ECONOMICS
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BIG FIVE PERSONALITY
AND DIFFERENT MEANINGS
OF HAPPINESS OF CONSUMERS

ABSTRACT. Happiness is an increasingly important topic worldwide affecting the economic policy of many countries. Prior studies have found that the specific meaning of happiness for individual consumers can vary. This study aimed to test whether the difference could be observed in the texts of online blogs that express people' experience of happiness. A text mining approach was taken, and the analysis results showed that the linguistic characteristics of extroversion, conscientiousness, and openness to experience have significant relationship with the different meanings of happiness manifested by the level of arousal in the texts.

Introduction

Happiness is an increasingly important topic worldwide, and many countries are moving their focus of economic policy toward happiness gradually. Unlike in the past, consumers around the world are pursuing happiness rather than just wealth or social status (Lyubomirsky *et al.*, 2005; Lipovetsky, 2009). Countries are making a variety of efforts at the national level, including introducing a happiness index to find ways of improving quality of life of their citizens (Ura, 2012; Frey, 2008).

Beginning from the 1970s, research on happiness has been actively conducted in various academic fields as well, including philosophy, psychology, economics, and sociology. Especially in the field of marketing and consumer behavior, the relationship between consumption and happiness has been firmly established (Myers, 2000; Hsee *et al.*, 2009). Many studies have also attempted to find the characteristics of consumption that can increase consumers' sense of happiness the most. Recently, the importance of experiential consumption such as of cultural and art products is growing along with the improvements in economic and social well-being of people around the world (Carter *et al.*, 2010).

Still, research on happiness to date has limitations of being restricted in scope compared with other topics of social science (DeNeve *et al.*, 1998; Mogilner *et al.*, 2010). Among many studies, a notable recent work by Mogilner *et al.* (2012) showed that the meaning of happiness can vary across individuals, and proposed two different definitions of

happiness accordingly. The difference in the definitions was based on different levels of arousal (i.e., high and low levels of arousal of positive affect) that consumers experience, and the authors investigated the effects of the difference on consumer behavior.

The present study expands the above-mentioned study in order to enhance the understanding of consumers' definitions of happiness. Specifically, this study aims to test empirically whether personality influences consumers' definitions of happiness. For this, a text mining approach is taken that utilizes psycho-linguistic features of texts. Online blog articles that describe the happy experiences of people are collected and analyzed to see whether the personality characteristics of the texts have significant relationship with the different meanings of happiness manifested in the texts. The Big Five model of personality was chosen considering its wide adoption in social science (Gomez *et al.*, 2002).

This paper is structured as follows. Section 2 introduces the theoretical background of this study. Section 3 presents the research hypotheses. Section 4 presents the research method and the key findings. Section 5 presents the conclusions and future research directions.

1. Literature Review

1.1. Definition of Happiness

The concept of happiness has become increasingly important in economy and consumer-related fields. This is because it is an important challenge to deliver more meaningful values to consumers by determining the degree of happiness consumers experience during consumption (Lipovetsky, 2009). Studies have also found that the sense of happiness consumers experience toward a brand has a positive influence on the perceived service quality, commitment level, and brand loyalty, clearly showing the close relationship between happiness and consumption (Hsee *et al.*, 2009; Hellén *et al.*, 2011).

Various perspectives exist regarding the determinants of the consumers' happiness levels. First, there is a perspective that happiness means the same to all individuals, as it is a combination of objective external environmental factors (Layard, 2005). In other words, this perspective is based on objectivity, claiming that happiness is determined by external inputs consistently. A typical example is the approach to verify the degree of happiness by measuring physiological phenomena, such as electroencephalography (EEG) (Frey *et al.*, 2010).

Secondly, there is a perspective that happiness can be defined as a subjective factor and that the assessment of whether one is happy can vary across individuals. In other words, happiness is defined as the subjective well-being an individual experiences and interprets subjectively. According to this perspective, the estimation of the degree of happiness should be obtained by a survey based on self-reporting (Veenhohen, 1996; Van Boven *et al.*, 2003; Gilbert, 2007).

Happiness can also be defined as positive affect or affective state of experiencing pleasure and enjoyment. According to research, humans experience positive affect when they feel happy, which can be divided into two types. The first type is a state of high arousal, such as excitement, elation, and passion, and the other is a state of low arousal, such as calmness, serenity, and tranquility (Barrett *et al.*, 1999; Bradley *et al.*, 1999; Russell, 2003). Although both states of high and low arousal are positive states, these affective states are largely influenced by individual characteristics such as culture and age, resulting in different meanings of happiness held by different people (Mogilner *et al.*, 2012).

