Study of Three Levels of Design for Cultural and Creative Products Pertinent to Consumer Personality Traits

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Abstract

To meet consumer requirement, the cultural and creative products underscore the route of developing personality products in a bid to satisfy unconventional and independent psychological demand of consumers. The purpose of this study is to explore correlation of consumer personality traits in selecting products or preference for products. Professional Dynamitic Program (PDP) personality traits testing has been used, and as for products three levels of emotional design proposed by Norman (2004) is adopted: Visceral, behavioral and reflective. The flow of study is divided into four major stages, the first stage of literature

review and theoretical construction, the second stage on websites of Palace Museum Boutique Pavilion, Taiwan Cultural and Creative Souvenirs Pavilion and Pinkoi, and invite experts to screen cultural and creative products on bestseller list; the third stage focuses on PDP personality traits testing in a bid to understand consumers' personality traits; The fourth stage provides cultural and creative products after screening and selection of questionnaire for individual intuitiveness of testee's preference for product design. The conclusion of this study shows significant correlation in preference of consumers' differential personality traits on design of cultural and creative products. It also conducts statistics on preference for levels of emotional design for cultural and creative products in accordance with different personality traits and the correlation result may provide reference for product planners, designers or sales.

Keywords: Professional Dynamitic Program (PDP), Personality traits, Three levels of design

I. Introduction

In today's community, when niche is king, personalized products are more likely to be favored by consumers. "User-oriented" has become an important direction for designers. Norman also mentioned in the book "Emotional Design" that good behavioral design should be people-centered and focus on understanding and satisfying the needs of people who actually use the product (Norman, 2004). Therefore, consumers' preference for purchasing products is an important reference for designers and marketers. From the perspective of personalization, cultural and creative products combine the two major elements of "culture" and "creativity." Developing personalized and creative products that are different from past traditions, enhance the value of the products, and attract consumers to purchase them will create more lucrative profits for designers. Such a model has become one of the current trends in global industrial development.

Under the "user-oriented" trend, personality traits have become an important direction for the study of consumer behavior. In the past, most of the personality traits issues were used in the development of internal human resources to assess the distribution of the company's employees' internal personality as a reference basis for adjustments to work content and education and training. For the company's external recruitment, it is an important reference. It is helpful to understand the personality characteristics of employees and help them in their management and direction. However, from many literature sources, it can be seen that the level of research related to personality traits has spread, especially the seller's personality and consumer behavior (Odekerken-Schröder et al., 2003; Vázquez-Carrasco & Foxall, 2006). The research scope is to lock in cultural and creative products, effectively narrow the cognitive gap between designers and consumers. The study of consumer personality traits will help designers understand different consumer personalities and identify consumer preferences for cultural and creative products. Our research result will help deeper exploration of the design model of cultural and creative products.

In this study, the personality traits of consumers are evaluated through personality trait detection tool PDP, and the three levels of emotional design influence on the cultural and creative products is also discussed. This research focuses on cultural and creative products. It

uses the best-selling products as samples from Taiwan's three major cultural and commercial sales platforms. In order to find merchandise suitable for the emotional design elements proposed by Norman, the experts are invited to conduct the first stage screening and select best-selling products under NT$500. The following best-selling products are to reduce consumers' influence on other factors in purchasing products. In this study, ANOVA analysis was used to analyze the effects of different consumer personality traits on the three levels of cultural and creative product emotion design.

2. Literature Review

2.1 Personality Traits and Consumer Behavior

In this study, the personality and behavior patterns of consumers are called "personality traits." "Personality" refers to the unique composition of individual characteristics, which determines the interaction mode between people and the environment. "Trait" refers to a continuous aspect that is used to explain the "consistency" of one individual's behavior in different contexts (Gatewood & Field, 1998); Flight et al. (2011) believes that personality in addition to the performance of individual attributes and characteristics, also has the uniqueness and durability characteristics; although personality traits have consistency and regularity, but still vary from person to person (Markus & Kitayama, 1998).

