, M. Work and/or fun: Measuring hedonic and utilitarian shopping value. *Journal of Consumer Research*, 20, 4, 1994, 644-656.
5. Bellizzi, J. A., and Hite, R. E. Environmental color, consumer feelings, and purchase likelihood. *Psychology & Marketing*, 9, 5, 1992, 347-363.
6. Baker, J. The role of the environment in marketing services: The consumer perspective. In J. A. Czepil, C. A. Congram, and J. Shanahan (eds.), *The Service Challenge: Integrating for Competitive Advantage*, American Marketing Association, Chicago, 1987, 79-84.
7. Baker, J., Levy, M., and Grewal, D. An experimental approach to making retail store environmental decision. *Journal of Retailing*, 68, 4, 1992, 445-461.
8. Betra, R., and Ahtola, O. T. Measuring the hedonic and utilitarian sources of consumer attitudes. *Marketing Letters*, 2, 2, 1991, 159-170.
9. Bitner, M. J. Servicescapes: The impact of physical surroundings on customers and employees. *Journal of Marketing*, 56, 2, 1992, 57-71.

10. Brown, M., Pope, N., and Voges, K. Buying or browsing? An exploration of shopping orientations and online purchase intention. *European Journal of Marketing*, 2003, 37, 11, 1666-1684.
11. Bruner II, G. C. Music, mood and marketing. *Journal of Marketing*, 54, 4, 1990, 94-100.
12. Caldwell, C., and Hibbert, S. A. The influence of music tempo and musical preference on restaurant patrons' behavior. *Psychology & Marketing*, 19, 11, 2002, 895-917.
13. Chandon, P., Wansink, B., and Laurent, G. A benefit congruency framework of sales promotion effectiveness. *Journal of Marketing*, 64, 4, 2000, 65-81.
14. Chau, P. Y. K., Hu, P. J. H., Lee, B. L. P., and Au, A. K. K. Examining customers' trust in online vendors and their dropout decisions: An empirical study. *Electronic Commerce Research and Applications*, 6, 2, 2007, 171-182.
15. Chaudhuri, A. A study of emotion and reason in products and services. *Journal of Consumer Behavior*, 1, 3, 2002, 267-279.
16. Chien, Y. W., Wegener, D. T., Hsiao, C. C., and Petty, R. E. Dimensional range overlap and context effects in consumer judgments. *Journal of Consumer Research*, 37, 3, 2010, DOI: 10.1086/652415.
17. Childers, T. L., Carr, C. L., Peck, J., and Carson, S. Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of Retailing*, 77, 4, 2001, 511-535.
18. China IntelliConsulting Corp. *Survey Report on China's Online Consumers for 2011*. 2011. <http://www.iaskchina.cn/Report/view/id/141> (accessed August 2, 2011).

19. Chiu, C.-M., Huang, H.-Y., Yen, C.-H. Antecedents of trust in online auctions. *Electronic Commerce Research and Applications*, 9, 2, 2010, 148-159.
20. Clitheroe, H. C., Jr., Stokols, D., and Zmuidzinas, M. Conceptualizing the context of environment and behavior. *Journal of Environmental Psychology*, 18, 1, 1998, 103-112.
21. Corbitt, B. J., Thanasankit, T., and Yi H. Trust and e-commerce: a study of consumer perceptions. *Electronic Commerce Research and Applications*, 2, 3, 2003, 203-215.
22. Crowley, A. E. The two-dimensional impact of color on shopping. *Marketing Letters*, 4, 1, 1993, 59-69.
23. Day, R. F., Lin, C. H., Huang, W. H., and Chuang, S-H. Effects of music tempo and task difficulty on multi-attribute decision-making: An eye-tracking approach. *Computers in Human Behavior*, 25, 1, 2009, 130-143.
24. Dhar, R., and Wertenbroch, K. Consumer choice between hedonic and utilitarian goods. *Journal of Marketing*, 37, 1, 2000, 60-71.
25. Dodds, W. B., Monroe, K. B., and Grewal, D. Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, 28, 3, 1991, 307-319.
26. Donovan, R. J., and Rossiter, J. R. Store atmosphere: An environmental psychology approach. *Journal of Retailing*, 58, 1, 1982, 34-57.
27. Donovan, R. J., Rossiter, J. R., Marcoolyn, G., and Nesdale, A. Store atmosphere and purchasing behavior. *Journal of Retailing*, 70, 3, 1994, 283-294.

28. Dunn, J. R., and Schweitzer M. E. Feeling and believing: The influence of emotion on trust. *Journal of Personality and Social Psychology*, 88, 5, 2005, 736-748.
29. Eroglu, S. A., Machleit, K. A., and Davis, L. M. Empirical testing of a model of online store atmospherics and shopper responses. *Psychology & Marketing*, 20, 2, 2003, 139-150.
30. Forgas, J. P. Mood and judgment: The Affect Infusion Model (AIM). *Psychological Bulletin*, 117, 1, 1995, 39-66.
31. Forsythe, S. M., and Shi, B. Consumer patronage and risk perceptions in Internet shopping. *Journal of Business Research*, 56, 11, 2003, 867-875.
32. Gabrielsson, A., and Lundstrom, E. The influence of musical structure on emotional expression. In P. N. Juslin and J. A. Sloboda (eds.), *Music and Emotion: Theory and Research*, Oxford University Press, Oxford, 2001, 223-248.
33. Gardner, M. P. Mood states and consumer behavior: A critical review. *Journal of Consumer Research*, 12, 3, 1985, 281-300.
34. Gefen, D., Karahanna, E., and Straub, W. Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27, 1, 2003, 51-90.
35. Gorn, G. J. The effects of music in advertising on choice behavior: A classical conditioning approach. *Journal of Marketing*, 46, 1, 1982, 94-101.
36. Gorn, G. J., Goldberg, M. E., Chattopadhyay, A., and Litvack, D. Music and information in commercials: Their effects with an elderly sample. *Journal of Advertising Research*, 31, 5, 1991, 23-32.

