

**Role of personality characteristics and
dining-out atmospherics in the development
of taste complexity attitude**

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Abstract

Customer Relationship Management (CRM) is a strategic business management tool used to retain customers and enhance business profitability. To successfully employ CRM, food service providers need to acquire knowledge about consumer attitudes. Insights into elements influencing evaluations of a dining-out experience may benefit restaurant managers since it allows them to have a better knowledge of what determines consumers' needs and expectations. This research provides a better understanding of the relationship between consumers personality characteristics and their food taste attitudes in a dining-out environment.

By proposing and testing a theoretical taste complexity attitude model, the research addresses gaps in both the personality theory and sensory marketing strands of the consumer behaviour parent discipline literature. Research into the relationships among consumers' personality characteristics, the affect of dining-out atmospherics and consumers' taste complexity attitudes has not been reported in the literature. Consequently, the research in this study was designed to address the question:

How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?

During the development of the proposed model, *Role of Personality in Development of Taste Complexity Attitude*, knowledge drawn from personality theory and sensory marketing theory was integrated into the proposed model. Three research issues and their associated hypotheses were tested:

RI 1: Do personality characteristics have an effect on the level of influence of dining-out atmospherics while dining-out?

RI 2: Do personality characteristics impact on taste complexity attitude?

RI 3: Do dining-out atmospherics influence a food consumer's taste complexity attitude?

A quantitative methodological approach was adopted to investigate whether a relationship existed between the independent and dependent variables associated with this research study. Hypotheses pertaining to the relationship among personality characteristics, dining-out atmospherics and taste complexity attitude were empirically tested. The hypotheses were tested using Exploratory Factor Analysis (EFA) and Path Analysis. The Statistical Package for the Social Sciences (SPSS) Version 23 was employed to carry out the EFA and Path Analysis procedures.

The findings of this study provide insights into how various elements of personality characteristics may determine the taste complexity attitude of customers who are dining out in a restaurant. The results showed that customers rating strongly on the *Agreeableness* personality characteristic and, to some extent, strongly on the *Conscientiousness* personality characteristic are most likely to rate strongly on *Taste Complexity Attitude*. Appearance and texture of the food were found to be important in the development of the customer's taste complexity attitude but dining-out atmospherics were not found to be important. Therefore, the customer relationship management strategy needs to take the implications from this contribution to theoretical knowledge into account when planning a menu offering.

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DECLARATION OF AUTHORSHIP AND ORIGINALITY

I, the undersigned author, declare that all of the research and discussion presented in this thesis is original work performed by the author. No content of this thesis has been submitted or considered either in whole or in part, at any tertiary institute or university for a degree or any other category of award. I also declare that any material presented in this thesis performed by another person or institute has been referenced and listed in the reference section.

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Has this paper been submitted for an award by another research degree candidate (Co-Author), either at CQUniversity or elsewhere? (if yes, give full details)

No

Candidate's Declaration

I declare that the publication above meets the requirements to be included in the thesis as outlined in the Research Higher Degree Theses Policy and Procedure

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Chapter 1 Introduction

1.1 Background and Research Question

This study provides insight into the relationship between an individual's personality characteristics impacting on an individual's taste complexity attitudes in a dining-out environment. During the last decade of the 21st century, there has been ongoing research reported in the parent discipline literature, Consumer Behaviour, that is relevant to this study. Within the discipline literature, Personality Theory and Sensory Marketing research are two relevant areas of interest. Yet another area of interest is Customer Lifetime Value (CLV) research. CLV research falls within the Customer Relationship Management (CRM) strand of Consumer Behaviour. In retaining a long-term profitable relationship between restaurateurs and valuable customers, CRM and CLV have emerged as critical managerial tools (Castéran, Meyer-Waarden & Reinartz, 2017). In light of the paucity of research into taste complexity formation reported in the literature, the knowledge gained in this study about taste complexity attitude formation may be of benefit to restaurant managers as it allows them to have a better understanding of their customers' needs and expectations of their dining-out experience. From a managerial perspective it is valuable to study whether there are relationships among personality traits, store atmospherics and taste complexity attitude since, as yet, there is no clear indication from the extant research studies which of these variables is the most important or even whether there is an inter-relationship among them; although research into each of these areas has shown that individually they play an important role in determining customer satisfaction. Such information would allow managers to determine where to focus their attention in improving their

customer's dining-in experience. In the next chapter, Chapter 2, there is a review of the literature pertaining to the relevant research into taste complexity attitude formation.

There is Taste complexity attitude has been reported to be influenced by atmospherics (e.g. Jin, 2015; Wansink, 2004). The individual contributions of flavour, texture and appearance to taste complexity attitude have also been researched (e.g. Depoortere, 2013; Baldwin, Cave & Lodge, 2012). The relative contributions of flavour, texture or appearance in determining attitude to taste complexity were thus explored in this study. Establishing whether there is a relationship among personality characteristics, dining-out atmospherics and taste complexity attitude may help managers determine what variables they need to take into account in their preparations. Drawing together these three previously separate strands of research into one study may provide valuable knowledge for food providers attempting to improve an individual customer's sensory experiences while eating in their venue. This knowledge may be a means of not only ensuring customer retention but also creating customer lifetime value.

Summary: Implementing CRM can provide a competitive advantage to restaurateurs and food providers. Having a better understanding of how an individual's personality characteristics impact on their attitude to taste in a dining-out environment, can contribute to building customer retention and profitability for restaurant managers.

1.2 Research Question and Research Issues

A gap in the literature was identified: The relationships among individual personality characteristics, the affect of atmospherics in a dining-out environment and individuals' taste complexity attitudes has not been reported in the extant consumer behaviour research literature and this is knowledge that may be appreciated by restaurant managers attempting to satisfy an individual customer's taste complexity preference while the customer is eating in their venue; or perhaps more importantly, providing an avenue to successfully segment and target their consumers through the use of personality characteristics. Personality theory and sensory marketing research provided some support for the development of the model, *Role of Personality in Development of Taste Complexity Attitude*. This model provided a foundation for the research. The model's accompanying hypotheses were tested using survey data collected for this study. The model and hypotheses underpinned an examination of the study's research question.

Research Question (RQ): *How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?*

The three primary elements in this research question are: (1) *Personality Characteristics* (2) *Dining-out Atmospherics*, and, (3) *Taste Complexity Attitude*. These three constructs were involved in the determination of whether an individual's personality characteristics impact on their food taste complexity

attitude in a dining-out environment. The relationships among these three elements are operationalised by the research issues.

Research Issues: Research issues were identified that drew attention to the potential relationships among the research constructs in the research question. Previous empirical research into the relationship of personality characteristics, the affect of atmospherics in a dining-out environment and individuals' taste complexity attitudes has been largely disregarded, with the exception of only a few researchers who have studied some aspects of the research issues (Robson et al., 2011; Robson & Kimes, 2009; Kimes & Robson, 2004). Based on this information, research issues related to the research question were expounded. The first research issue (RI 1) asked the question: Do personality characteristics have an effect on the influence of dining-out atmospherics? The second research issue (RI 2) asked the question: Do personality characteristics impact on taste complexity attitude? The third research issue (RI 3) asked the question: Do the dining-out atmospherics influence a food consumer's Taste Complexity Attitude? These research issues were designed to explore whether there was a relationship between personality characteristics, atmospherics in a dining-out environment and an individuals' taste complexity attitudes. Question 1 was posed to determine whether personality characteristics, the independent variable, and taste complexity attitude, the dependent variable, were mediated by an independent variable, Dining-out Atmospherics. Question 1 (Q1): Does the addition of Dining-out Atmospherics improve the model? The research issues, associated hypotheses and subsidiary question are listed in Table 1.1.

Table 1.1 Research Issues and Associated Hypotheses

Research Issue	Hypotheses
RI 1: Do personality characteristics have an effect on the influence of dining-out atmospherics?	Hypothesis 1: <i>Extraversion</i> is related to <i>Dining-out Atmospherics</i> Hypothesis 2: <i>Agreeableness</i> is related to <i>Dining-out Atmospherics</i> Hypothesis 3: <i>Imagination</i> is related to <i>Dining-out Atmospherics</i> Hypothesis 4: <i>Neuroticism</i> is related to <i>Dining-out Atmospherics</i> Hypothesis 5: <i>Conscientiousness</i> is related to <i>Dining-out Atmospherics</i>
RI 2: Do personality characteristics impact on taste complexity attitude?	Hypothesis 6: <i>Extraversion</i> is related to <i>Taste Complexity Attitude</i> Hypothesis 7: <i>Agreeableness</i> is related to <i>Taste Complexity Attitude</i> Hypothesis 8: <i>Imagination</i> is related to <i>Taste Complexity Attitude</i> Hypothesis 9: <i>Neuroticism</i> is related to <i>Taste Complexity Attitude</i> Hypothesis 10: <i>Conscientiousness</i> is related to <i>Taste Complexity Attitude</i>
RI 3: Do the dining-out atmospherics influence a food consumer's Taste Complexity Attitude?	Hypothesis 11: <i>Dining-out Atmospherics</i> is related to <i>Taste Complexity Attitude</i>
Q: Does the addition of Dining-out Atmospherics improve the model?	
Source: Developed for this research	

The theory contribution is explained in Chapter 5, Section 5.4. This study on the relationship between the Personality Characteristics, Taste Complexity Attitudes and Dining-out Atmospherics makes four significant contributions to the theoretical knowledge base:

- Establishes and tests the proposed theoretical model, *Role of Personality in Development of Taste Complexity Attitude*
- Explains the relevance of the relationship between *Personality Characteristics* and their effect on the influence of *Dining-out Atmospherics*

- Explains the relevance of the relationship between *Personality Characteristics* and *Taste Complexity Attitudes*
- Explains the relevance of the relationship between *Dining-out Atmospherics* and *Taste Complexity Attitude*

The contribution to practical knowledge is explained in Chapter 5, Section 5.5.

This study on the relationship between the Personality Characteristics, Taste Complexity Attitudes and Dining-out Atmospherics makes a significant contribution to the application of practice and policy:

- The appearance and texture of the food were found to be important in the development of the taste complexity attitude of the customer although flavour was not found to be a dimension of taste complexity attitude. This knowledge should be taken into account when considering and planning the menu offering.

Summary: The relationship among Personality Characteristics, Taste Complexity Attitudes and Dining-out Atmospherics is investigated in this research study. The research findings, based on the consumer behaviour literature and an analysis of survey data collected via an online survey instrument, made a contribution to the research theory as well as application knowledge for restaurant managers and food service providers. There was a contribution to theoretical knowledge about the influence of consumers' personality characteristics associated with taste complexity attitudes. Practitioner knowledge about the importance of the appearance of food has been reinforced and new knowledge about the significance of food flavour and

texture has been an important addition to the knowledge base of food service providers.

1.3 Research Justification

CRM research provides knowledge about how to manage a company's interaction with current and potential long-term customers to increase their profitability, an important goal for business managers operating in the current global economy (Kumar, 2015; Abdolvand, Albadvi & Koosha, 2014; Palmatier, Houston, Dant & Grewal, 2013; Stahl, Heitmann, Lehmann & Neslin, 2012). Restaurateurs who understand what influences customers' taste preferences while they are dining in their restaurant can more easily identify available commercial opportunities. Thus, a justification for undertaking this research is the gap in the personality theory and sensory marketing research literature. This study integrates research into personality characteristics, the service environment and the development of taste complexity attitude.

1.4 Methodology

The Positivism paradigm guiding the research methodology in the study supports a deductive approach and aims to explain, explore and predict the outcomes of human consciousness using quantitative research methods (Perry, 1998). This is an appropriate methodology to adopt in a research study investigating whether individuals' personality characteristics affect individuals' taste complexity attitudes and whether there is a mediating effect of atmospherics in the dining-out environment on individuals' taste complexity attitudes. The consumer behaviour literature was drawn upon to establish the

research question and research issues. A quantitative methodology was espoused and an online survey was used to obtain data to test hypotheses that originated from the literature review. Exploratory Factor Analysis (EFA) and Path Analysis were used to test the hypotheses developed from the research question and a subsequent question posed about the efficacy of the proposed model.

Chapter 2, the literature review discussion, incorporates two strands of the parent Consumer Behaviour literature, Personality Theory and Sensory Marketing. This information provided partial support for developing an initial theoretical framework, a proposed model, research issues and associated hypotheses. Chapter 3 describes the research design. Justification for the adoption of the Positivism paradigm was explained as the research aims to explain, explore and predict the outcomes of human consciousness using quantitative research methods. Test instrument development, sampling strategy, data analysis and ethical considerations are included in Chapter 3. Chapter 4 contains a report of the data analysis, the EFA and Path Analysis. An Exploratory factor analysis (EFA) was used to test the adequacy of measures, to verify the discriminant validity of the constructs in the model and perform reliability tests. Path Analysis was then used to test the hypotheses and determine differences between variables. The model, *Role of Personality in Development of Taste Complexity Attitude*, derived from the theoretical framework and literature review proposed at the end of Chapter 2, was empirically tested with data compiled from responses to an on-line questionnaire survey. Data were obtained from a sample of 317 respondents.

Respondents completed the MINI-IPIP questionnaire, questions about dining-out atmospherics and questions about the development of their taste complexity attitude. The Statistical Package for the Social Sciences (SPSS) Version 23 was employed to carry out the EFA and Path Analysis statistical procedures. Chapter 5 reports results from the Path Analysis and the evaluation of the research hypotheses.

1.5 Research Limitations and Implications for Further Research

There are inherent limitations within the research design and these limitations need to be addressed:

- Disadvantages from using an online survey; limited sampling and a lack of rich data.
- This study selected only three of a range of potential dimensions that contribute to the dining-out atmospherics construct but these dimensions may not be representative of the measures of dining-out atmospherics. An implication for further research is that the dimensions that contribute to the dining-out atmospherics construct could be better determined by undertaking qualitative exploratory research using focus groups and open-ended interview questions.
- This study selected only three of a range of potential dimensions that contribute to the taste complexity attitude construct, but these dimensions may not adequately measure all the sensory dimensions involved in forming the taste complexity attitude. An implication for

further research is that it would be worthwhile to undertake further qualitative exploratory research using focus groups and open-ended interview questions to determine the dimensions that contribute to the taste complexity attitude construct; implementing this change would overcome one of the limitations of this study.

- Study data were collected within Australia so the generalizability of the findings is limited to the Australian context from which data were gathered. It would be well to substantiate the theory proposed by testing the model using data collected in other geographical contexts.

A more detailed explanation of the study's limitations and directions for further research is offered in Chapter 5, Section 5.6.

1.6 Research Study Definitions

To ensure that this research study is clearly understood, the definitions of the key concepts or terms adopted in this research from the parent discipline consumer behaviour literature are provided below. In this section, key definitions are ordered alphabetically according to the first word in the construct.

- *Appearance* is one of the three dimensions of *Taste*. Appearance is defined as the way the food looks; it often provides the first impression of the food (Zellner, Loss, Zearfoss & Remolina, 2004).
- *Agreeableness*: This personality characteristic when measured falls along a hostile/agreeable continuum; a person who measures at the

agreeable end of the continuum is someone who gets along with others (Forrester & Tashchian, 2010).

- *Conscientiousness*: A person who is accustomed to dealing with life's challenges and has mature defensive responses falls on the conscientiousness end of the conscientiousness/spontaneous personality characteristic continuum; those who measure highly in conscientiousness are often well-prepared to tackle any obstacles that come their way (Soldz & Vaillant, 1999).
- *Consumer Behaviour* has been defined as: 'The study of individuals, groups, or organizations and the processes they use to select, secure, use, and dispose of products, services, experiences, or ideas to satisfy needs and the impact that these processes have on the consumer and society' (Perner, 2010).
- *Dining-out* occurs when consumers eat a meal outside the respondent's permanent legal residence in a public food consumption setting where a menu choice is offered (adapted from Collins Dictionary, 2017).
- *Dining-out Atmospherics* are the controllable characteristics (sight, sound, scent and touch) of the servicescape that entice a customer to enter the restaurant and can influence a customer's mood and decision-making (Kotler, 1973).
- *Extraversion*: The personality characteristic of a person who interacts highly with the surrounding environment (Solomon, Russell-Bennett & Previte, 2013; Eysenck, 1950).

- *Flavour* is one of the three dimensions of *Taste*. It is defined as the distinctive essence of a food or drink perceived by the taste buds in the mouth (Oxford Dictionary 2017).
- *Mini-IPIP*: The MINI-International Personality Item Pool (or MINI-IPIP) Scale is comprised of 20-items of the 50-item International Personality Item Pool Questionnaire used to assess the *Big Five Personality Characteristics*. The five characteristics are: Extraversion (introverted/extroverted continuum), Agreeableness (hostile/agreeable continuum), Openness/Imagination (closed/open continuum), Neuroticism (stable/neurotic continuum) and Conscientiousness (spontaneous/conscientious continuum) (Donnellan, Oswald, Baird & Lucas, 2006).
- *Neuroticism*: A person who has low activation thresholds and is unable to inhibit or control their emotional reactions; they are measured as experiencing a negative affect on the stable/neurotic continuum (Judge, Erez, Bono & Thoresen, 2002).
- *Openness/Imagination*: A person who is open to new experiences, likely to accommodate new ideas and think laterally; this personality characteristic measures at the open end of the closed/open continuum (Lebowitz, 2016),
- *Personality*: 'Individual differences in characteristic patterns of thinking, feeling and behaving' (American Psychological Association, 2013),

- *Sensory Marketing*: This is an emerging area of marketing research. It integrates the use of sensory stimuli (haptics, olfaction, audition, taste and vision) with product development (Krishna, Cian & Sokolova, 2016).
- *Taste* is one of five special senses in humans. As chemicals interact with taste buds on the tongue the resulting nerve impulses are classified as certain kinds of taste such as sweet, sour, salty, spicy and bitter (Field, 2014). In this study, appearance, flavour and texture were the three dimensions selected as the main contribution to a human's eating enjoyment (Bourne, 2002).
- *Taste Complexity* is determined by the ability of the sense of taste to respond to dissolved molecules in the mouth. Individual taste complexity attitudes arise from individual's gustation responses, with heredity and learning influencing responses (Beauchamp & Moran, 1982).
- *Texture* is one of the three dimension contributing to the sense of *Taste*. Texture is defined in this study as 'a multi-parameter sensory factor composed of those surface-related features which can be perceived by ... tactile mouthfeel senses' (Chen, 2007, p. 583).

1.7. Dissertation Outline

This study is undertaken to establish whether the personality characteristics of individual food consumers eating in a dining-out environment impact on individual taste complexity attitudes. The thesis has five main chapters, the structure and presentation of this thesis follows the suggestions of Perry

(1998). Chapter 1 starts with an overview of the research, a brief introduction to the research's background, research question and issues. It then moves on to a justification for examining whether there is a relationship among any of the Big Five personality characteristics, dining-out atmospherics and taste complexity attitude. This chapter also briefly explains the methodology, the research design, the research limitations and implications for future study. These sections of the chapter are followed by a list of definitions, the dissertation outline and chapter summary.

Chapter 2 provides a review of the literature pertinent to the research topic. The foundation underpinning the enquiry into this research study is drawn from the Consumer Behaviour parent discipline literature. Embedded within the broad parent discipline of Consumer Behaviour are Personality Theory and Sensory Marketing. A brief introduction in Section 2.2.1 to these two strands of Consumer Behaviour literature describes the relevance of these literatures to the research topic. These two sub-disciplines were drawn upon in the literature review to provide a theoretical framework for the research and also the foundation for the development of the model underpinning this study. There is limited empirical research indicating that different personality types may influence product selection and food taste complexity attitudes and there is also some empirical research into which of the sensory channels are involved in evaluations of a dining-out experience. However, further exploration of the relationships among individual personality characteristics, the effect of atmospherics in a dining-out environment and individuals' taste complexity attitudes is indicated by a gap in the research literature that fails to integrate

these variables into a single piece of research. Section 2.3 is where the five personality characteristics have been described; these include Extraversion, Agreeableness, Openness/Imagination, Neuroticism and Conscientiousness. In Section 2.4 and Section 2.5 of Chapter 2, dining-out atmospherics and taste complexity attitude were explained. Section 2.6 of Chapter 2 presents a description of individual personality characteristics, taste complexity and dining-out atmospherics in order to understand the potential relationship among these constructs. The summary of the literature review is located in Section 2.7. The theoretical framework and a description of the development of the proposed model, *Role of Personality in the Development of Taste Complexity Attitude*, is also included in this chapter in Section 2.8. The conclusion to the chapter is found in Section 2.9 of Chapter 2.

Chapter 3 provides the research design. This chapter discusses the quantitative research methods employed in the study. The theoretical paradigm chosen to support the research design is described in Section 3.2 of the chapter. The six steps through which the research design moved are described in Section 3.3. These six steps progressed through from the research method, the test instrument design, the data collection process, the survey administration and the design assessment to the statistical data analysis. The five-step test instrument design process is outlined in Section 3.4: (1) determination of the information to be acquired, (2) stipulation of the survey format, (3) creation of a draft questionnaire containing multi-item measurement scale items, (4) evaluation of the test instrument to assess validity and reliability, and, (5) pilot testing and refining of the questionnaire to produce the finalised test

instrument. Sampling strategy, data analysis and ethical considerations are mentioned in Sections 3.6, 3.7 and 3.8, respectively.

Chapter 4 explains the data analysis. The quantitative research method included data preparation, data cleaning, outlier screening and normality tests; these processes were described in Section 4.2 of this chapter. In Section 4.2.2, respondents' demographics and brief descriptive statistics are examined in order to better understand the data set. The Exploratory Factor Analysis (EFA) included factor identification, reliability and validity testing and these processes were described in Section 4.3. Path Analysis and hypotheses evaluation are reported in Section 4.4.

Chapter 5 presents the findings and implications of the research study. This chapter discusses the research findings and compares them with information reported in the current literature. The research question and research issues are described in Sections 5.2 and 5.3. In Sections 5.4 and 5.5 within this chapter, a discussion of the theoretical, practical and policy contributions are included. Finally, limitations of the study and future research directions are discussed in Section 5.6.

The format of this thesis followed CQUniversity Australia guidelines. The referencing style is in accordance with the American Psychological Association (APA) Style Guide (6th edition) 2010.

1.8 Conclusion

An overview of this research study and an introduction to the research study background, research question and issues is offered at the beginning of Chapter

1. Following on from this is an explanation of the research justification and methodology. The discussion of research limitations and implications for further research, provision of research study definitions and the dissertation outline conclude the chapter. The next chapter, Chapter 2, presents a review of the literature underpinning the development of the conceptual framework that provides a foundation on which to build the proposed model, *Role of Personality in the Development of Taste Complexity Attitude*.

Chapter 2 Literature Review

2.1 Introduction

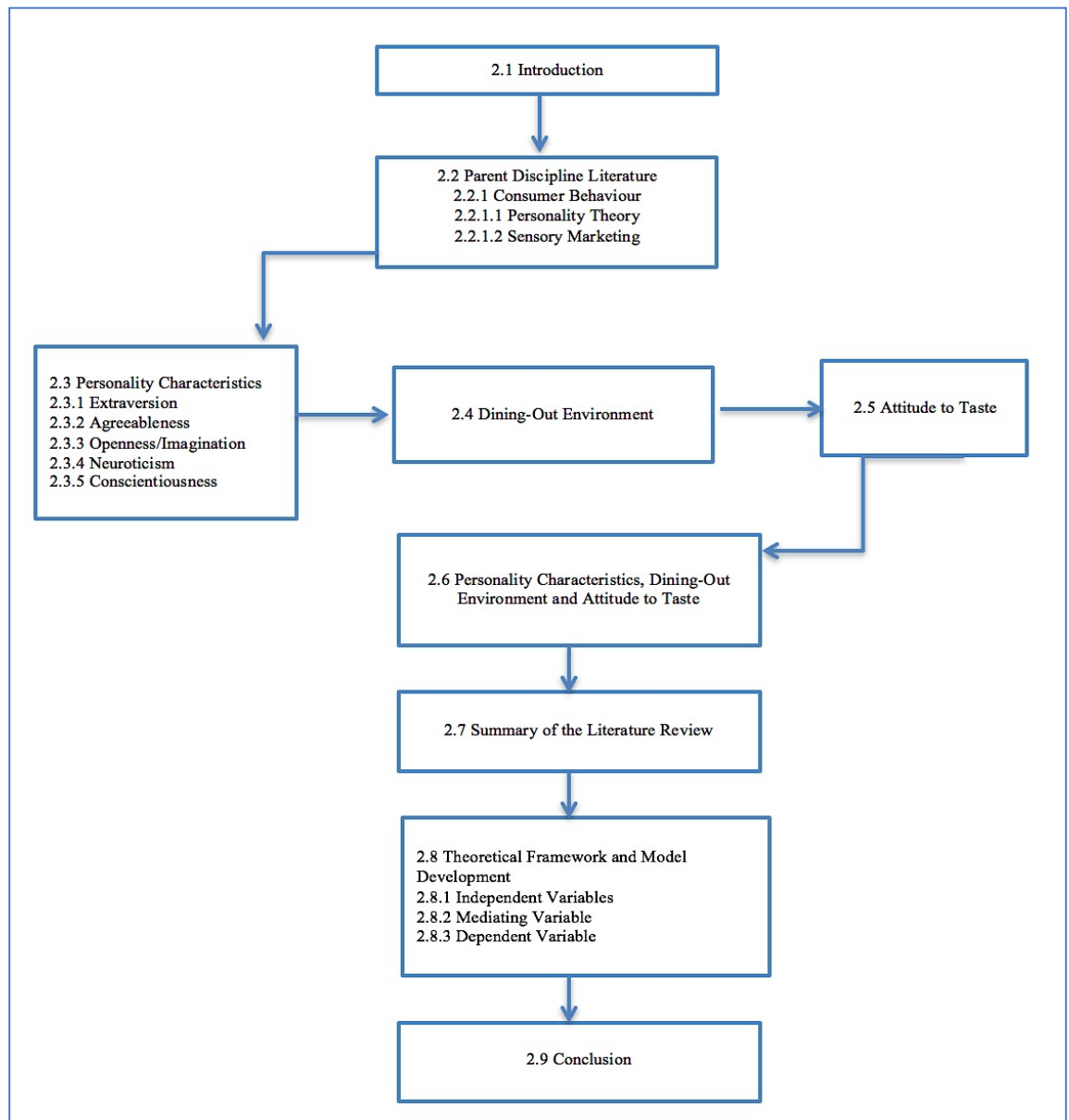
Since the turn of the 21st century stringent economic conditions have impacted the global macroenvironment. The highly competitive nature of commerce has therefore made it imperative for businesses to understand what constitutes superior value for their consumers (Constantinides, 2006). Thus, there has been ongoing research into strategic customer relationship management (CRM), with many of these studies trying to establish how customer lifetime value (CLV) can best be achieved (see for example, Castéran, Meyer-Waarden & Reinartz, 2017; Kumar & Pansari, 2016; Kumar, 2015; Abdolvand et al., 2014; Palmatier et al., 2013; Stahl et al., 2012). This research is reported in the consumer behaviour literature, the parent discipline literature relevant to this study.

Two of the strands within the consumer behaviour literature are consumer personality characteristics and sensory marketing. A review of the literature pertaining to these strands is undertaken within this chapter since this study is attempting to ascertain whether an individual's personality characteristics impact on an individual's taste complexity attitudes in a dining-out environment. There are indications that different personality types may influence attitudes to food and, thereby, product selection. However, there is limited empirical research into whether the engagement of different sensory channels is involved in evaluations of a dining-out experience. Drawing together these two strands of research in one study may provide valuable knowledge for food providers attempting to improve an individual customer's sensory experiences while eating in their venue. This knowledge may be a

means of not only ensuring customer retention but also creating customer lifetime value.

