

Introversion/Extraversion Personality Characteristics Affect Consumer Taste Preferences in Food Consumption Context

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ABSTRACT

Despite academic discourse and practitioner rhetoric about the value and interactive nature of the associations among the Introversion/Extraversion (I/E) personality characteristics, taste preferences and the public/private consumption context, only a few of the recent studies in the literature have investigated these associations. The conceptual framework provides a clear understanding of the associations among these factors. Identifying the influence of I/E personality characteristics affecting consumer taste preferences and behaviour in a public or private food consumption context addresses a gap in the literature. It was predicted that extraverts will be more vulnerable to external cues, and will show more changeability in taste preference when dining in public, with preliminary results confirming these hypotheses. The findings from this study have relevance to consumer behaviour theorists as well as service providers in the hospitality industry.

Keywords: Consumer behaviour, Segmentation, Marketing Research and Retail Atmospherics.

Personality theorists have had a longstanding interest in identifying traits such as Introversion/Extraversion (I/E) in order to use them to explain individual behavioural differences. Although the concept of introvert/extravert personality existed prior to the early part of the twentieth century, in 1910 Carl Jung popularized the modern psychological concept of these traits. By 1947 Eysenck's research had confirmed that introvert and extravert factors were important dimensions of personality (Breckenridge, 2014; Eysenck, 1992). It has been observed that Introversion/Extraversion (I/E) characteristics have a relationship with product selection, shopping behaviour, brand choice, word-of-mouth and loyalty (Solomon, Russell-Bennett & Previte, 2013; Goby, 2006). Furthermore, there is research reported in the literature that personality factors influence an individual's food choices and general food preferences (Breen, Plomin, & Wardle, 2006; Falcigila & Norton, 1994), (See also, for example: Keller & Siegrist, 2015; Tiainen, Mannisto, Lahti, Blomstedt, Lahti, & Perala, 2013; Mottus, McNeill, Craig, Starr, & Deary, 2013; Kim, Suh, & Eves, 2010; Eertmans, Victoir, Vansant, & Bergh, 2005; Furst, Connors, Bisogni, Sobal, & Falk, 1996).

Research has indicated that taste preferences are specifically related to different personality traits. A significant positive association has been found between sensation seeking and a liking for spicy food, including spicy Asian foods and spicy BBQ spare ribs (Byrnes & Hayes, 2012). Hirsch, in

partnership with Baskin-Robbins, reported that there is a relationship between ice-cream flavour preference and customer personality (Baskin-Robbins & Hirsch, 2013). The study showed that people who prefer 'very-berry strawberry' flavour are perceived to be tolerant, devoted and introverted. Other research has shown that there is a linkage between personality and sweetness preferences in wine consumption (Saliba, Wragg, & Richardson, 2009). The findings of this research showed that extraverted individuals are more likely to prefer sweet wine than introverted individuals. However, there is a paucity of research reporting on whether taste preferences are directly influenced by personality or indirectly via the context in which food is consumed. The goal of the present study was to close this research gap.

AIM

This paper utilises a Taste Preference Model (TPM) containing three components. TPM is used as the foundation upon which to conduct an examination of the relationship between these factors.

- Component 1: Introversion/Extraversion (I/E),
- Component 2: Public/Private Context,
- Component 3: Taste Preferences

LITERATURE REVIEW

COMPONENT 1: INTROVERSION/EXTRAVERSION (I/E) PERSONALITY TRAITS

By 1921 it had been proposed that the Introversion/Extraversion (I/E) construct constituted a fundamental component of personality theory (Cain, 2012). During the 1940s, research carried out by Eysenck confirmed that I/E constituted an important component of an individual's personality (Breckenridge, 2014; Eysenck, 1992). Where an individual's personality is located on the I/E continuum determines their perception of, and reaction to, the surrounding world (Breckenridge, 2014; Cain, 2012; Wilt & Revelle, 2008; Jung, 1971). Introverts are drawn to the inner world of thought and feeling (Cain, 2012), while extraverts prefer to actively interact with other people and the surrounding environment (Wilt & Revelle, 2008).

Introverts are more interested in an internal environment, preferring to listen and reflect (Lu & Hsiao, 2010). They operate at a near-optimal arousal level and are more sensitive to stimulation (Breckenridge, 2014). Introverts are described as quiet, reserved, serious people who keep their feelings under control and act responsibly (Gudjonsson, Sigurdsson, Bragason, Einarsson & Valdimarsdottir, 2004). All these characteristics are now generally viewed as being on the introversion (I) end of the I/E continuum (Breckenridge, 2014; Carrigan, 1960).

By contrast, Eysenck (1976) found that extraversion (E) is most highly related to sociability and also risky behaviours. As Eysenck's work developed, it was incorporated in the 1980s into Costa and McCrae's influential Neo Personality Inventory Theory, often referred to as 'the Big Five' (1992). 'The Big Five' dimensions are: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and, Neuroticism (Costa & McCrae, 1992). Extroverts make fast decisions and are comfortable multitasking and taking risks (Cain, 2012). Seeking to heighten arousal by increased engagement with social and other stimulation-related domains is characteristic behaviour of extraverts (Zuckerman & Kulhman, 2000).