This study focuses on the influence of consumer personality traits on the design and purchase Intention of cultural and creative products. In the relevant literature on personality traits, the five-factor model (Five Factor Model) of the personality traits proposed by McCrae & John (1992), referred to as FFM, is most favored by follow-up researchers. This study hopes to reduce the complexity of questionnaires for survey respondents and to integrate research with the industry. Therefore, the PDP aptitude testing tool is used by current companies to understand the personal characteristics of their own employees or interview candidates. This set of tools is a commonly used measurement tool for employee recruitment of top 100 companies in Taiwan. It has more than 16 million employees and is the most widely used "personal traits behavior diagnostic system" in the world (http://pdp.com.tw/2017/index.php). The characteristics of the PDP personality traits are summarized in Table 1:

Table 1. Strengths and weaknesses of personality traits organized by this study

Personality trait	Strength	Weakness	Suitable Occupation
Dominance (Tiger)	1.Strong leadership 2.Adventurous 3.Decisive 4.Fearless	1. Inconsiderate 2.Impatient 3.Does not know how to please others 4.Arrogant	Supervisor, General
Extroversion (Peacock)	1.Optimistic, likes attention 2.Creative 3.Energetic	1.Unrealistic 2.Impulsive 3.Poor concentration	Public relations, Sales representative
Conformity (Koala)	1.Listener 2.Emotionally stable 3.Tolerant	1.Too cautious 2.Does not like change 3.Indecisive	Administration, Customer services
Patience (Owl)	1.Careful consideration 2.Organized 3.Logical	1.Picky 2.Complicates issues	Accountant, Engineer

| Integration (Chameleon) | 1.Adaptive 2.Strong integration ability | 1.Changeable 2.Unpredictable | Personal assistant |

Source: own study

When consumers purchase goods with more self-conceptual characteristics, different personality traits can influence consumer choice (Brody & Cunningham, 1968). Sparks et al. (1971) believe that through the profile of personality characteristics of buyers of different types of goods, it can be seen that different product or brand purchasers have different personality traits. From the above literature, it is known that the personality traits of consumers influence their purchasing behavior and can be used as a variable in the selection of market segments.

2.2 Personality Traits and Emotional Design

Driven by technological advances in manufacturing technology, the quality of goods has also been steadily increasing. Consumers no longer only consider the beauty and durability of their products before purchasing them, and instead seek personal and emotional satisfaction. Therefore, good creative goods should be designed from the perspective of "user" and focus on the emotional interaction between people and products, inducing consumers' positive emotions to meet the psychological needs. Norman (2004) proposes three levels of use in The Multiple Faces of Emotion and Design in the book "Emotional Design" and states that people interpret the same at multiple levels. Experience, attractive for a certain level, may not necessarily be attractive at another level. A successful design must be excellent at all levels. The book also simplifies and proposes the product features that these three levels can correspond to. The visceral design feature is "appearance"; the behavioral design feature is "useful fun and utility"; and the design feature of the reflective level is "self-image, personal satisfaction, memory".

Table 2. Emotional Design Levels

Brain operation level	Description	Product feature
Visceral level	In its most primitive subconscious mechanism, it can immediately make positive and negative judgments on external stimuli. Instant reaction is sent through the motor nervous system to send messages. It is also the starting point of emotional procedures.	Product appearance, touch and color feel.
Behavioral level	The operation of the brain that deals with most behaviors is affected by experience and learning. Unconscious activities or routine operations are affected by the level of visceral and reflection.	Feeling of function, performance and usability
Reflective level	The message reflection processing program, through its own experience of conscious reflection and experience, this level can affect other levels of reaction, is also the most advanced processing mechanism.	Communication and reflection of product image

Source: (Norman, 2004)

Huang (2009) believes that the theory of the practicality of products in the past has repeatedly emphasized innovation and can no longer satisfy the current consumer market. In addition to design, Japan also realizes that the beauty and function of the surface cannot constitute the differentiation and uniqueness of the product; besides the beauty and practicality of the products design, it needs to find the connection between the product and the consumer.

Chaudhuri (2006) also points out that emotion is an important determinant for consumers to purchase products or services. Norman (2004) believes that design is important, but what design he chooses is determined by the situation, the context, and especially his mood. According to the above-mentioned scholars' discussion, how to use products as a means of emotional design to create emotional links between consumers with different personality traits and products, and thus increase the willingness to purchase intention of creative products items is the direction for the development of this study.