The structure of this chapter is as follows. Section 2.2 provides an overview of the parent discipline literature, focusing on Personality Theory and Sensory Marketing. The research literature pertaining to five personality characteristics identified in *The Big Five Personality Characteristics Typology*, also called the *Neo Personality Inventory*, acknowledged as the most widely recognised approach to classifying personality characteristics, has been reviewed (Solomon, Russell-Bennett & Previte, 2013). The labels for each of these five personality characteristics are: extraversion, agreeableness, openness/imagination, neuroticism and conscientiousness. An explanation of each of these characteristics is given in Section 2.3 of this chapter. Section 2.4 identifies the senses invoked in the perception of atmospherics. Section 2.5 describes the senses used in determining the taste complexity attitude. Section 2.6 reviews the literature on personality characteristics, dining-out environment and attitude to taste. Section 2.7 summarises the review of the literature supporting the study's theoretical framework and model development provided in Section 2.8. The chapter's conclusion is located in Section 2.9. An outline of Chapter 2 is presented in Figure 2.1.

Figure 2.1 Chapter 2 Outline



Source: Developed for this research

2.2 Parent Discipline Literature

The foundation underpinning the enquiry into this research study is drawn from the Consumer Behaviour parent discipline literature. Embedded within the broad parent discipline of Consumer Behaviour are Personality Theory and Sensory Marketing. Within this literature there has been a great deal of research focusing on the Big Five Personality Characteristics and how these characteristics affect food choice. For example, empirical research has indicated that personality characteristics have a relationship with product/brand selection and post-experience attitude (Solomon et al., 2006). Personality characteristics have been shown to relate to a particular preference for some food and drink products. Studies such as Prescott, Allen and Stephens (1993) make use of taste complexity but there has not been a structured effort to create an objective measure of it. However, the individual contributions of flavour, texture and appearance to particular preferences for some food and drink products have been researched. Although little is known about the relative contribution of flavour, texture or appearance in determining a consumer's overall post-experience food and drink preferences, taste complexity attitude, there are indications from the personality research that personality may be implicated in the consumer's overall post-experience taste complexity attitude.

2.2.1 Consumer Behaviour

The study of consumer behaviour has been recognised for a considerable period of time as a well defined scientific discipline (Kassarjian, 1971). In broad terms, consumer behaviour research is concerned with the study of

individuals and their behaviours (Perner, 2010). More specifically, it is concerned with ‘the interaction of affect and cognition, behaviours and environmental events by which human beings conduct the exchange aspects of their lives’ (American Marketing Association, 2017, n.p.). Within the parent discipline of consumer behaviour, many different strands of research have evolved, including personality theory and sensory marketing. Thus, an investigation into the interaction between personality, environment and attitude to taste clearly falls under the umbrella of the consumer behaviour parent discipline.

2.2.1.1 Personality Theory

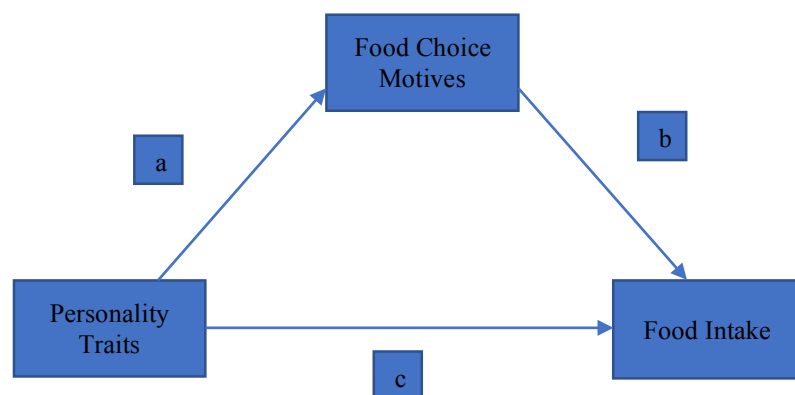
A variety of theoretical perspectives have been brought to the conceptualisation of personality. However, there is general consensus that the term ‘personality’ is a way of labelling a consistent pattern of responses to external and internal stimuli (American Marketing Association, 2017; Diener, 1998). Response consistency underpins the typing of people into specific personality categories, but there is less consensus among theorists on the nature of these categories. The five factor trait taxonomy is a model that consistently delineates the sphere of personality (McCrae & Costa, 1996). This model it is widely known as The Big Five (TBF) (Kell, Rittmayer, Crook & Motowidlo, 2010).

A resurgence of personality research since the 1990s has provided evidence for marketing managers that there is a relationship between personality and brand choice, responses to advertising, product selection, shopping behaviour, word-of-mouth and loyalty (Solomon et al., 2013). Several studies have identified a

relationship between individual factors such as psychological trait effects and food choices or food consumption frequency (Keller & Siegrist, 2015; Kim, Suh & Eves, 2010; Eertmans, Victoir, Vansant & Bergh, 2005; Furst, Connors, Bisogni, Sobal & Falk, 1996). This research study focuses on examining individual consumer's psychological characteristics, what influences their food experiences and how these variables impact on their attitude toward their food in a dining-out context.

A good foundation from which to build the theoretical model for the proposed study is found in the Eertmans et al. (2005) study. Their basic model, depicted in Figure 2.2, shows the relationship among three variables: personality trait, food choice motive and food intake. The study determined that spicy food consumption was positively associated with choice motivation. More importantly, however, for the proposition under investigation in the proposed study, their study concluded that food choice motives and personality traits could affect food intake.

Figure 2.2 Proposed path model of the relationships among Personality Traits, Food Choice Motives, and, Food Intake



Source: Eertmans et al. (2005, p.3)

One approach to offering an explanation of an individual's personality type is to link their personality type to their taste complexity attitudes. Studies have investigated the relationship between a favorite flavour or taste preference in food choice (Akpan, 2013; Baskin-Robbins & Hirsh, 2013). For example, when Baskin-Robbins partnered with Dr Alan Hirsh, they identified the relationship between ice-cream flavour and the customer's personality type. The results of this study showed that those who preferred '*very-berry strawberry*' are tolerant, devoted and introverted (Akpan, 2013; Baskin-Robbins & Hish, 2013). Another study found a link between personality and sweet preferences in wine consumption (Saliba, Wragg & Richardson, 2009). This study found that extraverted individuals are more likely to prefer sweet wine than introverted individuals. Yet another study concluded that there was a significant positive association between a sensation seeking personality characteristic and a spicy food preference (Byrnes & Hayes, 2012). Thus, in light of these studies, there are sufficient indications within the consumer behaviour literature to warrant an investigation into whether personality characteristics are related to the sensory determinants of consumers' taste complexity attitudes.

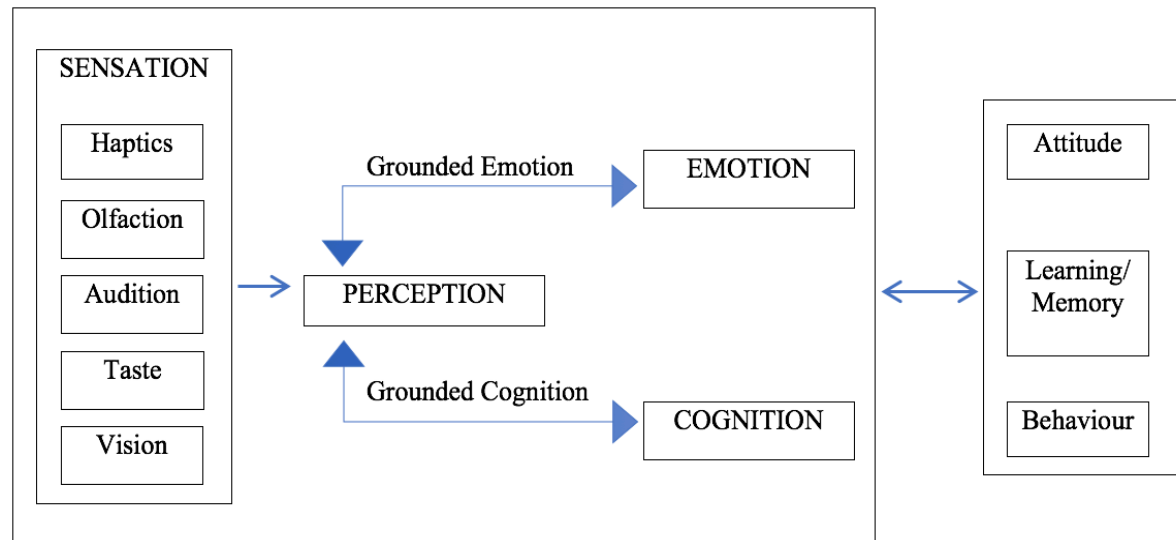
2.2.1.2 Sensory Marketing

It has long been recognized that consumers' perceptions of their experiences and their attitudes are affected by their sensory input (Solomon et al., 2013). Some of the earlier research concentrated on sensory perception antecedents and consequences (Kahn & Isen, 1993; Houston, Childers & Heckler, 1987; Gardner, 1985). However, much of the reported marketing research relating to

sensory perceptions has been concerned solely with the use of visual cues (Hultén, Broweus & van Dijk, 2009). Prior to the last decade of the twentieth century there was something of a scarcity of research into the effects of haptics, olfaction, audition and taste on attitude, learning/memory and behavior. Toward the end of the first decade of the twenty-first century, the sensory perception domain within the parent discipline of consumer behavior marketing was identified when the term ‘sensory marketing’ was coined by a group of researchers (Krishna, 2012).

A sensory marketing conceptual framework offered by Krishna (2012) shows how sensation and perception are linked to attitude, learning/memory and behaviour. Figure 2.3 below demonstrates Krishna’s perception of these relationships. Sensory marketing, from a corporate-world managerial perspective, may engage consumers more efficiently than explicit marketing appeals. Recent research reflects the interest shown in establishing whether consumer perceptions of a product, such as the product’s sophistication or quality, can be subconsciously triggered by appealing to one or some of a consumer’s other basic senses (Krishna, Cian & Sokolova, 2016).

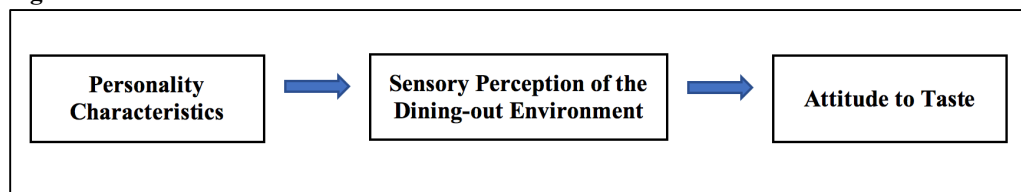
Figure 2.3 A sensory marketing conceptual framework



Source: Krishna (2012, p. 4).

The framework in figure 2.3 supports the inference that there will be a relationship between the consumer's attitude toward a dining-out context, their reported taste complexity attitude, and their sensory perception of the a dining-out environment. Thus, the sensory marketing conceptual framework devised by Krishna (2012) has been partially adopted and adapted for use in the theoretical model underpinning this research study into taste complexity attitude. It is proposed that sensory perception of the dining-out environment plays an essential role in the direct and indirect relationships between a consumer's personality characteristics and their attitude to taste, as shown in figure 2.4 below.

Figure 2.4 Theoretical Model



Source: Developed for this research

2.3 Personality Characteristics

Personality has been defined using typological characteristics (Cattell, 1943) which affect behavior (Allport, 1927; Carr & Kingsbury, 1938; Van Egeren, 2009; Just, 2011). Personality characteristics are elements that affect human behaviour (McCrae & Terraciano, 2005; McCrae & Costa, 1996; Goldberg, 1993; Allport, 1927). Personal characteristics distinguish between individuals and lead to behavioural consistencies (McAdams, 1996). The five factor taxonomy is a contemporary theoretical personality model used in significant amounts of research; it is widely known as ‘The Big Five’ (TBF) (Engler, 2014). The characteristic continua of TBF are: Extraversion (introverted/extroverted), Agreeableness (hostile/agreeable), Openness (closed/open), Neuroticism (stable/neurotic) and Conscientiousness (spontaneous/conscientious) (John, Donahue & Kentle, 1991).

In this study, the MINI-International Personality Item Pool (or MINI-IPIP) Scale was used to determine where the sample of food consumer respondents fell on TBF continua. The MINI-IPIP Scale is a condensed version of the International Personality Item Pool (Donnellan, Oswald, Baird & Lucas, 2006). A description of each of the five personality traits, as provided in the literature, follows.

2.3.1 Extraversion

The concept of the introverted/extraverted continuum was formalized and developed in the 1920s when Jung posited that people’s perception of, and reaction to, the surrounding world was determined by where they ranked on

this continuum (Breckenridge, 2014; Wilt & Revelle, 2008; Jung, 1921; 1971). Introverts are described as quiet, reserved and serious people who typically keep their feelings under control and act responsibly (Gudjonsson, Sigurdsson, Bragason, Einarsson & Valdimarsdottir, 2004). Extraverts are typically very social and talkative. Active, outgoing and assertive people rank highly on the extraversion end of the continuum (Wilt & Revelle, 2008; Kristof-Brown, Zimmerman & Erin, 2005). The extraversion construct has been incorporated in almost all major personality models, notably TBF (Costa, 1992b) and Eysenck's work (1950; 2013). Its original focus on sociability has remained stable throughout (Breckenridge, 2014), with research consistently confirming that extraverts are primarily oriented to a social setting and focus their energy on people and objectives and introverts are more interested in an internal environment, preferring to listen and reflect (Lu & Hsiao, 2010). The four questions in the MINI-IPIP questionnaire measuring Extraversion are: Q1) I am the life of the party; (Q6) I do not talk a lot (R); (Q11) I talk to a lot of different people at parties, and; (Q16) I keep in the background.

2.3.2 Agreeableness

Agreeableness refers to how well individuals get along with others. The concept of Agreeableness is used to explain where individuals fall on the hostile/agreeable continuum. Some of the specific agreeableness dimensions are: warmth, flexibility, understanding, cooperativeness and not causing discomfort in others (Forrester & Tashchian, 2010; Antonioni, 1998; Buss & Finn, 1987; Tupes & Christal, 1961). Interpersonal conflict reduction, group cooperation enhancement and consensus achievement behaviours are positively

related to agreeableness (Graziano & Tobin, 2002; Graziano, Hair & Finch, 1997; Graziano, Jensen-Campbell & Hair, 1996;). Agreeableness is often expressed as a willingness to help others (Kristjánsson, 2006). Previous studies have found that agreeableness directly influenced food choice (e.g. meat consumption) (Keller & Siegrist, 2015). Individuals with high agreeableness eat less meat, based on their ethical concern with meat consumption (Forestell, Spaeth & Kane, 2012; Mayer, O'Connor & Shirreffs, 2007). The four questions in the MINI-IPIP questionnaire measuring Agreeableness are: (Q2) I sympathise with others' feelings; (Q7) I feel others' emotions; (Q12) I am not very interested in others (R); and (Q17) I am not interested in other people's problems (R).

2.3.3 Openness (Imagination)

The concept of Openness is used to explain where individuals fall on the closed/open continuum. Openness refers to whether individuals are open to new experiences, likely to entertain new ideas and think outside the box, display intellectual curiosity, engage in fantasy, creativity, liberalism, daring, and display a willingness to question one's own values and those of authority (Lebowitz, 2016; Dodgson, 2016; Lord, 2007; Goldberg, 1993; McCrae, 1987). Openness is connected to promoting peace, tolerance, justice and equality (Douglas, Bore & Munro, 2016). Broad intellectual skills and the search for knowledge also are linked to openness (Schretlen, van der Hulst, Pearlson & Gordon, 2010). However, not only has this extremely stable characteristic been linked to knowledge and skills, it has also been found to correlate positively with creativity, originality, a tendency to self-exploration with a therapist, and

there is often a negative correlation with conservative political attitudes (Soldz & Vaillant, 1999). Openness is likely to promote intellectual growth. Individuals who make strong leaders and who are most likely to be innovative are ranked high on the open end of the closed/open continuum (DeYoung, Quilty & Peterson, 2007). The four questions in the MINI-IPIP questionnaire measuring Openness/imagination are: (Q5) I have a vivid imagination; (Q10) I have difficulty understanding abstract ideas (R); (Q15) I am not interested in abstract ideas (R), and; (Q 20) I do not have a good imagination (R).

2.3.4 Neuroticism

Neuroticism has been adopted as the label for the stable/neurotic continua concept. Research findings suggest that the construct of neuroticism is comprised of many dimensions. Neuroticism has been found to relate negatively to an individual's self-esteem, emotional stability, self-efficacy, locus of control and poor job performance and motivation (Judge, Erez, Bono & Thoresen, 2002; Judge & Ilies, 2002). The anxiety and self-consciousness components have been correlated negatively with achievement values, benevolence, tradition and conformity while the hostility and impulsiveness component of neuroticism related positively to hedonism (Roccas, Sagiv, Schwartz & Knafo, 2002). A long-term study over 45 years showed that neuroticism was negatively correlated with smoking cessation and a healthy adjustment to life and positively to drug/alcohol abuse and mental health issues (Soldz & Vaillant, 1999). Individuals ranking high on the neurotic end of the Neuroticism continuum have difficulties in life, including addiction, poor job performance and they make unhealthy adjustments to life changes (Roccas et

al., 2002). The four questions in the MINI-IPIP questionnaire measuring Neuroticism are: (Q4) I have frequent mood swings; (Q9) I get upset easily; (Q14) I am relaxed most of the time (R), and; (Q19) I seldom feel blue.

2.3.5 Conscientiousness

The Conscientiousness concept label is used when explaining where individuals fall on the spontaneous/conscientious continuum. Conscientiousness has been linked positively with achievement, conformity and security and negatively with stimulation and excitement seeking (Roccas et al., 2002). Those rating high on conscientiousness are likely to value order, duty, competency and achievement, self-discipline and deliberate before taking action (Roccas et al., 2002; Judge, Higgins, Thoresen & Barrick, 1999; Barrick & Mount, 1991). A long-term study found that conscientiousness was positively correlated with being able to adjust to life's challenges and engage mature defensive responses; these people were well prepared to deal with obstacles. Furthermore, this factor correlated negatively with depression, smoking, substance abuse and requiring psychiatric treatment (Soldz & Vaillant, 1999), and is strongly related to post-training learning (Woods, Patterson, Koczwara & Sofat, 2016). The four questions in the MINI-IPIP questionnaire measuring Conscientiousness are: (Q3) I get chores done right away, (Q8) I like order, (Q13) I often forget to put things back in their proper place (R), and; (Q18) I make a mess of things (R).

2.4 Dining-out Atmospherics

The service environment (servicescape) has long been recognised in consumer behaviour literature as an important component of effective services marketing (Donovan, Rossiter, Marcoolyn & Nesdale, 1994). Environmental stimulation, atmospherics, can cause significant differences in consumers' behaviour (Furnham & Allass, 1999). Within atmospherics research, there are various strands. There is a well-established body of work concerned with retail service-scape atmospherics (Tai & Fung, 1997; Sherman, Mathus & Smith, 1997; Baker, Levy & Grewal, 1992; Dawson, Bloch & Ridgway, 1990; Baker 1986; Sherman & Smith, 1986). Store layout in retail stores has a direct effect on customer-approach behaviour (the desire to enter, explore and purchase) (Solomon, Russell-Bennett & Previte, 2013). A different type of context from retail stores, the layout of an airport lounge, has also been investigated and the airport service-scape has been reported to have a direct effect on customer seat selection and customer satisfaction (Fodness & Murray, 2007).

Yet another strand of atmospherics research has explored the relationship between consumers' behaviours, evaluations of food consumption experiences and dining-out atmospherics (Latimer, Pope & Wansink, 2015). There is research indicating that the physical environment where service is delivered plays a role in determining the consumer's perception of the experience (Pijls & Groen, 2012; Wansink, 2004). Other research has established that the impact of the dining context has a significant effect on food consumption and food choice, and, on customers' positive affective responses and their perceived value of the dining experience (Liu & Jang, 2009). Ambience has also been

observed to have a significant impact on return patronage (Ribeiro Soriano, 2002; Dube, Renaghan & Miller, 1994). Furthermore, it has been suggested that the service atmosphere directly stimulates behavior and may lead to customer's willingness to spend more money (Heung & Gu, 2012). Other research has reported that the degree of overall customer satisfaction and loyalty is influenced by the consumer's perception of the interior design, the atmospherics, of the restaurant; lighting, music, table layout and furnishings, colour scheme and ambient odour (Ryu & Han, 2010). Implications drawn from these other strands of atmospherics research may have some relevance for this study.

2.4.1 Lighting

Lighting can have a strong impact on a consumer's visual perception of the atmosphere of the dining environment. The relationship between the level of lighting preferences and an individual's emotional responses and approach–avoidance behaviour have been indicated in various research studies (Baron, Rea & Daniels, 1992; Gifford, 1988; Hopkinson, Petherbridge & Longmore, 1966). While inhibition, arousal, self-consciousness and good behaviour may decrease under the influence of soft/low or warm lighting, this type of lighting increases the duration of the food consumption period (Scheibehenne, Todd & Wansink, 2010; Summers & Hebert, 2001; Lavin & Lawless, 1998; Areni & Kim, 1994). Low level lighting can increase the level of comfort and create a more positive affect toward objects (Baron, Rea & Daniels, 1992; Hopkinson et al., 1966). Conversely, higher levels of illumination are related to increased physiological arousal and harsh or bright illumination is likely to shorten the

duration of a meal (Wansink, 2004; Kumari & Venkatramaiah, 1974). Both lighting quality and contrasting light levels in different areas are also important (Baraban & Durocher, 2010). Lighting can make a customer feel that the atmosphere of the dining environment is intimate, exciting, hostile or full of electrifying energy (Baraban & Durocher, 2010). Thus, lighting in the dining environment is likely to be an important element influencing consumers' taste attitudes.

2.4.2 Music

Music has an impact on a consumer's auditory perception of the atmosphere of the dining environment. Research has been conducted on restaurant customers' behaviour and music effect; music tempo variations could significantly affect bar purchase numbers, visit duration and estimated gross profitability (Milliman, 1986). Later studies have confirmed that noise effect has a relationship with eating duration, food choice and consumption quantity (Stroebele & de Castro, 2004; Wansink, 2004; Caldwell & Hibbert, 2002; North & Hargreaves, 1996). The greater the liking of the music, the longer the customers stay in the dining environment and increase their expenditure (Wansink, 2004; 1992).

2.4.3 Table Layout

Table layout has an impact on a consumer's spatial perception of the atmosphere of the dining environment. An optimal table mix can improve revenue (Kimes & Thompson, 2002). Thus, table layout is generally considered to be an important management tool since table size, layout and

seating (i.e. number, type and configuration) may be effective elements in maximising capacity and balancing demand and supply without compromising customer satisfaction. The nature of college students' dining experiences and their choice of dining seat have been studied (Robson, 2008; Robson, 2002). Observation of college students indicated that private areas of the dining room such as near the corner or a window were preferred (Robson, 2008). Other studies also suggest that table characteristics affect restaurant patrons' behaviour (Robson, Kimes, Becker & Evans, 2011; Kimes & Robson, 2004). However, although individual studies into table size, distance between tables, types of tables and chairs and quantities thereof have indicated that these are important factors in determining customer attitudes, holistic research has not been undertaken into whether consumers' spatial perceptions of table layout atmospherics affect their dining-out taste complexity attitudes.

Summary: From the studies reported in Sections 2.4.1, 2.4.2 and 2.4.3, it seems likely that there is a relationship between consumers' sensory perceptions of dining-out atmospherics and their taste complexity attitude. However, as yet, there is no empirical research indicating there is a relationship between dining-out atmospherics and the consumer's food consumption attitude to taste. In this research study, the atmospherics construct is comprised of the lighting, music and table layout in the dining-out environment.

2.5 Taste Complexity Attitude

Consumers' choice of food involves complex processes with no single determinant of the processes but it is influenced by taste preferences, genetic

differences in taste sensitivity, hunger/satiety states and other factors such as the context (social influences) (Corbin, 2006). Taste, the gustatory sense, is one of the five human senses (Field, 2014). Attitude toward taste complexity is determined by the ability of the sense of taste to respond to dissolved molecules in the mouth. Individual taste complexity attitudes arise from a consumer's gustation responses, with heredity and learning influencing the responses (e.g. Beauchamp & Moran, 1982).

The sense of taste influences appetite, regulates food intake and food preferences (Depoortere, 2013; Baldwin, Cave & Lodge, 2012; Jenkins, White, Montfort & Burton, 2011; Kong, Zhang & Kamel, 2009). The appearance of the food was the first factor to attract considerable research attention while texture has been the last (Bourne, 2002). Respondents' answers about the texture characteristics of a sample food are based upon the 'order of appearance' principle, whereas flavour characteristics cannot be anticipated (Szczesniak & Kahn, 1971). Factors that are critical to the choice and enjoyment of food and beverage consumption are the appearance, flavour and texture (mouthfeel) of the food (Stokes, Boehem & Baier, 2013).

2.5.1 Appearance

The visual appearance of the food provides the first impression of the food; 'the first taste is always with the eyes' (Zellner et al., 2004, p. 31). The sense of vision is employed in assessing the food's appearance. Ability to identify a food is enhanced by colour and colour increases appetite, the temptation to eat the food, and, food acceptability (Field & Duizer, 2016; Zellner, Siemers, Teran, Conroy, Lankford, Agraftotis, Ambrose & Locher,

2011; Levitan & Visser, 2008; Zellner et al., 2004; Bourne, 2002; Garber, Hyatt & Starr, 2000; Blackwell, 1995; Stillman, 1993; Zellner et al., 1991; Hyman, 1983; DuBose, Cardello & Maller, 1980). Food presentation and colour can increase temptation to eat (appetite) prior to consumption (Levitan & Visser, 2008; Mega, 1974). Meals from different cultures have a different nature, colour and pattern of design, such as the browns and greens of western food which contrast with the brightly coloured, delicately sculptured components of Thai meals (Hutchings, 1999). Research has indicated also that colour is one of the visual cues employed in judging food freshness and refreshment expectation (Wada, Arce-Lopera, Masuda, Kimura, Dan, Goto, Tsuzuki & Okajima, 2010; Zellner & Durlach, 2002, 2003; Clydesdale, Gover, Philipsen & Fugardi, 1992). As well, colour can influence evaluations of the appearance and flavour (Zellner et al., 1991). For example, clear beverages are expected to be more refreshing than colored ones. People are more accurate when identifying appropriately coloured foods and drinks. For example, people recognised the type of wine from its colour rather than the flavour (Morrot, Brochet & Dubourdieu, 2001).

2.5.2 Flavour

Taste buds, the gustatory mechanism found on the tongue, recognise various flavour modalities; the primary ones are salt, acid, sweet and bitter. Previously it was thought that these four tastes are located in, or near, particular zones of the tongue; sweet receptors at the pointed end of the tongue, salty receptors on either side of the tongue, sour receptors along the middle of the tongue and bitter receptors at the back of the tongue (Field, 2014; Ferguson, 2011; Tomita,

Ikeda & Okuda, 1986). However, other research suggests that receptor zones are not found in specific regions of the mouth (Breslin, 2013) and this explains why the phrase ‘tastes good’ is commonly used to provide an overall impression of food flavour (Taylor & Roberts, 2004, p. 2).

The other component that makes up the sense of flavour is aroma. Congruency occurs when flavour perception and aroma are paired. Recently, aroma research has been expanding with significant interactions between taste and aroma processing being observed (Wallance, 2015; Auvray & Spence, 2008; Verhagen, 2007; Verhagen & Engelen, 2006; Small & Prescott, 2005). These findings elucidate the processes used in assessing a product’s flavour acceptability (Auvray & Spence, 2008). A better understanding of the multisensory processes, especially flavour perception, has been gained from research where the acceptability and flavour of new products was assessed (e.g., Shepherd, 2006; Blake, 2004; Gilbert & Firestein, 2002; Stillman, 2002).