Psychologists now tend to agree on several important points pertaining to extraverted or introverted behaviours. Introverts and extraverts differ in their responses to outside stimulation, their decision-making and the way they work. Since extroverts are typically highly social and talkative, they tend to have strong social skills and many friends. Thus, despite eating and drinking being universal social phenomena (Sagioglou & Greitemeyer, 2016), it is likely that stimulation-seeking extraverts will seek differing food sensations and different food consumption contexts from introverts. However, as yet there is only limited empirical research investigating personality traits in relation to taste preferences (Saliba et al., 2009; Elfhag & Erlanson-Albertsson, 2006).

One sub-characteristic of extraversion is risk-taking (sometimes called "Venturesomeness" (see for example Twigger-Ross & Breakwell, 1999) and it has been observed to have a significant effect on food choice (Latimer, Pope & Wansink, 2015; Cohen & Avieli, 2004). For the purpose of this study, people who enjoy trying a new food have been described as having food venturesomeness. It was found for example, that food related personality traits had a significant effect on visitors' food choice at food events and festivals (Kim, Suh & Eves, 2010). The taste of food (how much it is liked

and disliked) determined consumer food choice, and, tasters who were more food venturesome liked a wide variety of strong-tasting foods, whereas tasters who were less food venturesome showed the classical dislike of bitter and spicy (Ullrich, Touger-Decker, O'Sullivan-Maillet, & Tapper, 2004); this finding, however, is likely to be moderated by cultural factors and experience (Beauchamp, 1982).

The literature has suggested that a more general willingness to take culinary risks may prove a fruitful avenue to explore in relation to personality traits. Food neophiles are those having an adventurous orientation to new or different foods (Latimer, Pope & Wansink, 2015). Whether a food neophiles' attraction to novelty is associated with venturesomeness — which in turn is associated with extraversion — has yet to be established. Latimer, Pope and Wansink (2015) also showed that more adventurous eaters (in this case young adults) were not just more interested in novel taste experiences but also: more likely to engage in cooking; more likely to focus on food quality and overlook food price; and more likely to exhibit the classic extraversion tendency towards sociability whereby they enjoy eating with friends.

Component 2: Public/Private Context

While, these previous studies demonstrate that some empirical research has shown that personality may be related to taste preference, the study on which this paper is based adds a further dimension to this understanding. The current study aims to discover how the relationship between personality and taste preference may be mediated by public/private domain food consumption; 'public' consumption is defined as a meal consumed outside the respondent's permanent legal residence (Adapted from Collins Dictionary, 2016) and 'private' consumption is defined as a meal consumed within the respondent's permanent legal residence (Adapted from Collins Dictionary, 2016).

Environmental influences on retail store customers have been examined (Sherman, Mathus, & Smith, 1997; Tai & Fung, 1997; Baker, Levy & Grewal, 1992; Dawson, Bloch, & Ridgway, 1990; Baker, 1986; Sherman & Smith, 1986). There are, however, relatively few studies investigating the relationship between consumer behaviour, dining atmospherics and food choice (Latimer, Pope & Wansink, 2015). The extant literature has suggested that atmospherics such as temperature, lighting,

odour and noise can influence eating duration (Wansink, 2004). Ambient temperature has relatively intuitive associations with the volume of food and fluid ingested (Wansink, 2004). Beyond temperature, the associations are less obvious. It has been reported that harsh or bright illumination and unpleasant odour are likely to shorten the duration of a meal, though, soft music during a meal can extend meal duration and individuals are more likely to order a dessert (Wansink, 2004). The impact of the dining context on food consumption and food choice, or, more broadly on customers' affective responses and perceived value is of interest to the emergent dining atmospherics sub-discipline literature (Liu & Jang, 2009).

As noted above, different levels of stimulation can cause significant differences between an extrovert's and an introvert's behaviour (Furnham & Allass, 1999). Some theorists examining the interaction of the environment and food choice have suggested that there may be individual differences in arousal level (Jin, 2015; Wansink, 2004; Miliman, 1986). Since extraverts are embedded in social networks (Friedman, Kern, & Reynolds, 2010), it is likely that extraverted individuals may engage in more frequent public consumption situations with other people and potentially be exposed to a wider variety of food tastes more often than introverts (Keller & Siegrist, 2015). While such relationships are intuitively plausible, how personality dimensions such as I/E interact with public/private consumption contexts has yet to be explored.

Component 3: Taste Preference

The sense of taste is also called the gustatory sense. It is one of five special senses in the human body: gustation (taste), olfaction (smell), vision (sight), hearing, and equilibrium (touch) (Field, 2014). Taste is the ability to respond to dissolved molecules in the mouth and it is defined as 'chemicals interacting with receptor sites in specialised structures of the tongue, ... the resulting nerve impulses are classified as certain kinds of taste ... such as bitter, sweet, salty and sour' (Field, 2014, p. 1). Although the physiological characteristics of taste are known, taste preferences are, however, an under-explored field of study (Cheok et al, 2013). Nonetheless, there is agreement that the sense of taste is innately hedonic and biased (Sagioglou & Greitemeyer, 2016).