1.2. Big Five Model of Personality

Personality is a unique, stable, and individual characteristic that differentiates one from others, including an individual's emotion, values, attitude, and aptitude. It represents the growth and development of the overall psychological system of an individual, rather than reflecting a partial subsection of it (Goldberg, 2013; Digman, 1990).

The Big Five model of personality is increasingly the most popular model of personality in academia, widely being adopted in social science. It claims that human personality consists of five factors: Extroversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to experience (Goldberg, 1981; Digman, 1990; Carver *et al.*, 2013).

The personality characteristics associated with each factor are as follows. First, extroversion indicates the degree to which an individual wants to interact with others and attract others' attention (Norman, 1963; Goldberg, 1990; Costa *et al.*, 1991). Agreeableness indicates maintaining easygoing and harmonious relationships with others (Costa *et al.*, 1991; Hong *et al.*, 2008). Conscientiousness indicates the characteristics of trying to comply with social norms, rules, and principles (Costa *et al.*, 1991). Neuroticism represents psychological instability that leads to negative emotions such as anxiety, fear, sadness, shame, anger, and guilt (Costa *et al.*, 1992). Openness to experience is a disposition of paying attention to the external world and is similar to the concepts of imagination and curiosity. Individuals with a high level of openness to experience tend to achieve goals through a discovery of new opportunities and by using unconventional methods (Ryckman, 2008).

1.3. Personality and Language Use

Personality is an important factor that allows us to express ourselves and understand others in our lives (Kassarjian, 1971; Digman, 1990). In face-to-face communication, determining each other's personality is achieved by interpreting the other's spoken words, gestures, and behaviors. However, in online communication, texts are very important for determining one's personality because other cues are not available or limited (Back *et al.*, 2010; Gosling *et al.*, 2011; Schwartz *et al.*, 2013; Bai *et al.*, 2014).

People selectively use certain vocabulary unknowingly by habit, and also show consistency in their overall writing style. As such, the vocabulary and the style of language used by an individual in everyday life often reveal one's characteristics. In this context, researchers have demonstrated significant correlations between verbal cues and personality (Pennebaker & King, 1999; Lee *et al.*, 2007; Yarkoni, 2010; Holtgraves, 2011; Schwartz, *et al.*, 2013).

A prime example is the study by Pennebaker and King (1999) that applied the Linguistic Inquiry and Word Count (LIWC) text analysis program to the Big Five personality factors. They studied the relationship between personality and the linguistic components of LIWC by using a survey or by having students write essays. For instance, neuroticism was found to correlate positively with a higher frequency of "first-person singular pronouns" and "negative affective words," and, in contrast, negatively with "positive affective words". There are many other studies as well, including those of Yarkoni (2010), Mehl *et al.* (2006), Goldbeck *et al.* (2011), and Shwartz *et al.* (2013), that have reported the results of empirical analysis of the relationship between personality and text. Based on these results, the present research aimed to determine if the personality traits extracted from text mining have a significant relationship with the definition of happiness.

2. Hypotheses

Based on the model of the previous study introduced earlier (Mogilner *et al.*, 2012), the present study assumes that the meaning of happiness can largely be classified as a positive affect with a high level of arousal, such as excitement and passion, and a positive affect with a low level of arousal, such as calmness and serenity. In particular, the study views that the meaning of happiness for individuals can vary according to the five factors of personality introduced earlier. Accordingly, the following hypotheses by personality factors are proposed.

First, among the Big Five personality factors, extroversion is known to be a representative affective causal variable for enabling the experience of positive affect (Fossum *et al.*, 2000). Those with a high level of extroversion enjoy meeting people and are assertive, as they are gregarious and socially active. In addition, they like the challenge of a new experience and tend to seek thrills. Moreover, they are known to have a regulatory focus oriented toward promotion and be associated with creative tendencies (Strelau, 1987; Matthews, 1987; Elliot *et al.*, 2002; Carlo *et al.*, 2005). Accordingly, those with a higher level of extroversion are predicted to consider happiness as feeling excited with a higher level of arousal, and the following hypothesis is posited.

H1: People with a higher level of extroversion are more likely to define happiness as feeling excited.