37. Herr, P. M. Consequences of priming: Judgment and behavior. *Journal of Personality and Social Psychology*, 51, 6, 1986, 1106-1115.
38. Higgins, E. T. Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins and A. W. Kruglanski (eds.), *Social psychology: Handbook of basic principles*, Guilford, New York, 1996, 133-168.
39. Hoffman, D. L., and Novak, T. P. Marketing in hypermedia computer-mediated environment: Conceptual foundations. *Journal of Marketing*, 60, 3, 1996, 50-68.
40. Isen, A. M. An influence of positive affect on decision making in complex situations: Theoretical issues with practical implications. *Journal of Consumer Psychology*, 11, 2, 2001, 75-85.
41. Kaltcheva, V. D., and Weitz, B. A. When should a retailer create an exciting store environment? *Journal of Marketing*, 70, 1, 2006, 107-118.
42. Kennedy, M. S., Ferrell, L. K., and LeClair, D. T. Consumers' trust of salesperson and manufacturer: An empirical study. *Journal of Business Research*, 51, 1, 2001, 73-86.
43. Koo, D. M. and Choi, Y. Y. Knowledge search and people with high epistemic curiosity. *Computers in Human Behavior*, 26, 1, 2010, 12-22.
44. Koo, D. M. and Ju, S. H. The interactional effects of atmospherics and perceptual curiosity on emotions and online shopping intention. *Computers in Human Behavior*, 26, 3, 2010, 377-388.
45. Kotler, P. Atmospherics as a marketing tool. *Journal of Retailing*, 49, 4, 1973, 48-64.
46. Labowitz, S. Criteria for selecting a significance level: A note on the sacredness of .05. *The American Sociologist*, 3, 3, 1968, 220-222.

47. Laroche, M., Teng, L., Michon, R., and Chebat, J-C. Incorporating service quality into consumer mall shopping decision making: a comparison between English and French Canadian consumers. *Journal of Services Marketing*, 19, 3, 2005, 157-163.
48. Lian, J. W., and Lin, T. M. Effects of consumer characteristics on their acceptance of online shopping: Comparisons among different product types. *Computers in Human Behavior*, 24, 1, 2008, 48-65.
49. Lim, N. Consumer's perceived risk: Sources versus consequences. *Electronic Commerce Research & Applications*, 2, 3, 2003, 216-228.
50. Ma, Q.-G., and Wang, K. The effect of positive emotion and perceived risk on usage intention to online decision aids. *CyberPsychology & Behavior*, 12, 5, 2009, 529-532.
51. Macinnis, D. J., and Park, C. W. The differential role of characteristics of music on high and low involvement consumers' processing of Ads. *Journal of Consumer Research*, 18, 2, 1991, 161-173.
52. Mahmood, M. A., Bagchi, K., and Ford, T. C. On-line shopping behavior: Cross country empirical research. *International Journal of Electronic Commerce*, 9, 1, 2004, 9-30.
53. Mano, H., and Oliver, R. L. Assessing the dimensionality and structure of the consumption experience: Evaluation, feeling, and satisfaction. *Journal of Consumer Research*, 20, 3, 1993, 451-466.
54. Martin, L. L. Set/reset: Use and disuse of concepts in impression formation. *Journal of Personality and Social Psychology*, 51, 3, 1986, 493-504.

55. Martin, L. L., Seta, J. J., and Crelia, R. A. Assimilation and contrast as a function of people's willingness and ability to expend effort in forming an impression. *Journal of Personality and Social Psychology*, 59, 1, 1990, 27-37.
56. Martín, S. S., and Camarero, C. Consumer trust to a web site: Moderating effect of attitudes toward online shopping. *CyberPsychology and Behavior*, 11, 5, 2008, 549-554.
57. McCole, P. The role of trust for electronic commerce in services. *International Journal of Contemporary Hospitality Management*, 14, 2, 2002, 81-87.
58. McGuire, W. Psychological motives and communication gratification. In J. F. Blumer and E. Katz (eds.), *The Uses of Mass Communication: Current Perspectives on Gratification Research*, Sage, Beverly Hills, CA, 1974, 106-167.
59. McKnight, D. H., Choudhury, V., and Kacmar, C. Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research*, 13, 3, 2002, 334-359.
60. Mehrabian, A., and Russell, J. A. *An Approach to Environmental Psychology*. MIT Press, Cambridge, MA, 1974.
61. Milliman, R. E. The effects of background music upon the shopping behavior of supermarket patrons. *Journal of Marketing*, 46, 3, 1982, 86-91.
62. Milliman, R. E. The influence of background music on the behavior of restaurant patrons. *Journal of Consumer Research*, 13, 2, 1986, 286-289.
63. Miyazaki, A. D., and Fernandez, A. Consumer perceptions of privacy and security risks for online shopping. *The Journal of Consumer Affairs*, 35, 1, 2001, 27-44.

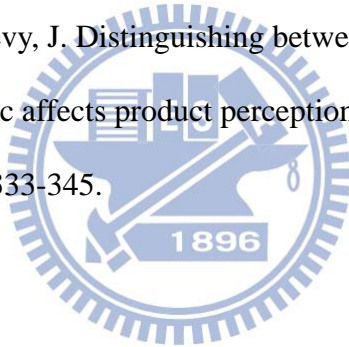
64. Moe, W. W. Buying searching, or browsing: Differentiating between online shoppers using in-store navigational click stream. *Journal of Consumer Psychology*, 13, 1, 2003, 29-39.
65. Morgan, R. M., and Hunt, S. D. The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58, 3, 1994, 20-38.
66. Mukherjee, A., and Nath, P. Role of electronic trust in online retailing: A re-examination of the commitment-trust theory. *European Journal of Marketing*, 41, 9, 2007, 1173-1202.
67. Park, C. W., and Young, S. M. Consumer response to television commercials: The impact of involvement and background music on brand attitude formation. *Journal of Marketing Research*, 23, 1, 1986, 11-24.
68. Petty, R. E., and Wegener, D. T. The elaboration likelihood model: current status and controversies. In S. Chaiken and Y. Trope (eds.), *Dual-Process Theories in Social Psychology*, Guilford Press, New York, 1999, 41-72.
69. Reichheld, F. F., and Schefer, P. E-loyalty: Your secret weapon on the web. *Harvard Business Review*, 78, 4, 2000, 105-113.
70. Russell, J. A., and Pratt, G. A description of the affective quality attributed to environment. *Journal of Personality and Social Psychology*, 38, 2, 1980, 311-322.
71. Sanbonmatsu, D. M., and Kardes, F. R. The effects of physiological arousal on information processing and persuasion. *Journal of Consumer Research*, 15, 3, 1988, 379-385.
72. Scherer, K. R., and Oshinsky, J. S. Cue utilization in emotion attribution from auditory stimuli. *Motivation and Emotion*, 1, 4, 1977, 331-346.