Some previous studies have established that the sense of taste influences appetite and regulates food intake and preference (Depoortere, 2013; Kong, Zhang, & Kamel, 2009). Humans may acquire a liking for originally unpalatable food due to simple exposure (Steinera, Glaserb, Hawiloc & Berridge, 2001). Taste preferences, especially for sweet, bitter and sour tastes, have been demonstrated to exist in humans from birth through to adulthood (Steinera et al., 2001). Although Hirsch (2001) was of the opinion that the development of taste preference came from taste experience around seven years old; Sagioglou and Greitemeyer's (2016) recently reported study suggested that it occurs throughout the life span. Taste preferences have been observed to have a relationship with food choice (Drewnowski, 1997).

Taste preferences are not only a guide to what is actually consumed, but they are cultural and social (Sagioglou & Greitemeyer, 2016). People may consume a non-preference food in order to eat more healthily or to be social. For example, some of the most popular foods, such as coffee, wine, beer and chilli pepper, are initially aversive to us but adaptive behaviour brings about a preference for these tastes. The relationship between personality traits and overeating behaviour has also been investigated (Wansink, 2004) and Latimer, Pope, and Wansink (2015) studied whether food neophiles in particular may experience increased body mass index (BMI).

Patterns of taste response based on I/E are emerging from the research literature with the various traits of risk taking, sociability and emotion, being shown to be linked to food product selection (Solomon, Russell-Bennett, & Previte, 2013). Extraverted individuals appear to exhibit a preference for sweet foods (Fitch & Gaylor, 2013), although sweetness has also been associated with other personality dimensions such as impulsiveness and (negatively) openness (Oleson, 2014 ; Saliba et al., 2009). The relationship may also be two-way; for example, Meier, Moeller, Reimer-Peltz and Robinson (2012) reported that tasting sweet foods increased pro-social behaviour in human subjects. Other research has suggested a link between willingness to ingest spicy foods and sensation seeking, one of the components of extraversion (Byrnes, 2012; Terasaki & Imada, 1988).

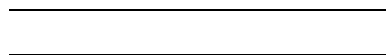
Because of the commercial implications of food desirability, most of the literature on nutrition and taste psychophysics has focused on perceptions and preferences for food stimuli that taste sweet, salty, sour and bitter (Field, 2014; Ferguson, 2011; Saliba et al., 2009). There is also evidence

available on the perceptions and preferences for food stimuli that are rich in fat (Fitch & Gaylor, 2013; Drewnowski, 1997). Spicy preference has been associated with sensation seeking, which may be ‘a variable likely to affect a consumer’s tendency to enjoy more complex entertainment, ... to prefer spicy and crunchy foods’ (Holbrook & Hirschman, 1982, p. 136). While four key taste preferences, sweet, salty, sour and bitter, are usually investigated in studies of consumer behaviour, this study has focused on six tastes: sweet, salty, sour, bitter, spicy and oily.

Theoretical Model

The Taste Preference Model (TPM), Figure 1, is grounded in the parent discipline literatures of marketing and psychology. The literature review indicated that there were three main variables involved in a taste preference relationship: Introversion/Extraversion personality trait, public/private consumption context and taste preference. In Figure 1, the Taste Preference Model presents the I/E personality as the independent variable, the public/private context as the mediating variable and taste preference as the dependent variable. This model suggests that personality will both directly and indirectly (through the consumption context) determine taste preference; the model supports the hypotheses that individuals with an extroverted orientation will be more vulnerable to contextual influence than introverts.

Insert Figure 1 about here



The model provides the foundation from which two hypotheses are drawn:

- *Hypothesis 1: An individual with an extravert personality characteristic will demonstrate a wide variety of taste consumption preferences in public settings*
- *Hypothesis 2: An individual with an introvert personality characteristic will demonstrate limited or stable taste consumption preferences regardless of the public/private consumption setting*

Research Method

This research will be undertaken using a quantitative method. Quantitative methods often employ descriptive or experimental techniques to investigate specific hypotheses or research questions (Malhotra, Hall, Shaw, & Oppenheim, 2006). Quantitative research can also be used to test perceptions of human beings and explain human behaviour in the social world (Sarantakos, 2013). The examination of relationships is a key objective of quantitative research (Punch, 2005), making this the most appropriate approach for this study.

The study aims to acquire data using a set of structured, largely closed-ended questions to obtain responses from a large number of participants to investigate whether there is a causal relationship among the I/E personality characteristic, public/private food consumption context and taste preferences (Burns & Bush, 2014). The study used a specially created Facebook profile as a 'host' for the online Vipada Food Studies (VFS) Profile, a questionnaire designed to obtain data to test the research hypotheses. The online questionnaire was created via Survey Monkey, an online survey tool commonly used in social research. Online questionnaires have methodological and financial advantages (Burns & Bush 2014). An online survey's processing fees are usually lower and there is a greater likelihood of participation than those for paper surveys (Sax, Gilmartin, & Bryant, 2003).