2.5.3 Food Texture

Pleasurable sensory responses to the mouthfeel of food determine individual taste complexity attitudes, with the texture of the food being one of the critical factors determining taste complexity attitudes (Stokes et al., 2013). The texture of food, the tactile mouthfeel sensation provoked during food consumption, is utilised in the evaluation of food acceptability and has a bearing on consumers' food product attitude (Stokes et al., 2013; Chen, 2007). From the first bite of food until it is swallowed, the tactile senses in the food consumer’s mouth are engaged in evaluating the acceptability of the texture of the food that has been placed in the mouth (Kim & Lee, 2016). ‘*Crunch(y)*’ and ‘*crispy*’ have been

identified as the most commonly used terms to describe texture (Luckett, Meullenet & Seo, 2016). Early research established that females were more texture-oriented, while males were more flavour-oriented (Szczesniak & Kahn, 1971). The role of food texture in determining taste preference attitudes has been acknowledged by food industry marketers who often use texture-related words when developing or promoting a new product targeting female consumers (Luckett, Kuttappan, Johnson, Owens & Seo, 2014).

Summary: Although taste is an area of interest to sensory marketing researchers, there is still a considerable amount of research to be undertaken in the area of attitude towards taste (Cheok, Tewell, Pradana & Tsubouchi, 2013). In this study, appearance, flavour and texture have been selected to represent the taste complexity attitudinal construct.

2.6 Personality characteristics, dining-out environment and attitude to taste

Long-established personality theory research has recognised various relationships between the broad construct of personality, personality characteristics and various aspects of consumer behaviour. For example, a need to establish and maintain personal territory is dependent on an individual's personality (Kimes & Robson, 2004). However, although there are many studies reported in the personality theory literature, the sensory marketing literature and the broader consumer behaviour literature, discussions on linkages and relationships among personality characteristics, atmospherics and attitude formation remains fragmented in the research literature.

2.6.1 Personality characteristics and their effect on the influence of dining-out environment

Lighting in the dining-out environment: One study reporting on personality characteristics and lighting in a hotel lobby servicescape concluded that lighting was the first influential dimension on lobby impression but people ranking high on openness paid little attention to lobby impression (Naqshbandi & Munir, 2011). However, with the exception of this study, there is a paucity of research into the impact of a consumer's personality characteristics on their visual perception of the lighting in the dining environment.

Music in the dining-out environment: Although there is little research into consumer's personality characteristics and auditory perception of dining environment atmosphere, there is research into personality characteristics and preference for particular types of music that may be useful in informing the choice of music selected for a dining environment. A link between music preference and personality characteristics has been noted (Delsing, Ter Bogt, Engels & Meeus, 2008; Zweigenhaft, 2008; North & Hargreaves, 2005; Klimas-Kuchtowa, 2000). Early researchers proposed that music preference unconsciously reflects specific personality traits (Cattell, Dubin & Saunders, 1954). Some support for this notion was found when Schwartz and Fouts (2003) established that people prefer to listen to music that reflects a specific personality characteristic, although there is research suggesting that the neuroticism and music preference were not connected (Lester & Whipple, 1996). Self-regulation of arousal has been linked to different types of personality characteristics (Ittersum & Wansink, 2013; Sherman et al., 1997;

Tai & Fung, 1997; Baker, Levy & Grewal, 1992; Dawson, Bloch & Ridgway, 1990; Baker, 1986; Sherman & Smith, 1986). Questions about the findings in these studies, however, have been raised by other researchers who concluded that there was no association between the Conscientiousness personality characteristic and use of music for emotional regulation (Chamorro-Premuzic, Swami, Furnham & Maakip, 2009).

Studies have determined that extraverts, especially sensation seekers, have a preference for Rock, Rap, Heavy Metal or Punk music (McCown, Keiser, Mulhearn & Williamson, 1997; Little & Zuckerman, 1986). Other studies have also found a positive association between the Extraversion personality characteristic and types of music preferences; these were Rap, R & B, and Hip Hop (Delsing et al., 2008; Zweigenhaft, 2008; Hall, 2005). Research in adolescents' music preferences and personality indicated that adolescents who ranked more highly on agreeableness tended to report a lowered preference for Pop/Dance music as they aged (Delsing et al., 2008; Zweigenhaft, 2008).

While research has indicated that music preference and personality characteristics are linked, as yet, there is no direct evidence that music affects consumers with different personality characteristics' taste complexity attitudes. However, extrapolating from the extant research, it is likely that the impact of a consumer's personality characteristics on their auditory perception of the dining environment will make music another important element in dining-out atmospherics.

Table-layout in the dining-out environment: As previously stated, observation of college students indicated that private areas of the dining room such as near

the corner or a window were preferred (Robson, 2008) and the need to establish and maintain personal territory is related to personality (Kimes & Robson, 2004). Other studies also suggest that table characteristics affect restaurant patrons' behaviour (Robson et al., 2011; Robson & Kimes, 2009; Kimes & Robson, 2004). However, although individual studies into table size, distance between tables, types of tables and chairs and quantities thereof have indicated that these are important factors in determining customer attitudes, holistic research has not been undertaken into whether consumers' spatial perceptions of table layout atmospherics affect their dining-out taste complexity attitudes.

2.6.2 Personality characteristics and attitude to taste

There are studies into personality characteristics. Personality traits and overeating behaviour are related (e.g. Wansink, 2004; Vervaet, Van Heeringen & Audenaert, 2004). An investigation into whether people with an adventurous orientation to new/different foods (food neophiles) experienced an increase in their body mass index greater than other personality types established that food neophiles did experience an increase in their body mass index greater than other personality types (Latimer, Pope & Wansink, 2015). It has been established that in a virtual environment people with an extravert personality make purchasing decisions influenced by their peers (Barkni, 2007). While investigations into the relationships among consumers' personality characteristics, food consumption and purchasing behaviours have been conducted, there is a little evidence in the reported research literature of a relationship between personality and attitude to taste complexity. The issue of

taste complexity/gustatory complexity has been loosely addressed in only a handful of studies. There are around two dozen papers (both peer-reviewed and others) that make use of taste complexity (Prescott et al., 1993). Taste complexity is a particularly intricate issue because complexity interacts well with taste combinations and with taste interactions (Prescott & Stevenson, 1995; Prescott et al., 1993). Salient questions pertaining to whether taste intensity results from the sum of taste in a process known as perceptual additivity, or, the addition of intensity of the individual components, or, asymmetries in taste intensity, or, taste itself have been asked but not resolved, pointing to issues that have not been sufficiently researched in the field of taste complexity (Green, Lim, Osterhoff, Blacher & Nachtigal 2010).

Despite the lack of knowledge about these issues, however, there has been some research into the relationship among consumer's personality characteristics, food consumption and purchasing behaviours. It is likely that attitude to taste complexity and food consumption are entwined in the consumer's decision about food choices; therefore, it was decided to focus on one of the possible constituents of food choice, attitude to taste complexity. An investigation was conducted into whether there is a relationship between personality characteristics and food taste complexity. The attractiveness of appearance, flavour and texture were measured to determine food taste complexity.

The decision to focus on an investigation of the relationship between personality characteristics and food complexity was supported by research investigating the relationship between personality characteristics and a

preference for specific food flavours. Extraverted individuals appear to prefer sweet foods and beverages (Fitch & Gaylor, 2013; Saliba, Wragg & Richardson, 2009) but a liking for sweetness also correlates with other personality characteristics, such as impulsiveness (positively) and openness (negatively) (Oleson, 2014; Saliba, Wragg & Richardson, 2009). A link between sensation-seeking, one of the components of the Extraversion personality characteristic, and willingness to ingest spicy foods has been observed (Byrnes & Hayes, 2012; Terasaki & Imada, 1988). Some research has tended to focus on personality characteristic variables and taste preferences within a specific food sample (e.g. sweet wine or obesity) (Richardson & Saliba, 2011; Saliba, Wragg & Richardson, 2000; Elfhag & Erlanson-Albertsson, 2006). These studies have empirically demonstrated that the extraversion characteristic components of risk, venturesomeness, sociability and emotion impact on taste complexity attitudes.

Research has been conducted on whether there is a relationship between any of the other four personality characteristics and attitude to taste and food choice (Keller & Siegrist, 2015; Siegrist, Hartmann & Keller, 2013; Meier, Moeller, Riemer-Peltz & Robinson, 2012). These studies have been concerned with whether agreeableness, openness/imagination, neuroticism and conscientiousness personality characteristics influence attitude to taste. The findings of one study disconfirmed the proposition that people who like sweet food (e.g. candy) also ranked highly on agreeableness (Meier, Moeller, Riemer-Peltz & Robinson, 2012). Another study showed that the Openness/imagination personality characteristic has a relationship with food

choices (Siegrist, Hartmann & Keller, 2013). A later study found that individuals ranking highly on the openness/imagination personality characteristic were likely to try unfamiliar vegetables and fruits (open to the new experience), even those with a bitter taste, and to substitute healthier vegetables and fruits for less healthy food in their diet (Keller & Siegrist, 2015). This study also noted that the Openness/imagination personality characteristic had a negative association with meat consumption (Keller & Siegrist, 2015). A study on conscientiousness and neuroticism personality characteristics observed that there was a relationship between these personality characteristics and restrained eating behaviour (Heaven, Mulligan, Merrilees, Woods & Fairouz, 2001). Low levels of cautiousness, self-discipline and self-efficacy, all components of the conscientiousness personality characteristic, related significantly to emotional and external eating styles (Heaven et al., 2001). It has been observed that people high on the Conscientiousness scale were more likely to avoid fats, (e.g. high-fat food and non-meat fats) (Goldberg & Strycker, 2002) while people with the Neurotic personality characteristic were more likely to give consideration to their food choice motives (weight control and health) (Carrillo, Prado-Gasco, Fiszman & Varela, 2012). Other research has suggested that the relationships between personality characteristics and food consumption investigated in some studies indicated that the relationship was a two-way relationship (Saliba et al., 2009). For example, tasting sweet foods resulted in increased prosocial behaviour in human subjects (Meier et al., 2012).

Although, food taste complexity attitudes were not taken into consideration, the findings of a recent investigation into whether food neophiles experience increased mass index (BMI) may allow the inference to be drawn that the extraversion personality characteristic is related to food taste preference (Latimer et al., 2015); earlier research had studied the relationship between personality characteristics and overeating behaviour (Wansink, 2004).

However, despite indications of interest in researching whether there is a relationship between personality and some of the dimensions of taste, such as flavour, there is a scarcity of prior research into the relationship between personality characteristics and attitude to taste complexity.

2.6.3 Dining-out environment and attitudes to taste

Several recent studies have demonstrated that multisensory atmospherics can influence consumers' taste, flavour and beverage (e.g. alcohol) experiences (Spence, Puccinelli, Grewal & Roggeveen, 2014; Sester, Deroy, Sutan, Galia, Desmarchelier, Valentin & Dacremont, 2013). Some theorists who have examined environmental interaction and food complexity attitudes consider that there may be individual differences in sensory arousal level influencing attitudes (Jin, 2015; Wansink, 2004; Miliman, 1986). Lighting, music and table position are three physical environment variables that have been discussed in the literature.

Lighting: There are a few indications that the colour of lighting can influence the consumer's taste attitude. Recently, researchers have studied the relationship between the auditory and visual attributes of the environment's

influence on the consumer's taste rating of alcohol (Spence et al., 2014; Velasco, Spence, Jones & King, 2013). The relationship between the multisensory atmospheric (lighting and music) and vodka preferences in flavour has confirmed that participants under red lighting and gentle music were likely to prefer raspberry vodka (Wang & Spence, 2015). However, this is an area of research that is still emerging and there are few mentions in the research literature of a relationship between lighting atmospherics and attitude toward taste complexity.

Music: For several decades, academics from a diversity of disciplines have studied the effect of music on various aspects of behaviour (Bruner, 1990). A liking for the music provided throughout the servicescape has a primary, positive influence on consumer evaluations of pleasure, arousal and service quality, while the music characteristic (e.g. slow pop or fast classical) had an additional effect on pleasure and service quality evaluations (Sweeney & Wyber, 2002). However, although research into the relationship between music and customer behaviour indicates that music is likely to be an important element in the music atmospherics in the dining-out environment influencing consumers' taste attitudes, this is an area that has yet to be researched.

Table Layout: Providing comfortable dining-out environments is a goal of dining-out venue operators. Table layout is considered to be an important management tool, with the impact of table layout being manifested as an affective comfort response (Barker & Pearce, 1990). However, whether dining atmospherics are related to an individual's taste complexity attitude, although

intuitively plausible on the basis of distantly related literature, has yet to be researched.

Summary: Despite the diversity found within studies of personality characteristics, atmospherics and taste attitudes, whether there is a direct relationship, or indirect relationship mediated by sensory perception of atmospherics, between personality characteristics and taste complexity attitude has not been established. While the consumer behaviour literature has reported studies investigating the relationships between personality characteristics and product selection or shopping behaviour, or brand choice or word-of-mouth or loyalty, there is only a very limited amount of research literature reporting on whether personality characteristics have a relationship with food taste complexity attitude.

2.7 Summary of the Literature Review

During the 1980s, researchers and practitioners adopted the marketing concept i.e. acknowledgement that revenue derives from both new and retained customers. The significance of customer relationship management (CRM) and achievement of customer lifetime value (CLV) have continued to be important ongoing research issues, most especially since the turn of the 21st century when global economic conditions have had a heavy impact on the global macroenvironment, business finances and profitability (Constantinides, 2006). Identifying customers who contribute significantly to increasing restaurant revenue has become of great interest to researchers (Collings & Baxter, 2005). Providing food that accommodates consumers' taste complexity attitudes in a

dining context with appealing atmospherics are significant factors in building customer satisfaction, loyalty and profitability (Bowen & Chen, 2001). The literature reviewed in this chapter indicates there are several under-researched areas of the consumer behaviour parent discipline research that have the potential to impact on customer management and customer lifetime value.

Research reported within two strands of the consumer behaviour literature, personality theory and sensory marketing, provided a foundation for the development of the model underpinning this study. There is limited empirical research indicating that different personality types may influence product selection and food taste complexity attitudes and there is also some empirical research into which of the sensory channels are involved in evaluations of a dining-out experience. However, further exploration of the relationships among individual's personality characteristics, the affect of atmospherics in a dining-out environment and individuals' taste complexity attitudes is indicated by the gaps in the research literature.

Thus, this research is undertaken to establish whether the personality characteristics of individual food consumers eating in a dining-out environment impact on individual taste complexity attitudes. Drawing together the two research strands, personality theory and sensory marketing, may provide valuable knowledge for food providers attempting to satisfy an individual customer's taste complexity preference while eating in their venue. Based on the related studies in the literature, gaps in the literature have been identified as follows:

- The relationship between an individual's personality characteristics and individual taste complexity attitudes has not been investigated;
- There are limitations in the research into the effect of individual's personality characteristics on their evaluation of a dining-out environment atmospherics; and,
- The relationship among personality characteristics, atmospherics of the dining-out environment and individual taste complexity attitudes has not been empirically tested.

The specific gap in the literature that this research aims to address requires an investigation of the following question:

How do personality characteristics relate to consumer taste complexity attitudes in a dining-out environment?

It has long been established that both personality characteristics and context influence many aspects of customer behaviour (Terasaki, & Imada, 1988; Srinivasan, 1996). Several studies have identified a relationship between personality characteristics and food choices or food consumption frequency (Keller & Siegrist, 2015; Kim et al., 2010; Eertmans et al., 2005; Furst et al., 1996). Studies have investigated the relationship between dining atmospherics and consumers' food consumption attitudes (Latimer et al., 2015; Pijls & Groen, 2012; Ryu & Han, 2010; Liu & Jang, 2009; Wansink, 2004). Thus two propositions underpin the theoretical framework employed in this study. Proposition (1): a food consumer's personality characteristics are the input related to the customer's taste complexity attitude outcome. Proposition (2):

dining atmospherics mediate a customer's taste complexity attitude outcome. Developing a model of the impact of personality and restaurant atmospherics on food consumers' taste complexity attitude may be of great use to managers of restaurants by allowing them to gain a competitive advantage from understanding the relationship between customer personality characteristics, sensory variables and their gustatory attitudes. This knowledge may be a means of not only ensuring customer retention but also creating customer lifetime value.

To address the problem concerned with the effect that an individual's personality characteristics has on individual taste complexity attitude in a dining-out environment, the following research issues were identified:

RI 1: Do personality characteristics have an effect on the influence of dining-out atmospherics?

RI 2: Do personality characteristics impact on taste complexity attitude?

RI 3: Do the dining-out atmospherics influence a food consumer's taste complexity attitude?

To explore these research issues, research hypotheses are developed in Section 2.8.

2.8 Theoretical Framework and Model Development

Chapter 2 provided a detailed review of the literature associated with consumers' personality characteristics and sensory marketing. The review of the consumer behaviour and sensory marketing literature disclosed that seven main variables were involved in the determination of food taste complexity

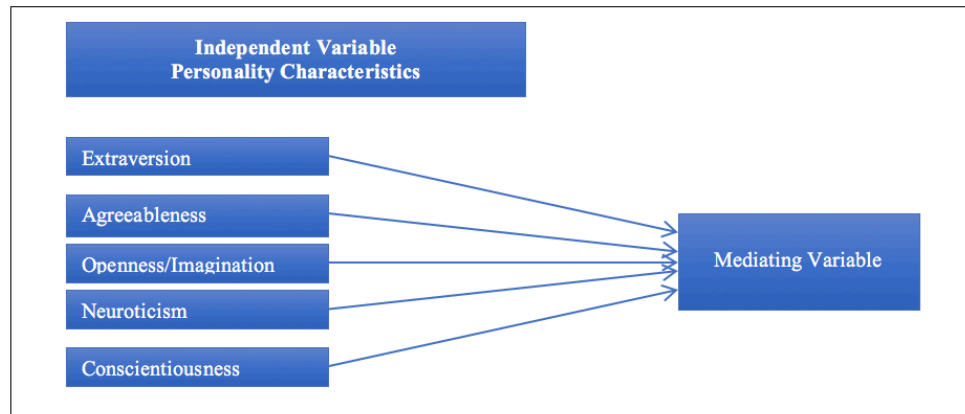
attitude in a dining-out environment. In Section 2.3 pertinent research was presented about The Big Five Personality Characteristics: Section 2.3.1 (Extraversion), Section 2.3.2 (Agreeableness), Section 2.3.3 (Openness/Imagination), Section 2.3.4 (Neuroticism) and Section 2.3.5 (Conscientiousness). These five variables constituted the personality characteristic variables. In Section 2.4 research reporting on dining atmospherics was presented. Research into three sensory determinants of the atmospheric variable in the dining-out environment, lighting, music and table layout, was reported in Sections 2.4.1, 2.4.2 and 2.4.3, respectively. Sections 2.4.1, 2.4.2 and 2.4.3 presented a case for the selection of these three constituents to represent the atmospherics variable, the mediating variable, impacting on taste complexity attitude. Section 2.5 explained that the determinants of taste complexity attitude, the output section of the model in this study, consisted of the appearance, flavour and texture of food. Taste complexity attitude represented the dependent variable in a theoretical model of the model, *Role of Personality in Development of Attitude to Taste Complexity Attitude*, presented in Figure 2.8. The model proposed below in this section of Chapter 2 was tested using data collected from respondents to an on-line survey.

2.8.1 Independent variables

The five personality characteristic constructs adopted from The Big Five Personality Characteristics Inventory were: Extraversion (introverted/extroverted), Agreeableness (hostile/agreeable), Openness (closed/open), Neuroticism (stable/neurotic) and Conscientiousness

(spontaneous/conscientious). Figure 2.5 shows the potential relationship of the independent variables to the mediating variable.

Figure 2.5 Personality Characteristics Independent Variable

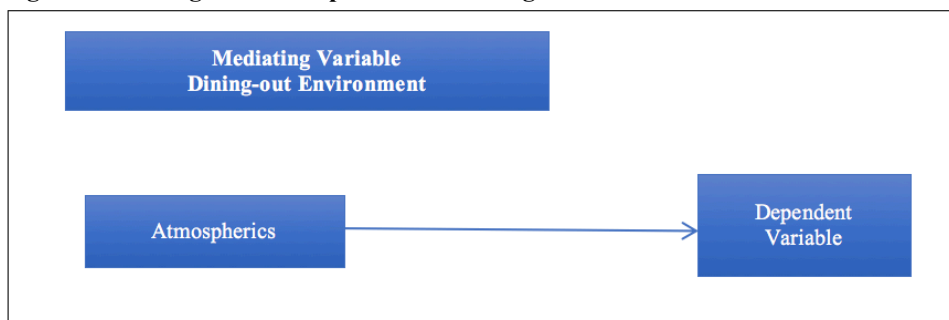


Source: Developed for this research

2.8.2 Mediating variable

When a dependent variable is influenced by an independent variable through another independent variable then the independent variable through which the influence is exerted takes on a mediator function (Baron & Kenny, 1986). Mediation suggests a hypothesis whereby an independent variable is influenced by a mediator which in turn affects the dependent variable. In this research the dining-out environment mediating variable, atmospherics, affects taste complexity attitude as demonstrated in the relationship shown in Figure 2.6.

Figure 2.6 Dining-out Atmospherics Mediating Variable

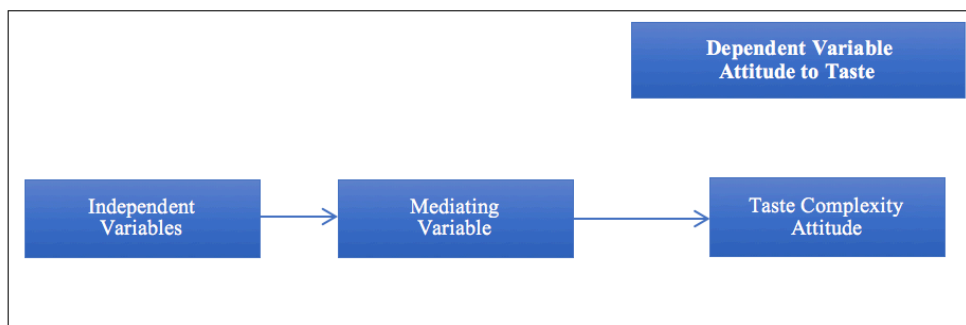


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2.8.3 *Dependent variable*

Literature indicates that the outcome of a dining-out experience is manifested in the consumers taste attitude, taste complexity (Krishna, 2012; 2010). The independent variables, the five personality characteristics, and the mediating variable, atmospherics, influence the consumer's outcome attitude, taste complexity. Figure 2.7 shows the potential relationship of the dependent variable with the independent variables and the mediating variable.

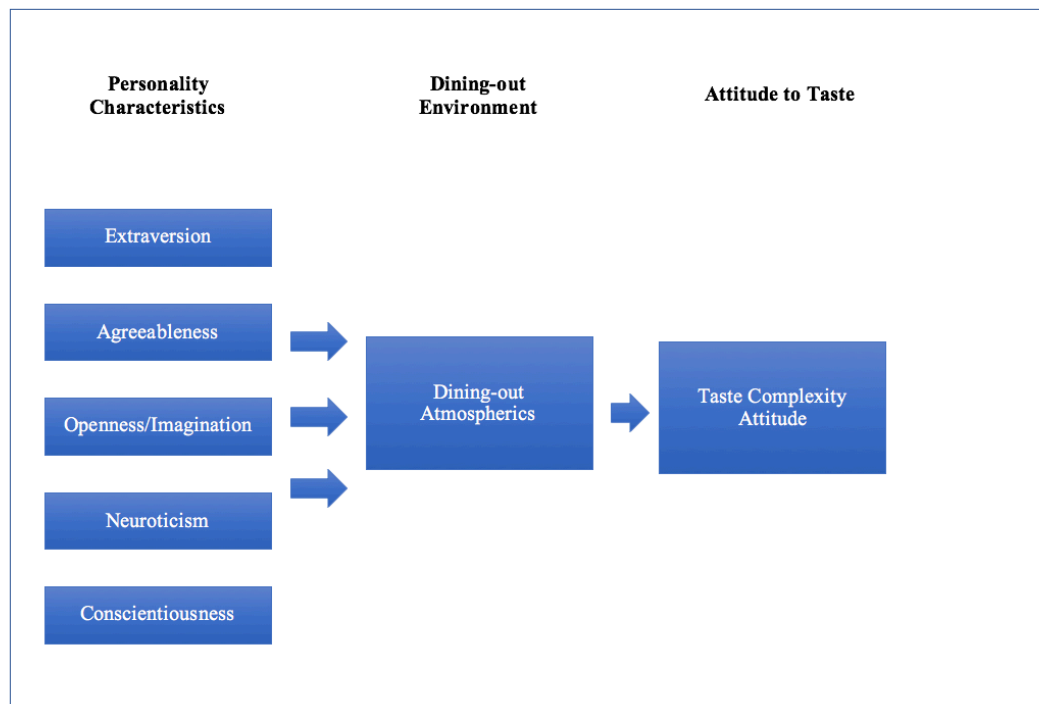
Figure 2.7 Taste Complexity Attitude Dependent Variable



Source: Developed for this research

The three partial theoretical models come together in the Theoretical Model presented in Figure 2.8. The Theoretical Model contains seven constructs: five independent variables, one mediating variable and one dependent variable.

Figure 2.8 Proposed Theoretical Model
Role of Personality in Development of Taste Complexity Attitude



Source: Developed for this research

In any dining-out environment used to test the model, the relationship between a customer and their attitude toward food taste complexity should be statistically related to their personality characteristics, (as assessed by the five independent variables, *Extraversion*, *Agreeableness*, *Openness/Imagination*, *Neuroticism* and *Conscientiousness*) leading to the dining-out environment (as assessed by the mediating variable, *Dining Atmospherics*) and then the outcome attitude to taste of the food consumption experience (as assessed by the dependent variable, *Taste Complexity Attitude*). The research provides for a better understanding of the relationship between consumers and the formation of their attitudes toward food taste in a dining-out environment. The research addresses a gap in the personality theory strand of the consumer behaviour parent discipline literature as well as a gap in the sensory marketing strand of

the consumer behaviour parent discipline literature and tests a new theoretical dining-out framework.

The research describes the theoretical foundation and methodology proposed for a consumer's taste complexity attitude and how it relates to personality characteristics and dining-out atmospherics. The development of the proposed theoretical model was guided by the research question:

How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption context?

The literature revealed seven variables pertinent to addressing the research problem. Theory and the adoption of rational implications drawn from theory supported the development of hypotheses. The first research issue of interest was ascertaining whether there was a relationship between personality characteristics and the influence of dining-out atmospherics. There was no specific prior research investigating this relationship found in the literature review but peripheral research suggested that lighting, music and table layout determined the atmospherics of a dining-out environment and *Atmospherics* was a construct that was likely to have a relationship with a consumer's personality characteristics. The second research issue was concerned with the relationship between personality characteristics and taste complexity attitude. During the literature review, *Taste Complexity Attitude* was identified as a construct that was likely to have a relationship with a consumer's personality characteristics. The third research issue identified was concerned with the relationship between the dining-out environment construct, *Atmospherics*, and attitude to taste, *Taste Complexity Attitude*. No specific prior research was

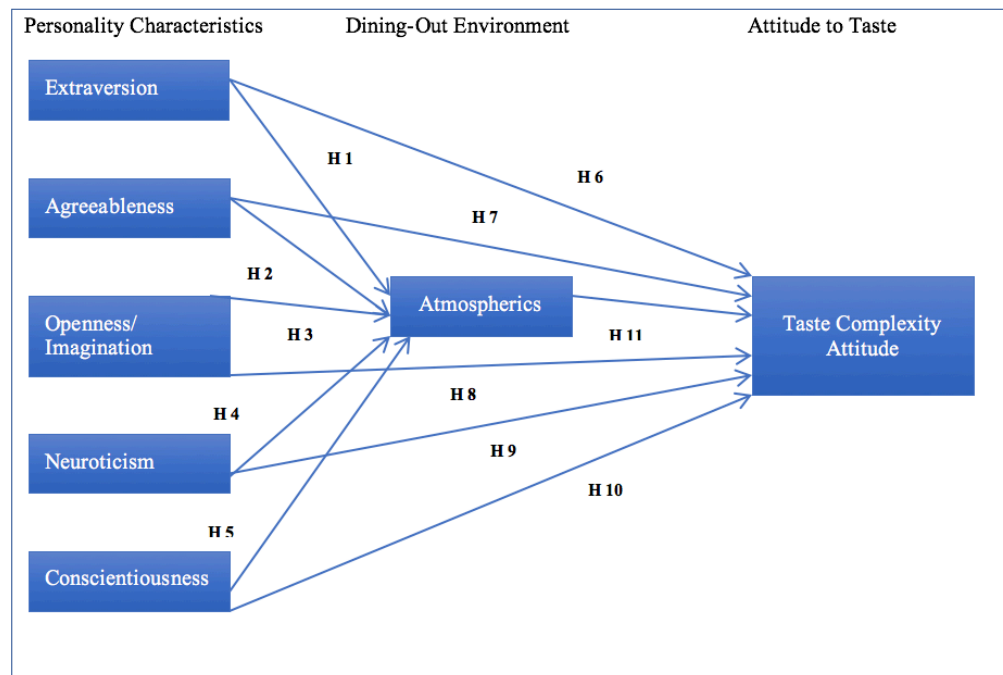
identified in the literature supporting this relationship but the researcher's extensive personal experience working in the restaurant industry as well as CLV research literature supported research into whether the *Atmospherics* construct had a relationship with the *Taste Complexity Attitude* construct. The hypothesised interrelationships supported the construction of the theoretical model. Table 2.1 provides the research question, 11 related hypotheses and one question. This research addresses a gap in the literature suggested by consumer behaviour researchers' inferences and assumptions.