73. Schlosser, A. E. Experiencing products in a virtual world: The role of goals and imagery in influencing attitudes versus intentions. *Journal of Consumer Research*, 30, 2, 2003, 184-198.
74. Schlosser, A. E., White, T. B., and Lloyd, S. M. Converting web site visitors into buyers: How web site investment increases consumer trusting beliefs and online purchase intentions. *Journal of Marketing*, 70, 2, 2006, 133-148.
75. Schwarz, N. and Bless, H. Constructing reality and its alternatives: An inclusion/exclusion model of assimilation and contrast effects in social judgment. In L. L. Martin and A. Tesser (eds.), *The construction of social judgments*, Erlbaum, Hillsdale, NJ, 1992, 217-245.
76. Schwarz, N., and Clore, G. L. Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality & Social Psychology*, 45, 3, 1983, 513-523.
77. Schwarz, N., and Clore, G. L. How do I feel about it? Informative functions of affective states. In K. Fiedler and J. Forgas (eds.), *Affect, Cognition, and Social Behavior*, Hogrefe, Toronto, Ontario, Canada, 1988, 44-62.
78. Sherman, E., Mathur, A., and Smith, R. B. Store environment and consumer purchase behavior: Mediating role of consumer emotion. *Psychology & Marketing*, 14, 4, 1997, 361-378.
79. Shim, S., Eastlick, M., Lotz, S.L., and Warrington, P. An online prepurchase intentions model: the role of intention to search. *Journal of Retailing*, 77, 3, 2001, 397-416.
80. Stevens, C. W. K-Mart stores try new look to invite more spending. *The Wall Street Journal*, 26, 1980, 29-35.

81. Sweeney, J. C., and Wyber, F. The role of cognitions and emotions in the music-approach-avoidance behavior relationship. *Journal of Service Marketing*, 16, 1, 2002, 51-69.
82. Thompson, W. F., Schellenberg, E. G., and Letnic, A. K. Fast and loud background music disrupts reading comprehension. *Psychology of Music*, 2011, forthcoming.
83. U.S. Census Bureau. *The 1st Quarter 2011 Retail E-Commerce Sales Report*. 2011. <http://www.census.gov/retail/#ecommerce> (accessed August 1, 2011).
84. van Noort, G., Kerkhof, P., and Fennis, B. M. Online versus conventional shopping: Consumers' risk perception and regulatory focus. *Cyberpsychology and Behavior*, 10, 5, 2007, 731-733.
85. Voss, K. E., Spangenberg, E. R., and Grohmann, B. Measuring the hedonic and utilitarian dimensions of consumer attitude. *Journal of Marketing Research*, 40, 3, 2003, 310-321.
86. Wang, L. C., Baker, J., Wagner, J. A., and Wakefield, K. Can a retail web site be social? *Journal of Marketing*, 71, 3, 2007, 143-157.
87. Wang, Y. D., and Emurian, H. H. An overview of online trust: Concepts, elements, and implications. *Computers in Human Behavior*, 21, 1, 2005, 105-125.
88. Wegener, D. T., and Petty, R. E. Flexible correction processes in social judgment: The role of naive theories in corrections for perceived bias. *Journal of Personality and Social Psychology*, 68, 1, 1995, 36-51.
89. Williams, M. In whom we trust: Group membership as an affective context for trust development. *Academy of Management Review*, 26, 3, 2001, 377-396.

90. Wu, C. S., Cheng, F. F., and Yen, D. C. The atmospheric factors of online storefront environment design: An empirical experiment in Taiwan. *Information & Management*, 45, 2008, 493-498.
91. Yalch, R. F., and Spangenberg, E. R. Effects of store music on shopping behavior. *Journal of Consumer Marketing*, 7, 2, 1990, 55-63.
92. Yalch, R. F., and Spangenberg, E. R. The effects of music in a retail setting on real and perceived shopping times. *Journal of Business Research*, 49, 2, 2000, 139-147.
93. Yoon, S. J. The antecedents and consequences of trust in online-purchase decisions. *Journal of Interactive Marketing*, 16, 2, 2002, 47-63.
94. Zhu, R., and Meyers-Levy, J. Distinguishing between the meanings of music: When background music affects product perceptions. *Journal of Marketing Research*, 42, 3, 2005, 333-345.



## Appendix 1: The questionnaire

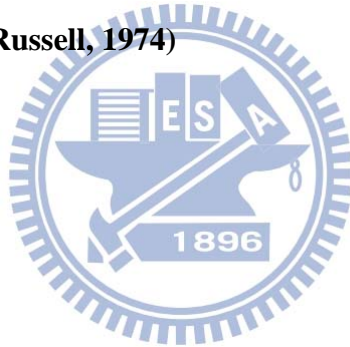
### A1.1: measures for arousal, pleasure, trust, and purchase intention