The Mini-IPIP questionnaire (Baldasaro, Shanahan & Bauer, 2013; Cooper, Smillie & Corr, 2010; Donnellan, Oswald, Baird & Lucas, 2006; Milojev, Osborne, Greaves, Barlow & Sibley, 2013; Sibley, 2012; Sibley, Luyten, Purnomo, Mobberley, Wootton, Hammond & Robertson, 2011) was embedded in the Vipada Food Studies (VFS) Profile as the method to determine respondents' I/E personality characteristics. The Mini-IPIP contains a set of 20-item short questions drawn from the 50-item International Personality Item Pool (IPIP) (Mooradian & Swan, 2006). The Mini-IPIP is a brief measure of the Big Five factors of personality (Goldberg, 1999): Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Intellect/Imagination (or Openness). It provides a valid and reliable short-form measure of the Big Five Personality characteristics and the results obtained on the Mini-IPIP scale were similar to those obtained on IPIP-FFM scales (the Five-Factor Model) (Donnellan et al., 2006; John & Srivastava, 1999). Previous research such as Donnellan et al., (2006)

has shown that the Mini-IPIP scale is an easily administered instrument and it has the most transparent and detailed validation information to measure personality.

Figures 3, 4, 5 and 6 below show the key variables relating to taste and dining preferences used in this study. The taste scale consists of two components, developed for this study, designed to capture the concept of extreme taste preferences. Participants are first asked to identify which of the key gustatory components (sweetness, saltiness, sourness, bitterness, spiciness and an additional component, oiliness) are most prominent in their main meal. They are asked to rank them, although given the option to choose only one or two to provide more information about. They are then asked to rate their first ranked taste component for extreme taste preferences with the additional question, “Turning to the taste characteristic you choose as number 1, on the following scale please rate this characteristic”. In addition, they are asked if they had an entrée or dessert and if they consumed alcohol with the meal (see Figure 4). Both sets of questions were repeated, once for the respondent’s latest ‘eating out’ dining experience, and the last time they ate ‘in’, at home, with at least one other person.

Participants

CQUniversity students, staff and other interested groups were invited to participate in the research process using a convenience, ‘snowball’ sampling technique. This sampling approach was drawn at the convenience of the researcher (Burns & Bush, 2014) from participants who were available to the researcher through (for example) friendship and workplace networks (Saunders, Lewis & Thornhill, 2009). Although a sample of 400 responses is sought, currently there are 171 respondents.

At the initial recruitment stage, the researcher provided an information pack and consent form information to ensure that the participants proceeded with informed consent. Once the recruitment process proceeded, participants were guided through the informed consent process and a short survey (3 questions) relating to 3 sections: (1) demographic responses, (2) a recent meal that they ate in a public context and (3) another meal they ate in a private context to become a part of the experimental profile’s network.

Findings

While the purpose of this paper is primarily a review of the literature and the construction of the model for this study, some preliminary results have been collected and an initial analysis is presented below.

Demography

Demographic data were available from 171 responses. The majority of respondents were younger than 45 years old; 35-44 years old (29%), 25-34 years old (22%), 18-24 years old (23%). The majority of respondents were female (74%) and the regions of origin identified were: Oceania (67%), Asia (19%), Europe (10%), North America (2%) and South America (2%).

I/E Personality

Complete 20-item Mini-IPIP data were available from 169 participants to date. The Mini-IPIP scale provided an additive score, a traditional way of scoring. The scale included 11 reversed-items. There were four items that measured extraversion and introversion: I am the life of the party, I talk to a lot of different people at parties, I don't talk a lot (reversed) and I keep in the background (reversed). Once the reversed items were adjusted, a single total E/I score was obtained by adding the result for each item. Preliminary results suggested that the sample was evenly split around the midpoint, with 49.6% of the sample scoring about 12 and above, the balance scoring below 12 (see Figure 2). For the purpose of the analysis the sample was split into two groups with initial findings reported on this basis.

Insert Figure 2 about here

I/E Personality, Eating in (Private) and eating out (Public) and Extreme Taste Preferences

To analyse private (eating in) and public (eating out), an additive scale was again employed to give a single score on the taste preferences continuum (hereafter referred to as “taste extremity”) for the latest meal the respondent had eaten at home, and another taste extremity score for the latest meal

eaten out. Mean results for introverts show results follow the predicted pattern. Introverts rated their latest meal at home as having a mean taste rating of 6.11, with their meal out at 5.98, a non-significant difference. For the extroverts, there was a significant one-tailed difference between whether they ate in or out. There was a significant difference between the scores for eating-in ($M=6.54$, $SD=6.91$) and eating out ($M=8.37$, $SD=7.07$) conditions $t(45) = -1.753$, $p = 0.0432$.

Although, as previously indicated, these results are less than half of the anticipated full sample size, the initial indications from the research show the predicted relationship between the I/E personality, public/private consumption and extreme taste preferences (see Figure 3).

Insert Figure 3 about here

The suggested hypotheses predicted that extraverted personalities will demonstrate an increased variety in consumption preferences in public settings relative to private settings, and that introverts will show no such tendency to seek an increase in variety. A preliminary examination of these hypotheses has been conducted in relation to the likelihood of ordering/consuming an entrée, dessert, and alcohol with the meal. Figures 4, 5 and 6 show the patterns of response, with alcohol consumption in particular showing the expected pattern. In all three categories, extraverts are more likely to purchase entrées, desserts and alcohol than introverts in public dining settings. With entrée consumption/ordering, introverts show a relatively smaller difference in the likelihood of consuming entrées than extraverts (relative to context), in line with the hypotheses, but for desserts introverts showed a greater difference of likelihood to consume/order dessert as a function of context.

