Profiling Consumers: The Role of Personal Values in Consumer Preferences

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Declaration

I, Franziska Leutner, confirm that the work presented in this thesis is my own.

Where information has been derived from other sources, I confirm that this has

been indicated in the thesis.

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London, 22nd of August 2016

Abstract

Models of consumer choice often fail to explain why individual consumers are drawn towards different products. Yet, with the growing use of personalised marketing, an understanding of individual consumer motivations is increasingly relevant. Where research investigates the effect of psychometrics on consumer choice, the focus often lies on personality. However, the relationship between personality and consumer choice is notoriously spurious. In addition, consumer choice increasingly requires active decision making in today's rich product environment. Personality offers limited insights into drivers of such consumer decisions. Personal values may be a more suitable psychometric. Theoretical work on values indicates their relevance in decision making and behaviour.

Values describe a person's underlying goals and ambitions, reflecting their core needs and drivers. This thesis explores whether values meaningfully explain why consumers prefer products at the category, product variant and brand level, and investigates the predictive strength of values in different consumer choice scenarios. It does so by examining purchase records, social media activity, and self-report data to test a series of predictive, structural and group differences models. The thesis contributes an original conceptual and methodological framework for assessing the role of values in consumer behaviours. It further contributes a text based measure of values to ease application in consumer settings.

Results suggest that: 1. Values are correlated with preference for product category (Chapter 4); 2. Individual differences in values significantly predict product choice in the supermarket (Chapter 5); 3. Individual differences in consumer brand affiliation predict values with moderate accuracy (Chapter 6). These findings contribute to a more comprehensive understanding of the role of values in consumer preference and their feasibility and usefulness for application in personalisation and consumer insight.

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Part I: Introduction

Chapter 1 The Individual in Consumer Choice

This chapter gives an overview of individual differences in consumer research. It critically reviews congruence as a framework for explaining individual differences in brand and product preference and choice. Finally, predictive personality based models of consumer preference are discussed as an alternative to congruence models.

The vast array of products and brands available today mean that most purchases require consumer to make decisions that go beyond material need fulfilment. Consumer choice has become a demanding task, and the decision making burden is pervasive in people's lives. Even in such needs-driven contexts as food consumption, consumers are required to choose between a wide, and growing, array of options. The amount of brands available in all categories at supermarkets has multiplied in the last 20 years: Supermarkets now offer an average of 44,000 products (FMI, 2013). Most consumer choice options overlap largely in functional properties, and with the absence of an obvious better option, choices turn into tasks requiring attention. Almost half of consumers today spend more than three minutes to pick up three products from the supermarket shelf, actively making decisions (Yakob, 2015).

In this context, consumer choice becomes increasingly relevant, in particular factors explaining how and why consumers make decisions between functionally similar options. Consumer decisions, preferences, and ultimately behaviours, are influenced by a wide array of factors. Consequently, consumer choice is studied across disciplines, with areas of investigation including decision-making, judgement, perception and attention, information processing, motivational theories, attitude formation, and influence of advertising. Much of consumer psychology focuses on cognitive processes and behaviours (Jansson-Boyd, 2010). Such approaches offer insights into general processes underlying consumer behaviour, but rarely address what drives consumer decisions, or explain where individual differences in preferences arise. Where consumer studies have been concerned with understanding individual drivers underlying consumer choice, they have applied frameworks of the self as central to consumer decision making. Consumer choices are seen as extensions of the self, as decisions that

are taken not to fulfil needs but to self-express (Solomon, Bamossy, Askegaard, & Hogg, 2013).

The idea that consumers purchase for reasons other than meeting material needs is increasingly relevant in today's world. Consumption has foregone material need fulfilment to the point of absolute consumption, that is, the purchasing of products for the act of purchasing alone (Boeing & Lebert, 2014). Consumer psychologists in the 1970s recognised that purchasing goes beyond material need fulfilment, leading them to move on from rational approaches to consumption to more person based approaches. Consumption is seen as self-expression, in the sense that products are purchased to represent who we are, and what we want. The symbolic interactionist perspective, popular with sociologist, views human identity as arising out of interaction with symbols (Solomon, 1983). Consumer psychologists have applied this symbolic interactionist perspective to the consumption driven world of today, where many of the symbols we use to shape our identity are products (Solomon et al., 2013).