Agreeableness is defined as an individual's disposition to conform to others. Agreeableness is strongly associated with positive affect, as is extroversion, but the former is more closely related to altruistic behaviors, sympathy, and being considerate of others. Agreeable people tend to value and enjoy relationships with others and easily get along and make friends with others (Graziano *et al.*, 2007). Most of all, those with a higher level of agreeableness tend to be moral, gentle, modest, compliant, and show a strong tendency to self-regulate emotions (Tobin *et al.*, 2000). They are considerate of, and have concern for others and are accommodating. Therefore, they are predicted to define happiness as feeling calm with a low level of arousal, and the following hypothesis was established.

H2: People with a higher level of agreeableness are more likely to define happiness as feeling calm.

Conscientiousness can be defined as the degree to which individuals work hard and are organized and reliable. Conscientious is also associated with positive affect, and those with a high level of conscientiousness are prudent, have high self-control, and regard order highly. In other words, they have strong organizational skills and the drive to achieve a given task, are goal-oriented and have strong determination, and accordingly have a strong commitment to fulfilling duties. In addition, conscientiousness is associated with preventive regulatory focus and a strong tendency for emotional control (Cabanac, 2002; Tsuchiya *et al.*, 2007; Manczak *et al.*, 2014). Therefore, those with a high level of conscientiousness are predicted to consider happiness as feeling calm with a low level of arousal, and the following hypothesis was established.

H3: People with a higher level of conscientiousness are more likely to define happiness as feeling calm.

Openness to experience is defined as the degree of curiosity and sensitivity to new ideas, values, and emotions and living an experientially rich life. Those with a high level of openness to experience tend to not only easily accept new things, but also easily become interested, are adventurous, and have a strong thrill-seeking tendency. In addition, they can be predicted to consider the definition of happiness as an excited affect because they are flexible in thinking, pursue idealistic goals, are highly imaginative, and accommodate different or opposing opinions or perspectives (Aluja *et al.*, 2003). Additionally, those with a high level of openness to experience were found to have sensitive emotions, like those with a high level of

extroversion (Matsumoto *et al.*, 2000; Terracciano *et al.*, 2003). Therefore, those with a higher level of openness to experience are predicted to consider happiness as feeling excited with a high level of arousal, and the following hypothesis was established.

H4: People with a higher level of openness to experience are more likely to define happiness as feeling excited.

Finally, it is known that people with a higher level of neuroticism tend to be anxious, self-conscious, and impulsive. They are known to cope poorly with stress due to emotional instability and poor impulse control. Accordingly, as neuroticism is closely related to negative emotions, it was regarded to be difficult to determine its relationship with the definition of happiness in this study (Costa *et al.*, 1980; Fossum *et al.*, 2000; Tan *et al.*, 2004; Neff *et al.*, 2007). Therefore, this study does not posit a hypothesis on neuroticism.

3. Research Method and Key Findings

3.1. Data

The data for this study were collected using the "We Feel Fine" project (http://www.wefeelfine.org/). The project has built an online tool that collects the blog articles of people around the world with the goal of understanding the emotions of them. It automatically collects the blog articles that include the expressions "I feel" or "I'm feeling" among the new posts of many blog services around the world, creating a database that identifies 2,178 affective words that appear together with the expressions (Kamvar *et al.*, 2011). The project allows access to the data through a public Application Programming Interface (API), which programmers can use easily to retrieve the part of the data of particular interest.

Details of the data collection method for the present study are as follows. First, from the database, the sentences that contain the affective word "happy" were crawled using Python programming, along with some additional information such as posting date, gender of the writer, and the URL of the full text. The URLs were then accessed and the entire texts of the corresponding pages were fetched. In this way, the blog articles in the database that describe various experiences of happiness could be collected. Some of the collected articles that are not appropriate for the research such as advertisements, song lyrics, and poems, or writings with less than 30 words were excluded from the analysis. In total, 1,983 blog articles were collected for the study. Finally, the linguistic characteristics of each article were extracted using LIWC to be used as the independent variables of the study.

Next, the arousal score of each blog article was calculated based on an extensive dictionary developed by Warriner *et al.* (2013). The dictionary contains the arousal value of 13,915 English words that were crowdsourced through an online survey on Amazon's MTurk. The arousal value of each word in the dictionary indicates how much the word conveys the sense of arousal in its meaning. The values were then summed up and used as the dependent variable that measures how much the writer is feeling excited when expressing the feeling of happiness in each blog article.