Insert Figure 4 about here

Insert Figure 5 about here

Insert Figure 6 about here

Conclusion

The aims of this study were to explore the relationships among the introversion/extraversion (I/E) personality characteristic, a public/private consumption context and taste preferences. This study used a quantitative approach to test a theoretical model comprised of three components: personality (the introversion-extraversion dimension), which is the independent variable, public/private context as the mediating variable and taste preference as the dependent variable. This model broadly predicts that personality will both directly and indirectly (through context) determine taste preference. The preliminary results confirm the prediction that extraverts will be more responsive to context when it comes to the influence of the dining environment on extreme taste preferences and variety, a finding that has both theoretical and practical implications for consumer behaviour theorists and hospitality practitioners.

Limitations of the Study

There are limitations in this study associated with the use of an online survey, notably poor control over the sample characteristics and understanding of response rate (Nulty, 2008). In addition, selecting a sample drawn solely from a university population and also from a single university place limitations on the generalizability of the findings (Brown, Varley & Pal, 2009; Douglas, McClelland & Davies, 2008; Smith, Smith & Clarke, 2007; Stodnick & Rogers, 2008). The degree to which the taste extremity or motivation for variety in gustatory taste is determined by social or cultural shaping has yet to be established. Finally, the variable “taste extremity” is a conceptually untested one, and it is arguable that adding scores of (for example) saltiness and sweetness to each other may be tapping into a dimension that could better be regarded as taste *complexity*, or a combination of variety and taste extremity.

Future Research

Future research can address the limitation imposed by the sample bias since the demographic distribution of the study’s respondents suggests that sample bias is of limited concern. A different

sample can be utilised in future research to validate the model. However, the development of the TPM opens the way for personality traits/gustatory preferences to be included in future research.

Implications for Management

Since introverts are less likely to consume dessert when they are eating out than extraverts, the implication for managers is they need to work out a way to entice introverts to want to consume a dessert while in the restaurant to maximise patrons' expenditure.

REFERENCES

- Baker, J. (1986). The role of the environment in marketing services: The consumer perspective. Chicago: *American Marketing Association*, 79-84.
- Baker, J., Levy, M., & Grewal, D. (1992). An experimental approach to making retail store environmental decisions. *Journal of Retailing*, 68(4), 445-461
- Baldasaro, R. E., Shanahan, M. J., & Bauer, D. J. (2013). Psychometric properties of the mini-IPIP in a large, nationally representative sample of young adults. *J Press Assess*, 95(1), 74-84. doi:10.1080/00223891.2012.700466
- Baskin-Robbins, & Hirsh, A. (2013). Baskins-Robbins reveals what your favorite ice cream flavour says about you. Retrieved from <http://news.baskinrobbins.com/news/baskin-robbins-reveals-what-your-favorite-ice-cream-flavor-says-about-you>
- Beauchamp, G. K., & Moran, M. M. (1982). Dietary experience and sweet taste preference in human infants. *Appetite*, 3, 139-152.
- Breckenridge, L. J. (2014). *Introverts and extroverts*. London: Salem Press Encyclopedia of Health.
- Breen, F. M., Plomin, R., & Wardle, J. (2006). Heritability of food preference in young children. *Physiology & Behaviour*, 88.
- Brown, C., Varley, P., & Pal, J. (2009). University course selection and services marketing. *Marketing Intelligence & Planning*, 27(3), 310-25.
- Burns, A., & Bush, R. (2014). *Marketing Research*. Harlow, Essex: Pearson Education.
- Byrnes, N. H., & Hayes, J. E. (2012). Personality factors predict spicy food liking and intake. *Food Quality and Preference*, 28(1), 213-221.
- Cain, S. (2012). *Quiet: The power of Introverts and a world that can't stop talking*. London: Penguin Books.
- Carrigan, P. M. (1960). Extraversion-introversion as a dimension of personality: A reappraisal. *Psychological Bulletin*, 57(5), 329.
- Cheok, A. D., Tewell, J., Pradana, G.A., & Tsubouchi, K. (2013). *Touch, Taste, and Smell: Multi-sensory Entertainment*. Springer International Publishing.
- Cohen, E., & Avieli, N. (2004). Food in tourism: attraction and impediment. *Annals of Tourism Research*, 31(4), 755-778.
- Collin Dictionary. (2016). Eat Out. Retrieved from <http://www.collinsdictionary.com/dictionary/english/eat-out>