With the increased amount of products available to choose from, much of people's self-worth and understanding today is tied to their identity as a consumer (Kanner & Gomes, 1995). Similarly, the dramaturgical perspective describes consumption as a means to define the self in relation to others: Consumers use products as props to act out their different social roles, to the extent that some props, or products, become extensions of the self (Solomon et al., 2013). Props are used to define the self at different levels, with products used to reflect personality, homes and furnishings used to shape family identity, one's chosen place of residence to reflect community identity, and finally sports teams or landmarks to reflect group identity (Hansen & Altman, 1976; Nasar, 1989; Rentfrow et al., 2013; Sadalla, Vershure, & Burroughs, 1987). In this sense,

products become central means to communicate the self to others. Communication of the self to others is important not only for impression management towards others, but also towards oneself. What others think of us defines how we see ourselves (Kleine, Schultz Kleine, & Kernan, 1993). Symbols, or products, thus contribute both towards how others, and how we, see ourselves. The importance of such symbols increases in unfamiliar environments where consumers rely on products to maintain their self-concept (Ball & Tasaki, 1992). When confidence in self-view is reduced, consumers are more likely to choose products that support their self-view (Gao, Wheeler, & Shiv, 2009). In today's fast moving world, the importance of brands and products for consumers' self-understanding may be partially due to the increased need of consumers to maintain their self in unfamiliar environments.

1.1 The Self in Consumer Preferences and Choice

Given the prominent role that consumption takes in many contemporary societies and individual lives, it is not surprising that theories of consumer psychology often address essentially human needs and processes. Consumption is an expression of what makes us unique as individuals, and a way to express ourselves in our actions and the worlds we create around us. Dramaturgical and symbolic interactionist perspectives suggest that the consumer's self is central to understanding consumer behaviour and choice, in particular in ambiguous choice context such as presented in today's marketplaces. Consumption is used to hide or highlight certain aspects of the self, in other words to create a favourable self-representation both to others and to oneself (Solomon et al., 2013). Brands and brand endorsement are used as forms of implicit impression management and are frequently used for online self-presentation

(Hollenbeck & Kaikati, 2012). This is expressed in correlations between Facebook likes which often relate to popular music, brands or websites, and personality traits (Kosinski et al., 2013). Consumers identify with some brands to the extent that they tattoo brand logos or name their children after brands (Geoghegan, 2005; Yakob, 2015). Consumer self, or self-concept, is often used to explain this identification of consumers with products. Self-concepts are the "beliefs a person holds about his or her attributes, and how he or she evaluates these qualities" (Solomon et al., 2013, p.208), although the definition of self varies across disciplines and paradigms (Achouri & Bouslama, 2010). There are several ways in which the self-concept influences consumer product preferences and behaviour.

First, consumers use products because they see them as reflections of either their ideal or their real self (Wright, Claiborne, & Sirgy, 1992). Consumers evaluate themselves against an attribute they consider as ideal. Products then are appraised as favourable either because they are perceived by the consumer to be a means to achieve the ideal attribute, or as consistent with the actual self. Advertising takes advantage of this mechanism. Self-esteem advertising, where positive feelings about the self are stimulated in consumers, is effective in changing consumer attitudes towards advertised products (Durgee, 1986). In addition to ideal and actual self, symbolic interactionism and dramaturgical approaches understand the self to encompass multiple selves, each complete with their appropriate scripts, props and costumes (Goffman, 1959; Solomon, 1983). Selves are also related to the multiple role identities people take on such as boss, parent, or friend. Products are evaluated in terms of their contribution to the self they relate to.

Second, consumers use products to influence how others will perceive them (Holt & Thompson, 2004; Kleine et al., 1993; Solomon, 1983; Wright et al., 1992). Self-presentation is a behaviour that people engage in to show themselves to others in a favourable way (Zhao et al., 2008). It describes efforts we make in order to influence the impressions other form about us (Zhao, Grasmuck, & Martin, 2008). As most of our life is spent interacting with others, and depends on social support, self-presentation forms a fundamental part of people's lives. Self-presentation is related to both primary and secondary personal goals (Rosenberg & Egbert, 2011). Primary personal goals are related to changing behaviour in others, in this case the goal to get others to form a certain impression. Secondary goals are on-going concerns and reoccurring motivations, such as interaction goals (the goal to ensure social appropriateness of interactions), identity goals (the goal to maintain a certain self-concept), and personal resource goals (the goal to maintain physical, mental and other assets) (Rosenberg & Egbert, 2011). That self-presentation is closely related to personal goals helps to understand the significance it takes in our everyday interactions. Goffman (1959) with his dramaturgical approach recognised that people employ specific strategies when interacting with others in order to create positive impressions. People become actors who use objects, including products and brands, to perform an identity that they conceive others will approve of (Strano & Wattai Queen, 2012).

Consumers do not only use products as props for self-representation, they also evaluate the favourability of products in terms of how they believe products to be evaluated by others (Graeff, 1996; Snyder & Gangestad, 1986; Solomon & Bell, 1988). Similarly, the concept of the looking glass self describes that our self-view varies depending on whose perspective we take on when evaluating ourselves (Cooley, 1992).

Third, individual differences in self-consciousness affect how much importance consumers place on representing their selves through products. Those high in self-consciousness tend to be more interested in clothing and heavier users of cosmetics than people low in self-consciousness (Solomon et al., 2013).