3.2. Analysis

The analysis aimed to test the relationship between the personality characteristics that can be inferred from the blog articles, and the type of happiness as represented by the level of arousal in the texts. In order to represent the personality characteristics of each text, proxy variables (*Table 1*) were constructed for each of the five personality factors based on the findings of the previous studies that have reported the statistical relationships between the Big Five personality factors and many linguistic features. Specifically, six articles (Yarkoni, 2010;

Schwartz *et al.*, 2013; Mairesse *et al.*, 2007; Mehl *et al.*, 2006; Holtgraves, 2011; Hirsh *et al.*, 2009) were found to report the statistical correlations, and the following criteria were applied to the findings of the studies for constructing the proxies. First, those linguistic features that were reported to have significant correlations with personality features at a medium to high significance level in at least two of the six studies were chosen. However, only those features that showed different significances between personality traits were included. Next, for each of the blog articles, the frequencies of the corresponding variables as produced by LIWC were summed to a proxy if the variables positively correlated with a personality factor, and subtracted otherwise, resulting in the five proxy variables.

Table 1. Proxy Variables for Each Personality (the LIWC categories of words)

Personality Index (Proxy)	Positive Correlations	Negative Correlations
Extroversion	Human, 1st person plural, Social process, Friends, Sexual	Article, Numbers, Negations
Agreeableness	Home, Time, 1st plural, Family, leisure	Swear, Anger
Conscientiousness		Swear, Human, Anger, Death, Negations
Neuroticism	1st person singular, Negations, Sadness, Feel	Article
Openness	Article, Death	Home, Time, 1st singular, Family, Leisure, Present

Source: own compilation

3.3. Key Results

Table 2 shows the result of the regression analysis with the arousal level as the dependent variable and the five proxy variables as the independent variables. First, the proxies of extroversion and openness to experience were found to have a positive influence on the arousal level, supporting the research hypothesis (Extroversion β=.096, t= 4.625, p=.000; Openness β=.351, t= 6.778, p=.000). Next, the conscientious was found to have a negative influence on the arousal level (Conscientiousness β=-.111, t= -4.749, p=.000). However, agreeableness showed no statistically significant differences (Agreeableness β=.012, t=.423, p. 1).

Table 2. Regression Analysis

LIWC Personality Proxy	Arousal Score(Log)		
	B(SE)	β	*t*
Extroversion	.015(.003)	.096	4.625***
Agreeableness	.003(.007)	.012	.423
Conscientiousness	-.053(.011)	-.111	-4.749***
Neuroticism	-.011(.008)	-.077	-1.524
Openness	.040(.006)	.351	6.778***
Adjusted R^2			.165
F(*d.f.*)			79.451(5,1977)***
N			1,983

*p<.05, **p<.01, ***p<.001(one-tailed)
Source: own compilation

3.4. Discussion

Based on the analysis of the blog texts, it was found that the meaning of happiness (high arousal vs. low arousal) can vary according to the personality traits from the texts. Specifically, those indicating a high level of extroversion and openness to experience were found to have a higher level of arousal while having happy experience, supporting the hypotheses H1 and H4. On the other hand, those indicating a high level of conscientiousness were found to have a lower level of arousal, supporting hypothesis H3.

For agreeableness, the results did not support hypothesis H2. The result can be presumably because either the applied proxy variable does not represent agreeableness very well, or agreeableness does not have a particularly significant influence on the meaning of happiness revealed in the text. It is regarded that further research is needed about the result.

Conclusions and Directions for Further Investigation

This study aimed to demonstrate that the meaning of happiness can vary according to individuals' personality traits using a text mining approach. In particular, it was assumed that the extent to which happiness is defined as a high or a low level of arousal can differ among people with different personality characteristics.

For the study, 1,983 blog articles about happy experience were used to test the relationship between the personality inferred from the texts, and the level of arousal apparent in the texts. The analysis results showed that the linguistic characteristics of extroversion and openness to experience have a positive relationship with the arousal level shown in the texts. On the other hand, the traits of conscientiousness were found to have a negative relationship with the arousal level. These results can be regarded as providing a partial support for the hypotheses of this study.

The most important academic significance of this study is that it expands existing research on happiness using empirical analysis of online texts. The study also provides practical implications for businesses. As the amount of online text data has grown exponentially, it is ever more important to utilize the texts for understanding the market and consumers effectively. The findings of this study can be helpful for businesses in identifying the differences in consumers in regard to the meaning of happiness they hold. Moreover, if consumers' characteristics can be estimated based on online texts, many services and information can be personalized for more effective interaction with the consumers (Ahn *et al.*, 2012).

The limitations of this study and future research directions are as follows. First, this study was conducted with the data collected from English writers only. Accordingly, care needs to be taken when applying the results of this study to other countries or cultures. Second, in this study, the conclusion on agreeableness was somewhat unclear, and thus, more research with a closer examination is needed for the trait.

Acknowledgement

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