2.3 Consumer Personality and Product Design

When evaluating the aesthetic value of products, Lewaski (1988) believed that aesthetic value is divided into three levels X, Y and Z; the lowest level X represents the aesthetic design of the product's exterior; the middle level Y represents the customer's understanding of the product function; the upper level Z represents the feeling that the product gives customers, which is the product's personality. Many studies on the perception of product design have explained that products have personalities, and that there are two advantages to this. The first is that it helps consumers understand products (Mugge, Govers & Schoormans, 2009); the second is that it attracts consumers because consumers will purchase products that fit their image (Govers & Mugge, 2004; Govers & Schoormans, 2005). Consumers are inclined to purchase products that fit their personality and image. Even though consumers sometimes like the design of products, they still will not purchase the product because they symbolic meaning of the product does not fit them (Creusen & Schoormans, 2005).

H1：Consumer personality traits significantly affect the visceral design of the cultural and creative products

H2：Consumer personality traits significantly affect the behavioral design of the cultural and creative products

H3：Consumer personality traits significantly affect the reflective design of the cultural and creative products

3. Research Methodology

3.1 Research Framework
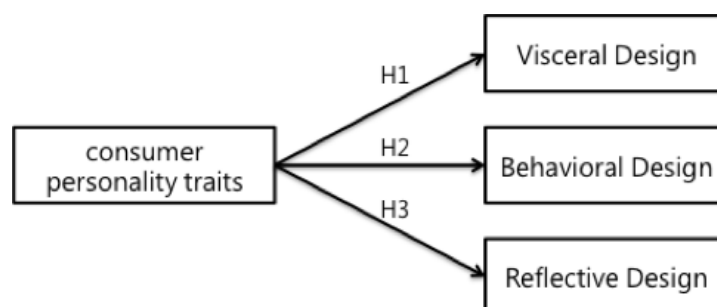
Research framework is presend in figure 1:

Figure 1. Research framework

3.2 Research Flow

The research flow consists of four major stages: the first stage of literature review and theoretical construction, the definition of consumer personality traits, and the three levels of emotional design proposed by Norman (2004); the second phase of research sample selection, this sample comes from, the best-selling products of the three major websites such as the Palace Museum Boutique Pavilion, Taiwan Cultural and Creative Souvenirs Pavilion, and Pinkoi, and five experts on the best-selling list of the website's best-selling products, product screening, at this stage using five-point scale to conduct an expert questionnaire , 1 represents very unsuitable, 5 represents very suitable, and finally selected the product sample of the consumer questionnaire; PDP personality trait testing are firstly conducted before the third stage questionnaire is issued to understand the personality traits of the consumers themselves, and then the questionnaires are issued to the study. The fourth stage of the questionnaire analysis, conclusions and recommendations, is to identify the relationship between consumer personality traits and three levels of cultural and creative product design. The research flow is shown as Figure 2:
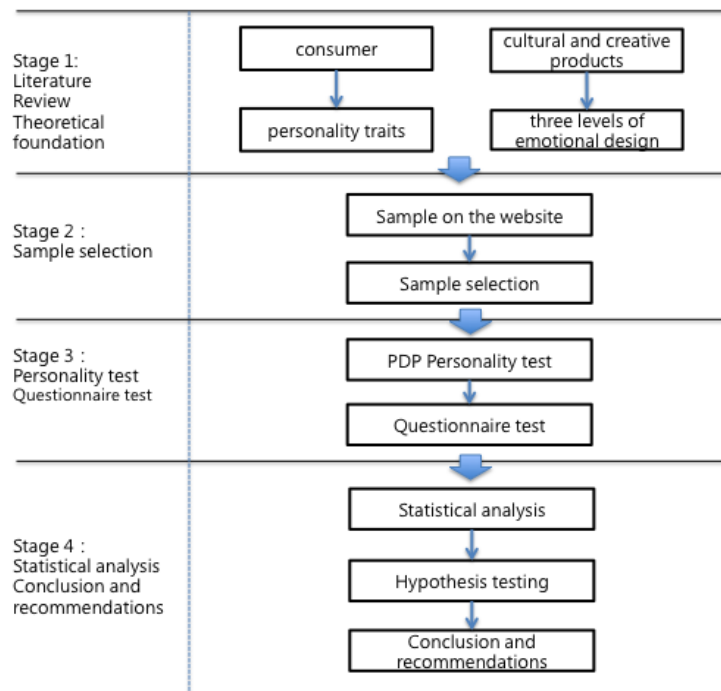