1.2   Self-Congruence

If consumers use products and brands to extend and communicate their identities, the question of how products are selected arises. Specifically, why certain products or brands are perceived as favourable in terms of representing the self and others are not. Consumers evaluate products both in terms of how they relate to their own self and goals, and in terms of how they are perceived by others. Products are important props in self-representation, used to maintain one's own identity as well as to communicate identity to the outside world. The idea of congruence as an explanation for individual differences in consumer preferences originates from this conceptualisation of consumer preference as a function of the self. The congruence concept holds that consumers prefer those products or brands that are similar to them. The concept has been proposed at the product as well as the brand level. It is thought that much of a brand's success is due to an overlap between the brand personality and its consumers' self-concepts, with a meta-analysis reporting an effect of r = .31 of self-congruence on brand preference (Aguirre-Rodriguez, Bosnjak, & Sirgy, 2012). The effect of congruency is moderated by a number of factors including individual differences in self-enhancement, cognitive elaboration, impression formation, self-motives, as well as brand aspects such as perceived quality, customer satisfaction, and brand prestige and appearance

(Aguirre-Rodriguez et al., 2012; Erdogmus & Budeyri-Turan, 2012; S. Y. Park & Lee, 2005).

Similarly, product attachment, the strength of the emotional bond a consumer has with a product, is thought to result from a perceived similarity in personality between product and consumer (Govers & Mugge, 2004). Congruence between product and consumer personality predicts product related outcomes such as how attached a consumer is to a product, or how long a consumer holds on to a product (Mugge, Schifferstein, & Schoormans, 2006). Product-consumer personality congruence predicted consumer preference for several household appliances (Govers & Schoormans, 2005), cars (Govers & Mugge, 2004; Mugge et al., 2009), watches (Mugge et al., 2006) and holidays (Sirakaya-Turk, Baloglu, & Mercado, 2013).

A major challenge with congruence models is the identification and measurement of dimensions on which both products or brands and consumers can be compared. Congruence implies that both product and consumer share certain attributes, and that the consumer recognises and evaluates these attributes in the product. The idea of product, or brand personality, lends itself as a measurement tool for congruence.

1.2.1 Brand and Product Personality: Profiling the Soft Side of Products

Brand and product personality are the human attributes with which a given product, or brand, is described (Govers & Schoormans, 2005). Brand personality is also understood as the sum of all interactions a customer has had either directly with the brand, or with consumers of that brand (J. L. Aaker, 1997). Product personality reflects the symbolic meaning of products, thereby capturing product attributes beyond material utility and function (Govers & Schoormans, 2005; Janlert & Stolterman, 1997). Product personality

is not only communicated through product appearance, but also through interaction with the product. This is particularly relevant for electronic products or machines where frequent interaction occurs (Desmet, Nicolás, & Schoormans, 2008). Brand and product personality thus describe soft characteristics of products that influence consumer preferences. These soft characteristics become interesting in the context of consumer preference because it is thought that the higher the resemblance between a brand's and a consumer's personality, the better the brand relationship (Huang, Mitchell, & Rosenbaum-Elliott, 2012). Although first connections between brand and human personality go back to the late 1980s, the conceptualisation as well as measurement of congruency has been notoriously difficult (Alt & Griggs, 1988; Batra, Lehman, & Singh, 1993). Therefore, both brand and product personality are often criticised on measurement and conceptual grounds, although brand personality measures are more widely established. Brand personality affects a number of brand related outcomes, including purchase intention, brand trust, attachment and commitment, and brand loyalty (Bouhlel, Mzoughi, Hadiji, & Ben Slimane, 2011; Lin, 2010; Naresh, 2012).

1.2.2 Brand Personality and Congruence

The most influential measure of brand personality is Aaker's (1997) five dimensional measure of Sincerity, Excitement, Competence, Sophistication, and Ruggedness. Aaker (1997) compiled a list of 114 personality traits used by marketers to describe brands. 600 raters evaluated 37 brands on each of the traits. The set of 37 brands was selected based on three criteria: that consumers should have an opinion about the brands, and that the brands were thought to reflect different brand personality types, and represent symbolic, utilitarian, and symbolic/utilitarian brands.

Brands that serve symbolic functions were brands in areas such as clothing, fragrance, and cosmetics; brands that serve utilitarian functions were in areas such as pain relievers and toothpaste; and brands that serve utilitarian and symbolic functions were in areas such as computers, soft drinks, and sports shoes. As in human personality approaches, Aaker (1997) applied dimension reduction to the obtained data, postulating that like human personality, brand personality results from underlying traits (Avis, 2012). Dimension reduction of the obtained ratings resulted in the five proposed dimensions, with sincerity representing honest, wholesome and down-to-earth brands; excitement representing daring, imaginative and spirited brands; competence representing reliable, intelligent and successful brands; sophistication representing charming and upper-class brands; and ruggedness representing outdoorsy and tough brands (J. L. Aaker, 1997).