Table 2.1 Research Question and Hypotheses

Research Question and Hypotheses	
RQ	<i>RQ: How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?</i>
H1:	<i>Extraversion is related to Dining-out Atmospherics</i>
H2:	<i>Agreeableness is related to Dining-out Atmospherics</i>
H3:	<i>Imagination is related to Dining-out Atmospherics</i>
H4:	<i>Neuroticism is related to Dining-out Atmospherics</i>
H5:	<i>Conscientiousness is related to Dining-out Atmospherics</i>
H6	<i>Extraversion is related to Taste Complexity Attitude</i>
H7	<i>Agreeableness is related to Taste Complexity Attitude</i>
H8	<i>Imagination is related to Taste Complexity Attitude</i>
H9	<i>Neuroticism is related to Taste Complexity Attitude</i>
H10	<i>Conscientiousness is related to Taste Complexity Attitude</i>
H11	<i>Atmospherics is related to Taste Complexity Attitude</i>
Q1	<i>Does the addition of Dining-out Atmospherics improve the model?</i>

Source: Developed for this research

Table 2.1 provides the study's hypotheses. The hypotheses were presented in the alternative hypothesis style. Selection of the alternative hypothesis method was justified by use of this method in other marketing studies that have undertaken Path Analysis (Malhotra, 2009). Figure 2.9 provides the hypothesised model.

Figure 2.9 Initial Theoretical Model and Related Hypotheses

Source: Developed for this research

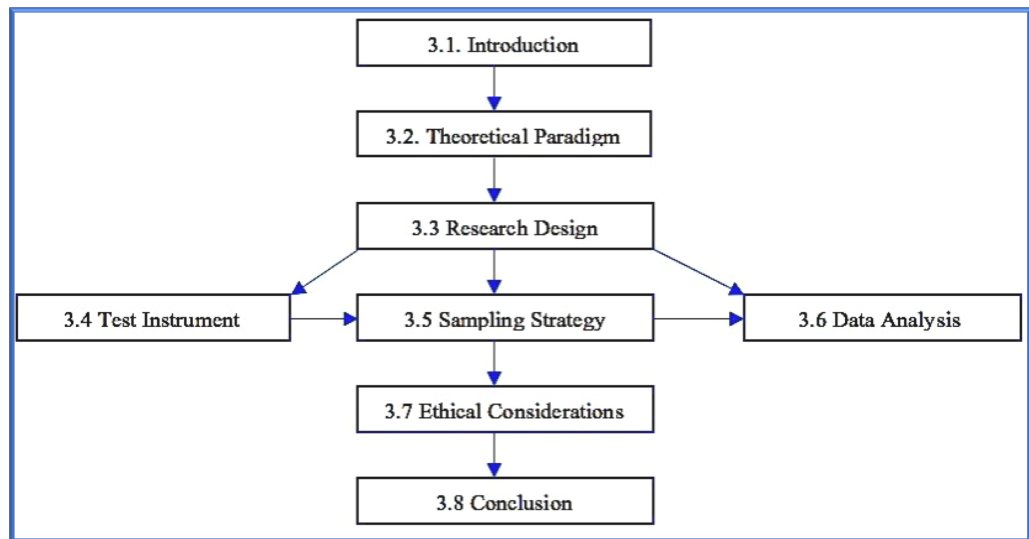
2.9 Conclusion

This chapter provides detailed background information about each variable in the research. The key objective of this section is to review the relationships among the Big Five personality characteristics, sensory perception of atmospherics and taste complexity attitude. In this study within the parent discipline area of consumer behaviour there are two sub-discipline areas: personality theory and sensory marketing. Discussions of these two areas are important because these disciplines provide the foundation and new insights for this research used in the conceptualisation and hypotheses' development for this research. Based on the review of the literature, there are several areas that remain under-researched and require further exploration to better inform our understanding of the relationships between the TBF personality characteristics, dining-out atmospherics and taste complexity attitude.

Chapter 3 Research Design

3.1 Introduction

This chapter discusses the research method employed in this research and its justification. The research method used a quantitative method to scientifically investigate the phenomena. As shown in Figure 3.1, Chapter 3 describes and justifies the quantitative research methodology. In Section 3.2, justification of the choice of research paradigm is provided. Section 3.3, the research design, started with an explanation of the research method and then provided the rationale for choosing the survey method. A discussion is presented of the survey design and measurement in Section 3.3. The validity and reliability of an online survey is explained in Sections 3.4 and 3.5. The method of data analysis is discussed in Section 3.6. Included in this section are explanations of how data purifying, data cleaning and deletion of missing data, assessment of normality and outliers, and, the MINI-IPIP and taste preference scales were conducted. The survey design and measurement section gives details of the demographic question (Section 3.6.1), the MINI-IPIP measurement (Section 3.6.2), and, the taste preference and meal experience questions (Section 3.6.3). Ethical Considerations are addressed in Section 3.7. Finally, Section 3.8 summarises the chapter.

Figure 3.1 Chapter 3 Outline

Source: Developed for this research

3.2. Theoretical Paradigm

A paradigm is the general framework of the nature of the scientific endeavour guiding research and practice in a field. The paradigm accommodates the basic assumption underpinning the research, key issues, the research model and method for seeking answers to research questions (Neuman, 2014). Selection of an appropriate paradigm is the basic requirement for any research design. In theory development there are two critical research approaches: deductive theory testing and inductive theory building. The Positivism paradigm supports a deductive approach while the Phenomenology paradigm provides a foundation for an inductive approach (Perry, 1998). While the Positivism paradigm aims to explain, explore and predict the outcomes of human consciousness using quantitative research methods, the Phenomenology paradigm employs qualitative research methods such as case studies and interviews which are essential to inductive theory building research (Sarantakos, 2013). This study into personality and taste complexity attitudes employed a deductive quantitative research method. The

Positivism paradigm was adopted because it supported an investigation of theoretical relationships drawn from the literature, exploring the nature of these relationships and empirically testing hypotheses explaining relationships based on statistical evidence (Malhotra, 2009).

3.3 Research Design

The selection of an appropriate research design depends on the objectives of the research (Burn & Bush, 2014). This study had three objectives. Background information was needed to conduct the descriptive study, which in turn provided the information necessary to design an experiment to test hypotheses that stipulated the relationships between two or more variables (Burn & Bush, 2010). Thus, descriptive research was carried out during the research study (Burn & Bush, 2014).

The research design provided an overall framework and prepared the structure and strategy of the research. In this study, descriptive research was conducted. Information was sought about the subject being investigated in order to generate the research hypotheses and refine the research issues (Churchill, Brown & Suter, 2009). An online survey questionnaire was used to obtain data to test hypotheses that originated from a review of the literature. The research was investigating whether there was a relationship among the variables associated with the research objectives. Minimising errors and maximising reliability was paramount during the construction and application of the test instrument. The survey instrument was pilot-tested and refined before it was launched online. The processes and procedures used in the study supported the

credibility of the causality established by the quantitative research (Neuman, 2014; Hair, Bush & Ortinau, 2006).

3.3.1 Research Method

Quantitative research uses experimental techniques, employs formalised procedures to collect data and undertakes statistical analysis of the data to investigate hypotheses or research questions (Malhotra, 2009). The analysis of large samples obtainable using a quantitative approach supports the derivation of generalisable outcomes (Hair, Bush & Ortinau, 2006). Since the key objective of quantitative research is the examination of relationships, this was the most appropriate technique for a study aiming to empirically test the hypothesised relationships presented in Chapter 2 and provide an understanding of whether an individual's personality characteristics impact on an individual's taste complexity attitudes in a dining-out environment.

As explained in the previous chapter, Chapter 2, literature existed showing that individual factors such as psychological traits affect food choices (Furst et al., 1996; Eertmans et al., 2005; Kim et al., 2010). From within this literature, the Eertmans et al. (2005) model was selected and modified to provide a theoretical framework and definition of the constructs used in the proposed model supporting the research being undertaken in this study. Included in the proposed research model were independent, mediating and dependent variables. It was anticipated that a description of the relationships among the variables in the model could be developed from an analysis of the survey data, first by using Exploratory Factor Analysis (EFA) to check factor loadings and

the reliability and validity of the questionnaire and then, Path Analysis to evaluate the hypotheses. The data analysis findings are reported in Chapter 4.

3.3.2 Test Instrument Design

Since there was no appropriate questionnaire available to gather data to test the research hypotheses, the five-step process similar to the processes advocated in the research design method literature for questionnaire development was followed (Zikmund et al., 2013; Pallant, 2016, Jones et al., 2006).

- Step 1: Determination of the information to be acquired. The variables to be measured were specified, having been drawn from the literature review.
- Step 2: The survey format was stipulated, the measurement scales to be used were fixed upon, the manner employed to gather the information was established and the organisation of the test instrument was decided upon.
- Step 3: A draft questionnaire containing multi-item measurement scale items was created to survey a convenience sample of personality characteristics. The items were designed to measure the seven variables in the theoretical model.
- Step 4: The test instrument was evaluated to assess its validity and reliability.
- Step 5: The questionnaire was pilot tested and then refined to produce the finalised test instrument.

3.3.3 Data Collection Process

To obtain data from a large population sample the survey research method was employed; surveys are the method most commonly used for collecting primary data (Zikmund et al, 2013). However, there are limits to the in-depth details obtainable using questions and there is also a lack of control over response/completion rates and the integrity of respondents. Disadvantages in using online surveys also rest in the potentially unrepresentative nature of both the population and the samples taken from it. However, these disadvantages are outweighed by online surveys having the flexibility to capture the data within a tight period of time (Malhotra, 2009). Online surveys allow access to a large audience from which to collect a convenience sample with relative ease and at low cost through the elimination of paper and postage (Hair et al., 2003). Furthermore, online surveys allow electronic data to be transferred quickly to data files (Zikmund et al., 2013). Four different methods of response were required from respondents in the online survey used in this study: 1) ordinal scales were provided for responses to demographic questions; 2) five point Likert-type scales were provided for responses to multiple choice questions; 3) ranking scales were provided for responses to taste complexity attitudes questions; 4) space was allowed to type in individual responses (Zikmund et al., 2013).

3.3.4 Survey Administration

Errors in the administration of survey research are common and come from several sources: self-selection bias, non-response bias and common method bias, (Zikmund et al., 2013). A survey is likely to accomplish its goal if

participants cooperate by completing the survey and giving truthful answers (Couper, 2000). The reliability and validity of raw data is reduced by respondent errors.

The two main categories of respondent error that occur in research are: 1) self-selection bias and 2) non-response bias (Zikmund et al., 2013). People who feel strongly about a subject are more likely to participate in surveys pertaining to that subject than people who are indifferent to it, thereby bringing about self-selection bias (Zikmund et al., 2013). When survey respondents have different demographics or attitudes from those who did not respond a non-response bias occurs (Sax et al., 2003).

Common method bias, a limitation of self-administrated surveys, can occur either randomly or systematically but both forms of bias can lead to misleading findings (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). Questions requiring different types of responses were posed throughout the survey to minimise this type of bias. Examples of the types of required responses included Likert-type scales varying between seven and five points, as well as questions where participants chose a drop-down box to select the answer. Varying the required method of response helped to reduce the problem of common method bias.

This study's survey was administered through a third party, Survey Monkey (an online survey provider) in an attempt to increase the number of responses and thus reduce non-response error. Respondents with Survey Monkey earn credit points for each survey completed and they can then exchange these points for a \$100 Amazon gift card or a charitable donation (Survey Monkey, 2017). To minimise non-response, non-price incentives included a gentle

email reminder being sent to CQUniversity's staff, students and interested groups, as well as, user-friendly formatting and layout of the survey. Estimation of non-response bias can be approached in three different ways, comparison with known values, subjective estimation and extrapolation (Armstrong & Overton, 1977). The present study adopted the extrapolation method.

3.3.5 Design Assessment

Evaluation of the reliability and validity of the test instrument took place before the data set was analysed using the multiple regression technique. The test instrument reliability, demonstrating the degree to which measures were free from error and yielding consistent results, was assessed. The test instrument's validity was a means of showing whether the indicator effectively fitted within the definition of particular concepts.

3.3.6 Statistical Analysis

The description of the relationship between Personality characteristic and taste complexity attitudes could be established by analysing the survey data using EFA and multiple regression analysis. The Statistical Package for the Social Sciences (SPSS) Version 23 was employed to carry out these statistical procedures. CQUniversity held a licence for SPSS Version 23 so that research higher degree students enrolled at the university could use this software program to support their research studies.

3.4 Test Instrument

This section presents a detailed report on the creation of the test instrument. To

obtain accurate and complete information about the research problem, a test instrument was developed that translated the research objectives into a series of questions (Malhotra, 2009).

The research objectives were determined from the research problem under investigation in Chapter 1, while in Chapter 2, the theoretical framework, model development and research hypotheses are presented in Section 2.8. A five-step process was used in the development of a test instrument designed to elicit appropriate information that would allow the research problem to be addressed (See Figure 3.2). The five-step process, drawn from the research design method literature, is as follows:

- Step 1: Determination of the information to be acquired
- Step 2: The survey format was stipulated
- Step 3: A draft questionnaire containing multi-item measurement scale items was created
- Step 4: The test instrument was evaluated to assess its validity and reliability.
- Step 5: The questionnaire was pilot tested and then refined to produce the finalised test instrument.

3.4.1 Step 1: Determination of the information to be acquired

Informed by the psychology and consumer behaviour literature, a theoretical framework was created to link the research concepts (Zikmund et al., 2013). Concept definitions were constructed as the foundation from which to launch

Step 1 in the design of the test instrument (Ghauri & Grønhaug, 2010). Table 3.1 presents the various theoretical concepts used in the framework to represent the independent and dependent variables concerned with the research issues.

Table 3.1 Research Issues, Independent and Dependent Variables

Research Issue	Independent Variables	Dependent Variables
RI 1: Do personality characteristics have an effect on the influence of dining-out atmospherics?	Personality Characteristics	Dining-out Atmospherics
RI 2: Do personality characteristics impact on taste complexity attitude?	Personality Characteristics	Taste Complexity Attitude
RI 3: Do the dining-out atmospherics influence a food consumer's taste complexity attitude?	Dining-out Atmospherics	Taste Complexity Attitude

Source: Developed for this research

Specific sets of measurement instruments linked to the conceptual definitions were used to bring the taste preference phenomenon into the researcher's field of enquiry (Ghauri & Grønhaug, 2010). Demographic questions were measured using three items appropriate to this investigation. The amount of variance found in each construct was ascertained from an analysis of data obtained by the measurement instrument.

Included in the 54-item questionnaire were three participant information questions: gender, age and region of origin. Question 1 required participants to indicate whether they were male or female. Question 2 asked participants in which age group they were. The following age groups were offered from which participants could select: 18-24 years, 25-34 years, 35-44 years, 45-54 years, and 55 years and over. The last question in this section, Question 3, inquired

about the country of origin of participants. The options provided in this survey for the region of origin, where they were born, were: Asia, Europe, North America, South America, Africa, and Oceania (Australia, New Zealand, Papua New Guinea, Pacific Islands). Following the demographic questions, the 20 questions of the MINI-IPIP Measure were included.

3.4.1.1 Independent Variables: Five Personality Characteristics

The 20 questions of the MINI-IPIP Measure are a brief measure of the Big Five Personality Factors (Goldberg, 1999): Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Intellect/Imagination (or Openness). These questions have been delineated in detail in Chapter 2. For the purpose of investigating whether the individual's personality characteristics: Extraversion, Agreeableness, Openness, Neuroticism and Conscientiousness is related to taste complexity attitude, twenty items measuring the five personality characteristics in the MINI-IPIP Measure were of particular use from Items 1 and 20. Table 3.2, below, provides the definition of the five personality characteristics, their operational definition and the survey items used to measure these characteristics.

Table 3.2 Five Personality Characteristic Measures

Concept	Definition	Operational Definition	Survey Items
Extraversion	A person who interacts with the surrounding environment (Solomon et al., 2013; Eysenck, 1950)	Extraverts seek adventure, friends and are assertive (Solomon et al., 2013)	Items 4, 9, 14 and 19
Agreeableness	A person who gets along with others, fall on the hostile/agreeable continuum (Forrester & Tashcian, 2010).	Some of the specific agreeableness dimensions are: warmth, flexibility, understanding, cooperativeness and not causing discomfort in others (Forrester & Tashchian, 2010)	Items 2,7,12 and 17
Openness/Imagination	A person who is open to new experiences, likely to entertain new ideas and think laterally (Lebowitz, 2016).	Openness refers to whether individuals are open to new experiences, likely to entertain new ideas, intellectual curiosity, fantasy, creativity, liberalism, daring, and willingness to question one's own values and those of authority (Lebowitz, 2016).	Items 5, 10 (R), 15 (R) and 20 (R)
Neuroticism	A person who has low activation thresholds and is unable to inhibit or control their emotional reactions (Judge et al., 2002).	Neuroticism has been found to relate negatively to an individual's self-esteem, emotional stability, self-efficacy, locus of control and poor job performance and motivation (Judge et al., 2002)	Items 4, 9, 14 (R) and 19
Conscientiousness	A person who is accustomed to dealing with life's challenges and has mature defensive responses falls on the conscientiousness end of the conscientiousness/spontaneous personality characteristic continuum (Soldz & Vaillant, 1999).	A person with high level on conscientiousness are likely to value order, duty, competency and achievement, self-discipline and deliberate before taking action (Roccas et al., 2002)	Item 3, 8, 13 (R) and 18 (R)

Source: Developed for this research

3.4.1.2 Dependent Variable: Attitude to Taste Complexity Preference

Since it had been demonstrated previously in the literature that the Personality trait has an impact on taste complexity attitudes, eight questions designed to measure taste preference were included in the survey. In addition, a further three questions designed to measure the taste characteristic, texture and appearance of the meal were included in the questionnaire. In Sections 2 and 3 of the questionnaire, meal experience details were enquired into. Information was requested concerning illumination, music and table placement. Further information was sought about the cost, purpose of the meal and how many people were present. In Table 3.3 below outlines the concepts of Taste Complexity Attitude (Appearance, Flavour and Texture), the Dining-out Environment (Illumination, Music, Table Placement), Cost, Purpose of the Meal and Number Present, their definitions, their operational definitions and the survey items used to measure these concepts.

Table 3.3 Taste Complexity Attitude and Meal Experience Measure (Dependent Variables)

Concept	Definition	Operational Definition	Survey Items
Attitude to Taste Complexity	Attitude toward taste complexity is determined by the ability of the sense of taste to respond to dissolved molecules in the mouth. Individual Taste complexity attitudes arise from individual's gustation responses with heredity and learning influencing the responses (Beauchamp & Moran, 1982).	The attitude to taste complexity is based on the appearance, flavour and texture (mouthfeel) of the food (Stokes, Boehem & Baier, 2013).	Items 31, 32 and 33.
Appearance	Appearance derives from the balance of complex elements in a meal that influence the perceived attractiveness, liking and willingness to try the food (Zellner et al., 2010).	The influence of visual cues on rating the perceived flavour and acceptance of food from 1 (ordinary) to 5 (spectacular), (Imram, 1999).	Item 32
Flavour	Gustatory sense is defined as the ability to respond to the food we eat (Field, 2014).	Reasonable to extremely Sweet/Salty/Sour/Bitter/Spicy /Oily flavour (Field, 2014).	Item 31
Texture	Texture is the response of the tactile sense to physical stimuli that results from contact between the body and a food; different sensations are felt as the food is chewed (Bourne, 2002).	Rating the main meals' texture from 1 (a single, consistent texture) to 5 (lots of variety in the texture).	Item 33
Dining-out Environment	Atmospherics is the controllable characteristics of a service scape (sight, sound, scent and touch) that entice a customer to enter the store and can influence a customer's mood and decision making (Kotler, 1973).	Dining-out environment is based on the lighting, music and table layout.	Items 40, 41 and 42.
Illumination	Harsh or soft illumination is an atmospheric that affects consumers' nonvisual senses and influences the duration of a restaurant visit (Wansink & Ittersum, 2012; Baker, 1987).	The influence of the level of lighting on seating choice, ranked from 1 (softly lit) to 5 (well lit) (Wansink & Ittersum, 2012).	Item 40
Music	Music noise is an ambient condition that influences eating duration and food consumption (Wansink, 2004).	The influence of the level of music noise on seating choice, ranked from 1 (quiet) to 5 (noisy) (Wansink, 2004).	Item 41
Table	Spatial layout refers to floor	The influence of the placement	Item 42

Placement	plan, size, shape and placement of furnishings and equipment (Lovelock & Wirtz 2011).	of the table, ranked from 1 (pubic area) to 5 (private) (Lovelock & Wirtz, 2011).	
Cost	The monetary cost, the amount paid for the food, and value, the estimated monetary worth of the service and products, of the eating out experience (Kabir, 2016)	The total monetary cost of the meal: \$20 or less, \$21-40, \$42-60, \$61-80, \$81-100, over \$100	Item 37
Purpose of Meal	The reason prompting an eating occasion' (EO) or 'eating event', an occasion where food or drink is ingested and incorporating all meal types (Leech, Worsley, Timperio & McNaughton, 2015).	Context is one of three constructs identified as descriptors of meals. The meal's purpose (for example, business meal, family meal, date night, socialising with friends, special occasion and any other purpose) and location (eating out of home) are two variables important in establishing the context of the meal (Leech, Worsley, Timperio & McNaughton, 2015)	Item 38 Section 2
Number Present	The number of people involved in social interaction around the meal table.	How many people were sitting at your table with you? 1) I was on my own, 2) 1 other person, 3) 2 other people, 4) 3 other people, 5) 4 other people, 6) 5 other people, 7) more than 6 other people	Item 25

Source: Developed for this research

3.4.2 Step 2: The survey format was stipulated

The decision was made to use a self-administered questionnaire. A large participant sample of voluntary, self-identified participants interested in evaluating a meal experience were obtained utilising an online survey technique (Jones et al. 2006). Survey Monkey was employed to acquire the survey sample. This type of self-administered survey was chosen because of the time constraints of the Masters by Research project, the available research funding and the need to acquire sufficient data to meet the overall research

objectives (Zikmund et al., 2013). Questions in this type of survey can be versatile while the possibility for respondent misunderstanding is low. Furthermore, the questionnaire can be reasonably long but item non-response rates are typically in the medium range (Zikmund et al., 2013).

3.4.3 Step 3: Placement of multi-item measurement scale items in the draft questionnaire

The design of the survey instrument followed the suggestions of Dillman, Smyth and Christian (2014). The survey included information about the survey, a request for completion and provision for additional suggestions, thanks for participation in the survey and closure advice about counselling support. The questionnaire section of the survey was comprised of three sections. Demographic information questions were included in the survey instrument as well as multiple-choice scales designed to investigate each of the latent constructs (Churchill, Brown & Suter, 2009).

The first section of the questionnaire elicited demographic information and establish the personality type of participants. The second section of the questionnaire collected information about a dining-out meal experience and this is the data set that was analysed in this Masters by Research project. The third section obtained information about an eating-at-home meal experience but this information was reserved for later analysis. Five to seven point Likert-type scales were provided for participants to define their personality-type and explain their meal experiences. The personality questions ranged from 1 = very inaccurate to 5 = very accurate. The meal experience questions ranged from 1 = strongly agree to 5 = strongly disagree. A brief general note about each of the

constructs was provided between the sections and their corresponding constructs. The survey is available in Appendix X.

3.4.4 Step 4: The test instrument was evaluated

During the evaluation of the test instrument consideration was given to the survey's various elements: information sheet, measurement instrument appearance, instructions and question order. The draft questionnaire was distributed for peer review and reviewers' suggestions were implemented to guarantee that the survey had a professional appearance. After taking into account feedback suggestions, restrictions were placed in Section 1 to reduce error from non-completion of the questionnaire. The researcher calculated that the average time of completing the survey was approximately 15 minutes.

3.4.5 Step 5: The questionnaire was pilot tested and refined to produce the finalised test instrument.

Ethical clearance was obtained from the Human Research Ethics Committee, CQUniversity (Ref. H15/11-250) prior to conducting the pilot testing of the survey instrument. The draft questionnaire included a total of 54 items in three sections:

- Section 1: Participant information (3 items) and the MINI-IPIP scales (20 items),
- Section 2: A meal you ate out (19 items)
- Section 3: A meal you ate at home (12 items).

Pilot testing of the draft questionnaire was conducted to discern the appropriateness the questionnaire's format. The researcher used a convenience,

purposive sampling technique to disseminate the draft questionnaire among a review panel that included students and staff of CQUniversity and interested groups. The draft questionnaire did not ask any personal particulars and followed the necessary protocols stated in the ethical clearance approval document. The respondents were assured of the confidentiality of their responses. They were also informed about their rights (i.e. their rights to quit during the survey process) in the first section or social exchange page if so desired. A total of 20 completed and usable responses were received in the first two weeks of September 2016. Responses in these completed surveys were evaluated and it was concluded that the survey was ready for use.

3.5 Sampling Strategy

A convenience sample of the survey's target population was sought by disseminating the survey on-line using Survey Monkey.

3.5.1 Study Population

Definition of the target population at the beginning of the sampling procedure ensures appropriate sources provide data (Zikmund et al., 2013). The target population for this study is men and women from the ages of eighteen to fifty-five who have Facebook and Internet email accounts. There were 410 survey participants but from among these respondents 317 usable surveys were obtained.

3.5.2 Sample Frame

Because of time and cost constraints, a self-administered online survey was used in this research. Thus, although the distribution among gender, age and

extraversion/introversion personality of the sample population could be noted it could not be controlled or manipulated.

3.5.3 Sample Technique

To avoid chance sampling error and in an effort to capture a representative group of dining-out respondents, the on-line survey was kept open 24 hours a day, seven days a week for three months. This sampling technique ensured a strong probability that respondents were drawn from among a broad stratum of the dining-out population.

3.5.4 Sample Size

Statistical and non-statistical factors were considered in determining the sample size in this study. To minimise the risk of sampling error the researcher endeavoured to sample a large population (Ghauri & Gronhaug, 2010). Sample size affects the precision of estimates of the reliability of the sample relative to the population estimates. This study aimed to sample 400+ participants: a sample of this size is more likely to promote more score variance among interval measurement scales and result in a greater approximation to the true range of scores within the population. Guidance on the sample size decision was obtained from other studies (Charter, 2003; Lenth, 2001). After data cleaning, 317 cases were retained from the original 410 return surveys.