- Cooper, A. J., Smillie, L. D., & Corr, P. J. (2010). Short Communication: A confirmatory factor analysis of the Mini-IPIP five-factor model personality scale. *Personality and Individual Differences, 48*, 688-691. doi:10.1016/j.paid.2010.01.004
- Costa, P. T., & McCrae, R. R. (1992). Normal personality assessment in clinical practice: The NEO Personality Inventory. *Psychological Assessment, 66*(4), 408-428.
- Dawson, S., Bloch, P., & Ridgway, N. (1990). Shopping motives, emotional states, and retail outcomes. *Journal of Retailing, 66*(4), 408-428.
- Depoortere, I. (2013). Taste receptors of the gut: emerging roles in health and disease. *Gut: Basic Science, 63*, 179-190.
- Donnellan, M. B., Oswald, L. F., Baird, M. B., & Lucas, E. R. E. (2006). The Mini-IPIP Scales: Tiny-yet-effective measures of the Big Five Factors of Personality. *Psychological Assessment, 18*(2), 192-203. doi:10.1037/1040-3590.18.2.192
- Douglas, J., McClelland, R., & Davies, J. (2008). The development of a conceptual model of student satisfaction with their experience in higher education. *Quality Assurance in Education 16*(1):19-35.
- Drewnowski, A. (1997). Taste preferences and food intake. *Annual Review Nutrition, 17*, 237-253.
- Eertmans, A., Victoir, A., Vansant, G., & Bergh, O. (2005). Food-related personality traits, food choice motives and food intake: Mediator and moderator relationships, *Food Quality and Preference, 16*, 714-726.
- Elfhag, K., & Erlanson-Albertsson, C. (2006). Sweet and fat taste preference in obesity have different associations with personality and eating behavior. *Physiology & Behavior, 88*, 61-66.
- Eysenck, H. J. (1992). A hundred years of personality research, *from Heymans to modern times*: Lecture. Bohn Stafleu Van Loghum.
- Falcigila, G. A., & Norton, P. A. (1994). Evidence for a genetic influence on preference for some foods. *Journal of the American Dietetic Association, 94*, 154-158.
- Ferguson, P. (2011). The sense of taste. *American Historical Review, 116*(2), 371-384.
- Field, M. (2014). *Taste*. Salem Press Encyclopedia of Science. Hackensack, New Jersey.
- Fitch, N. G. & Gaylor, M. O. (2013). Does individual personality type influence dietary taste preference among South Dakota State University (SDSU) students. *Proceeding of the South Dakota Academy of Science, 92*, 135-147.
- Friedman, H. S., Kern, M. L., & Reynolds, C. A. (2010). Personality and health, subjective well-being, and longevity. *Journal of Personality, 78*(1), 179-215.

- Furnham, A., & Allass, K. (1999). The influence of musical distraction of varying complexity on the cognitive performance of extroverts and introverts. *European Journal of Personality, 13*(1), 27-38.
- Furst, T., Connors, M., Bisogni, C. A., Sobal, J., & Falk, L. (1996). Food choice: A conceptual model of the process. *Appetite, 26*(3), 247–265.
- Goby, V. (2006). Personality and online/offline choices: MBTI profiles and favoured communication modes in Singapore study. *CyberPsychology & Behaviour, 9*(1), 5-13.
- Goldberg, L. (1999). The structure of personality traits: Vertical and horizontal aspects. *American Psychological Association, 169*-188.
- Gudjonsson, G. H., Sigurdsson, J. F., Bragason, O. O., Einarsson, E., & Valdimarsdottir, E. B. (2004). Compliance and personality: the vulnerability of the unstable introvert. *European Journal of Personality, 18*(5), 435.
- Hirsch, A. (2001). *What flavour is your personlaity? Discover who you are by looking at what you eat* New York: Sourcebooks.
- Holbrook, M., & Hirschman, E. (1982). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun. *Journal of Consumer Research, 9* (September).
- Jin, Q. (2015). A Research Proposal: The effect of restaurant environment on consumer behaviour. http://scholarsarchive.jwu.edu/cgi/viewcontent.cgi?article=1037&context=mba_student
- John, O. P. & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. *New York, Guilford Press, 2*, 102-138.
- Jung, C. (1971). *Psychological types: Collected works. Vol. 6*, Princeton, NJ: Princeton University Press.
- Keller, C., & Siegrist, M. (2015). Does personality influence eating styles and food choices? Direct and indirect effects. *Appetite, 84*, 128-138.
- Kim, Y. G., Suh, B. W., & Eves, A. (2010). The relationships between food-related personality traits, satisfaction, and loyalty among visitors attending food events and festivals. *International Journal of Hospitality Management, 29*, 216-226.
- Kong, A., Zhang, D. & Kamel, M. (2009). A survey of palmprint recognition. *Pattern Recognition, 42*(7), 1408-1418.
- Latimer, L., Pope, L., & Wansink, B. (2015). Food neophiles: profiling the adventurous eater. *Obesity: A Research Journal, 23*(8), 1577-1581.
- Liu, Y., & Jang, S. S. (2009). The effects of dining atmospherics: An extended Mehrabian–Russell model. *International Journal of Hospitality Management, 28*(4), 494-503.