Despite the methodological rigour underlying its development, the consistent demonstration of its good psychometric properties, and its replication across cultures (Eisend & Stokburger-Sauer, 2013; Ferrandi, Falcy, Kreziak, & Valette-Florence, 1999), Aaker's (1997) scale suffers from several methodological issues. The scale lacks generalisability across time, as brand perceptions and categories may have changed along with the marketplace and product landscape in the past 15 years (Avis, 2012). The scale further raises conceptual issues, as it includes items that do not reflect personality traits (Azoulay & Kapferer, 2003); although later adaptations of the measure remedy this (see Geuens, Weijters, & De Wulf, 2009). A further measurement and conceptual problem with Aaker's (1997) brand personality scale is that consumer personality significantly affects consumer ratings of brand personality. Extraverts were more likely to perceive car brands as exciting than introvert participants ($r = .17$), and Neurotic participants were more likely to attribute competence to car brands ($r = -.12$).

Participants high on Openness were more likely to rate brands as sincere (r = .15) and competent (r = .13, and participants high on Agreeableness tended to rate brands as more sincere (r = .28), competent (r = .27), and exciting (r = .25). Conscientious participants rated car brands as more sincere (r = .21), competent (r = .13), exciting (r = .13), and sophisticated (r = .13) (Dikcius, Seimiene, & Zaliene, 2013). Brand ratings may thus reflect rater as well as product personality.

The results of Aaker's (1997) investigation into brand personality suggest that congruency approaches as explanations of brand liking may be flawed because brand personality falls onto different dimensions than human personality. Although some of the brand personality dimensions may resemble human personality traits (Agreeableness and sincerity, Extraversion and excitement, and Conscientiousness and competence), sophistication and ruggedness are not reflected in dimensions of human personality (Caprara, Barbaranelli, & Guido, 2001; Fennis, Pruyn, & Maasland, 2005; Lin, 2010). Consumer may be attracted to certain personality traits of a brand, but those brand personality traits cannot directly overlap with their own if brands are perceived to exhibit characteristics different to human characteristics (Briggs, 1992).

In a similar vein, Caprara, Barbaranelli, and Guido (2001) found that the Big Five personality dimensions could not be mapped onto brands. Brand personality did not fall into the same five dimensions as human personality. The Big Five personality dimensions are largely accepted as the standard framework for human personality (Barrick, Mount, & Judge, 2001). They have been shown in numerous studies to represent basic human personality traits across cultures, are stable over time, and demonstrate good reliability and validity (Chamorro-Premuzic, 2011). The Big Five are higher order personality traits derived from the lexical hypothesis, which states that all aspects of personality are

represented as adjectives in human language (O P John, Robins, & Pervin, 2008). By reducing the dimensionality of those adjectives, five dimensions emerge: Extraversion, Conscientiousness, Agreeableness, Neuroticism, and Openness to Experience. The Big Five are conceptualised as human traits rooted in biology that, at the interplay of genetic an environmental factors, create behavioural dispositions in individuals (Bouchard & McGue, 2003; Costa & McCrae, 1992; Plomin, Owen, & McGuffin, 1994). The application of human personality theory to brands lacks in this respect. Brands do not naturally possess a predefined set of personality traits which become more or less expressed (Avis, 2012). Nonetheless, customers do recognise certain attributes comparable to human personality in brands (Siguaw, Mattila, & Austin, 1999).

To investigate these theoretical concerns over the applicability of human personality theory to brand personality, Caprara et al. (2001) obtained ratings from 1,500 participants of both themselves and 12 selected brands, on 8 adjectives describing each of the Big Five dimensions. They found that self-ratings on the adjectives fell into the established five factor structure. Ratings of brands, however, did not replicate the same structure. Rather, brand ratings on the adjectives fell into two dimensions, one containing adjectives relating to Neuroticism and Agreeableness (such as 'patient' and 'affectionate'), and one containing adjectives relating to Openness and Extraversion, or Openness and Conscientiousness, depending on the brand that was being rated (Caprara et al., 2001). The two dimensionality of brand personality was replicated in an independent study (Milas & Mlačić, 2007). This supports the view that brand costumer personality congruency, at least in its conceptualisation of direct overlap of traits, is flawed as an explanation for brand preferences.

Research on congruence in the tourism sector foregoes conceptual issues with the comparability of human and brand personality. Here, congruence is conceptualised as the overlap between ratings of self and ratings of consumer of respective holiday, such as tourists on cruises. Results of several studies reveal a significant effect of congruence on tourist satisfaction and other outcomes (Beerli, Meneses, & Gil, 2007; Chon, 1992; Hosany & Martin, 2012; Kastenholz, 2004; Litvin & Goh, 2002; Litvin & Kar, 2004). For example, Hosany and Martin (2012) report standardised regression coefficients of -.25 between actual self-congruence, and of -.35 between ideal self-congruence, with cruisers' experience. That is, the higher cruisers perceive the overlap between their actual and ideal self and that of other cruisers, the more positively they experience their cruise, and the more satisfied they are with the cruise.