3.6 Data Analysis

Data were recorded in the Statistical Package for the Social Sciences (SPSS) Version 23. The data set was subsequently cleaned to remove any entry errors. The total number of completed surveys was 410 but following data cleaning

317 sets of data were found to be useable. The first constraint on the number of useable surveys was imposed by the requirement for completed answers to all the questions. In Questions 14 (Texture), 19.17 per cent of respondents did not answer the question. Taking a sample of non-responders and asking them to complete the survey was not possible as, not only were financial and time constraints imposed by the nature of the study, but it was also an anonymous survey. Following the data cleaning procedure, the descriptive statistical information, including skewness and kurtosis, was explored to generate an overview of the data set (Hair, Black, Babin & Anderson, 2010).

Exploratory Factor Analysis (EFA) was applied to the cleaned data set to identify items for exclusion from the Path Analysis phase of the data analysis. The test instrument's validity and reliability was assessed before proceeding with the application of Path Analysis to the data set. Section 3.6.1, assessment of test instrument reliability and validity, is followed by a discussion justifying the use of Path Analysis for the data analysis in Section 3.6.2.

3.6.1 Assessment of Test Instrument Reliability and Validity

EFA is based on the assumption that all variables correlate to some degree (Ho, 2014). The EFA process reduced a number of related variables to subsets of their representative factors that were reasonably uncorrelated with other subsets that could then be used for subsequent analysis (Pallant, 2016; Hair et al., 2010; Tabachnick & Fidell, 2000). In this study the SPSS assessment tools were utilised during the EFA stage of the research to assess the validity and reliability of the test instrument. The validity and reliability tests were

conducted to ensure that the amount of error was minimal and the results were a true representation of the observed event (Hair et al., 2010).

Reliability: Exploratory Factor Analysis (EFA) was applied to the Mini-IPIP scale data. Principal Axis Factoring (PAF) with Oblimin (Oblique) rotation for multifactorial solutions was employed. The Cronbach's Alpha for each of the scales was calculated to ensure scale reliability (Churchill, 1979). Cronbach's Alpha is a measure that determines the scale's internal consistency. It is widely used as a means of assessing the reliability of a scale (Churchill, 1979; Hair et al., 2010; Tabachnick & Fidell, 1989). Generally, a Cronbach's Alpha of above 0.70 is considered acceptable but above 0.80 is preferable (Pallant, 2016). The results of the reliability test for each of the scales was at least 0.70. As a result of the EFA analysis, at the conclusion of the factor extraction, rotation and interpretation procedure seven factors emerged containing 25 items with no cross-loadings. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test was found to be minimally acceptable (0.660) and Bartlett's test of Sphericity was significant ($p < 0.001$).

Validity: The content validity of the items in this survey was examined. The EFA identified that the independent variables were measured by 2 items each, the mediating variable was measured by 1 item, music, and the dependent variables was measured by 2 items, taste preference and texture, a total of 5 items. The following table, Table 3.4, outlines the processes used to measure the reliability and validity of the scale, which adapted from a scale development (Zikmund et al., 2011; Pallant, 2010; Malhotra, 2009; Jones et al., 2006).

Table 3.4 Reliability and Validity

Measurement	Definitions	Assessment Strategies
Reliability: Scale reliability	Refers to the consistency of measure (Pallant, 2016).	Cronbach's Coefficient Alpha: assessing the multi-item scales in each theoretical construct, during the EFA stage (scale reliability) (Gow, 2017).
Validity	The extent to which a measure or set of measures correctly examine the concepts of a study determine the validity of the scale. (Zikmund et al., 2011)	The construct validity involves testing a scale as an overarching term to assess the validity of the measurement procedure that used to measure a given construct (Gow, 2017).
1. Convergent validity	An examination of the convergent validity test results showed that the items uniquely measured their respective constructs, as hypothesised (Hair et al. 2010).	In this study three measures were examined: <ul style="list-style-type: none"> • Factor Loadings: Items load on one factor without cross-loadings on another construct • Average Variance Extracted (AVE): Eigenvalue measures of the Average Variance Extracted (AVE) from the total variance, expressed by the correlation matrix • Cronbach's Alpha Test: Convergent validity indicated by reliability coefficient alpha >0.7 (Pallant, 2016).
2. Discriminant validity	One construct is distinct from other constructs (Zikmund et al., 2011)	Unrelated items load on different factors.

Source: Adapted from Zikmund et al. 2011; Pallant 2010; Malhotra 2009 and Jones Story, Clavisi, Jones, & Peyton, 2006)

3.7 Ethics

When human respondents are involved in a research study various ethical issues need to be given careful consideration (Malhotra, 2009). There are three ethical factors critical to human research: authenticity and credibility, anonymity and duty of care (Barnes, Penn-Edwards & Sim, 2015). Ethical considerations taken into account in this study included the issues of

anonymity, privacy and informed consent. This study went through a Low Risk Review Process and Application. Ethical clearance from the CQUniversity Ethics Committee was obtained prior to proceeding with the research (No. H15/11-250). The survey was conducted on what were deemed to be ethical terms by the CQUniversity Ethics Committee.

3.8 Conclusion

This chapter discussed the research method employed in this study. A brief explanation and justification for the use of the Positivism paradigm to support the research was provided. The study was designed to investigate relationships and empirically test hypotheses pertaining to the relationship of Personality and taste preference. SPSS Version 23 was used to store and statistically investigate data collected for this study. An explanation of how the research methodology underpinning the design of the online survey was offered. The development and administration of the data collection instrument, the test instrument, were discussed in Section 3.4. There were seven variables involved in this research; they consisted of personality characteristics, dining atmospherics and taste complexity attitudes. The sampling strategy was described in Section 3.5. The data analysis method, Exploratory Factor Analysis (EFA), was explained in Section 3.6. The next chapter, Chapter 4, presents the results of the data analysis.

Chapter 4 Data Analysis

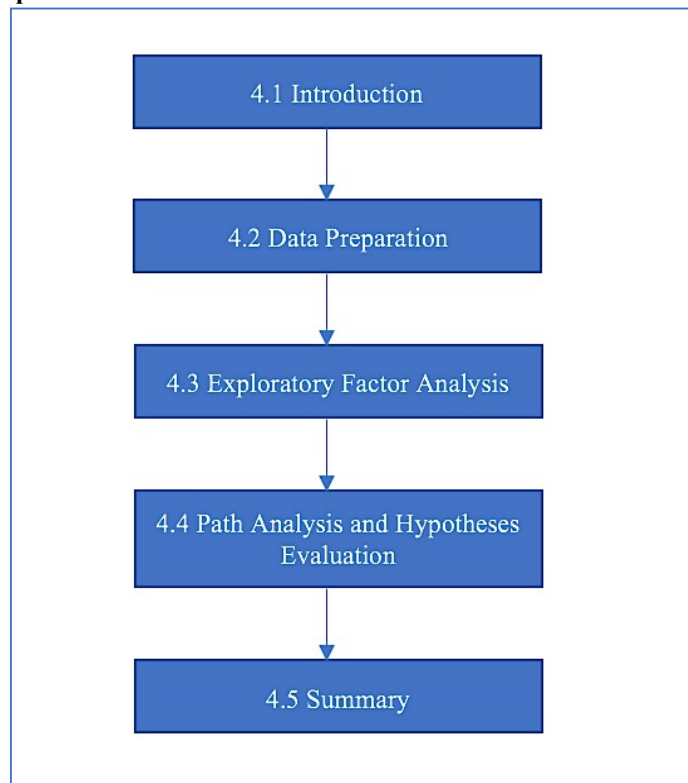
4.1 Introduction

This chapter explains the analysis of the quantitative primary data collected using the online survey process. The Vipada Food Studies (VFS) Profile was created for this study and distributed via Survey Monkey online, hosted by CQUniversity. The Key Survey program created an online link to the site containing the survey, <https://www.surveymonkey.com/r/3KS2GMZ>. Following the expiry of the online survey, the quantitative primary data collected from Survey Monkey was exported directly to SPSS 23.0 in .xl format. The survey gathered data from a total sample of 410 but there were 317 usable surveys. Data were analysed in several stages to minimise errors and abnormalities. A detailed description of the data set preparation, exploratory factor analysis, path analysis and hypotheses evaluation are provided in this chapter.

In Section 4.2 a description is given of the data preparation. Section 4.2.1 includes an explanation of the process of dealing with missing data during the data cleaning and data screening. Section 4.2.2 provides a descriptive analysis of respondents' profiles and an assessment of the normality of the distribution of the retained data. Section 4.3 reports on the Exploratory Factor Analysis (EFA) conducted on the data set. During the EFA stage of the data analysis, the factor structure was explored (Section 4.3.1) and factors were identified. The reliability and validity of the test instrument were examined in Sections 4.3.2 and 4.3.3. Upon completion of the data preparation, Path Analysis was applied to the cleaned data set to explore relationships among the independent variables (the five personality characteristics), the mediating variable

(atmospherics) and the dependent variable (taste complexity attitude) to evaluate the proposed hypotheses. Section 4.4 describes the application of Path Analysis and evaluation of the research hypotheses. The results derived from testing the research hypotheses are described in Section 4.4.1. Section 4.5 summarises the material included in Chapter 4. Figure 4.1 below depicts the five-part structure of Chapter 4.

Figure 4.1 Chapter 4 Outline



Source: Developed for this research

4.2 Data Preparation

The data preparation steps carried out in this study comprised data cleaning and data screening and the selection of items for inclusion in the data file created for use in testing the hypotheses (Zikmund et al., 2010). The following

sections will explain how these steps were implemented. The tabulated data sheet was extracted in .xls format from the 'Survey Monkey' system and transferred into a SPSS Version 23.0 database. From this database variables indicated by theory that pertained to the proposed hypotheses were extracted and placed in Data Set 3. An exploration of the characteristics of the raw data in Data Set 3 took place. The normality of the data set was examined before a more detailed analysis of data was undertaken (Tabachnick & Fidell, 2007). To achieve maximum accuracy in the results, missing data were dealt with during the preliminary stages of data cleaning and screening prior to undertaking Path Analysis.

4.2.1 Data Cleaning and Screening

A total of 410 surveys were returned and labelled Data Set 1. An audit of returned Data Set 1 was conducted. It was essential to check for data errors such as missing data before the data set was analysed. Each survey was examined to ensure that 1) the survey instructions had been followed and 2) the questionnaire had been completed.

Missing Data: Due to the 'required completion answer' constraint in Section 1 there was no missing data in this section of the returned surveys. However, since there were no exclusion constraints automatically applied to Section 2, among the 410 returned surveys there were some surveys with missing data. The extant literature has suggested various approaches to dealing with missing data. The first option is the deletion of the survey or variable containing missing data from the data set. This can lead to a loss of a substantial amount of data. Alternative approaches are the pairwise deletion, listwise deletion,

mean imputation, and, regression imputation (Hair et al., 2010; Tabachnick & Fidell, 2007). It is argued that there is no single best way to deal with missing values (Hair et al., 2010; Tabachnick & Fidell, 2007). For the purpose of this study incomplete surveys from respondents who attempted but did not complete the survey were deleted from Data Set 2.

Data cleaning: During the cleaning process, some incomplete surveys were found and these surveys were discarded. In the sections where ‘other’ made provision for the respondent to provide information, irrelevant comments were judged to invalidate the survey and these surveys were discarded. Responses deemed to be unreliable based on the detection of pattern responses also resulted in these surveys being excluded from the data set. Thus, unreliable or invalid survey responses were decided on the basis of (1) non-compliance with survey instructions or (2) response inconsistencies.

Non-compliance with survey instructions was found in surveys where responses to blocks of items were not supplied; for example, some respondents had failed to answer the taste preference questions. Another type of non-compliance error arose from respondents choosing the ‘other’ option and then providing the same information that could have been selected from one of the multiple options already provided by the researcher. These surveys were extracted from the data set during the data cleaning since there were no automatic restrictions imposed by non-compliance with field completion in Sections 2 and 3 of the questionnaire. The questionnaire was set up in such a way that respondents could not skip or miss any questions in Section 1. The restricted questions in Section 1, the demographic questions (Q1-3) and the

MINI-IPIP questions (Q4-23) ensured that all questions in Section 1 were completed. Uncompleted responses in Section 1 did not allow the participant to progress to Section 2, thereby causing participants who failed to answer all the questions in Section 1 to be excluded automatically from participation in the remainder of the survey before data were extracted in .xls format from the 'Survey Monkey' system and transferred into a SPSS Version 23.0 database.

Evidence of response inconsistency was judged according to three criteria: a) contradictory responses to items 32, 33 and 34, b) internal inconsistency among items 4, 9, 14, 19, 32, 33, 34, 40, 41 and 42, and, c) pattern responses. These surveys were extracted from the data set during the data cleaning. After data cleaning, 93 of the 410 returned surveys were deemed to be unacceptable for use in this research study. Data set 3 was created from the remainder of the surveys and contained 317 sets of survey responses (77.31% response rate).

Data Screening on Data Set 3 followed the guidelines of Pallant (2016). The data screening process was composed of three activities: 1) Category component and label modification to fit succinct variable labels into the allocated heading space in the SPSS program, 2) selection of appropriate variables on the basis of theory to test the proposed hypotheses, and, 3) Item reduction during the EFA. To ensure the multivariate analysis requirement of complete data was met, a further check of data in Data Set 3 for missing data was undertaken. A descriptive analysis was run on Data Set 3 (Pallant, 2016).

Mahalanobis Multivariate Outlier Analysis was also conducted during Path Analysis to evaluate the hypotheses (Section 4.4). *Mahalanobis* distance was observed to check for multivariate normality. *Mahalanobis* distance is a well-

known distance measure that takes into account the covariance matrix. It also refers to the distance of a particular case from the centroid of the remaining cases, where the centroid is the point created by the means of all the variance (Tabachnick & Fidell, 2007). In this study, Mahalanobis distance was calculated by comparing the chi-square distribution with Degrees of Freedom equal to the number of predictors ($1 - \text{CDF.CHISQ}(\text{MAH_35}, 6)$), the results fell between 0.00329 to 0.99918 and they were greater than $p < 0.001$; therefore, there were no values showing an outlier in this dataset. There were no missing values in the Data Set 3.

4.2.2 Response Profile

Initially the online survey was available on Survey Monkey for a period of six months during March – August 2016 for dissemination among pilot test panel members. There was a completed response rate of 18.18%. This is acceptable for online survey student research where response rates are far lower than offline methods (Sax et al., 2003).

Table 4.1 Sample Characteristics Demographic Distribution by Age, Gender and Country of Origin of Survey Respondents

Demographic (N=317)	Percent of Sample (%)
Age Group	
18 – 24	17.4%
25 – 34	20.5%
35 - 44	25%
45- 54	16.4%
55 years old and over	21%
Gender	
Female	57.1%
Male	42.9%
Region of Origin	
Oceania (Australia, New Zealand, Papua New Guinea, Pacific Islands)	73%
Asia	12%
Europe	11.7%
Others	4%

Source: Survey data

A total of 317 participants, of whom 57.1% (N=181) were female, completed this survey. There was a range of ages from 18 - 55 years old and over. The majority of respondents fell into the age groups of 35 - 44 years (25%). The 55 years and over category comprised 21% of the respondents while the 25 - 34 years comprised 20.5% of the respondents and 16.4% of respondents fell into the 45 - 54 years' category (see Table 4.1). Of the 317 participants, about 73% (N=230) were born in Oceania (Australia, NZ, Papua New Guinea, Pacific Islands), another 12% were born in Asia (N=38), another 11.7% were born in Europe (N=37), and, less than five percent were born elsewhere.

4.3 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was undertaken to investigate the

relationships between the variables in this study. The data set employed during the EFA consisted of 317 survey responses, a sufficiently large number to ensure that the results for a complex model were meaningful (Hair et al., 2010). The suitability for factor analysis of the data set was verified by a Kaiser-Meyer-Olkin Measure of Sampling Adequacy test value of 0.681. Furthermore, the adequacy of the correlation matrix, as indicated by Bartlett's Test of Sphericity ($p=.000$), also indicated that the EFA factorability solution was acceptable (Pallant, 2016). The validity of the test instrument was assessed using SPSS tools. Information derived from the EFA statistical analysis established which factors were the best factors representing the data. To ensure questionnaire items measured the variables they were designed to measure, the factor structure was examined. Criteria for measures of suitability were met indicating that there were significant correlations among the variables and thus Data Set 3 was considered suitable for factor analysis. EFA was implemented prior to undertaking Path Analysis to test the study's hypotheses.

4.3.1 Factor Identification

Variables were assigned initially to constructs based on the theory reported in the literature. The EFA utilised SPSS 23.0 to summarise the patterns of correlations among the 26 bipolar semantic differential scale survey items to reveal the structure of the variables in the data set (Pallant, 2016). Closely related items grouped together under numbered factor headings to reveal the scale's underlying factorial structure.

Following a positive assessment of data acceptability for factor analysis, factors were extracted on the basis of eigenvalues, communality and

component matrix values, and, the Cattell Screeplot (Ho, 2014). The Principal Components (PC) method, with correlation coefficients less than 0.33 being eliminated, was used in the initial factor extraction to reveal the suitability of different numbers of factors before determining the most appropriate number of factors to be used (Pallant, 2016). This was followed by Direct Oblim (oblique) factor rotation with a delta parameter of zero; the number of iterations was fourteen. Nine factors accounted for 66.07% of the variance.

Two criteria were used to identify items for deletion: (1) a non-significant loading and (2) cross-loading. The results of the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) test and the significance given by the Bartlett's Test of Sphericity (BTS) test were examined. To ensure the scale remained reliable after item deletion, the Cronbach alpha test was used to evaluate the internal coherence of all the latent variables (Miller, 2013; Tabachnick & Fidell, 2007).

4.3.1.1: Suitability of the Data for Factor Analysis

The sample size should be over 100 (basic rule of thumb) or the sample size should be at least five times as many cases as variables entered into factor analysis (Ho, 2014). The sample size (317) in this study exceeded the minimum recommended sample size (50). From the initial factor analysis nine factors emerged. These nine factors accounted for 13.92%, 23.69%, 31.73%, 39.24%, 46.24%, 51.88%, 57.23%, 62.19%, and 66.07% of the variance. The Scree Plot, however, suggested that a seven-factor solution would be more appropriate.

To identify what these factors represented, it was necessary to consider which items loaded on each of the nine factors. An inspection of the items in factors 1 and 2 in the Pattern Matrix table indicated that the three items in each of these two factors appeared to reflect the personality characteristic of '*Agreeableness*'. The lowest loading item in each of these two factors did not cluster conceptually with the remaining two items in each of the factors. The four items loading in factor 3 reflected the personality characteristic of '*Conscientiousness*'. Factor 4 contained three items that reflected the '*Atmospherics*' within the restaurant. Factor 5 items reflected the personality characteristic of '*Extraversion*' while the two items in factor 6 reflected '*Taste Complexity*'. Factor 7 contained four items, all reflecting the personality characteristic of '*Imagination*'. Factor 8 also contained four items and these reflected the personality characteristic of '*Neuroticism*'. Factor 9 consisted of one item, '*Taste Extremity*'.

One item loaded above 0.9 and this was 'taste extremity' (0.95) but it was the only item in factor 9. Four items loaded above 0.8 and these were: 'forgot to put things back' (0.8), 'the level of lighting' (0.8), 'the level of noise or music' (0.8), and, 'good imagination' (0.8). Two items loaded negatively and these were 'taste texture' (-0.88) and 'taste appearance' (-0.84). Eleven items loaded above 0.7 and these were: 'feel others emotion' (0.79), 'talk to a lot of different people at parties' (0.78), 'sympathise' (0.77), 'interested in people's problems' (0.76)(R), 'vivid imagination' (0.76), 'am the life of the party' (0.76), 'mood swings' (0.75), 'do not talk a lot' (0.74)(R), 'keep in the background' (0.74)(R), 'relaxed most of the time' (0.74)(R), and, 'the table position' (0.71).

Three items loaded above 0.6 and these were: ‘chores done right away’ (0.69), ‘not really interested in others’ (0.63)(R) and ‘difficulty understanding abstract ideas’ (0.6). Of the remaining three items, three loaded above 0.5: ‘make mess’ (0.58)(R), ‘like order’ (0.57)(R) and ‘interested in abstract ideas’ (0.5). One item loaded above 0.4 and it was ‘seldom blue’ (0.49). ‘Interested in abstract ideas’ and ‘relaxed most of the time’ also both loaded in factors 1 and 2, with loadings of 0.33 so, by an iterative process raising the initial value from 0.33 to 0.44, they were eliminated from these factors; that is, items that did not load above 0.44 were deleted from factors. The statistics and, from a theoretical perspective, the cohesiveness of items in a seven-factor solution were evaluated and this process confirmed the suitability of the allocation of items within seven factors. Determination of the suitability of the variables for factor analysis was established on the basis of the KMO and BTS results. The KMO value of 0.68 (>0.6) and a significant BTS ($p=0.000$) indicated that the EFA factorability solution was acceptable.

4.3.1.2: Factor extraction, rotation and interpretation

In this study, it was expected that factors would be correlated so factor extraction was applied to Data Set 3. The fixed number of factors to extract was set to seven. The *Total Variance Explained Table* showed that seven components recorded eigenvalues of 1 or greater than 1. These components explained a total of 57.26% of the variance. Information situated in the *Communalities Table*, *Component Matrix Table* and the *Cattell Screeplot* was examined prior to making a final decision about the best number of factors to be retained since dependence on the Kaiser Criterion to identify the factorial

components of the scale may result in the extraction of too many components (Pallant, 2016).

The *Communalities Table* indicated that no items had a low value (less than 0.3) so the items fitted well with other component items (Pallant, 2016). With the exception of one item, the majority (23 items) of the rest of the 26 items was high. The high items were: ‘vivid imagination’ (0.71), ‘keep in the background’ (0.7)(R), ‘good imagination’ (0.68), ‘talk to a lot of different people at parties’ (0.67), ‘the level of lighting’ (0.66), ‘interested in other people’s problems’ (0.65)(R), ‘am the life of the party’ (0.63), ‘taste texture’, (0.63), ‘the level of noise or music’ (0.63), ‘difficulty understanding abstract ideas’ (0.63)(R), ‘upset easily’ (0.63), ‘mood swings’ (0.61), ‘forget to put things back’ (0.61)(R), ‘feel others emotions’(0.57), ‘not very interested in others’ (0.57)(R), ‘chores done right away’ (0.58), ‘eating out taste appearance’ (0.57), ‘do not talk a lot’ (0.56)(R), ‘make mess’ (0.55)(R), ‘interested in abstract ideas’ (0.55)(R), ‘the table position’ (0.52), ‘like order’ (0.52), ‘sympathy’(0.50). Two items were reasonably low: ‘seldom blue’ (0.39)(R) and ‘relaxed most of the time’ (0.39). One item, ‘taste extremity’, had a very low value (0.14) and it was eliminated.

The unrotated loadings provided in the *Component Matrix Table* showed that most of the items loaded quite strongly (above 0.4). The *Screeplot* demonstrated that there was a significant break after the first seven components with the seventh component explaining 57.26% of the variance. Coefficients less than 0.33 were suppressed and the *Pattern Matrix Table*, having evolved in 24 iterations, indicated that the majority of the items loaded above 0.4 across

seven factors. At least three items loaded on each component. While most items loaded strongly on only one factor, there were five items loading on more than one factor. Direct Oblimin was employed to obliquely rotate the factors to assist with the interpretation of the items clustering together (Pallant, 2016). An iterative process raising the initial value from 0.33 to 0.4 was undertaken to eliminate cross-loading items on the seven-factor solution; that is, items that did not load above 0.4 were eliminated. This resulted in only two items loading on the sixth factor although all of the other six factors had three or more items in them. Items in each of the seven factors were then inspected from a theoretical perspective for their cohesiveness within the factor.

At the conclusion of the factor extraction, rotation and interpretation procedure seven factors emerged containing 25 items with no cross-loadings. The Pattern Matrix showed that the four items in the first factor were loaded from -0.5 to -0.77 and this factor clearly reflected the personality characteristic of *Neuroticism*. The second factor had four items quite highly loaded, between 0.64 and 0.77, and this factor was labelled *Agreeableness*. Four items in the third factor loaded between 0.5 and 0.75 and this factor was labelled *Conscientiousness*. Three items in the fourth factor loaded between 0.73 and 0.8 and this factor was labelled *Atmospherics*. Four items in the fifth factor loaded quite highly between 0.7 and 0.79 and this factor was labelled *Extraversion*. Two items in the sixth factor, labelled *Taste Complexity*, loaded on -0.73. Four items in the seventh factor loaded between 0.56 to 0.79 and this factor was labelled *Imagination*. Sections 4.3.3 and 4.3.4 describe the assessment of the test instrument's internal consistency and validity.

4.3.2 Reliability

To ensure the scale was reliable the internal coherence of all latent variables was examined (Pallant, 2016; Tabachnick and Fidell, 2007). The reliability of a scale is the ability of that scale to measure consistently the phenomenon it is designed to measure. Cronbach's Alpha is the most commonly used statistic to determine the reliability of the test and, ideally, a minimum level of reliability of 7.0 for Cronbach's Alpha coefficient was considered to be an acceptable standard (Pallant, 2016; Ho, 2014). The existing literature emphasised that multi-item measures provide a better reflection of reality in the results (Burn & Bush, 2014; Neuman, 2013). The multiple items retained in each of the final sets of items representing the seven constructs included in the model were tested to establish their Cronbach's Alpha Co-efficient; each of these constructs was tested separately. There were five independent constructs (5 x 4 items), a mediating construct (3 items) and a dependent construct (2 items).

The SPSS reliability analysis of the five independent constructs produced Cronbach's Alpha Co-efficients of: *Extraversion* (0.78), *Agreeableness* (0.69), *Imagination* (0.67), *Neuroticism* (0.65) and *Conscientiousness* (0.61). The Cronbach's Alpha Co-efficient of *Neuroticism* could be improved from 0.65 to 0.68 with the removal of the 'seldom feel blue' item. The Cronbach's Alpha Co-efficient for the mediating construct of *Atmospherics* was 0.7 and the Cronbach's Alpha Co-efficient for the dependent construct of *Taste Complexity* was 0.73. After removing the 'seldom feel blue' item, the reliability statistic for the overall scale (containing 24 items) was 0.6, close to the preferred range of 0.7 or greater, thereby indicating that the internal consistency within the scale

was reasonable (Pallant, 2016). The reliability of each one of the seven rotated components was then examined.

(1) *Extraversion*: As shown in Table 4.2, all four items loaded strongly with values above the threshold (0.300). The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy Test result was acceptable (0.735) and the Bartlett's Test of Sphericity was significant ($p=.000$). The Cronbach's Alpha Test of item-test reliability showed that the reliability of the four items was 0.776, thus being acceptable ($\geq .700$). The loadings of the four surveys item indicator variables (item 5, item 10, item 15, item 20), are presented in Table 4.2.

Table 4.2 Extraversion

Variable	Factor loading	Cronbach Alpha	KMO	Bartlett's sig.
Am the life of the party	0.779	0.78	0.731	0.000
Talk to a lot of different people at parties	0.785			
Keep in the background (R)	0.734			
Do not talk lot (R)	0.702			

Source: Analysis of test instrument data

(2) *Agreeableness*: As shown in Table 4.3, all four items loaded strongly with values above the threshold (0.300). The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy Test result was acceptable (0.641) and the Bartlett's Test of Sphericity was significant ($p=.000$). The Cronbach's Alpha Test of item-test reliability showed that the reliability of the four items rounded up to 0.7 and was thus acceptable ($\geq .700$). The loadings of four indicator variables (item 6, item 11, item 16, item 21) are presented in Table 4.3.