#### **Arousal (Mehrabian and Russell, 1974)**

1. 亢奮的 / 不亢奮的
2. 精力充沛的 / 懶洋洋的
3. 狂熱的 / 懶散的
4. 熱情的 / 緩和的

#### **Pleasure (Mehrabian and Russell, 1974)**

5. 愉悅的 / 煩惱的
6. 輕鬆的 / 煩躁的
7. 滿足的 / 不滿足的
8. 快樂的 / 不快樂的
9. 樂觀的 / 鬱悶的
10. 休閒的 / 無聊的



#### **Trust (Morgan and Hunt, 1994)**

11. 提供個人資料給此購物網站是安全的
12. 此購物網站所販售的產品是可靠的
13. 在此購物網站瀏覽資訊是安全的
14. 此購物網站提供的資訊值得信賴的

15. 此購物網站會確實履行訂單

16. 此購物網站是令人信賴的

**Purchase Intention ( Dodds et al. 1991)**

17. 我在此網站購買商品可能性高

18. 我會願意在此網站購買商品



A1.2: Selected hedonic and utilitarian products for pretest



下列產品的特性，請在適當空格中作記。Ex: \_\_\_:\_\_\_:\_\_\_: X:\_\_\_:\_\_\_:\_\_\_

◆ 桌上型電腦

- |           |                             |       |
|-----------|-----------------------------|-------|
| 1. 功用性    | ___:___:___:___:___:___:___ | 非功用性  |
| 2. 必需的    | ___:___:___:___:___:___:___ | 非必需的  |
| 3. 實用的    | ___:___:___:___:___:___:___ | 非實用的  |
| 4. 有功效的   | ___:___:___:___:___:___:___ | 無功效的  |
| 5. 具有幫助性  | ___:___:___:___:___:___:___ | 不具幫助  |
| 6. 有趣的    | ___:___:___:___:___:___:___ | 無趣的   |
| 7. 乏味的    | ___:___:___:___:___:___:___ | 興奮的   |
| 8. 不令人高興  | ___:___:___:___:___:___:___ | 令人高興  |
| 9. 不令人激動的 | ___:___:___:___:___:___:___ | 令人激動的 |
| 10. 娛樂性   | ___:___:___:___:___:___:___ | 不娛樂性  |
| 11. 功利性   | ___:___:___:___:___:___:___ | 非功利性  |
| 12. 享樂性   | ___:___:___:___:___:___:___ | 非享樂性  |

◆ 腳踏車

- |           |                             |       |
|-----------|-----------------------------|-------|
| 1. 功用性    | ___:___:___:___:___:___:___ | 非功用性  |
| 2. 必需的    | ___:___:___:___:___:___:___ | 非必需的  |
| 3. 實用的    | ___:___:___:___:___:___:___ | 非實用的  |
| 4. 有功效的   | ___:___:___:___:___:___:___ | 無功效的  |
| 5. 具有幫助性  | ___:___:___:___:___:___:___ | 不具幫助  |
| 6. 有趣的    | ___:___:___:___:___:___:___ | 無趣的   |
| 7. 乏味的    | ___:___:___:___:___:___:___ | 興奮的   |
| 8. 不令人高興  | ___:___:___:___:___:___:___ | 令人高興  |
| 9. 不令人激動的 | ___:___:___:___:___:___:___ | 令人激動的 |
| 10. 娛樂性   | ___:___:___:___:___:___:___ | 不娛樂性  |
| 11. 功利性   | ___:___:___:___:___:___:___ | 非功利性  |
| 12. 享樂性   | ___:___:___:___:___:___:___ | 非享樂性  |

◆ 電玩遊戲

- |           |                             |       |
|-----------|-----------------------------|-------|
| 1. 功用性    | ___:___:___:___:___:___:___ | 非功用性  |
| 2. 必需的    | ___:___:___:___:___:___:___ | 非必需的  |
| 3. 實用的    | ___:___:___:___:___:___:___ | 非實用的  |
| 4. 有功效的   | ___:___:___:___:___:___:___ | 無功效的  |
| 5. 具有幫助性  | ___:___:___:___:___:___:___ | 不具幫助  |
| 6. 有趣的    | ___:___:___:___:___:___:___ | 無趣的   |
| 7. 乏味的    | ___:___:___:___:___:___:___ | 興奮的   |
| 8. 不令人高興  | ___:___:___:___:___:___:___ | 令人高興  |
| 9. 不令人激動的 | ___:___:___:___:___:___:___ | 令人激動的 |
| 10. 娛樂性   | ___:___:___:___:___:___:___ | 不娛樂性  |

- |         |   |      |
|---------|---|------|
| 11. 功利性 | _____ : _____ : _____ : _____ : _____ : _____ | 非功利性 |
| 12. 享樂性 | _____ : _____ : _____ : _____ : _____ : _____ | 非享樂性 |

◆ 套裝旅遊行程

- |           |   |       |
|-----------|---|-------|
| 1. 功用性    | _____ : _____ : _____ : _____ : _____ : _____ | 非功用性  |
| 2. 必需的    | _____ : _____ : _____ : _____ : _____ : _____ | 非必需的  |
| 3. 實用的    | _____ : _____ : _____ : _____ : _____ : _____ | 非實用的  |
| 4. 有功效的   | _____ : _____ : _____ : _____ : _____ : _____ | 無功效的  |
| 5. 具有幫助性  | _____ : _____ : _____ : _____ : _____ : _____ | 不具幫助  |
| 6. 有趣的    | _____ : _____ : _____ : _____ : _____ : _____ | 無趣的   |
| 7. 乏味的    | _____ : _____ : _____ : _____ : _____ : _____ | 興奮的   |
| 8. 不令人高興  | _____ : _____ : _____ : _____ : _____ : _____ | 令人高興  |
| 9. 不令人激動的 | _____ : _____ : _____ : _____ : _____ : _____ | 令人激動的 |
| 10. 娛樂性   | _____ : _____ : _____ : _____ : _____ : _____ | 不娛樂性  |
| 11. 功利性   | _____ : _____ : _____ : _____ : _____ : _____ | 非功利性  |
| 12. 享樂性   | _____ : _____ : _____ : _____ : _____ : _____ | 非享樂性  |