Several studies report an effect of brand-consumer congruency on brand outcomes. In a comprehensive review Achouri and Bouslama (2010) develop a conceptual model in which congruence is proposed to affect brand satisfaction and loyalty. However, the conceptual and methodological flaws around brand personality discussed above are reflected in research on congruence as a driver of brand liking. Many studies use the same questionnaires to assess both brand and consumer personality (Birdwell, 1968; Dolich, 1969; Kressmann et al., 2006). For example, Kressmann et al. (2006) report a robust model that demonstrates an effect of self-image congruency on brand loyalty, such that consumers are more loyal to brands that are similar to the customers' self-image. However, consumer personality in this study is measured using Aaker's (1997) brand personality questionnaire. Given that human personality has different dimensions to brand personality, it is questionable whether the resulting personality scores for participants are valid, reliable, and measuring factors

present in the data (Caprara et al., 2001). The authors do not provide a factor analysis of human scores on Aaker's brand personality measure to address this question. Considering research demonstrating that consumer self-ratings correlate with consumer brand ratings (Dikcius et al., 2013), congruence in this study may occur as a result of response bias rather than similarity in actual personality between consumer and brand.

Congruence may thus be a reflection of identification with a brand, such that consumers tend to rate brands that they like as more similar to themselves than brands that they do not like, as reported in Dolich (1969). In this study brand personality and self-image were rated by the same person on 22 adjective pairs, including as expensive-inexpensive. This raises issues both with the relevance of selected adjectives to humans and brands, as well as the effect of response bias on brand personality.

The difference in personality dimensions between brands and humans may be one of the reasons explaining lack of empirical support for congruency theories. Another reason may be limitations of personality as an explanatory variable. Aaker's (1997) brand personality scale illustrates that personality describes what people and brands do. Personality inventories are aimed at describing individual differences in typical behaviours. Brand liking may not be the result of typical behavioural patterns but rather of underlying goals and motivations. Individual differences in values describe such underlying goals and drivers, and may be more suitable in explaining why consumers are drawn towards certain brands but not others.

1.2.3   Product Personality and Congruence

Product personality is studied by designers and psychologist as a way of understanding the product characteristics that influence consumer preference as well

as consumer interaction with a product (Pourtalebi & Pouralvar, 2012). Products with delicate personalities, for example, tend to be treated with more care by consumers (Mugge et al., 2009). Consumers tend to prefer products that resemble their own personality (Govers & Mugge, 2004; Govers & Schoormans, 2005).

Several product personality measures exits, though there is no widely established measure. As with brand personality, methodological flaws are present. Some approaches directly apply measures of human personality to products, which is problematic given that not all human characteristics may be present in products (Kassarjian, 1971; Sirgy, 1982). Others consider products from only one category, or fail to validate the scale (Jordan, 2002; Malhotra, 1981; Wells, Andriuli, Goi, & Seader, 1957). Mugge et al. (2009) developed a product personality measure based on over 1,000 adjectives describing product characteristics. They validated the measure using products from various categories. Dimension reduction resulted in twenty subgroups of personality characteristics for products. For the final measure, one descriptor was chosen out of each of the groups, resulting in a 20 item product personality measure. Items included cheerful, open, cute, dominant, silly, boring, honest and serious (Mugge et al., 2009). In a qualitative study assessing reasons for product choice, Creusen and Schoormans (2005) identified six product characteristics that were sufficient in describing consumers' reasons for choosing a product. Consumers were asked to choose between functionally equivalent but differently designed products and were subsequently interviewed on their reasons for choosing one design over the others. The six characteristics were: communication of aesthetic, symbolic, functional, ergonomic information, attention drawing, and categorisation (Creusen & Schoormans, 2005).

Early studies on the relationship between consumer personality and product preference indicated that consumers of different products differed in their personality. For example, convertible car owners differed in personality form standard or compact car owners (Westfall, 1962). Subsequent studies confirm this link, although methodological as well as measurement concerns weaken their claims. For example, Govers and Mugge (2004) found that people preferred products that were congruent with their own personality. However, in this study product personality was measured using the human personality dimensions Extraversion and Conscientiousness, using items from human personality measures. In addition, product preference was self-reported, and rather than measuring participants' own personality, a scenario-based approach was used. Scenario-based approaches present participants with scenarios and ask them to rate, in this case, the personality and product preference of the persons portrayed in the scenario. It is thus questionable whether results from the study represent actual preferences or rather indicate that people who are perceived to have certain attributes are perceived to also like products that represent the same attributes. The same holds for a study using the scenario based approach to determine product attachment and lifetime (Mugge et al., 2006).

To forego the methodological issues surrounding incompatibility of human and product personality scales, Govers and Schoormans (2005) measured consumer-product congruence directly using a four item self-report measure (i.e. 'This product is not like me / is like me'). In addition, user-image congruence was measured (i.e. 'If you consider the types of people who like this product, are you like these people?'). Results indicated that consumer-product congruence accounted for a significant amount of variance in consumer product preference, even when user-image congruence was accounted for

(predicting consumer preference from user-image congruence R^2 = .24, R^2 change when adding consumer-product congruence as a predictor variable = .14). This indicates that consumers identify with the product directly, and not via the social groups they believe to engage with the products.