Table 4.3 Agreeableness

Variable	Factor loading	Cronbach Alpha	KMO	Bartlett's sig.
Sympathise with other feelings	0.636	0.69	0.641	0.000
Feel other emotions	0.664			
Not very interested in others (R)	0.646			
Not interested in other people's problems (R)	0.765			

Source: Analysis of test instrument data

(3) *Openness/Imagination*: As shown in Table 4.4, all four items loaded with values between 0.56 and 0.7. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy Test result rounded up to 0.6 and the Bartlett's Test of Sphericity was significant ($p=.000$). The Cronbach's Alpha Test of item-test reliability showed that the reliability of the four items rounded up to 0.7 and was thus acceptable ($\geq .700$). The loadings of the four indicator variables (item 9, item 14, item 19, item 24) are presented in Table 4.4.

Table 4.4 Openness/Imagination

Variable	Factor loading	Cronbach Alpha	KMO	Bartlett's sig.
Have a vivid imagination	0.705	0.67	0.585	0.000
Have difficulty understanding abstract ideas (R)	0.652			
Am not interested in abstract ideas (R)	0.563			
Do not have a good imagination (R)	0.794			

Source: Analysis of test instrument data

(4) *Neuroticism*: As shown in Table 4.5, all four items loaded strongly with values above the threshold (0.300). The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy Test result was 0.648 and the Bartlett's Test of

Sphericity was significant ($p=.000$). The Cronbach's Alpha Test of item-test reliability showed that the reliability of the four items was 0.65 and thus reasonably close to being acceptable ($\geq .700$). The loadings of the four indicator variables (item 8, item 13, item 18, item 23) are presented in Table 4.5.

Table 4.5 Neuroticism

Variable	Factor loading	Cronbach Alpha	KMO	Bartlett's sig.
Have frequent mood swings	-0.765	0.65	0.648	0.000
Get upset easily	-0.722			
Am relaxed most of the time (R)	-0.561			
Seldom feel blue	-0.503			

Source: Analysis of test instrument data

(5) *Conscientiousness*: As shown in Table 4.6, all four items loaded strongly with values above the threshold (0.300). The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy Test result was 0.63 and the Bartlett's Test of Sphericity was significant ($p=.000$). The Cronbach's Alpha test of item-test reliability showed that the reliability of the four items was 0.61, close to being considered acceptable ($\geq .700$). The loadings of four indicator variables (item 7, item 12, item 17, item 22) are presented in Table 4.6.

Table 4.6 Conscientiousness

Variable	Factor loading	Cronbach Alpha	KMO	Bartlett's sig.
Get chores done right away	0.738	0.61	0.631	0.000
Like order	0.658			
Often forget to put things back in their proper place (R)	0.749			
Make a mess of things (R)	0.498			

Source: Analysis of test instrument data

(6) *Atmospherics*, all three items in factor 4 loaded with values above the threshold (.300) and the three item test reliability result of 0.7 produced by the Cronbach's Alpha Test indicated that there was overall internal consistency among the three items representing *Atmospherics*. A KMO of 0.69 and significant Barlett's Test of Sphericity ($p=.000$) suggested that the scale was reliable and the internal consistency of the scale was acceptable (Pallant, 2016). Based on these outcomes, the three indicator variables (item 25, item 26, item 27) are acceptable. This information is summarised in Table 4.7.

Table 4.7 Dining-out Atmospherics

Variable	Factor loading	Cronbach Alpha	KMO	Barlett's sig.
Level of noise or music	0.796	0.7	0.648	0.000
The table position	0.727			
The level of lighting	0.803			

Source: Analysis of test instrument data

(7) *Taste Complexity*: Three items loaded in factor 6. One was eliminated when the absolute value was raised to 0.44 as it has a low loading of -0.355. The other two items had high loadings, -0.734 and -0.726 The Cronbach's Alpha

co-efficient of 0.73 indicated that the scale was reliable and the internal consistency of the items was acceptable. A KMO of 0.65 and significant Bartlett's test suggested that the factorisability of the variables was acceptable (Pallant, 2016). Based on these outcomes, the two indicator variables (item 28, item 29) were acceptable. The outcomes are presented in summary form in Table 4.8.

Table 4.8 Taste Complexity Attitude

Variable	Factor loading	Cronbach Alpha	KMO	Barlett's sig.
Taste Appearance	-0.734	0.73	0.5	0.00
Taste Texture	-0.726			

Source: Analysis of test instrument data

4.3.3 Validity

The extent to which a measure or set of measures correctly examine the concepts of a study determine the validity of the scale. Using the SPSS assessment tools, the validity of the scale was assessed in this study by examining the results provided during the exploratory factor analysis (EFA) (Malhotra, 2009). The convergent and discriminant validity test results indicated that there was an adequate degree of unidimensionality within and between the constructs. The following paragraphs discuss the findings of the validity tests.

4.3.3.1 Convergent Validity

An examination of the convergent validity test results showed that the items uniquely measured their respective constructs, as hypothesised. In this study three measures were examined: Factor Loadings, Average Variance Extracted

(AVE) and Cronbach's Alpha Test results. 1) The EFA results showed that the factor loadings of *Extraversion* items varied between 0.78 and 0.70, *Agreeableness* items varied between 0.76 and 0.65, *Imagination* items varied between 0.79 and 0.56, *Neuroticism* items varied between 0.76 and 0.50, *Conscientiousness* items varied between 0.75 and 0.5, *Atmospherics* items varied between 0.8 and 0.73 and both the *Taste Complexity* factors were 0.7. Standardised loadings should be a minimum of 0.5 and ideally 0.7 or higher as a good rule of thumb (Hair et al., 2010) (see Table 4.10). While the loadings in three factors were above the higher recommended loading, all of the loadings were above the minimum criterion.

2) The average variance extracted was computed for each of the latent constructs using the square root of total variance. The results showed that the AVE of *Atmospherics* was greater than 60% (or 0.6) and *Extraversion* and *Taste Complexity* were greater than 50% (or 0.5) while *Agreeableness* (0.46), *Imagination* (0.48), *Neuroticism* (0.42) and *Conscientiousness* (0.45) were almost 0.5, suggesting that the convergent validity for each of the constructs was acceptable or close to acceptable (Hair et al., 2010).

3) Whether items are measuring the same latent construct consistently can be determined from observing the Cronbach's Alpha Test results. Cronbach's Alpha values of 0.5 and below are considered indicators of poor performance, while construct consistency is confirmed when the test result is 0.7 or higher (Hair et al., 2010). The Cronbach's Alpha coefficients for each of the constructs fell very close to 0.7 and 0.8, thereby suggesting that each of the latent constructs was convergent. The three methods used to assess convergent

validity indicated that the convergent validity of the scales was, overall, quite satisfactory.

Table 4.9 Convergent Validity

Constructs	Factor Loadings	Average Variance Extracted (AVE)	Cronbach's Alpha Test
Extraversion	Between 0.7 and -0.78	0.56	0.78
Agreeableness	Between 0.65 and 0.76	0.46	0.69
Imagination	Between 0.79 and 0.56	0.48	0.67
Neuroticism	Between 0.76 and 0.50	0.42	0.65
Conscientiousness	Between 0.75 and 0.5	0.45	0.61
Atmospherics	Between 0.8 and 0.73	0.60	0.7
Taste Complexity	0.7	0.53	0.73

Source: Analysis of test instrument data

4.3.3.2 Discriminant Validity

The discriminant validity test results demonstrate whether one construct is uniquely different from other constructs in the model. Available in SPSS is Principal Components Analysis with Varimax Rotation, seven pairs entered (pairwise items), and this was used to establish whether two components were extracted for each pair of constructs. The model modification indices for the five-factor model indicated there were cross-loadings for a few items (Cooper, Smillie & Corr, 2010). Cross-loading of items across the factors was insignificant. All items had strong factor loadings on their primary factor. Only one item exhibited a potentially problematic cross-loading; the *Conscientiousness* item 'Make a mess of things' had a moderate negative loading (-.458) on the *Neuroticism* factor.

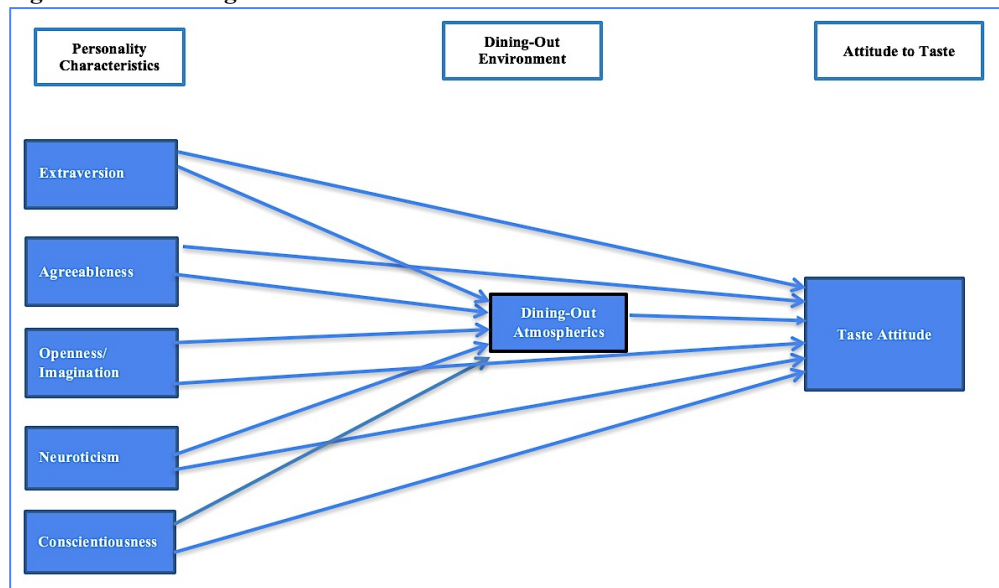
The first factor (*Extraversion*), the third factor (*Agreeableness*) and the fourth

factor (*Imagination*) had four components extracted. In the fifth factor (*Atmospherics*), there were three items loading and the seventh factor (*Taste Complexity*) had two items loading. The second factor (*Neuroticism*) had five components loading, with one cross-loading with the sixth factor (*Conscientiousness*) which had four components and it was ‘Make a mess of things’ (R) (See Appendix B). These results indicated that the discriminant validity of each of the constructs was established.

Summation of EFA, reliability and validity testing: EFA revealed the factorial structure of the test instrument items designed to examine personality characteristics, atmospherics and taste complexity attitude. The EFA identified items that loaded significantly on factors to ensure that factors included in the theoretical framework corresponded with the constructs proposed on the basis of theory (Pallant, 2016; Ho, 2014). The theoretically proposed constructs aligned with indicator variables. The results of convergent validity and discriminant validity tests showed that there was a substantial degree of unidimensionality within and between the constructs. The seven items represented *Extraversion*, *Agreeableness*, *Imagination*, *Neuroticism*, *Conscientiousness*, *Atmospherics* and *Taste Complexity Attitude*. The EFA procedure identified the measurement variables representing the latent constructs. The following section discusses the application of Path Analysis to the data and the results from this statistical procedure are used to evaluate the research study’s hypotheses.

4.4 Path Analysis and Hypotheses Evaluation

Path Analysis is an extension of Multiple Regression Analysis. Path Analysis is a commonly established and well-documented statistical procedure in the Consumer Behaviour parent discipline. It is used to describe the linkages between independent variables (IVs) and dependent variables (DVs) posited on the basis of theory (Ho, 2016). To further the examination of the effects of personality characteristics on atmospherics and taste complexity attitude, the hypothesised relationships among these variables were presented diagrammatically in the Path Analysis model (Figure 4.2). The model specified an ordering among the variables that reflected the hypothesised structure of cause-effect linkages. The Path Analysis form of the Multiple Regression technique was used to determine the magnitude of direct and indirect influences that each variable had on other variables that followed it in the presumed order (as indicated by the direction arrows). Through this particular regression technique, the strength of each separate path could be estimated. This analysis actually involved two regression equations: (1) taste complexity attitude was the dependent variable (DV) for six independent variables (IVs) (five personality characteristics and atmospherics), (2) atmospherics is the dependent variable (DV) for the five independent variables (IVs), the five personality characteristics.

Figure 4.2 Path diagram

Source: Developed for this research

To establish the relationships among the five personality characteristics (IVs), atmospherics (MV) and taste complexity attitude (DV), two standard multiple regression tests were performed. To ensure data were suitable for multiple regression analysis four criteria were evaluated: (1) the sample size requirement, whereas $N > 50 + 8m$ (where m = number of independent variables), (2) multicollinearity and singularity, (3) outliers, and, (4) normality, linearity, homoscedasticity and independence of residuals (Pallant, 2016).

There was a requirement for two structural equations (EQ1 and EQ2) representing the path model depicted in Figure 4.3 in order to compute path coefficients in the path model where there were two endogenous variables (taste complexity attitude and atmospherics).

(1) The path coefficients among taste complexity (DVs) and the five personality characteristics and atmospherics were entered as independent variables (IVs).

(2) The path coefficients among atmospherics (DV), and the five personality characteristics were entered as independent variables (IVs).

The prediction equation is $Y = a + b_1x_1 + e$, where Y is the dependent variable, a is the constant (or intercept), and x is a dichotomous variable taking the value of 1 if the subject is assigned to the treatment group and e is a disturbance (or error) term.

The two equation models (EQ1 and EQ2) are presented in Figure 4.2, below.

Figure 4.3 Equation Models

$$EQ1: \text{Taste Complexity Attitude} = a_1 + b_1 \text{ Extraversion} + b_2 \text{ Agreeableness} + b_3 \text{ Conscientiousness} + b_4 \text{ Neuroticism} + b_5 \text{ Imagination} + b_6 \text{ Atmospherics} + e_1$$

$$EQ2: \text{Atmospherics} = a_2 + b_7 \text{ Extraversion} + b_8 \text{ Agreeableness} + b_9 \text{ Conscientiousness} + b_{10} \text{ Neuroticism} + b_{11} \text{ Imagination} + e_2$$

Source: Developed for this research

(EQ1) The path coefficients among *Taste Complexity Attitude* (DV), the five *Personality Characteristics* and *Atmospherics* (IVs) were obtained by regressing the former on the latter. The first regression analysis results in the *Coefficients Table* showed all six independent variables (IVs) entered into the prediction equation. The Beta values presented in the Standardised Coefficients column represented the standardised regression coefficients among taste complexity (DV) and the five personality characteristics and atmospheric (IVs).

The *Model Summary* table showed that the simple R (Pearson product-moment correlation) was 0.246 and the R-square was 0.6. Thus, for this sample, six

predictor variables, *Extraversion*, *Agreeableness*, *Imagination*, *Neuroticism*, *Conscientiousness* and *Atmospherics*, explained 60% of the variance in the dependent variable *Taste Complexity Attitude*. The ANOVA table presented results from the test of the null hypothesis that R-square is zero. An R-square of zero would indicate that there was no linear relationship between the predictor and dependent variables. The ANOVA table showed that the computed F statistic is 3.322, with an observed significance level of less than 0.003. Thus, the hypothesis that there is no linear relationship between the predictor and dependent variable was rejected.

Multicollinearity Tolerance and Variance Inflation Factor (VIF) reported in the *Coefficients Table* were checked. Multicollinearity is present in a regression model when two or more independent variables have a very high correlation ($r=0.9$ and above) (Gow, 2017; Pallant, 2016). Tolerance value is an indicator of how much of the variability of the specified independent is not explained by the other independent variables in the model and is calculated using the formula $1-R^2$ for each variable. The VIF is the inverse of the Tolerance value (1 divided by Tolerance) and a VIF value above 10 would indicate multicollinearity. In this regression, the tolerance value for each independent variable was between 0.883 and 0.990 which is greater than 0.10. The VIF value, which is between 1.010 and 1.147, is below the cut-off of 10. The standardised Beta coefficient measure represented the standardised regression coefficients between the dependent variable (*Taste Complexity Attitude*) and the predictor variables (five *Personality Characteristics* and *Atmospherics*). The Beta coefficient results showed that *Agreeableness* was positive 0.209 and

statistically significant at the 0.000 level (Beta = 0.209, $t=3.571$, $p<0.000$). The Beta coefficient for *Conscientiousness* was positive 0.106 and statistically it was very close to being significant at 0.058 (beta = 0.209, $t=3.571$, $p=0.058$ which is slightly >0.05).

The *Normal Probability Plot (P-P)* and the *Scatterplot of the Regression Standardised Residual* were checked as part of the analysis. The *Normal Probability Plot (P-P)* fell along a reasonably straight diagonal line from bottom left to top right, between 0.0 and 1. The *Scatterplot of the Regression Standardised Residual* outliers were between 2 and -3 and the distribution was roughly rectangular, with most of the scores concentrated in the centre (along the 0 point). The path coefficient (EQ1) results among taste complexity (DV) and the five personality characteristics and atmospherics (IVs) are summarised in Table 4.10.

Table 4.10 The path coefficient results (the personality characteristics and dining-out atmospherics)

DV	IVs	B	SE	Beta	t	Sig.
Taste Complexity	Extraversion	-0.006	0.06	-0.006	-0.105	0.917
Taste Complexity	Agreeableness	0.264	0.074	0.209	3.571	0.000
Taste Complexity	Conscientiousness	0.128	0.067	0.106	1.903	0.058
Taste Complexity	Neuroticism	-0.039	0.066	-0.034	-0.558	0.558
Taste Complexity	Imagination	0.018	0.070	0.015	0.262	0.794
Taste Complexity	Atmospherics	0.013	0.033	0.022	0.396	0.692

Source: Analysis of test instrument data

As indicated in Table 4.10, one of the five personality characteristics, *Agreeableness* (IDV), and *Taste Complexity Attitude* (DV) had a significant coefficient ($P>0.05$). The coefficient between *Conscientiousness* (IV) and

Taste Complexity Attitude (DV) was very close to being significant. This meant that participants who were more agreeable were likely to rate their taste complexity attitude toward the meal more positively. Also, participants who were more conscientious were slightly more likely than not to rate their taste complexity attitude toward the meal more positively. By contrast, participants who were more extraverted, imaginative or neurotic were less likely to rate the taste complexity of the meal positively and therefore, these relationships were not significant.

(EQ2) The path coefficients between *Atmospherics* (DV) and the five *Personality Characteristics* (IV) were obtained by regressing the former with the latter. The results from the *Coefficients Table* generated from the second regression analysis showed that all five *Personality Characteristics* were non-significant predictors of *Atmospherics*.

The *Model Summary* table showed that the simple R (Pearson product-moment correlation) was 0.097 and the R-square was 0.01. For this sample, the five *Personality Characteristics* predictor variables, *Extraversion*, *Agreeableness*, *Imagination*, *Neuroticism* and *Conscientiousness*, explained 10% of the variance in the dependent variable of *Atmospherics*. The *ANOVA* table presented results from the test of the null hypothesis that R-square is zero. An R-square of zero would indicate no linear relationship between predictor and dependent variables. The *ANOVA* table showed that the computed F statistic is 0.597, with an observed significance level of less than 0.70. Thus, the hypothesis that there was no linear relationship between the predictor and dependent variable was rejected.

Multicollinearity Tolerance and Variance Inflation Factor (VIF) values in the *Coefficients* table were checked. In this regression, the tolerance value for each independent variable fell between 0.878 and 0.980, which was less than 0.10 and the VIF value, which was situated between 1.109 and 1.142, was below the cut-off of 10. The standardised Beta coefficient was between the predictor variables (five *Personality Characteristics*) and the dependent variable (*Atmospherics*). The Beta coefficient results showed that there were two positive Beta coefficients: *Imagination* was positive 0.071 (Beta = 0.071, $t=1.170$, $p=0.243$ which is >0.05) and *Neuroticism* was 0.009 (Beta = 0.009, $t=0.151$, $p=0.880$ which is >0.05). In contrast, there were three negative Beta coefficients: *Extraversion* was -0.059 (Beta=-0.059, $t=-0.98$, $p=0.326$ which is >0.05), *Agreeableness* was -0.001 (Beta=-0.001, $t=-0.015$, $p=0.988$ which is >0.05) and *Conscientiousness* was -0.051 (Beta=-0.051, $t=-0.886$, $p=0.376$ which is >0.05).

The *Normal Probability Plot (P-P)* and the *Scatterplot of the Regression Standardised Residual* were checked as part of the analysis. The *Normal Probability Plot (P-P)* fell on an S-shaped line rising from the bottom left, between 0.0 and 0.2, with a slight curve in the middle, between 0.3 and 0.6 and rose up to between 0.7 and 1. The *Scatterplot* of the regression standardised residual outliers was between 2 and -3 and distributed within a roughly rectangular shape, with most of the scores concentrated in the centre (along the 0 point). The path coefficient (EQ2) results among atmospherics (MV) and the five personality characteristics (IVs) are summarised in Table 4.11.

Table 4.11 The path coefficient results among atmospheric (MV), and the five personality characteristics (IVs)

MV	IVs	B	SE	Beta	t	Sig.
Atmospherics	Extraversion	-0.100	0.102	-0.059	-0.983	0.326
Atmospherics	Agreeableness	-0.002	0.126	-0.001	-0.015	0.988
Atmospherics	Imagination	0.139	0.118	0.071	1.170	0.243
Atmospherics	Neuroticism	0.017	0.112	0.009	0.151	0.880
Atmospherics	Conscientiousness	-0.101	0.114	-0.051	-0.886	0.376

Source: Analysis of test instrument data

Table 4.11 represented the path model results with the estimated regression coefficient (Beta values) associated with the hypothesised paths. It indicated that none of the five personality characteristics, *Extraversion*, *Agreeableness*, *Imagination*, *Neuroticism* and *Conscientiousness*, had any effect on *Atmospherics* (lighting, music and table layout) in the dining-out venue.

4.4.1 Hypothesis Testing and Results

In this section, hypotheses developed for this research were evaluated using the reported outcome results of the data analysed. The research question, issues and hypotheses were developed at the conclusion of the literature review. The hypotheses were concerned with the relationships between the theoretical model constructs and these relationships were tested using Path Analysis. Path coefficients and significance levels between the constructs included in the path model were examined during the hypotheses assessment process. Table 4.12 presents a summary of the research question and related hypotheses, in addition to test results arrived at using Path Analysis.

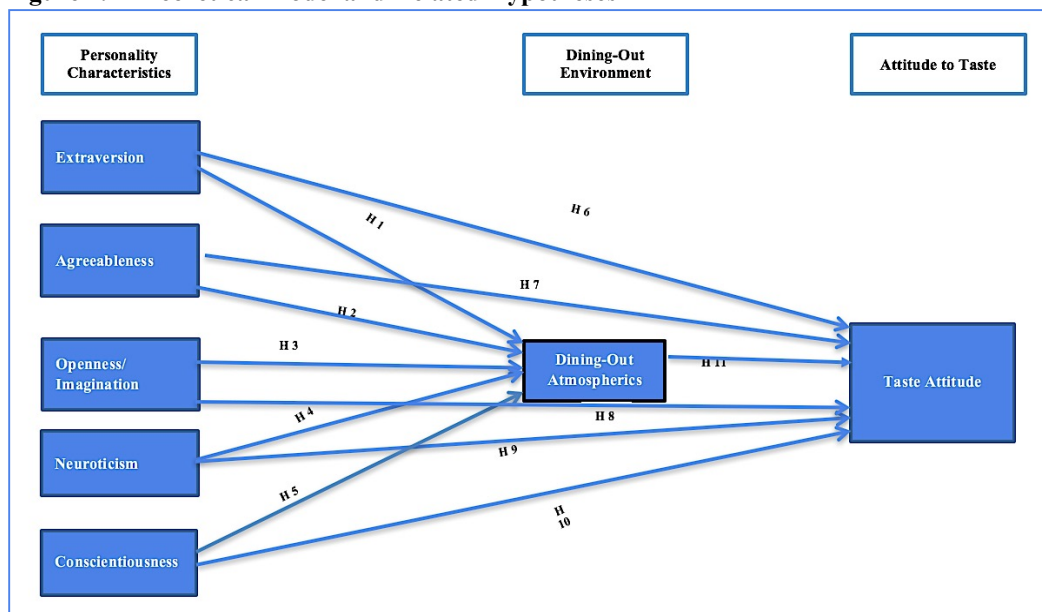
Table 4.12 Hypotheses Testing Results

Research question and Hypotheses		Multiple Regression Results	Beta	Sig.
<i>RQ: How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?</i>				
H1	<i>Extraversion is related to Dining-out Atmospherics</i>	Unsupported	-0.059	0.326
H2	<i>Agreeableness is related to Dining-out Atmospherics</i>	Unsupported	-0.001	0.988
H3	<i>Imagination is related to Dining-out Atmospherics</i>	Unsupported	0.071	0.243
H4	<i>Neuroticism is related to Dining-out Atmospherics</i>	Unsupported	0.009	0.880
H5	<i>Conscientiousness is related to Dining-out Atmospherics</i>	Unsupported	-0.051	0.376
H6	<i>Extraversion is related to Taste Complexity Attitude</i>	Unsupported	-0.006	0.917
H7	<i>Agreeableness is related to Taste Complexity Attitude</i>	Supported	0.209	0.000*
H8	<i>Imagination is related to Taste Complexity Attitude</i>	Unsupported	0.015	0.794
H9	<i>Neuroticism is related to Taste Complexity Attitude</i>	Unsupported	-0.034	0.558
H10	<i>Conscientiousness is related to Taste Complexity Attitude</i>	Supported	0.106	0.058*
H11	<i>Dining-out Atmospherics is related to Taste Complexity Attitude</i>	Unsupported	0.022	0.692

*= approaching significance at $p < 0.05$, **=significant at $p = 0.000$

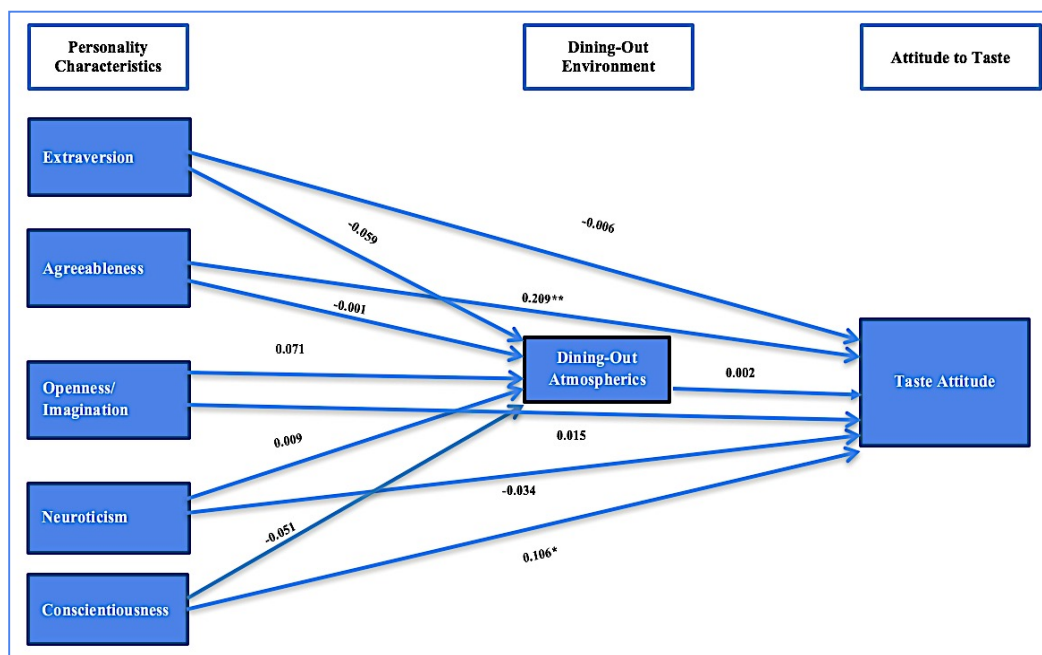
As presented in Table 4.12, eleven hypotheses were developed. Of the eleven hypotheses, the seventh hypothesis (H7) was strongly supported, while the tenth hypothesis (H10) was almost close to being supported whereas the other nine hypotheses were not supported. The theoretical model's related hypotheses and regression results are presented in Figure 4.4 and Figure 4.5.