◆ 家電

- |           |   |       |
|-----------|---|-------|
| 1. 功用性    | _____ : _____ : _____ : _____ : _____ : _____ | 非功用性  |
| 2. 必需的    | _____ : _____ : _____ : _____ : _____ : _____ | 非必需的  |
| 3. 實用的    | _____ : _____ : _____ : _____ : _____ : _____ | 非實用的  |
| 4. 有功效的   | _____ : _____ : _____ : _____ : _____ : _____ | 無功效的  |
| 5. 具有幫助性  | _____ : _____ : _____ : _____ : _____ : _____ | 不具幫助  |
| 6. 有趣的    | _____ : _____ : _____ : _____ : _____ : _____ | 無趣的   |
| 7. 乏味的    | _____ : _____ : _____ : _____ : _____ : _____ | 興奮的   |
| 8. 不令人高興  | _____ : _____ : _____ : _____ : _____ : _____ | 令人高興  |
| 9. 不令人激動的 | _____ : _____ : _____ : _____ : _____ : _____ | 令人激動的 |
| 10. 娛樂性   | _____ : _____ : _____ : _____ : _____ : _____ | 不娛樂性  |
| 11. 功利性   | _____ : _____ : _____ : _____ : _____ : _____ | 非功利性  |
| 12. 享樂性   | _____ : _____ : _____ : _____ : _____ : _____ | 非享樂性  |

◆ DVD 錄放影機

- |           |   |       |
|-----------|---|-------|
| 1. 功用性    | _____ : _____ : _____ : _____ : _____ : _____ | 非功用性  |
| 2. 必需的    | _____ : _____ : _____ : _____ : _____ : _____ | 非必需的  |
| 3. 實用的    | _____ : _____ : _____ : _____ : _____ : _____ | 非實用的  |
| 4. 有功效的   | _____ : _____ : _____ : _____ : _____ : _____ | 無功效的  |
| 5. 具有幫助性  | _____ : _____ : _____ : _____ : _____ : _____ | 不具幫助  |
| 6. 有趣的    | _____ : _____ : _____ : _____ : _____ : _____ | 無趣的   |
| 7. 乏味的    | _____ : _____ : _____ : _____ : _____ : _____ | 興奮的   |
| 8. 不令人高興  | _____ : _____ : _____ : _____ : _____ : _____ | 令人高興  |
| 9. 不令人激動的 | _____ : _____ : _____ : _____ : _____ : _____ | 令人激動的 |
| 10. 娛樂性   | _____ : _____ : _____ : _____ : _____ : _____ | 不娛樂性  |
| 11. 功利性   | _____ : _____ : _____ : _____ : _____ : _____ | 非功利性  |





### A1.3: Selected hedonic and utilitarian drinks for pretest



下列產品的特性，請在適當空格中作記。Ex: \_\_\_:\_\_\_:\_\_\_: X:\_\_\_:\_\_\_:\_\_\_

#### ◆ 啤酒

1. 功用性	___:___:___:___:___:___:___	非功用性
2. 必需的	___:___:___:___:___:___:___	非必需的
3. 實用的	___:___:___:___:___:___:___	非實用的
4. 有功效的	___:___:___:___:___:___:___	無功效的
5. 具有幫助性	___:___:___:___:___:___:___	不具幫助
6. 有趣的	___:___:___:___:___:___:___	無趣的
7. 乏味的	___:___:___:___:___:___:___	興奮的
8. 不令人高興	___:___:___:___:___:___:___	令人高興
9. 不令人激動的	___:___:___:___:___:___:___	令人激動的
10. 娛樂性	___:___:___:___:___:___:___	不娛樂性
11. 功利性	___:___:___:___:___:___:___	非功利性
12. 享樂性	___:___:___:___:___:___:___	非享樂性

#### ◆ 保健飲品

1. 功用性	___:___:___:___:___:___:___	非功用性
2. 必需的	___:___:___:___:___:___:___	非必需的
3. 實用的	___:___:___:___:___:___:___	非實用的
4. 有功效的	___:___:___:___:___:___:___	無功效的
5. 具有幫助性	___:___:___:___:___:___:___	不具幫助
6. 有趣的	___:___:___:___:___:___:___	無趣的
7. 乏味的	___:___:___:___:___:___:___	興奮的
8. 不令人高興	___:___:___:___:___:___:___	令人高興
9. 不令人激動的	___:___:___:___:___:___:___	令人激動的
10. 娛樂性	___:___:___:___:___:___:___	不娛樂性
11. 功利性	___:___:___:___:___:___:___	非功利性
12. 享樂性	___:___:___:___:___:___:___	非享樂性

#### ◆ 汽水

1. 功用性	___:___:___:___:___:___:___	非功用性
2. 必需的	___:___:___:___:___:___:___	非必需的
3. 實用的	___:___:___:___:___:___:___	非實用的
4. 有功效的	___:___:___:___:___:___:___	無功效的
5. 具有幫助性	___:___:___:___:___:___:___	不具幫助
6. 有趣的	___:___:___:___:___:___:___	無趣的
7. 乏味的	___:___:___:___:___:___:___	興奮的
8. 不令人高興	___:___:___:___:___:___:___	令人高興
9. 不令人激動的	___:___:___:___:___:___:___	令人激動的
10. 娛樂性	___:___:___:___:___:___:___	不娛樂性

- |         |       |      |
|---------|-------|------|
| 11. 功利性 | _____ | 非功利性 |
| 12. 享樂性 | _____ | 非享樂性 |

◆ **礦泉水**

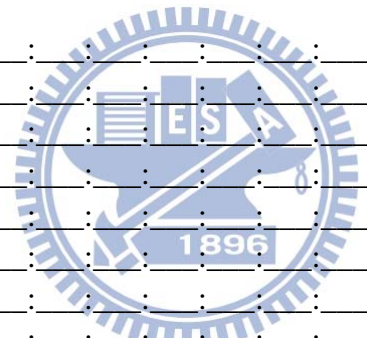
- |           |       |       |
|-----------|-------|-------|
| 1. 功用性    | _____ | 非功用性  |
| 2. 必需的    | _____ | 非必需的  |
| 3. 實用的    | _____ | 非實用的  |
| 4. 有功效的   | _____ | 無功效的  |
| 5. 具有幫助性  | _____ | 不具幫助  |
| 6. 有趣的    | _____ | 無趣的   |
| 7. 乏味的    | _____ | 興奮的   |
| 8. 不令人高興  | _____ | 令人高興  |
| 9. 不令人激動的 | _____ | 令人激動的 |
| 10. 娛樂性   | _____ | 不娛樂性  |
| 11. 功利性   | _____ | 非功利性  |
| 12. 享樂性   | _____ | 非享樂性  |