Figure 2. Research Framework

3.3 Subjects

The purpose of this study is to explore the influence of consumer personality traits on the emotional design of cultural and creative products. However, due to the wide range of cultural and creative products, in order to select suitable samples, this study first selected 18 samples from the best-selling products of Taiwan Cultural & Creative Souvenirs Pavilion website, National Palace Museum Network, and Pinkoi website. These samples have not exceeded the NT$500 price in order to minimize the price interference factor. Next, five experts were invited to conduct a five-point scale questionnaire survey on 18 products in

accordance with the three levels of visceral design, behavioral design, and reflective design proposed by Norman (2004). Among them, 1 represents very unsuitable, 5 represents very suitable, and a total of 7 cultural and creative products that are most suitable for emotional design are selected.

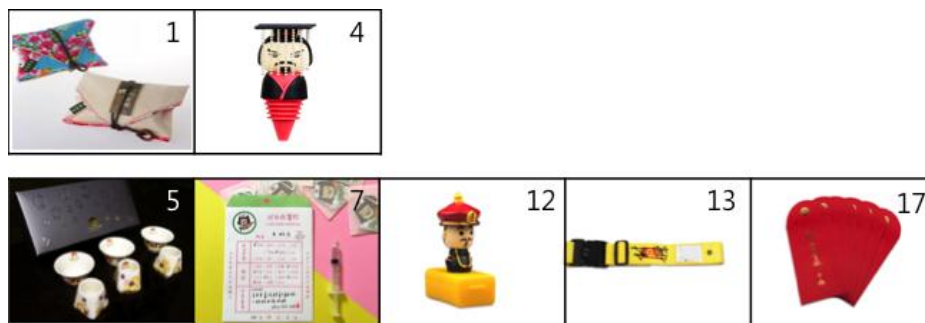Figure 3. Best-selling Cultural and Creative Products for Website

Figure 4. Cultural and Creative Products for Experts screen

3.4 Questionnaire Design

Using the questionnaire survey method, the contents of the questionnaire are: five personality traits measurement; cultural and creative product emotion design; and personal data. The title of the questionnaire refers to the design of past scholars' research, and based on the research needs, the questions are deleted and revised. Measured by Likert's five-point scale, the scores are strongly disagreed, disagreed, common, agreed, and strongly agree, and are given in sequence 1, 2, 3, 4, and 5 points. In order to increase the validity of the questionnaire, before the formal questionnaire was finalized, two professional scholars were invited to make several amendments, and several students were asked to conduct pre-tests from the perspective of consumers. The main purpose of the pre-test is to amend the ambiguity and increase or decrease the number of questionnaire items.

4. Results and Discussion

The questionnaire was replied online and the number of valid questionnaires was 329. This questionnaire analysis uses one factor ANOVA to estimate the different personality traits of consumers. This ANOVA testing is to measure whether the mean of the three perceptions

including visceral design, behavioral design and reflective design have the significant influence on cultural and creative design. Three facets of the questionnaire were used to find the sum of each facet.

From the different consumer personality traits for cultural and creative product preferences, there is a significant difference in personality trait quality for the reflective design of cultural and creative products (F=2.41 p<0.05). As shown in Table 3, the yellow marker shows that the project has significant differences under the 95% confidence level. The green marker shows that the project has significant differences under the 90% level of confidence.

Table 3. One-way ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
VISsum (Visceral design)	Between Groups	69.264	4	17.316	1.035	.389
	Within Groups	5221.941	312	16.737		
	Total	5291.205	316			
BEHsum (Behavioral design)	Between Groups	63.835	4	15.959	.825	.510
	Within Groups	6037.427	312	19.351		
	Total	6101.262	316			
REFsum (Reflective design)	Between Groups	75.480	4	18.870	2.407	.049
	Within Groups	2445.732	312	7.839		
	Total	2521.211	316			

Source: own study

According to the results of analysis of single factor variance, the different personality traits of consumers have significant results for the REFsum (Reflective Design) analysis of product design. Next, use the multiple comparison method to find out which group or groups and other groups have significant differences. The following is a multiple comparison analysis table:

Table 4. Multiple Comparisons

DV	(I) per	(J) per	Mean Difference (I-J)	Std. Error	Sig	95% Confidence interval	
						Lower Bound	Upper Bound
		4	.72470	.82330	.379	-.8952	2.3446
REFsum	1	2	-.77538	.50722	.127	-1.7734	.2226
		3	.39556	.54949	.472	-.6856	1.4767
		4	.23362	.49007	.634	-.7306	1.1979
		5	-.73317	.58989	.215	-1.8938	.4275
	2	1	.77538	.50722	.127	-.2226	1.7734
		3	1.17094*	.49564	.019	.1957	2.1462
		4	1.00900*	.42882	.019	.1652	1.8528
		5	.04221	.54008	.938	-1.0205	1.1049
	3	1	-.39556	.54949	.472	-1.4767	.6856
		2	-1.17094*	.49564	.019	-2.1462	-.1957
		4	-.16194	.47808	.735	-1.1026	.7787
		5	-1.12873	.57996	.053	-2.2699	.0124
	4	1	-.23362	.49007	.634	-1.1979	.7306
		2	-1.00900*	.42882	.019	-1.8528	-.1652
		3	.16194	.47808	.735	-.7787	1.1026
		5	-.96679	.52401	.066	-1.9978	.0642

	5	1	.73317	.58989	.215	-.4275	1.8938
		2	-.04221	.54008	.938	-1.1049	1.0205
		3	1.12873	.57996	.053	-.0124	2.2699
		4	.96679	.52401	.066	-.0642	1.9978

Note: Dominance (Tiger) = per1, Extroversion (Peacock) = per2, Patience (Owl) = per3, Conformity (Koala) = per4, Integration (Chameleon) = per5

Source: own study

5. Conclusion and Recommendation

5.1 Conclusion

This study aims to explore the influence of consumer personality traits on the design of cultural and creative products. According to relevant literature inferences, the effect of consumer personality traits on visceral design, behavioral design, and reflective design is verified. This section summarizes the results of empirical analysis, sums up the research conclusions and research recommendations, and explains the limitations of research.

(1) According to the above statistical analysis, at the 95% level of confidence, the differences in personality traits of different consumers for REFsum are significant and reach a significant level ($F=2.407$, $p=0.049 < 0.05$). The proposed items of the reflective design includes: The cultural and creative products can satisfy my emotional needs; the cultural and creative products can establish the image and social status of the consumers; and the cultural and creative products remind consumers of memories of past happiness. It has been proved that different consumer personality traits have obvious differences in the sentiment, image and memory of cultural and creative products. Therefore, research hypothesis H3 is established and H1 and H2 are not established.

(2) Further analysis by ANOVA multiple comparison revealed that at the 95% confidence level, the mean difference was significantly included at the 0.05 level: the peacock type (per2) had a significant difference for the owl (per3) ($p=0.019 < 0.05$); the peacock type (per2) achieved a significant difference for the koala (per4) ($p=0.019 < 0.05$); in contrast, the koala (per4) achieved a significant difference for the peacock type (per2) ($p=0.019 < 0.05$). At the 90% confidence level, the owl-type (per3) achieved a significant difference for the chameleon (per5) ($p=0.053$); the koala-type (per4) achieved a significant difference for the chameleon-type (per5) to achieve a significant difference ($p= 0.066$); in contrast, the chameleon type (per5) achieved a significant difference for the owl type (per3) ($p=0.053$).

(3) From the standpoint of consumer personality traits, the peacock-type features include optimistic love expression, abundance of creativity, emotional impulses, and unrestrainedness. Compared with owls, they are thoughtful, orderly and critical; and with koalas they are indecisive, emotional stability, and reluctance to change in personality characteristics, there are significant differences between the outward and inward. In terms of emotional expression, the peacock type is more extroverted, and the product's emotional expression and image status given by the reflective design of cultural and creative products are relatively significant.

5.2 Research Recommendations

Two research recommendations and future work are shown as follows.

(1) This research is conducted by questionnaire online. Consumers fill out questionnaires through pictures of cultural and creative products, lacking actual visual and tactile sensations, lacking a sense of realism in the experience of cultural and creative products, and relatively influencing consumers' actual experience of products. Therefore, it is recommended that follow-up researchers in the survey of the questionnaire can provide actual cultural and creative products for consumers to play and experience and make the research conclusions more accurate.