Figure 4.4 Theoretical Model and Related Hypotheses



Source: Developed for this research

Figure 4.5 Path Analysis Regression



*= approaching significance at $p < 0.05$, **=significant at $p = 0.000$

Source: SPSS results

Figure 4.5 above resulted that of the eleven hypotheses proposed for this research study, two were supported and nine were not supported.

4.5 Summary

Details of the research study's data analysis and results are presented in this chapter. The purpose of Chapter 4 was to examine the research question and evaluate its related hypotheses. Data preparation consisted of data cleaning, screening and a review of the demographic information. Exploratory Factor Analysis (EFA) conducted on the data sample (N=317) was utilized to validate and refine the data employed in the examination of the path analysis model (Section 4.4). The reliability and validity of the test instrument was scrutinised in Sections 4.4.3 and 4.4.4. Figure 4.5 summarised the results of the regression path analysis. The findings derived from the regression path analysis and their implications are discussed in Chapter 5, the final chapter of the study's report.

Chapter 5 Finding and Implications

5.1 Introduction

The research question (RQ) provides the foundation for the research.

RQ: How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?

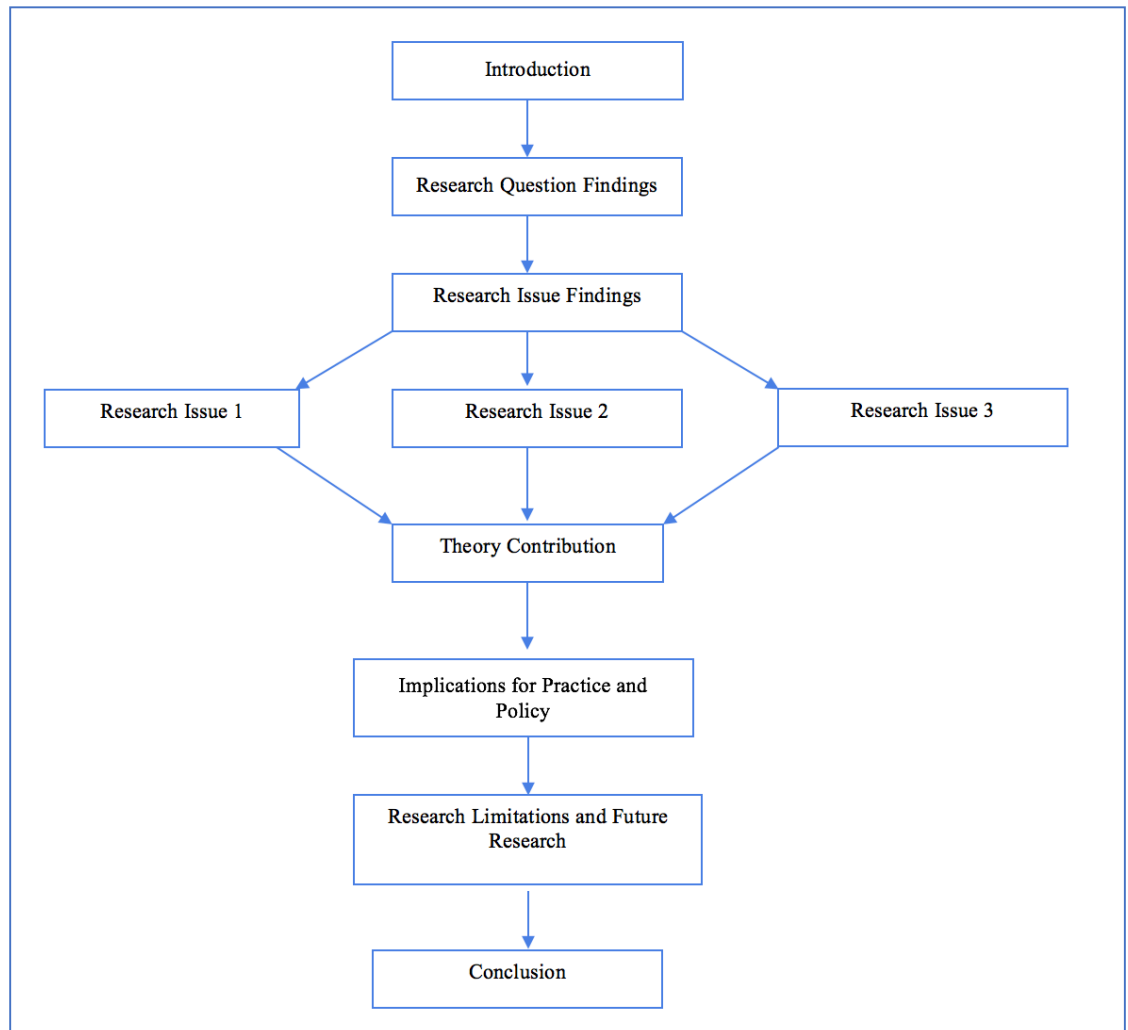
Three research issues were derived and investigated to answer the research question thoroughly. The purpose of the study was to design a research investigation that addressed the research question and its associated issues. Chapter 5 examines the findings generated in response to the investigation of this research question and discusses the implications of these findings.

Chapter 1 provided the research study's background. The study domain was outlined, the research question was delineated and research issues arising from the research question were also explained in Chapter 1. The lack of prior research pertaining to the topic was referred to in order to establish the value of this research.

Chapter 2 provided a review of the literature pertaining to personality characteristics, dining-out atmospherics and attitude to taste complexity. Personality theory is located within the parent discipline of consumer behaviour. Information on the atmospherics of the dining-out environment and taste complexity attitude is located within sensory marketing literature, also located within the parent discipline of consumer behaviour. Gaps in the personality theory literature associated with food consumption experiences and attitude suggested a need to explore this issue.

Chapter 3 described and justified the quantitative research methodology used in the study. The test instrument design, data collection process and survey administration was reported in this chapter. An explanation of the design assessment and statistical analysis was also presented. Data analysis included assessment of test instrument reliability and validity. In addition, mention of the ethical clearance from CQUniversity Research Ethics Committee was included in this chapter.

Chapter 4 presented information about the analysis of data that was collected using an online survey. The useable data set was comprised of a total sample of 317. In this chapter details of the data preparation process were stipulated. The chapter provided a detailed description of the collection of the initial data set and preparation, and, the examination and analysis of the useable data set employed to address the research question. Data were analysed in several stages to ensure that research analysis issues were addressed. Exploratory Factor Analysis (EFA) was used to identify factors and to check the reliability and validity of the data set. Following the EFA, a description of the application of Path Analysis and hypotheses evaluation was provided.

Figure 5.1 Chapter 5 Outline

Source: Developed for this research

5.2 Research Question Findings

Research Question (RQ): How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?

At the conclusion of Chapter 2, an initial theoretical framework was proposed to underpin this research study: Figure 2.4, Section 2.1.1. Three research issues were developed from the information drawn from the literature review in Chapter 2. The proposed theoretical model, *Role of Personality in Development of Taste Complexity Attitude*, was presented in Figure 2.9. Section 2.8 to provide a discussion of the findings in the literature pertaining to the research question and research issues: are personality characteristics related to the consumer's taste complexity attitude in the context of a dining-out food consumption environment.

After analysis of the study data, some expectations resulting from implications mentioned in the literature were confirmed, whereas a few other implications were disconfirmed. Additional knowledge about the effect of personality characteristics influencing consumers' taste complexity attitudes resulted from investigating issues in which no prior research had been presented in the literature. Knowledge about whether there was a relationship between the five personality characteristics and attitude to taste complexity was advanced as a result of the study's findings. In addition, knowledge about whether there was a relationship between the dining-out environmental atmospherics and taste complexity attitude was advanced as a result of the study's findings. The final

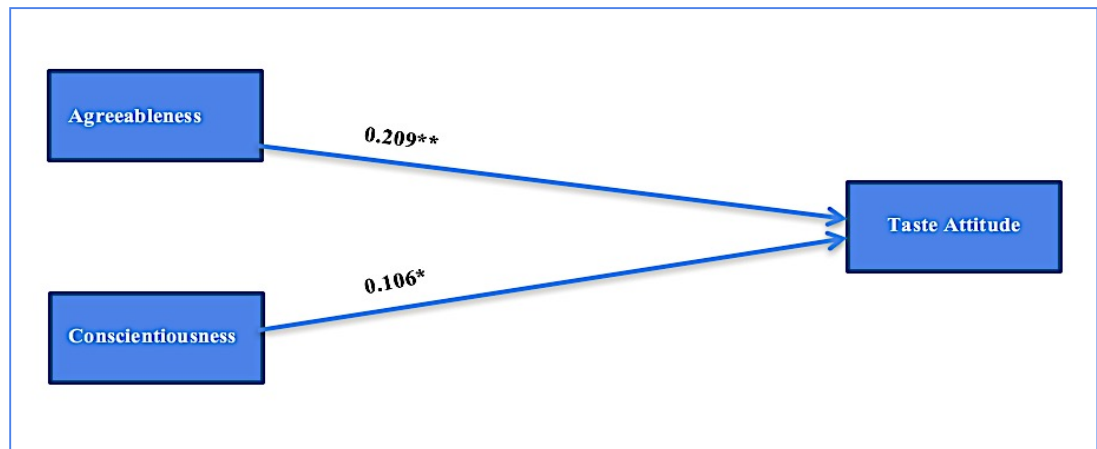
model presents the relationship investigated in this research between customers' food taste complexity attitude and their personality characteristics.

Implications drawn from the literature that were confirmed/disconfirmed in this research suggest that:

- (1) The *Agreeableness* personality characteristic has a positive and significant relationship with *Taste Complexity Attitude*.
- (2) The *Agreeableness* personality characteristic has a positive but not significant relationship with the *Dining-out Atmospherics* construct.
- (3) The *Conscientiousness* personality characteristic has a positive relationship approaching close to significance with *Taste Complexity Attitude*.
- (4) The *Conscientiousness* personality characteristic has a negative but not significant relationship with the *Dining-out Atmospherics* construct.

However, the research did not support implications in other parts of the literature that:

- (1) *Extraversion* is related to *Dining-out Atmospherics* or *Taste Complexity Attitude*;
- (2) *Openness/Imagination* is related to *Dining-out Atmospherics* or *Taste Complexity Attitude*;
- (3) *Neuroticism* is related to *Dining-out Atmospherics* or *Taste Complexity Attitude*, and,
- (4) *Dining-out Atmospherics* is related to *Taste Complexity Attitude*.

Figure 5.2 Personality Characteristics and Taste Attitude Model

→ Relationship exists, *=approaching significance at $p < 0.05$,
 **=significant at $p = 0.000$

Source: SPSS results

5.3 Research Issue Findings

The research findings are presented for the research issues one, two and three. These findings are commented upon in light of information obtained from the literature. The research suggested that there were a few similar and some different outcomes from those anticipated on the basis of implications derived from theory reported in the literature review. These research outcomes show how the research has advanced existing knowledge and contributed to personality theory and sensory marketing knowledge. Tables 5.2, 5.3 and 5.4 summarise the research contributions in respect to the literature reviewed.

In Tables 5.2, 5.3 and 5.4 Column 2, *Speculation* (S), *Implication* (I), *Mention of the Issue* (M), and, *No Prior Research* (NPR) explain the contractions used to position the research issues in relation to the reported literature. The *Implication* (I) comment is employed when personality theory and sensory marketing literature reports findings that are partially touching on an issue, but

no research study into the issue has been undertaken. There are implications in the literature that there may be a relationship between personality characteristics and dining-out atmospherics and also a relationship between personality characteristics and taste complexity attitude. When there has been *No Prior Research* (NPR) pertaining specially to a research issue, the research in this study has made an important contribution to theory. There is no indication in the literature that prior research has been undertaken into whether there is a relationship between dining-out atmospherics and taste complexity attitude.

Comments in Table 5.2, 5.3 and 5.4 Column 3 related personality theory and sensory marketing knowledge contributions to issues investigated in this research project. When there are implications in the literature that there may be a relationship between personality characteristics and dining-out atmospherics and also a relationship between personality characteristics and attitude to taste complexity, this research study *Adds to Knowledge* by reporting on the findings pertaining to research issues. This study *Advances Knowledge* by reporting on the findings pertaining to research issue when no research has been previously reported in the literature.

Table 5.1 Research Contribution of RI 1

<i>RQ: How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?</i>		
RI 1: Do personality characteristics have an effect on the influence of dining-out atmospherics?		
Findings	Status of research in literature	Contribution to knowledge of this research
Finding 1.1 (H1): <i>Extraversion</i> is related to <i>Dining-out Atmospherics</i>	I	Adds to knowledge
Finding 1.2 (H2): <i>Agreeableness</i> is related to <i>Dining-out Atmospherics</i>	I	Adds to knowledge
Finding 1.3 (H3): <i>Openness/Imagination</i> is related to <i>Dining-out Atmospherics</i>	I	Adds to knowledge
Finding 1.4 (H4): <i>Neuroticism</i> is related to <i>Dining-out Atmospherics</i>	I	Adds to knowledge
Finding 1.5 (H5): <i>Conscientiousness</i> is related to <i>Dining-out Atmospherics</i>	I	Adds to knowledge
Note: S= Speculation Confirmation/disconfirmation of expectation I = Implication Adds to knowledge M = Mention of the issue Adds to knowledge NPR = No prior research Advances knowledge		

Table 5.2 Research Contribution of RI 2

<i>RQ: How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?</i>		
RI 2: Do personality characteristics impact on taste complexity attitude?		
Findings	Status of research in literature	Contribution to knowledge of this research
Finding 1.6 (H6): <i>Extraversion</i> is related to <i>Taste Complexity Attitude</i>	I	Adds to knowledge
Finding 1.7 (H7): <i>Agreeableness</i> is related to <i>Taste Complexity Attitude</i>	I	Adds to knowledge (Beta=0.209**)
Finding 1.8 (H8): <i>Openness/Imagination</i> is related to <i>Taste Complexity Attitude</i>	I	Adds to knowledge
Finding 1.9 (H9): <i>Neuroticism</i> is related to <i>Taste Complexity Attitude</i>	I	Adds to knowledge
Finding 1.10 (H10): <i>Conscientiousness</i> is related to <i>Taste Complexity Attitude</i>	I	Adds to knowledge (Beta=0.106*)
Note: S= Speculation Confirmation/disconfirmation I = Implication Adds to knowledge M = Mention of the issue Adds to knowledge NPR = No prior research Advances knowledge		

Table 5.3 Research Contribution of RI 3

<i>RQ: How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?</i>		
RI 3: Do the dining-out atmospherics influence a food consumer's taste complexity attitude?		
Findings	Status of research in literature	Contribution to knowledge of this research
Finding 1.11 (H11): <i>Dining-out Atmospherics is related to Taste Complexity Attitude</i>	NPR	Advances knowledge

Note:	S= Speculation	Confirmation/disconfirmation of expectation
	I = Implication	Adds to knowledge
	M = Mention of the issue	Adds to knowledge
	NPR = No prior research	Advances knowledge

5.3.1 Research Issue 1: Do personality characteristics have an effect on the influence of dining-out atmospherics?

The first research issue was concerned with the relationship between Personality Characteristics and Dining-out Atmospherics. Research Issue 1 hypothesises, Hypothesis 1 (H1), Hypothesis 2 (H2), Hypothesis 3 (H3), Hypothesis 4 (H4) and Hypothesis 5 (H5), pertained to the relationship between *Extraversion* and *Dining-out Atmospherics* (H1), *Agreeableness* and *Dining-out Atmospherics* (H2), *Openness/Imagination* and *Dining-out Atmospherics* (H3), *Neuroticism* and *Dining-out Atmospherics* (H4), and, *Conscientiousness* and *Dining-out Atmospherics* (H5). During the literature review, *Dining-Out Atmospherics* was identified as a construct that was likely to have a relationship with the *Personality Characteristics* construct. The Path Analysis results, reported in Chapter 4, Section 4.4, were used to evaluate the five hypotheses within Research Issue 1. Although none of the five personality characteristics had a significant relationship with dining-out atmospherics, these findings added to knowledge reported in the relevant literature.

Finding 1.1 (H1): *Extraversion* is related to *Dining-out Atmospherics*

The first finding pertains to the relationship between *Extraversion* and *Dining-out Atmospherics*. In consumer behaviour, the physical environment, dining-out atmospherics, is a powerful tool that influences people's attitudes and behaviour (Solomon et al., 2013). There was no research in the extant literature about the *Extraversion* variable and its relationship with *Dining-out Atmospherics*. The finding of this research showed that there was no statistical significance in the relationship between *Extraversion*, the extraversion personality characteristic, and *Dining-out Atmospherics* and the relationship was negative. Participants who had a lower level of the *Extraversion* personality characteristic tended to report a greater influence of *Dining-out Atmospherics*. The *Extraversion* personality characteristic had been investigated in earlier research in relation to the influence of a single element of the dining-out environment (e.g. lighting or music). However, when lighting, music and table position were used as the dimensions of *Dining-out Atmospherics* there was only a negative, non-significant relationship with the *Extraversion* personality characteristic. The finding of this study added to knowledge.

Finding 1.2 (H2): *Agreeableness* is related to *Dining-out Atmospherics*

The second finding pertains to the relationship between *Agreeableness* and *Dining-out Atmospherics*. Previous research investigated the *Agreeableness* personality characteristic's relationship to music preference in adolescents, and the findings of this research indicated that adolescents who had higher levels of *Agreeableness* tended to report lower rates of liking for Pop/Dance music

(Delsing et al., 2008; Zweigenhaft, 2008). However, other research found that there was no relationship between *Agreeableness* and a music preference variable (Sigg, 2009). With conflicting findings about the relationship between *Agreeableness* and music preference there was no clear guidance in the literature on what outcome could be anticipated about a relationship between *Agreeableness* and the effect of music. Findings about the implications derived from previous personality/music research were of great interest but this study took music as only one of the dimensions measured by the *Dining-out Atmospherics* construct. The finding of this research indicated that there was no statistical correlation between *Agreeableness* and *Dining-out Atmospherics* and the relationship was negative. Participants who had a lower level of *Agreeableness* tended to rate more highly the influence of *Dining-out Atmospherics*. When lighting, music and table position were used as measures of *Dining-out Atmospherics* the research established that *Agreeableness* had no statistical relationship to *Dining-out Atmospherics* so the findings of this study added to knowledge.

Finding 1.3 (H3): *Openness/Imagination* is related to *Dining-out Atmospherics*

The third finding pertains to the relationship between *Openness/Imagination* and *Dining-out Atmospherics*. Previous research investigating the *Openness* personality characteristic and hotel lobby atmospherics found that there was a low positive relationship between the *Openness* personality characteristic and lighting, style and colour in a hotel lobby (Naqshbandi & Munir, 2011). It also noted that the *Openness* personality characteristic was weakly related to lobby impression; other variables, such as sensitivity, emotional, appeal and feel,

may have greater influence on lobby impression (Naqshbandi & Munir, 2011). Although the hotel lobby research is set in a different environment from the dining-out environment and because of the paucity of other research in this area, implications for the current study were drawn from the earlier hotel lobby study. In the current study, lighting, music and table position were used as the dimensions of the *Dining-out Atmospherics* construct. The results of the study established that there was no statistical correlation between *Openness/Imagination* and *Dining-out Atmospherics*. This study concluded, therefore, that a participant who has an *Openness* personality characteristic tended to be only weakly influenced by *Dining-out Atmospherics*, even though the relationship between these two variables was positive. The findings of this study added to knowledge.

Finding 1.4 (H4): *Neuroticism* is related to *Dining-out Atmospherics*

The fourth finding pertains to the relationship between *Neuroticism* and *Dining-out Atmospherics*. The neuroticism characteristic describes a person with an enduring tendency to experience negative emotions. Generally, individuals ranking high on *Neuroticism* are more likely to respond more quickly to dismissing a situation as hopelessly difficult and they respond more negatively to stressors (Nevid & Rathus, 2007). There have been previous investigations into the relationship between the *Neuroticism* personality characteristic and two of the *Dining-out Atmospherics* elements (music and table position). The finding of this research showed that *Neuroticism* and music preference were not connected (Lester & Whipple, 1996). Other research investigated the choice of dining seat of stressed college students; stress is one

of the sub-characteristics of *Neuroticism* (Robson, 2008; Robson, 2002). These students chose to sit in the private areas of the dining room such as near the corner or a window (Robson, 2008). Although music and table position were only two of the three dimensions employed in the measurement of *Dining-out Atmospherics* and the findings relating to music were negative, nevertheless implications about the relationship between *Neuroticism* and *Dining-out Atmospherics* were derived from these earlier studies. When the *Neuroticism* and *Dining-out Atmospherics* (lighting, music and table position) were measured it was established that *Neuroticism* had no statistical relationship to *Dining-out Atmospherics*. The findings of this study about the relationship between *Neuroticism* and *Dining-out Atmospherics* added to knowledge.

Finding 1.5 (H5): *Conscientiousness* is related to *Dining-out Atmospherics*

The fifth finding pertains to the relationship between *Conscientiousness* and *Dining-out Atmospherics*. A previous research investigation with adolescents who had a low level of the *Conscientiousness* personality characteristic noted that they were likely to prefer Rock music (Delsing et al., 2008). However, the findings of this study concluded that *Conscientiousness* and *Dining-out Atmospherics* (lighting, music and table position) had no statistically significant relationship with each other although there was an indication that there was a non-significant negative relationship. Participants who had a lower level of *Conscientiousness* tended to report that *Dining-out Atmospherics* had a greater influence on them than those who had a high level of *Conscientiousness*. The findings of this study added to knowledge.

5.3.2 Research Issue 2: Do personality characteristics impact on taste complexity attitude?

The second research issue was concerned with the relationship between *Personality Characteristics* and *Taste Complexity Attitude*. Research Issue 2 hypotheses, Hypothesis 6 (H6), Hypothesis 7 (H7), Hypothesis 8 (H8), Hypothesis 9 (H9) and Hypothesis 10 (H10), pertained to the relationship between *Extraversion* and *Taste Complexity Attitude* (H6), *Agreeableness* and *Taste Complexity Attitude* (H7), *Openness/Imagination* and *Taste Complexity Attitude* (H8), *Neuroticism* and *Taste Complexity Attitude* (H9), and, *Conscientiousness* and *Taste Complexity Attitude* (H10). During the literature review and the Exploratory Factor Analysis (EFA), it was surmised that the dimensions of appearance, flavour and texture comprised the *Taste Complexity Attitude* construct and that this construct was likely to have a relationship with consumers' personality characteristics. The Path Analysis results, reported in Chapter 4, Section 4.4, were evaluated and five findings pertaining to Research Issue 2 were arrived at. Two personality characteristics, *Agreeableness* and *Conscientiousness*, were the only two personality characteristics that had a relationship with *Taste Complexity Attitude*. These findings added to knowledge reported in the relevant literature.

Finding 1.6 (H6): *Extraversion* is related to *Taste Complexity Attitude*

The sixth finding of Research Issue 2 pertains to the relationship between *Extraversion* and *Taste Complexity Attitude*. There was no relationship between the extraversion personality characteristic and *Taste Complexity Attitude*. Previous research had reported that extraverts had significantly less

saliva stimulation than introverts when four drops of lemon juice were placed on the tongue (Eysenck & Eysenck, 1967). Thus, this early research concluded that more highly sociable extraverts responded less directly to a sour taste. When eating out was a mediating variable, more recent research found that there was a significant positive indirect reaction by extraverts to sweet and savoury taste perceptions (Keller & Siegrist, 2015). However, while the sense of taste influences consumers' food perceptions, people employ multiple senses in determining their food preferences (Field & Duizer, 2016). In the current study into the relationship between *Extraversion* and *Taste Complexity Attitude*, different sensory dimensions (sight and feel) to those investigated previously were employed to measure *Taste Complexity Attitude*. When appearance and texture were used as the measures of *Taste Complexity Attitude* a negative, non-significant relationship was found between the *Extraversion* personality characteristic and *Taste Complexity Attitude*. It was observed among participants with a lower level of *Extraversion* (i.e. those who measured more highly on the *Introversion* end of the E/I continuum) that this personality characteristic had a greater influence on *Taste Complexity Attitude* than the influence of a high level of *Extraversion* on *Taste Complexity Attitude*. Since only implications could be drawn from previous research, the findings of this study added to knowledge.

Finding 1.7 (H7): *Agreeableness* is related to *Taste Complexity Attitude*

The seventh finding for Research Issue 2 pertained to the relationship between *Agreeableness* and *Taste Complexity Attitude*. Previous research had investigated whether an *Agreeableness* personality characteristic had a

relationship with food choice and meat consumption (Keller & Siegrist, 2015; Mottus et al., 2012; Heaven et al., 2001). The findings of one study disconfirmed the proposition that strangers who like the flavour of sweet food (e.g. candy) were also high in the *Agreeableness* characteristic (Meier et al., 2012). In the current study into the relationship between *Agreeableness* and *Taste Complexity Attitude*, different flavours (spicy, bitter, sour, salty) from the sweet flavour investigated previously were included in the questionnaire. Appearance and texture were used as the measures of *Taste Complexity Attitude* and from an analysis of the study data it was established that *Agreeableness* had a statistically significant and positive relationship to *Taste Complexity Attitude*, (beta= 0.209, sig value = 0.00***). There was a greater influence of the *Agreeableness* personality characteristic on *Taste Complexity Attitude*, whereas lower levels of *Agreeableness* were not related to *Taste Complexity Attitude*. Since only implications could be drawn from previous research, the findings of this study added to knowledge.

Finding 1.8 (H8): *Openness/imagination* is related to *Taste Complexity Attitude*

The eighth finding pertains to the relationship between *Openness/imagination* and *Taste Complexity Attitude*. Individual's who are seeking a new experience display the *Openness/imagination* personality characteristic. Previous research showed that the *Openness/imagination* personality characteristic has a relationship with food choices (Keller & Siegrist, 2015; Siegrist, Hartmann & Keller, 2013). Individuals with high levels on *Openness/imagination* personality scale were likely to try unfamiliar vegetables and fruits (to be open to the new experiences) and even being prepared to replace sweet, salty and

fatty food with healthier vegetables and fruits (Keller & Siegrist, 2015). Moreover, consumers with a high *Openness/imagination* measurement also had a negative association with meat consumption (Keller & Siegrist, 2015). In the current study into the relationship between *Openness/imagination* personality characteristic and *Taste Complexity Attitude*, a greater variety of foods (unfamiliar vegetables and fruits) and flavours (e.g. bitter) to those investigated previously were offered for choice. When appearance and texture were used as the measures of taste complexity attitude, it was established that the *Openness/Imagination* personality characteristic had no statistically significant relationship to *Taste Complexity Attitude*, although there was a slight, non-significant positive relationship between these two variables. It was observed among participants with a higher level of *Openness/Imagination* (i.e. those who measured more highly on the *Openness/Imagination* end of the O/C continuum) that this personality characteristic had a greater influence on *Taste Complexity Attitude* than the influence of a low level of *Openness/Imagination* on *Taste Complexity Attitude*. Since only implications could be drawn from previous research, the findings of this study added to knowledge.

Finding 1.9 (H9): *Neuroticism* is related to *Taste Complexity Attitude*

The ninth finding pertains to the relationship between *Neuroticism* and *Taste Complexity Attitude*. This research found that *Neuroticism* had no relationship with *Taste Complexity Attitude*. Previous research investigated whether neuroticism was related to taste preference (Keller & Siegrist, 2015; Elfahg & Erlanson-Albertson, 2006). Consumers with a high level of *Neuroticism* had a strong preference for food with a sweet taste (Elfahg & Erlanson-Albertson,

2006) and this personality characteristic had a significant, positive indirect effect on sweet and savoury food consumption (Keller & Siegrist, 2015). In the current study into the relationship between the *Neuroticism* personality characteristic and *Taste Complexity Attitude*, flavours other than the sweet flavour investigated previously were included in the investigation. However, EFA found that flavour was not a determinant of *Taste Complexity Attitude*. When appearance and texture were used as the measures of *Taste Complexity Attitude* the findings of the study established that *Neuroticism* had no statistically significant relationship to *Taste Complexity Attitude*, and the slight relationship between these two variables was negative. Participants who had a lower level of *Neuroticism* tended to report higher rates of influence of this personality characteristic on their *Taste Complexity Attitude*. Since only implications could be drawn from previous research, the findings of this study added to knowledge.