◆ **果汁**

- |           |       |       |
|-----------|-------|-------|
| 1. 功用性    | _____ | 非功用性  |
| 2. 必需的    | _____ | 非必需的  |
| 3. 實用的    | _____ | 非實用的  |
| 4. 有功效的   | _____ | 無功效的  |
| 5. 具有幫助性  | _____ | 不具幫助  |
| 6. 有趣的    | _____ | 無趣的   |
| 7. 乏味的    | _____ | 興奮的   |
| 8. 不令人高興  | _____ | 令人高興  |
| 9. 不令人激動的 | _____ | 令人激動的 |
| 10. 娛樂性   | _____ | 不娛樂性  |
| 11. 功利性   | _____ | 非功利性  |
| 12. 享樂性   | _____ | 非享樂性  |

◆ **牛奶**

- |           |       |       |
|-----------|-------|-------|
| 1. 功用性    | _____ | 非功用性  |
| 2. 必需的    | _____ | 非必需的  |
| 3. 實用的    | _____ | 非實用的  |
| 4. 有功效的   | _____ | 無功效的  |
| 5. 具有幫助性  | _____ | 不具幫助  |
| 6. 有趣的    | _____ | 無趣的   |
| 7. 乏味的    | _____ | 興奮的   |
| 8. 不令人高興  | _____ | 令人高興  |
| 9. 不令人激動的 | _____ | 令人激動的 |
| 10. 娛樂性   | _____ | 不娛樂性  |
| 11. 功利性   | _____ | 非功利性  |



12. 享樂性 \_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_ 非享樂性



### 基本資料

1. 性別：<sub>1</sub> 男性 <sub>0</sub> 女性
2. 年齡：<sub>1</sub> 20歲以下 <sub>2</sub> 20-25歲 <sub>3</sub> 26-30歲 <sub>4</sub> 31-35歲  
<sub>5</sub> 36-40歲 <sub>6</sub> 41-45歲 <sub>7</sub> 46-50歲 <sub>8</sub> 51歲以上
3. 教育程度：<sub>1</sub> 小學 <sub>2</sub> 國中 <sub>3</sub> 高中職 <sub>4</sub> 專科 <sub>5</sub> 大學 <sub>6</sub> 碩士 <sub>7</sub> 博士
4. 職業：<sub>1</sub> 學生 <sub>2</sub> 教職員 <sub>3</sub> 製造業 <sub>4</sub> 資訊電腦業 <sub>5</sub> 大眾傳播/廣告業  
<sub>6</sub> 公務人員 <sub>7</sub> 軍人(含當兵) <sub>8</sub> 家庭主婦 <sub>9</sub> 金融保險業  
<sub>10</sub> 不動產業 <sub>11</sub> 其他服務業 <sub>12</sub> 其他行業 \_\_\_\_\_

(問卷到此結束，萬分感謝您的填答與支持)



## A1.4: Selected background music for pretest



問卷說明：煩請聆聽音樂，並填寫對於音樂的感受於以下的題目

請依據您聆聽音樂的感受，在適當的空格中作記。 Ex: \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_

### ◆ M01(歌曲 1)

- |                 |      |                     |     |
|-----------------|------|---------------------|-----|
| 1. 我喜歡這首音樂      | 很不喜歡 | ___:___:___:___:___ | 很喜歡 |
| 2. 這首音樂的節奏是     | 很快速的 | ___:___:___:___:___ | 很緩和 |
| 3. 這首音樂適合網路商店播放 | 很不適合 | ___:___:___:___:___ | 很適合 |

### ◆ M02(歌曲 2)

- |                 |      |                     |     |
|-----------------|------|---------------------|-----|
| 1. 我喜歡這首音樂      | 很不喜歡 | ___:___:___:___:___ | 很喜歡 |
| 2. 這首音樂的節奏是     | 很快速的 | ___:___:___:___:___ | 很緩和 |
| 3. 這首音樂適合網路商店播放 | 很不適合 | ___:___:___:___:___ | 很適合 |

### ◆ M03(歌曲 3)

- |                 |      |                     |     |
|-----------------|------|---------------------|-----|
| 1. 我喜歡這首音樂      | 很不喜歡 | ___:___:___:___:___ | 很喜歡 |
| 2. 這首音樂的節奏是     | 很快速的 | ___:___:___:___:___ | 很緩和 |
| 3. 這首音樂適合網路商店播放 | 很不適合 | ___:___:___:___:___ | 很適合 |

### ◆ M04(歌曲 4)

- |                 |      |                     |     |
|-----------------|------|---------------------|-----|
| 1. 我喜歡這首音樂      | 很不喜歡 | ___:___:___:___:___ | 很喜歡 |
| 2. 這首音樂的節奏是     | 很快速的 | ___:___:___:___:___ | 很緩和 |
| 3. 這首音樂適合網路商店播放 | 很不適合 | ___:___:___:___:___ | 很適合 |

### ◆ M05(歌曲 5)

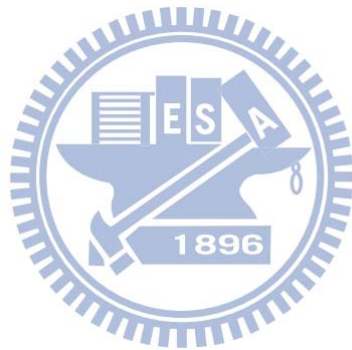
- |                 |      |                     |     |
|-----------------|------|---------------------|-----|
| 1. 我喜歡這首音樂      | 很不喜歡 | ___:___:___:___:___ | 很喜歡 |
| 2. 這首音樂的節奏是     | 很快速的 | ___:___:___:___:___ | 很緩和 |
| 3. 這首音樂適合網路商店播放 | 很不適合 | ___:___:___:___:___ | 很適合 |