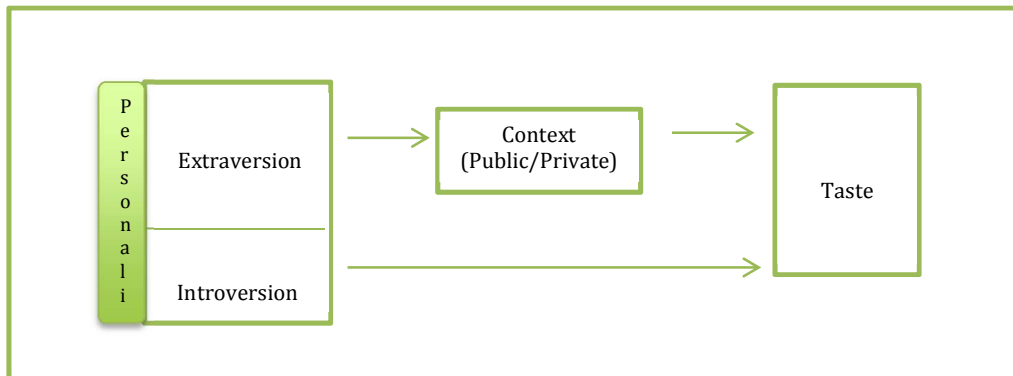
- Lu, H. P., & Hsiao, K. L. (2010). The influence of extro/introversion on the intention to pay for social networking sites. *Information & Management*, 47(3), 809-821.
- Malhotra, N., Hall, J., Shaw, M., & Oppenheim, P. (2006). *Essentials of marketing research: An applied orientation*. French Forest, NSW: Pearson Education.
- Meier, B., Moeller, S.K., Reimer-Peltz, M., & Robinson, M.D. (2012). Sweet taste preferences and experiences predict prosocial inferences, personalities and behaviours. *Journal of Personality and Social Psychology*, 102(1), 163-174.
- Milliman, R. E. (1986). The Influence of Background Music on the Behavior of Restaurant Patrons. *Journal of Consumer Research*, 13(2), 286-289.
- Milojevic, P., Osborne, D., Greaves, L. M., Barlow, F. K., & Sibley, C. G. (2013). The Mini-IPIP6: Tiny yet highly stable markers of Big Six personality. *Journal of Research in Personality*, 47, 936-944. doi:10.1016/j.jrp.2013.09.004
- Mooradian, T., & Swan, K.S. (2006). Personality-and-culture: The case of national extraversion and word-of-mouth. *Journal of Business Research*, 59(6), 778-785.
- Mottus, R., Realo, A., Allik, J., Deary, I. J., Esko, T., & Metspalu, A. (2012). Personality traits and eating habits in a large sample of Estonians. *Health Psychology*, 31(6), 806-814.
- Mottus, R., McNeill, G., Craig, L., Starr, J. M., & Deary, I. J. (2013). The associations between personality, diet and body mass index in older people. *Health Psychology*, 32, 353-360.
- Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: what can be done?. *Assessment & Evaluation in Higher Education*, 33(3), 301-314.
- Oleson, S. (2014). *Psychophysical Responses and Preference for Sweetness*. (Unpublished Master Thesis), San Diego State University, San Diego, CA.
- Punch, K. F. (2005). *Introduction to Social Research: Quantitative and Qualitative Approaches*. London: Sage.
- Sagioglou, S., & Greitemeyer, T. (2016). Individual differences in bitter taste preferences are associated with antisocial personality traits. *Appetite*, 96, 299e308.
- Saliba, A., Wragg, K., & Richardson, P. (2009). Sweet taste preference and personality traits using a white wine. *Food Quality and Preference*, 20, 572-575.
- Sarantakos, S. (2013). *Social Research*. Basingstoke, Hampshire, RG: Palgrave.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Essex: Pearson Education Ltd.
- Sax, L. J., Gilmartin, S. K., & Bryant, A. N. (2003). Assessing response rates and nonresponse bias in web and paper surveys. *Research in Higher Education*, 44(4), 409-432.

- Sibley, C. G., Luyten, N., Purnomo, M., Mobberley, A., Wootton, L. W., Hammond, M. D., . . . & Robertson, A. (2011). The Mini-IPIP6: Validation and extension of a short measure of the Big-Six factors of personality in New Zealand. *New Zealand Journal of Psychology, 40*(3), 142-159.
- Sibley, C. G. (2012). The Mini-IPIP6: Item response theory analysis of a short measure of the big-six factors of personality in New Zealand. *New Zealand Journal of Psychology, 41*(3), 21-31.
- Sherman, E., & Smith, R. (1986). Mood states of shoppers and store image: Promising interactions and possible behavioral effects. *Advances in Consumer Research, 13*, 251-254.
- Sherman, E., Mathus, A., & Smith, R. (1997). Store environment and consumer purchase behaviour: Mediating role of consumer emotions. *Psychology and Marketing, 14*(4), 361-379.
- Smith, G., Smith, A., & Clarke, A. (2007). Evaluating service quality in universities: a service department perspective, *Quality Assurance in Education, 15*(3): 334-51.
- Solomon, M., Russell-Bennett, R., & Previte, J. (2013). *Consumer behaviour: buying, having, being*. Frenchs Forest, NSW: Pearson Australia.
- Steinera, J., Glaserb, D., Hawiloc, M. E., & Berridgec, K. C. (2001). Comparative expression of hedonic impact: affective reactions to taste by human infants and other primates. *Neuroscience and Biobehavioral Reviews, 25*, 53-74.
- Stodnick, M., & Rogers, P. (2008). Using SERVQUAL to measure the quality of the classroom experience. *Decision Sciences Journal of Innovative Education, 6*(1): 115-33.
- Tai, S., & Fung, A. (1997). Application of an environmental psychology model to in-store buying behaviour. *International Review of Retail, Distribution & Consumer Research, 7*(4), 311-337.
- Terasaki, M. F, & Imada, S. (1988). Sensation seeking and food preferences. *Personality and Individual Differences, 9*, 87-93.
- Tiainen, A. M. K., Mannisto, S., Lahti, M., Blomstedt, P. A., Lahti, J., & Perala, M. M. (2013). Personality and dietary intake. Findings in the Helsinki birth cohort study. Findings in the Helsinki birth cohort study. *PLoS ONE, 8*(7).
- Twigger-Ross, C. L. & Breakwell, G. M. (1999). Relating risk experience, venturesomeness and risk perception. *Journal of Risk Research, 2*:1, 73-83, DOI: 10.1080/136698799376998.
- Ullrich, N., Touger-Decker, R., O'Sullivan-Maillet, J. & Tapper, B. J. 2004, 'PROP Taster status and self-perceived food adventurousness influence food preferences'. *Journal of the American Dietetic Association, 104*(4), 543-549.
- Wansink, B. (2004). Environment factors that increase the food intake and consumption volume of unknowing consumers. *Annual Review Nutrition, 24*, 455-479.