Finding 1.10 (H10): *Conscientiousness* is related to *Taste Complexity Attitude*

The tenth finding pertains to the relationship between *Conscientiousness* and *Taste Complexity Attitude*. This research found that *Conscientiousness* had a relationship to some degree with *Taste Complexity Attitude*. Previous research investigated the relationship between the *Conscientiousness* personality characteristic and food choice; people high on the *Conscientiousness* scale were more likely to avoid fats (e.g. high-fat food and non-meat fats) (Goldberg & Strycker, 2002). Moreover, the *Conscientiousness* personality characteristic was positively but indirectly associated with fruit consumption, but there was a significant, negative, indirect relationship between consumers with this

personality characteristic and a preference for the flavour of sweet, savoury, meat, sweetened drinks and with restrained eating (Keller & Siegrist, 2015; Goldberg & Strycker, 2002). In the current study into the relationship between the *Conscientiousness* personality characteristic and *Taste Complexity Attitude*, food choices and food flavours other than the sweet flavour investigated previously were employed. However, since EFA found that flavour was not a determinant of *Taste Complexity Attitude*, appearance and texture were used as the measures of *Taste Complexity Attitude* to establish that *Conscientiousness* had close to a statistically positive relationship to *Taste Complexity Attitude* (beta= 0.106, sig value=0.058*). While the results emerging from this research concluded that there is a relationship between *Conscientiousness* and *Taste Complexity Attitude*, this relationship may be explained by considering the possibility that individuals who have a high level of *Conscientiousness* were more likely to be careful of their food intake as a means of controlling their weight. Since only implications could be drawn from previous research, the findings of this study added to knowledge.

5.3.3 Research Issue 3: Do the dining-out atmospherics influence a food consumer's Taste Complexity Attitude?

Finding 1.11 (H11): *Dining-out Atmospherics* is related to *Taste Complexity Attitude*.

The eleventh finding pertains to the relationship between *Dining-out Atmospherics* and *Taste Complexity Attitude*. *Dining-out Atmospherics*, the physical environment, had previously been found to be important for attracting customers to the restaurant (Mattila, 2001). Interactions with the place, interior

décor, the meal occasion and service encounter could form a frame that expresses certain emotions and determines a particular type of atmosphere in the dining-out environment (Finkelstein, 1989). This early research concluded that *Dining-out Atmospherics* have an influence on the customer's overall perception of the dining-out experience. Analysis of the data collected for this research study found that the *Dining-out Atmospherics* construct had no direct relationship with *Taste Complexity Attitude*. These findings support the conclusion that *Dining-out Atmospherics* have no effect on the consumer's *Taste Complexity Attitude*. The importance of creating an appealing atmosphere that influences the customer's overall perception of the dining-out experience may depend on factors other than venue atmospherics that are involved in the situation, such as the type of occasion or the quality of customer service (Johns & Kivela, 2001). With no research reported in the literature that is specific to this topic, the findings of this study advance knowledge.

5.3.4 Question 1: Does the addition of Dining-out Atmospherics improve the model?

When *Dining-out Atmospherics* was introduced as a mediating variable between *Personality Characteristics* and *Taste Complexity Attitude*, there was no statistically significant relationship between personality characteristics and *Dining-out Atmospherics* or between *Dining-out Atmospherics* and *Taste Complexity Attitude*. It was therefore concluded that the addition of *Dining-out Atmospherics* as a mediating variable does not improve the model, *Role of Personality in Development of Taste Complexity Attitude*.

Summary of findings pertaining to the Research Issues:

The personality characteristics included in this research study were: *Extraversion, Agreeableness, Openness/Imagination, Neuroticism* and *Conscientiousness*. The *Dining-out Atmospherics* construct was comprised of the following dimensions: *Lighting, Music* and *Table Layout*. The *Taste Complexity Attitude* construct was comprised of the following dimensions: *Appearance* and *Texture* (*Flavour* was included in the questionnaire but excluded during the EFA).

- (1) The relationship between *Personality Characteristics* and *Dining-out Atmospherics*: There were no statistically significant relationships between any one of the five personality characteristics included in the research and dining-out atmospherics.
- (2) The relationship between the *Personality Characteristics* and *Taste Complexity Attitude*: The findings arrived at in this study from the results of the data analysis suggested that the agreeableness and conscientiousness personality characteristics had a relationship with taste complexity attitude. The agreeableness personality characteristic had a positive significant relationship with taste complexity attitude (beta= 0.209, sig value = 0.00***), while the conscientiousness personality characteristic had a positive relationship approaching significance with taste complexity attitude (beta= 0.106, sig value=0.058*).
- (3) The relationship between *Dining-out Atmospherics* and *Taste Complexity Attitude*:

Dining-out atmospherics was not related to taste complexity attitude.

- (4) The addition of *Dining-out Atmospherics* as a mediating variable to the model, *Role of Personality in Development of Taste Complexity Attitude*, does not improve the model.

5.4 Theory Contribution

There are several ways that the research findings contribute to the Consumer Behaviour parent discipline theory, most especially to two of the research strands that are located within the discipline, consumer personality theory and sensory marketing.

- An innovative perspective was adopted in this research study by integrating personality theory and sensory marketing. These are areas that previous researchers have largely neglected to bring together or only drawn on small fragments of these areas in their research.
- While the five-personality-characteristics concept has been utilised in a considerable amount of research over a long period of time, there is a paucity of research in the literature bringing personality characteristics, the service environment and the development of taste complexity attitude together.
- The major contribution of this research is the conceptualisation of two constructs, *Dining-out Atmospherics* and *Taste Complexity Attitude*.
- Developing and testing a model of the *Role of Personality in Development of Taste Complexity Attitude*.

Thus the present study has provided a contribution to theoretical knowledge about the influence of personality characteristics on taste complexity attitude.

5.5 Research Limitations and Further Research Implications

Practitioner knowledge about the importance of the appearance of food has been reinforced but new knowledge about the significance of food texture has been an important addition to the knowledge base of food service providers. However, it is worth questioning why personality characteristics and dining-out atmospherics, both well-established and valuable variables (in research terms) failed to link significantly with the taste complexity attitude construct put forward in this study. There are limitations inherent to the research design and these limitations need to be addressed to ensure that future research is conducted as appropriately as possible (Malhotra et al., 2006). The limitations for this study and directions for further research are noted below:

- This study used an online survey and the response rate elicited 40% of responses from potential participants before participants were purchased from Survey Monkey. Online surveys, in general, tend to elicit a low response rate, and the reasons for low response rate may include the overwhelming clutter created by junk mail and numerous invitations to participate in voluntary surveys both online and paper-based, the fast-paced culture of the 21st century, increased demand for paid work hours and less willingness to participate in surveys (Sax et al., 2003). Nonetheless, the number of useable responses (317) was sufficient to undertake Path Analysis.

- The sample size of 317 in this study may have placed a limitation on the generalisability of the findings of the data analysis. By increasing the sample size there is a greater likelihood of achieving a more representative distribution, thereby providing greater stability.
- Another limitation may also have occurred as a consequence of the sampling frame employed in this study. Although the sample size was sufficient to satisfy the Path Analysis requirements, the sampling frame took in two different types of survey participants; some of the online participants were volunteers while other online participants were employees of Survey Monkey. A different sample frame may produce different results.
- Respondent self-selection does not allow the researcher to ensure that a representative sample of the population has been obtained. For example, even though the personality characteristics construct is considered to be universal, the disproportionately large representation of Oceania respondents in the sample may have biased the findings derived from the data analysis (Cheung, Leung, Zhang, Sun, Gan, Song & Xie, 2001; Benet-Martinez & Waller, 1997).
- The potential for respondents to have different understandings of complex variable definitions is another limitation of this study. While the five personality characteristics have been consistently defined over a long period of time, the self-assessment nature of questions designed to establish where respondents fall on each of the five personality continua may result in respondents who lack self-awareness providing

misleading answers to questions. Similarly, the measurement of taste complexity attitude was based on self-reported data and this may result, also, in respondents who lack self-awareness providing misleading answers to questions.

- The researcher selected only three of a range of potential dimensions that contribute to the dining-out atmospherics construct but these dimensions may not adequately measure the environmental influences impacting on taste complexity attitude. Three items are the minimum number of items for scale generation but the addition of further items measuring other dimensions of dining-out atmospherics may change the study's findings. However, balanced against strengthening construct validity is the risk of lowering the representativeness of the sample population due to a lower response rate to longer surveys.
- Similarly, three items representing three potential dimensions of taste complexity attitude were included in the questionnaire but, despite research in the literature indicating that there was a relationship between personality and flavour, it was only texture and appearance that respondents indicated were important dimensions of taste complexity attitude. The questionnaire items evaluating an individual's taste complexity attitude, especially perception of texture, may need to be increased and refined further to include other dimensions contributing to taste complexity attitude (Field & Duizer, 2015).
- The issue of external validity has been touched on earlier but further studies applying the insights gained from this study to the real-world

context of restaurant and food service providers are required to test whether the relationships that emerged in this study also work in a variety of other dining-out environments and contexts.

- The group context was included in the parameters set up within the questionnaire for the respondent. Asking questions about a meal recently partaken in a group context ensured that the responses were applied rather than theoretical. However, dining as part of a group contains potentially a very large number of contingencies that could determine menu choice. Apart from the menu of the venue itself, there is a large number of factors that might impinge on choice; social pressure from fellow diners, the affordability of menu items, time constraints, dietary limitations, interactions between factors relating to one diner or another could lead to complex responses in terms of choice. Thus, another limitation of the research findings in this study is the lack of control of these factors.
- The generalizability of the study's findings is limited since it is likely that there are cross-cultural differences in consumers' taste complexity attitudes and the data for this study was collected solely within Australia. It would be well to substantiate the theory proposed by testing the model using data collected in other geographical areas.

While implications for further research can be found in addressing the limitations that have been identified in this study, adopting a different methodological approach to gathering data may also be well worth consideration. Data gathered from a longitudinal study, or, data obtained from

multiple, cross-sectional purposive samples of respondents may provide more accurate insights into this research issue. For example, tracking the development of taste complexity attitude across the life-span of people with particular personality characteristics may help to confirm or disconfirm the findings of this study (McCrae & Costa, 1994). Adopting a different methodological approach may also deepen the richness of the data. Rather than the quantitative approach employed in this study, using a qualitative approach or a mixed-methods approach in further research into this issue would allow the dimensions of the dining-out atmospherics construct and the taste complexity attitude construct to be refined. Qualitative research could provide insights into the roles that personality characteristics, dining-out atmospherics and taste complexity attitude play in evaluating a dining-out experience. Furthermore, qualitative research that asks open-ended questions could provide a greater understanding of the relationships among these variables. This approach may provide researchers with greater insights into why the relationships among personality characteristics, atmospherics and taste complexity attitude are weak.

5.6 Discussion of the Implication for Management, Policy and Theory Developments

Considering the durability of the Big Five as a construct in both marketing and consumer behaviour psychology, and the wealth of studies showing significant links between one or other of the five factors, it could have been anticipated that this study would have unearthed greater, and more significant relationships

between the Big Five, taste complexity and attitudes towards aspects of atmospherics. This research discovered that there is a positive relationship with the *Agreeableness* and *Conscientiousness* personality characteristics and taste complexity attitude. In the case of conscientiousness, however, that relationship only approached significance. Other relationships were nonsignificant. *A priori*, on the basis of information reported in Section 2.3.4, it could have been anticipated that neuroticism (which is characterised by moodiness, anxiety and fear) would have an interesting relationship with both atmospherics and taste complexity, but no relationship was found. Since extraversion (characterised by association with risk, venturesomeness and sociability) (Richardson & Saliba, 2011; Saliba, Wragg & Richardson, 2000; Elfhag & Erlanson-Albertsson, 2006), it would have been reasonable to expect significant relationships between this variable and both attitude to taste complexity and aspects of dining-out atmospherics. This study failed to uncover such relationships. Finally, openness is considered to be a variable made up of a number of characteristics that include preference for variety and curiosity, and these characteristics would appear to be quite directly related to attitudes to taste complexity (Dollinger, 1993).

It is worth asking why these three well-established and (in research terms) valuable variables failed to link significantly with the constructs put forward in this study: taste complexity and dining-out atmospherics. To some degree, the reasons have been addressed in the research limitations, but more broadly, this study was quite ‘applied’ in that it focused on a particular meal in which the respondent had participated in recently. This meal took place in a group dining-

out context; one of the parameters set up for the respondent. A group dining-out context (which dining-out experiences often are) potentially contains a very large number of contingencies that could determine menu choices. Apart from the venue's menu (which ordinarily is limited, thereby constraining diner choice), there is a large number of factors that might impinge on choice: social pressures from fellow diners, the affordability of items on the menu, time constraints (which might eliminate some choices), un-met dietary limitations and personal interactions between diners. Any or all of these factors could lead to incredibly complex responses in terms of choice.

The last possibility mentioned (personal interactions between diners) may well explain why *Agreeableness* was the sole (highly) significant variable of the Big Five to play a role in determining attitude toward taste complexity. It is possible that when a single diner in a group drives, for whatever reason, menu choice the individual menu choices of the remaining group members are suppressed with individual choice being subordinated to the dominant other's choice. After all, *Agreeableness* relates to willingness to be cooperative and considerate (Meier et al., 2012).

This is where undertaking future research in two opposite directions could be of benefit. As mentioned in the section on limitations, there is value in addressing these issues using a qualitative approach. By contrast to this direction, laboratory studies isolating a single variable relating to complexity or atmospherics may help to identify some underlying principles that can be obscured in the complex real world of dining.

In terms of the applied value of this research, there is an additional question: to what degree can restaurant managers benefit from considerations about the individual personality of diners? While it is unrealistic to expect those working in hospitality to issue personality surveys at the doors of venues, there is evidence, both anecdotally and from psychology laboratories, that this is not necessary before gaining benefits from taking the customer's personality into account. Anecdotally, stories are available of bartenders and *maitre d'hôtel* able to benefit from 'reading' the body language of diners and customers (e.g. Mars & Gerald, 1982). Staff may be able to pick up on customers' personality variables, rapidly internalise their observations and utilise them to maximise outcomes, including the customer's dining-out experience and the profitability of the venue (Naumann, Vazire, Rentfrow & Gosling, 2009).

Results of this study may help restaurant managers to have a better understanding of how an individual's personality characteristics impact on their attitude to taste in a dining-out environment. Findings of this study may provide insights into how various elements of personality characteristics may determine the taste preference of customers who are dining in their restaurant. Appearance and texture of food were found to be important in the development of the taste complexity attitude of the customer.

Restaurant managers can gain an advantage from this research by understanding that there is a relationship between certain individual personality characteristics and their consumers' taste complexity attitude. The results showed that customers who have strong *Agreeableness* and *Conscientiousness*

personality characteristics are most likely to have a strongly developed *Taste Complexity Attitude*. The meal appearance and textural variety of the food are important for customers with these two types of personality characteristics. Therefore, this knowledge should be taken into account when considering and planning the menu offering.

Finding some practical implications from this study would be beneficial for the food industry since managers need as much help as they can get to ensure their customers have a satisfactory dining-out experience. Previous research has indicated that taste complexity is difficult to determine; it has not been established what constitutes taste preferences. Studies indicated that there was a lack of knowledge of taste complexity, although research on the individual taste elements of flavour, texture and appearance (see Section 2.5) suggested that these three elements contribute to influencing taste complexity preferences. There were limitations within the findings from this data because it became apparent during the statistical analysis of the study data that taste interactions within the human gustatory system and how these taste components of flavour, texture and appearance interact in the perception of food and beverages were difficult to measure.

5.7 Conclusion

The findings of this research study have been outlined in this chapter. The research has provided an answer to the research question that was posed: *How do personality characteristics relate to consumer taste complexity attitudes in a dining-out food consumption environment?* The research discovered that

there is a significant positive relationship with the agreeableness personality characteristics and taste complexity attitude. The relationship between the conscientiousness personality characteristic and taste complexity attitude was positive and approached significance. The findings have made a contribution to consumer behaviour theory and a practical contribution to enhancing the menu planning of dining-out food service providers. Finally, this study provides a direction for future research into the role of consumers' personality characteristics, dining-out atmospherics and consumers' taste complexity attitudes.

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Appendices

Appendix A: Vipada Food Studies Survey



Information Sheet

This project is being undertaken as part of a Masters Study program for Vipada Charoensuk. The purpose of this project is to better understand the eating experience including at home and in public environments. You are invited to participate in this project.

Task

Please follow the survey link in Facebook or your email based on your most recent experience of your meal.

- Step 1: Follow the survey link
<https://www.surveymonkey.com/r/7DVHBKP>
- Step 2: Answer a questionnaire set

Participation

Participants in this survey will complete a 58-item questionnaire with multiple choice questions, open-ended question and Likert scale questions that will take approximately 20 minutes of your time. Questions will seek your answers to demographic questions including age group. Importantly, we are interested in your eating experiences. Your participation in this project is entirely voluntary. If you agree to participate you do not have to complete any question(s) you are uncomfortable answering. Your decision to participate or not participate will in no way impact upon your current or future relationship with CQUniversity. If you do agree to participate you can withdraw at any time without comment. Any information already obtained from you will be removed from this study. However, as the questionnaire is anonymous once it has been submitted it will not be possible to withdraw.

Risks

There are no risks beyond normal day-to-day living associated with participation in this project. If while answering any of the questions you find yourself becoming uncomfortable and/or distressed, you are encouraged to seek information or assistance from the researchers and you will also be encouraged to contact CQU counselling on 07-49309456, or via email counselling@cqu.edu.au. Alternatively, lifeline counselling is available on 131 114 or Beyondblue 1300 22 4636.

Privacy and Confidentiality

All comments and responses are anonymous and will be treated confidentially. The names of individual persons are not required in any of the responses. Any data collected as part of this project will be stored securely as per CQU's Management of research data policy.

Please note that non-identifiable data collected in this project may be used as comparative data in future projects.

Consent to Participate

You must be 18 years or older to participate. You may withdraw your participation at any time before you submit the completed survey.

If have any questions or require further information please contact one of the research team members below.

Research Findings

The aggregated findings of this research will be published in a Master degree thesis, and also in academic journals or conference papers. If you would like a summary of these research findings please register your interest with:

Vipada Charoensuk
CQUniversity Australia
School of Business & Law
Brisbane
Vipada.charoensuk@cquemail.com

Please contact CQUniversity's Office of Research (Tel: 07 4923 2603; E-mail: ethic@cqu.edu.au, if there be any concerns about the nature and/or conduct of this research project.

Thank you. Your participation in this survey is valuable and highly appreciated.



Vipada Food Studies (VFS) Profile

Section 1: Participant information (3 items) and the MINI-IPIP scales (20 items),

1) What is your gender?

1: Female

2: Male

2) To which age group do you belong?

1: 18-24 years old

2: 25-34 years old

3: 35-44 years old

4: 45-54 years old

5: 55 years old and over

3) What is your region of origin (Where were you born)?

1: Asia

2: Europe

3: North America

4: South America

5: Africa

6: Oceania (Australia, New Zealand, Papua New Guinea, Pacific Islands)

Personality Questionnaires (Q20 Questions)

Questions	1: Very Inaccurate	2: Moderately Inaccurate	3: Neither Inaccurate nor Accurate	4: Moderately Accurate	5: Very Accurate
Q1: I am the life of the party					
Q2: I sympathize with others' feelings					
Q3: I get chores done right away.					
Q4: I have frequent mood swings.					
Q5: I have a vivid					

imagination.					
Q6: I don't talk a lot.					
Q7: I am not interested in other people's problems					
Q8: I often forget to put things back in their proper place.					
Q9: I am relaxed most of the time.					
Q10: I am not interested in abstract ideas.					
Q11: I talk to a lot of different people at parties.					
Q12: I feel others' emotions.					
Q13: I like order.					
Q14: I get upset easily.					
Q15: I have difficulty understanding abstract ideas.					
Q16: I keep in the background.					
Q17: I am not really interested in others.					
Q18: I make a mess of things.					
Q19: I seldom feel blue.					
Q20: I do not have a good imagination.					

Section 2: A meal you ate out (Public Context)

We are now going to ask you a few questions about a recent "eating out" experience. Answer the questions, if possible, in relation to a recent meal you ate out (that is, at a restaurant or cafe).

24) Was your meal a lunchtime meal, or dinner?

- 1: Lunch (12-4 pm)
- 2: Dinner (7-12 pm)

25) How many people were sitting at your table with you?

- 1: I was on my own.
- 2: 1 other person
- 3: 2 other people
- 4: 3 other people
- 5: 4 other people
- 6: 5 other people
- 7: more than 6 other people. Please specify how many.

26) Where did you sit?

- 1: Indoors
- 2: Outdoors

27) First turning to your main meal....what was it? (e.g. "spaghetti bolognese" or "vegetarian pad Thai"?)

--

28) Please describe your main meal in a few sentences (unless the above is sufficient). So, if you had a tapas or banquet meal, please describe the different parts of the meal.

--

29) Did you order an entree before this meal?

- 1: Yes
- 2: No

30) Based on your main meal, please rank the main taste characteristics of your main meal. You can choose just two of the following if you like, or all six in any order. So, for example, if your main meal was sweet and sour pork, with no oiliness, saltiness or bitterness, you MIGHT choose sweet first and sour second, and that's it!

Ranking

Ranking	Taste
	Sweet
	Salty
	Sour
	Bitter
	Spicy
	Oily
	Other

Turning to the taste characteristic you chose as number 1 (the main characteristic of your meal), on the following scale please rate this characteristic. So, if you chose "oily" as the main characteristic, how would you rate the oiliness of the meal on the following scale? Or if you chose bitterness, how bitter would you rate the meal on the following scale?

31) On the following scale, 1 means "reasonably...salty, bitter, sweet, oily, spicy, sour", and 5 means "extremely....salty, bitter, sweet, oily, spicy, or sour". Rate the MAIN characteristic....

1	2	3	4	5
---	---	---	---	---

32) Turning to the physical appearance (e.g. colour) and presentation of the main meal, how would you rate it on the following scale (where 1 means ordinary/OK and 5 means spectacular)?

1	2	3	4	5
---	---	---	---	---

33) How would you rate the appearance?

1	2	3	4	5
---	---	---	---	---

34) Turning to the texture of the meal, how would you rate the texture of the meal on the following scale where 1 means a single, consistent texture, and 5 means lots of variety and interesting textures.

1	2	3	4	5
---	---	---	---	---

35) Did you have a dessert and what was it? (eg. Creme Brulee, Cake or Ice-Cream)

1: Yes

2: No

36) What was its name (please specify)

37) If you ordered any drink, what was the main type of drink you had?

1: Alcoholic drink

2: Non-Alcoholic drink

38) What was the total cost of the meal?

1: \$20 or less

2: \$21-40

3: \$41-60

4: \$61-80

5: \$81-100

6: over \$100 (please specify)

39) What was the main purpose for this meal?

1: Business meal

2: Family meal

3: Date night

- 4: Socialise with friends
- 5: Special Occasion (such as birthday or wedding anniversary?)
- 6: Any other purposes (please specify)

40) Did you choose the table where you sat or have some influence over the decision?

- Someone else chose the table. I had no influence over it.
- I helped choose the table, or had some influence over where we sat.
- I chose the table. The position was my choice.

In choosing where you sat to eat, which of the following factors made an impact on your choice?

41) The level of lighting	1: Brightly lit	2:	3	4	5: Mood lighting (not so well lit)	6: Not relevant to my decision.
42) Level of music	1: Quiet	2	3	4	5: Extremely	
43) The table position	1: In public area	2	3	4	Private Area	

44) Were there any other factors that influenced the choice of table?

--

Section 3: A meal you ate at home (Private Context)

You're almost done! Turning to a recent meal you ate with others at home (either your own home or someone else's place), please answer the following questions.

45) When did you eat this meal?

- 1: Lunch (12-4 pm)
- 2: Dinner (7-12 pm)

46) How many people were sitting at your table with you?

- 1. 1 other person
- 2: 2 other people
- 3: 3 other people
- 4: 4 other people.
- 5: 5 other people
- 6: more than 6 other people. Please specify how many.

47) Turning to your main meal, what was it? (e.g., butter chicken with rice or pizza)

--

48) Please describe your main meal in a few sentences (unless the above is sufficient). So, if you had a smorgasbord or a series of snacks instead of a main meal, please describe the different parts of the meal.

--

49) Did you have an entree before this prepared meal?

1: Yes

2: No

50) Did you have a dessert and what was it? (e.g. crème brulee, cake or ice-cream)

1: Yes

2: No

51) What was its name (please specify)

--

52) If you have a drink, what was the main type of drink you had?

1: Alcoholic drink

2: Non-Alcohol drink

53) What was the main purpose of this meal?

1: Business meal

2: Family meal

3: Date night

4: Socialise with friends

5: Special Occasions (e.g. birthday, wedding anniversary)

6: Any other purposes (please specify)

54) Based on your main meal, please rank the main taste characteristics of your main meal. You can choose just two of the following if you like, or all six in any order. So for example, if your main meal was sweet and sour pork, with no oiliness, saltiness or bitterness, you MIGHT choose sweet first and sour second, and that's it!

Ranking

Ranking	Taste
	Sweet
	Salty
	Sour
	Bitter
	Spicy
	Oily
	Other

Turning to the taste characteristic you chose as number 1 (the main characteristic of your meal), on the following scale please rate this characteristic. So, if you chose "oily" as the main characteristic, how would

you rate the oiliness of the meal on the following scale? Or if you chose bitterness, how bitter would you rate the meal on the following scale?

55) On the following scale, 1 means "reasonably...salty, bitter, sweet, oily, spicy, sour", and 5 means "extremely....salty, bitter, sweet, oily, spicy, or sour". Rate the MAIN characteristic....

1	2	3	4	5
---	---	---	---	---

56) Turning to the physical appearance (e.g. colour) and presentation of the main meal, how would you rate it on the following scale (where 1 means ordinary/OK and 5 means spectacular)?

1	2	3	4	5
---	---	---	---	---

57) How would you rate the appearance?

1	2	3	4	5
---	---	---	---	---

58) Turning to the texture of the meal, how would you rate the texture of the meal on the following scale where 1 means a single, consistent texture, and 5 means lots of variety and interesting textures.

1	2	3	4	5
---	---	---	---	---

Appendix B: Discriminant validity test using pairwise items for exploratory
factor analyses

	Component						
	1	2	3	4	5	6	7
Q1 E_LifeOfParty	.774						
Q2 A_Sympathize			.635				
Q3 C_ChoresDoneRightAway						.738	
Q4 N_MoodSwings		.767					
Q5 I_VividImagination				.671			
Q11							
E_TalkLotDifferentPartiesPeople	.787						
Q12 A_FeelOtherEmotions			.665				
Q13 C_LikeOrder						.654	
Q14 N_UpsetEasily		.735					
E_O_Taste_Extremity							
E_O_Taste_Appearance							.728
E_O_Taste_Texture?							.708
The level of lighting					.795		
Level of noise or music.					.788		
The table position					.718		
RDonotTalkLot	.701						
RInterestPeopleProblem			.763				
RForgetPutThingsBack						.740	
RRelaxedMost		.544					
RInterestAbstractIdeas				.593			
RDifficultUnderstandAbstract				.677			
RKeepInBackground	.742						
RNotReallyInterestInOther			.661				
RMakemess		-.458				.497	
RSeldomBlue		.495					
RGoodImagination				.777			

Source: Analysis of test instrument data