In conclusion, congruency approaches are conceptually flawed in the sense that products and brands do not have the same personality dimensions as humans. Given problems with product personality measures, determining the personality congruence between a consumer and a product has been notoriously difficult (Avis, 2012). There is no measure that profiles consumers and products along the same personality dimensions (Caprara et al., 2001), and much of the existing research on congruence is methodologically flawed, casting doubts onto the validity of results. Despite this, research demonstrates that products have distinct personalities, and that they play a role in consumer choice (Govers & Schoormans, 2006). Congruency approaches are successful in conceptualising consumer choice as a process in which not only practical functionality and material need fulfilment but also soft product or brand characteristics, as well as desires and preferences, play a role. By doing this, congruency approaches offer an explanation for why consumer may be drawn to certain products.

1.3   Profiling Consumer Selves: The Big Five

Another approach to understanding the role of self in consumer choice is prediction. Such approaches forego methodological issues of congruency models. They take into consideration consumer characteristics only, rather than investigating what brand, or product, characteristics the consumer is drawn to. Consequently, no compatible measures of human and brand or product personality are needed.

Prediction approaches mostly use personality traits to quantify the consumer self. Although the self and personality are distinct constructs, they conceptually overlap. The self is an organisation of knowledge, including statement like 'I am…', 'I have…', or 'I will behave like…' (Ball & Tasaki, 1992). Personality describes general behavioural tendencies (Chamorro-Premuzic, 2011). Some researchers conceptualise the self as a changeable object that is continuously shaped through action and choices, whereas personality is largely stable across the lifespan (Gao et al., 2009; Soto, John, Gosling, & Potter, 2011). Personality is more suitable for quantitative investigations because the concept is well developed both theoretically and operationally. Numerous validated personality measures with good psychometric properties are available to researchers (Chamorro-Premuzic & Ahmetoglu, 2012). Personality can thus be reliably measured and quantified.

Personality as a factor in consumer behaviour has a long tradition (Kassarjian, 1971; Klein & Evans, 1968). The field was abandoned in the 1970s as a consequence of situational approaches gaining popularity over personality based approaches (R. Hogan, 2007). With a revival of personality research in the 1990s following the emergence of more unified personality theory, personality is regaining popularity in consumer behaviour and marketing (Volland, 2013). However, criticism addressed at the role of personality in consumer behaviour persists, mainly arguing that personality plays a negligible role in consumer behaviour and choice (Baumgartner, 2003). A growing body of literature demonstrates that this criticism is unwarranted.

Personality is thought to influence consumer behaviour in several ways. Personality describes people's behavioural dispositions, which are reflected in consumption related habits and behaviours (Baumgartner, 2003). For instance,

personality is related to people's willingness to take risks and act impulsively, both of which play a factor in people's propensity to purchase impulsively (Verplanken & Herabadi, 2001). Personality also has indirect effects on consumer behaviour through affecting educational attainment, occupational choice, and income (Fletcher, 2012; Heckman, Stixrud, & Urzua, 2006; Heineck, 2011; Jackson, 2006; Mueller & Plug, 2004).

A number of recent studies illustrate that personality has a non-negligible effect on predicting consumer behaviour (Casidy, 2012a). In a model that included personality traits, individual differences in cognition, and situational factors, personality traits Openness, Agreeableness, and Neuroticism directly predicted intention to purchase products online (standardised regression coefficients of .09, -.14, and -.16 repsectively) (Bosnjak, Galesic, & Tuten, 2007). Personality is also related to expenditure behaviour: In Volland's (2013) analysis of the British Household Panel Survey, a one standard deviation increase in Extraversion was related to an increase of £3.10 spending on leisure activities for females, and £6.80 for males. An increase in Neuroticism was associated with a £1.50 drop in expenditure for females only. Both males and females high in Openness spent more on leisure activities, and males also spent more on food away from home. Agreeableness was associated with lower expenditure both on leisure activities and food away from home, and Conscientious women, but not men, were less likely to spend on leisure.

Personality traits Openness and Extraversion influence brand affect, with the two personality traits differentially relating to aspect of brand affect (brand loyalty, perceived hedonic value, and purchase loyalty). For example, Extraversion was more strongly related to preferring a running shoe brand because it evoked feelings of pleasure ('I feel good when I use this product') than Openness (standardised regression

coefficient of .24 for Extraversion versus .13 for Openness) (Matzler, Bidmon, & Grabner-Kräuter, 2006). Extraverts also liked more brands, but liked those brands to a lesser degree, whereas Introverts liked less brands but with a strong preference (Schaefer, Knuth, & Rumpel, 2011).