### ◆ M06(歌曲 6)

- |                 |      |                     |     |
|-----------------|------|---------------------|-----|
| 1. 我喜歡這首音樂      | 很不喜歡 | ___:___:___:___:___ | 很喜歡 |
| 2. 這首音樂的節奏是     | 很快速的 | ___:___:___:___:___ | 很緩和 |
| 3. 這首音樂適合網路商店播放 | 很不適合 | ___:___:___:___:___ | 很適合 |

1. 性別：1 男性 2 女性
2. 年齡：1 15歲以下 2 16-20歲 3 21-25歲 4 26-30歲  
5 31-35歲 6 36-40歲 7 41-45歲 8 46歲以上
3. 教育程度：1 小學 2 國中 3 高中職 4 專科 5 大學 6 碩士 7 博士
4. 職業：1 學生 2 教職員 3 製造業 4 資訊電腦業 5 大眾傳播/廣告業  
6 公務人員 7 軍人(含當兵) 8 家庭主婦 9 金融保險業  
10 不動產業 11 其他服務業 12 其他行業\_\_\_\_\_

(問卷到此結束，萬分感謝您的填答與支持)



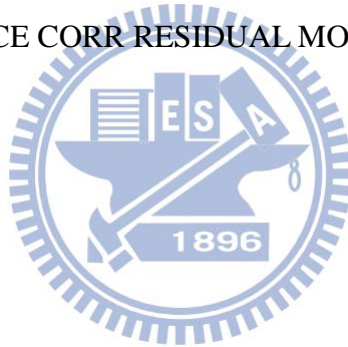




## Appendix 2: SAS Programs

### Program 1: SAS program for CFA

```
DM 'LOG;CLEAR;OUTPUT; CLEAR;';
OPTIONS replace NOCENTER NODATE PAGESIZE=60;
DATA musicCFA;
INPUT id V1-V20 @@;
CARDS;
1 5 5 4 3 5 3 5 2 4 4 4 4 5 5 5 4 5 4 4 4
.
.
.
299 6 5 4 4 4 5 7 7 1 3 3 3 2 3 5 3 2 1 5 6
;
PROC CALIS COVARIANCE CORR RESIDUAL MODIFICATION;
LINEQS
v1 = L1 F2 + E1,
v2 = L2 F2 + E2,
v4 = L4 F2 + E4,
v5 = L5 F2 + E5,
v6 = L6 F2 + E6,
v7 = L7 F2 + E7,
v3 = L3 F3 + E3,
v8 = L8 F3 + E8,
v9 = L9 F3 + E9,
v10 = L10 F3 + E10,
v11 = L11 F3 + E11,
v12 = L12 F3 + E12,
v13 = L13 F4 + E13,
v14 = L14 F4 + E14,
v15 = L15 F4 + E15,
v16 = L16 F4 + E16,
v17 = L17 F4 + E17,
v18 = L18 F4 + E18,
v19 = L19 F5 + E19,
v20 = L20 F5 + E20;
STD
F2 = 1,
F3 = 1,
F4 = 1,
F5 = 1,
E1=VAR1,
```





```

E2=VAR2,
E4=VAR4,
E5=VAR5,
E6=VAR6,
E7=VAR7,
E3=VAR3,
E8=VAR8,
E9=VAR9,
E10=VAR10,
E11=VAR11,
E12=VAR12,
E13=VAR13,
E14=VAR14,
E15=VAR15,
E16=VAR16,
E17=VAR17,
E18=VAR18,
E19=VAR19,
E20=VAR20;
COV
F2 F3 = CF2F3,
F2 F4 = CF2F4,
F2 F5 = CF2F5,
F3 F4 = CF3F4,
F3 F5 = CF3F5,
F4 F5 = CF4F5;
VAR V1-V20;
title 'results by all items';
run;
PROC CALIS COVARIANCE CORR RESIDUAL MODIFICATION;
LINEQS
v1 = L1 F2 + E1,
v2 = L2 F2 + E2,
v4 = L4 F2 + E4,
v5 = L5 F2 + E5,
v6 = L6 F2 + E6,
v7 = L7 F2 + E7,
v3 = L3 F3 + E3,
v9 = L9 F3 + E9,
v10 = L10 F3 + E10,
v11 = L11 F3 + E11,
v12 = L12 F3 + E12,
v13 = L13 F4 + E13,
v14 = L14 F4 + E14,
v15 = L15 F4 + E15,
v16 = L16 F4 + E16,
v17 = L17 F4 + E17,
v18 = L18 F4 + E18,

```



v19 = L19 F5 + E19,  
v20 = L20 F5 + E20;

STD

F2 = 1,

F3 = 1,

F4 = 1,

F5 = 1,

E1=VAR1,

E2=VAR2,

E4=VAR4,

E5=VAR5,

E6=VAR6,

E7=VAR7,

E3=VAR3,

E9=VAR9,

E10=VAR10,

E11=VAR11,

E12=VAR12,

E13=VAR13,

E14=VAR14,

E15=VAR15,

E16=VAR16,

E17=VAR17,

E18=VAR18,

E19=VAR19,

E20=VAR20;

COV

F2 F3 = CF2F3,

F2 F4 = CF2F4,

F2 F5 = CF2F5,

F3 F4 = CF3F4,

F3 F5 = CF3F5,

F4 F5 = CF4F5;

VAR V1-v7 v9-V20;

title 'results by all items';

title2 'except v8';

run;

PROC CALIS COVARIANCE CORR RESIDUAL MODIFICATION;

LINEQS

v1 = L1 F2 + E1,

v2 = L2 F2 + E2,

v4 = L4 F2 + E4,

v5 = L5 F2 + E5,

v6 = L6 F2 + E6,

v7 = L7 F2 + E7,

v9 = L9 F3 + E9,

v10 = L10 F3 + E10,

v11 = L11 F3 + E11,



$v_{12} = L_{12} F_3 + E_{12}$ ,  
 $v_{13} = L_{13} F_4 + E_{13}$ ,  
 $v_{14} = L_{14} F_4 + E_{14}$ ,  
 $v_{15} = L_{15} F_4 + E_{15}$ ,  
 $v_{16} = L_{16} F_4 + E_{16}$ ,  
 $v_{17} = L_{17} F_4 + E_{17}$ ,  
 $v_{18} = L_{18} F_4 + E_{18}$ ,  
 $v_{19} = L_{19} F_5 + E_{19}$ ,  
 $v_{20} = L_{20} F_5 + E_{20}$ ;