Wilt, J., & Revelle, W. (2008). Extraversion *Prepared for the Handbook of Individual Differences in Social Behaviour*, 5 (May), 1-28.

Zuckerman, M., & Kulhman, D. M. (2000). Personality and risk-taking: Common biosocial factors. *Journal of Personality and Social Psychology*, 68, 999-1029.

Figure 1: Taste Preference Model



Source:

Developed for this research study

Figure 2: Extraversion (Additive)

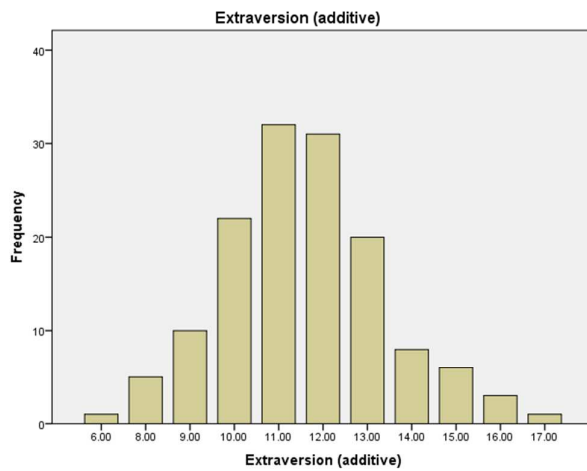


Figure 3: The relationship among I/E Personality, eating in, and, eating out

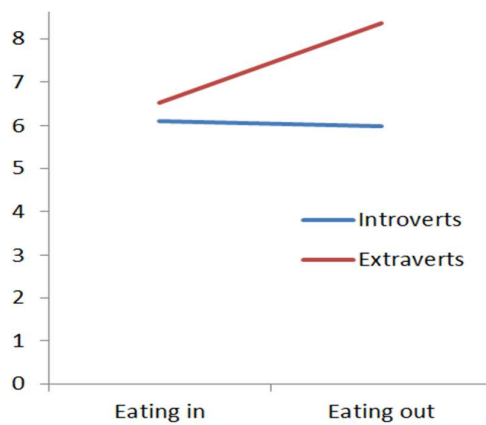


Figure 4: The relationship among I/E Personality, eating in, eating out and alcohol consumption

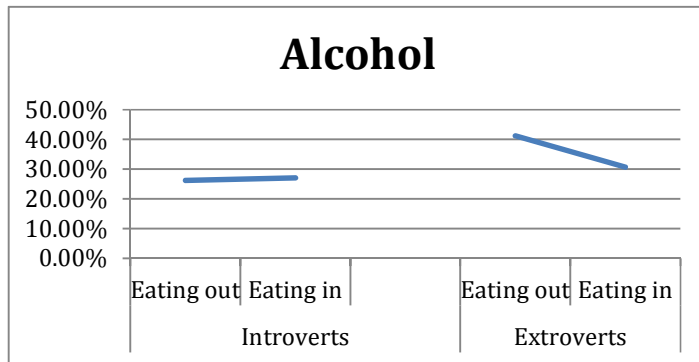


Figure 5: The relationship among I/E Personality, eating in, eating out and entrée

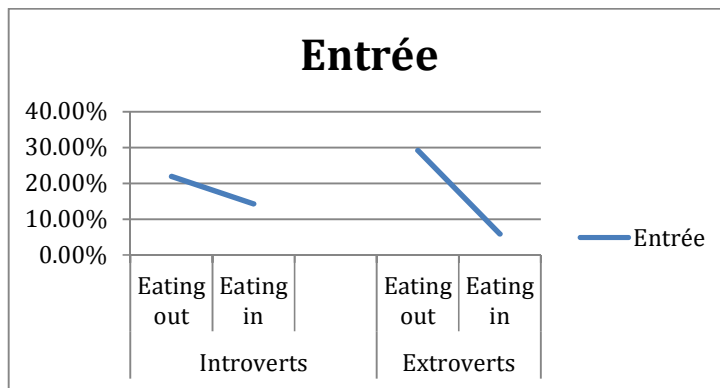


Figure 6: The relationship among I/E Personality, eating in, eating out and dessert