In a sample of 108 college students the Big Five personality traits did not significantly distinguish between Lenovo and Apple laptop owners (Nevid & Pastva, 2007). Personality did, however, have an effect on what aspects of use owners valued in their laptops. Neurotic people were more likely to place importance on ease of use and less likely to place importance on cost. Open people were more likely to rate style as important, and less likely to rate reliability as importance. Similarly, Openness negatively predicted the importance consumers put on visual aesthetic product aspects (Myszkowski & Storme, 2012). The big five personality traits Openness and Extraversion significantly predicted whether consumers preferred national or supermarket in-house brands, with Extraverts buying more national brands, and Open customers buying more in-house brands (Whelan & Davies, 2006).

Several studies of Facebook likes, that is the brand pages, celebrities, music preferences and content posts Facebook users mark as liked, significantly predicted individual differences in the Big Five personality traits (Kosinski et al., 2013; Youyou, Kosinski, & Stillwell, 2014). Whilst this study did not look at brand preferences in isolation, and hence their contribution to the prediction of personality traits is unclear, it indicates that preferences do relate to personality traits, and that the relationship is detectable in records of online behaviour. This has implications for the applicability of psychometrics in consumer behaviour. If personality can be measured via records of online behaviour, personality could be applied in consumer research without the need

to administer psychometric tests. This would make personality research in the consumer context less resource intensive. In addition, consumers could be observed directly rather than using panellists that may not be reflective of the actual customer base.

Prediction approaches to consumer behaviour fulfil an important role in demonstrating the relevance of the self, or personality, in consumer behaviour. In contrast to congruence models they do so without major theoretical or methodological concerns. However, prediction models are limited in terms of offering meaningful interpretations of the factors underlying consumer choice. One criticism of the Big Five in consumer behaviour is that they may be too high level personality traits to explain differences in specific preferences. Indeed, narrow traits may be better suited to predict narrow behaviours (Ahmetoglu, Leutner, & Chamorro-Premuzic, 2011), although the benefits of narrow measures remain subject of debate (Ones & Viswesvaran, 1996).

Another issue is the interpretability of the relationships between the Big Five and consumer behaviour. Even when relationships between these broad traits and specific consumer behaviours are detected, the explanations for why consumers make the choices they do are equally broad. For example, when we see a relationship between a consumer's Openness and their preference for in-house brands, we may conclude that a behavioural tendency for a variety of experiences is expressed in people purchasing less prestigious brands (Whelan & Davies, 2006). We cannot, however, make inferences about which motivations and drivers attract people to a certain product or brand. The Big Five do not explain why certain behaviours are adapted. That is, we cannot make meaningful inferences about what drove the individual to choose the less prestigious brand.

Chapter 2 Drivers Underlying Consumer Choice

This chapter introduces a conceptual framework of values as psychometrics for individual drivers of consumer preferences. Existing models and measures of values, as well as existing studies on values as predictors of behaviour, including consumer choice, are reviewed.

Where personality describes general behavioural tendencies, values describe underlying goals and drivers (Parks-Leduc, Feldman, & Bardi, 2014). Human values describe individual differences in goals and ambitions. A person's values serve as their guiding principles in life (S. H. Schwartz, 1994). Whilst consumer choice can be understood as an expression of underlying behavioural tendencies, and such behavioural tendencies do play a role in consumer choice, consumer choice is also a question of individual drivers and motivations. Many consumer choices today are the result of deliberate decision making (Yakob, 2015). Values describe individual differences in goals and ambitions, and as such influence how choice options are appraised and evaluated. By investigating values in consumer choice, researchers may thus gain insights into the individual drivers underlying consumer choices. Values research originates in social sciences where it was employed to understand individual motives in behaviour, and how those motives relate to one another.

2.1   Basic Human Values

The most influential model of values is that developed by Schwartz over the past three decades. Schwartz (1994) identified a set of specific values that are recognised by people across cultures. See Table 2-1 for a list and definitions of Schwartz's values. Several measures of values existed at the time, but Schwartz's model claimed to measure the complete array of human values that were grounded in human nature and present across cultures. Previous models addressed single or incomplete sets of value dimensions only. Much original values research was concerned with cultural values, or the understanding of how values in one culture differ from values in another culture (S. H. Schwartz, 1994). Social scientists developed value models to explain people's reaction

to social, political and moral conflicts. They found that people often based their decisions and opinions on higher-level principles, and proposed values as a framework to understand those principles.