STD

$F_2 = 1$ ,

$F_3 = 1$ ,

$F_4 = 1$ ,

$F_5 = 1$ ,

$E_1 = \text{VAR}_1$ ,

$E_2 = \text{VAR}_2$ ,

$E_4 = \text{VAR}_4$ ,

$E_5 = \text{VAR}_5$ ,

$E_6 = \text{VAR}_6$ ,

$E_7 = \text{VAR}_7$ ,

$E_9 = \text{VAR}_9$ ,

$E_{10} = \text{VAR}_{10}$ ,

$E_{11} = \text{VAR}_{11}$ ,

$E_{12} = \text{VAR}_{12}$ ,

$E_{13} = \text{VAR}_{13}$ ,

$E_{14} = \text{VAR}_{14}$ ,

$E_{15} = \text{VAR}_{15}$ ,

$E_{16} = \text{VAR}_{16}$ ,

$E_{17} = \text{VAR}_{17}$ ,

$E_{18} = \text{VAR}_{18}$ ,

$E_{19} = \text{VAR}_{19}$ ,

$E_{20} = \text{VAR}_{20}$ ;

COV

$F_2 F_3 = \text{CF}_2 F_3$ ,

$F_2 F_4 = \text{CF}_2 F_4$ ,

$F_2 F_5 = \text{CF}_2 F_5$ ,

$F_3 F_4 = \text{CF}_3 F_4$ ,

$F_3 F_5 = \text{CF}_3 F_5$ ,

$F_4 F_5 = \text{CF}_4 F_5$ ;

VAR V1-v2 v4-v7 v9-V20;

title 'results by all items';

title2 'except v3, v8';

run;

proc corr alpha;

var v9-v12;

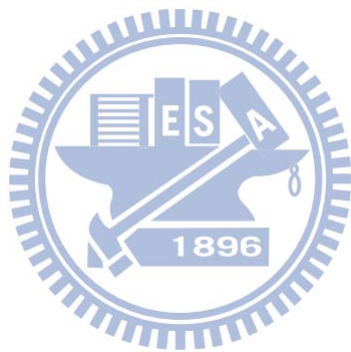
title 'alpha for F3';

run;

proc corr alpha;



```
var v1 v2 v4-v7;  
title 'alpha for F2';  
run;  
proc corr alpha;  
var v13-v14 v16-v18;  
title 'alpha for F4';  
run;  
proc corr alpha;  
var v19 v20;  
title 'alpha for F5';  
run;
```



Program 2: SAS program for Regression Analysis  
(for Study 1 and Study 2)

```

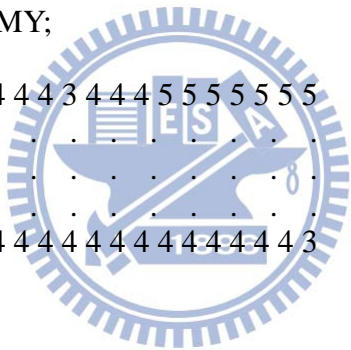
DM 'LOG;CLEAR;OUTPUT; CLEAR;';
OPTIONS CENTER NODATE PAGESIZE=60;
DATA aaa;
INPUT a1-a29;
  aro=(a16+a17+a18+a19)/4;
  ple=(a8+ a9+ a10+a11+a12+a13)/6;
  tru=(a20+a21+a22+ a23+a24+a25)/6;
  pur=(a26+a27)/2;
  IF a2=1 THEN DUMMY=1; ELSE DUMMY=0;
  IF a1=1 THEN dmus=0; ELSE dmus=1;
  IF a3=1 THEN da3=1; ELSE da3=0;
  IF a4=1 THEN da4=1; ELSE da4=0;
  IF a5=1 THEN da5=1; ELSE da5=0;
  IF a6=1 THEN da6=1; ELSE da6=0;
  IF a7=1 THEN da7=1; ELSE da7=0;
  aroDUMMY=aro*DUMMY;
CARDS;
1 1 2 1 2 2 1 5 5 4 5 4 4 4 3 4 4 4 3 4 4 4 5 5 5 5 5 5 5
. . . . .
. . . . .
. . . . .
2 2 2 2 2 2 1 4 4 5 5 5 5 5 4 4 4 4 4 4 4 4 4 4 4 4 4 4 3
;
proc print data=aaa;
  title 'Results for study1';
run;
PROC REG DATA=aaa;
  MODEL pur=dmus da3 da4 da5 da6 a28 a29 da7;
RUN;

PROC REG DATA=aaa;
  MODEL ARO=dmus a3 da4 da5 da6 a28 a29 da7;
RUN;

PROC REG DATA=aaa;
  MODEL PUR=dmus ARO a3 da4 da5 da6 a28 a29 da7;
RUN;

PROC REG DATA=aaa;
MODEL PLE=aro DUMMY aroDUMMY a3 da4 da5 da6 a28 a29 da7;
Hedonic:TEST aro=0 / print;
Utilitarian:TEST aro+aroDUMMY=0 / print;
RUN;

```



```
PROC REG DATA=aaa;  
MODEL TRU=PLE a3 da4 da5 da6 a28 a29 da7;  
RUN;  
PROC REG DATA=aaa;  
MODEL PUR=TRU a3 da4 da5 da6 a28 a29 da7;  
RUN;  
PROC REG DATA=aaa;  
MODEL PUR=PLE a3 da4 da5 da6 a28 a29 da7;  
RUN;  
PROC REG DATA=aaa;  
MODEL PUR=TRU PLE a3 da4 da5 da6 a28 a29 da7;  
RUN;
```