(2) This study confirms that consumer personality traits have the most significant impact on the reflective design of cultural and creative products. Among them, consumers with peacock-type personality traits are more significant than other personality traits. For designers, good cultural and creative products should be designed from the perspective of "user", and the "emotional" interaction between consumers and products should be strengthened, and the positive emotions of consumers should be satisfied to meet the psychological needs, thereby bringing about the highest realm of reflective design.

References

Brody, Robert, P., & Scott M. Cunningham (1968). Personality variables and the consumer decision process. *Journal of Marketing Research, 5*(1), 50-57. https://doi.org/10.2307/3149793

Chaudhuri, A. (2006). Emotion and reason in consumer behavior. *Routledge.*

Creusen, M. E. H., & Schoormans, J. P. (2005). The Different Roles of ProductAppear-ance in Consumer Choice. *Journal of Product Innovation Management, 22*(1), 63-81. https://doi.org/10.1111/j.0737-6782.2005.00103.x

Flight, R. L., Allaway, A. W., Kim, W. M., & D'Souza, G. (2011). A study of perceived innovation characteristics across cultures and stages of diffusion. *Journal of Marketing Theory and Practice, 19*(1), 109-126. https://doi.org/10.2753/MTP1069-6679190107

Gatewood R. D., & Field, H. S. (1998). Human Resource Selection (4 thud.). *Forthworth, TX, The Dryden Press.*

Govers, P., & Mugge, R. (2004). 'I love my jeep, because its tough like me': the effect of productepersonality congruence on product attachment. *Paper presented at the Proceed-ings of the Fourth International Conference on Design and Emotion*, Ankara, Turkey.

Govers, P., & Schoormans, J. P. (2005). Product personality and its influence on con-sumer preference. *Journal of Consumer Marketing, 22*(4), 189-197. https://doi.org/10.1108/07363760510605308

Hsin-Yi, Kuo (2000). The Relationships Between Employee Personality, Motivation Preference, Work Attitude, and Work Performance. *Shih Hsin University*.

Huang, C. L. (2009). The Innovation of Therapeutic Office Stationery Design. *National Cheng Chi University*.

Jia-Guang Lin. (2012). The Study of Relationship among Personality Traits, Customer Value and Facebook Behavior - The Dual Perspective of Functional and Emotional value. *National Cheng Kung University.*

Lewalski, Z. (1988). Product Esthetics -- an interpretation for designers. Carson city, *Nevada: Design & Development Engineering Press.*

McCrae, R. R. & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality, 60*, 175-215. https://doi.org/10.1111/j.1467-6494.1992.tb00970.x

Markus, H. R., & Kitayama, S. (1998). The cultural psychology of personality. *Journal of Cross-cultural Psychology, 29*(1), 63-87. https://doi.org/10.1177/0022022198291004

Mugge, R., Govers, P., & Schoormans, J. P. (2009). The development and testing of a product personality scale. *Design Studies, 30*, 287-302. https://doi.org/10.1016/j.destud.2008.10.002

Norman, D. A. (2004). Emotional Design: Why We Love (or Hate) Everyday Things. *New York: Basic Books.*

Odekerken-Schröder, G., De Wulf, K., & Schumacher, P. (2003). Strengthening outcomes of retailer–consumer relationships: The dual impact of relationship marketing tactics and consumer personality. *Journal of Business Research, 56*(3), 177-190. https://doi.org/10.1016/S0148-2963(01)00219-3

Sparks, D. L., & William T. T. (1971). A multivariate analysis of personality and product use. *Journal of Marketing Research, 8*(1), 67-70. https://doi.org/10.2307/3149728

Ljepava, N., Orr, R. R., Locke, S., & Ross, C. (2013). Personality and social characteristics of Facebook non-users and frequent users. *Computers in Human Behavior, 29*(4), 1602-1607. https://doi.org/10.1016/j.chb.2013.01.026

Vázquez-Carrasco, R., & Foxall, G. R. (2006). Influence of personality traits on satisfaction, perception of relational benefits, and loyalty in a personal service context. *Journal of Retailing and Consumer Services, 13*(3), 205-219. https://doi.org/10.1016/j.jretconser.2005.08.006

Su, Y. H., & Li, P. F. (2012). Impact of Facebook User Personality, Narcissism and Involvement on Loyalty. *The Journal of Advertising & Public Relations,* 51-75.