Table 2-1 Basic human values after Schwartz (1994)

Power	Social status, control or dominance over people and resources
Achievement	Personal success
Hedonism	Pleasure and sensuous gratification for oneself
Stimulation	Excitement, novelty, and challenge in life
Self-direction	Independent thought and action-choosing, creating, exploring
Universalism	Appreciation and protection of the welfare of all people and nature
Benevolence	Preservation and enhancement of welfare of people with whom one is in frequent personal contact
Tradition	Respect and commitment to cultural and religious customs
Conformity	Restrain from actions likely to upset others and violate social norms
Security	Safety and stability of society, relationship and self

2.1.1   Earlier Models of Values

Ingelhart's values were derived from basic human needs (1977). He reduced Maslow's hierarchy of needs to two basic needs: Materialism, a preference for security, and Post Materialism, a preference for higher needs such as freedom, self-expression and participation. Ingelhart revised his theory to include a more broad definition of Post Materialism as Survival/Self-Expression, with dimensions of interpersonal trust, happiness, and liberal sexual morality (Ingelhart & Welzel, 2005). Ingelhart's theory importantly included a theory of value change. Industrialisation lead to the replacement of traditional with secular-rational values. In post-industrial or advanced societies values of Self-Expression then became more important (Ingelhart, 1977). Ingelhart's values are

measured by asking about concrete moral scenarios including abortions, national pride, respect for authority (agreement of which is rated as traditional), and political orientation and homosexuality (agreement with which is rated as self-expression). One criticism on Ingelhart's measure is that all indicators are only indirectly related to values (Datler, Jagodzinski, & Schmidt, 2013). Another criticism is that there are causal relationships between the indicators of values that Ingelhart uses, meaning that independence is violated (Datler et al., 2013).

Moderate correlations were observed between Ingelhart and Schwarz dimensions ($r = -.02$ to $r = .24$), with the highest between Ingelhart's Secular-Rational/Self-Expression and Schwartz's Conservation-Openness (Dobewall & Strack, 2014). In addition, Ingelhart's Self-Expression is associated with Schwartz's Altruism (Welzel, 2010), and Ingelhart's Post Materialism and Self-Expression correlate with Schwartz's Universalism and Self-direction (positive), and with Tradition, Conformity, and Security (negative)(Beckers, Siegers, & Kuntz, 2012). Schwartz values explained more variance than Post Materialism or Self-Expression, and had higher explanatory power when modelling values as predictors of moral and social attitudes (Beckers et al., 2012).

2.1.2 Schwartz's Basic Human Values

Schwartz defined value as 'a (1) belief (2) pertaining to desirable end states or modes of conduct, that (3) transcends specific situations, (4) guides selection or evaluation of behaviour, people, and events, and (5) is ordered by importance relative to other values to form a system of value priorities' (S. H. Schwartz, 1994, p.20). Values derive from three underlying needs humans have to fulfil: their needs as biological organisms, the need for coordinated social interaction, and the need to sustain social

groups (S. H. Schwartz & Bilsky, 1987, 1990; S. H. Schwartz, 1992). Values form a system of value priorities where values are ordered by importance relative to one another (S. H. Schwartz, 1994). The theoretical model of relationships amongst value dimensions is presented in Figure 2-1.
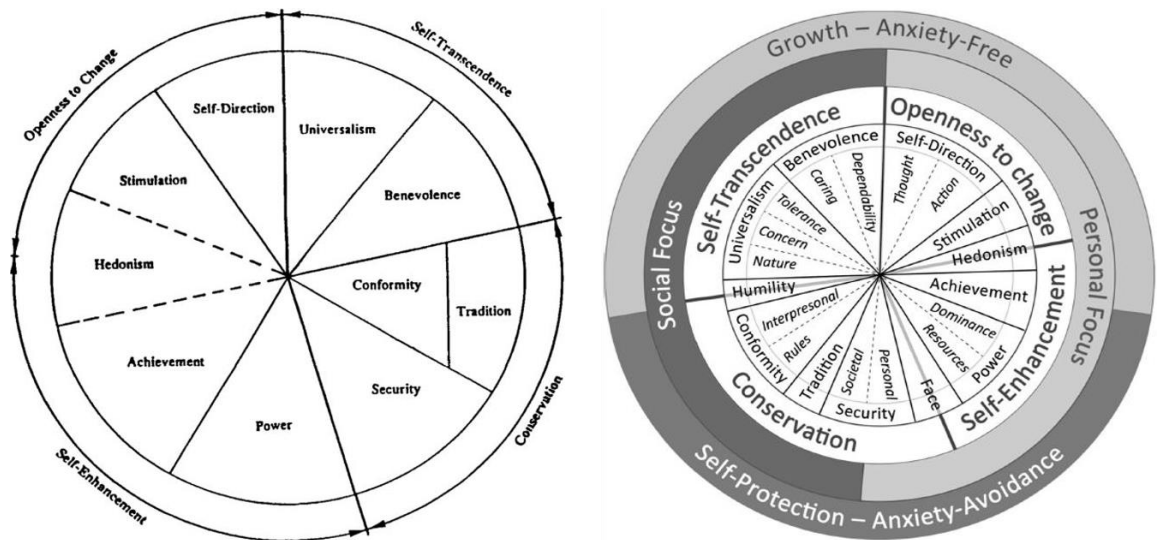
Figure 2-1 Original (Schwartz, 1994) and refined (Schwartz et al., 2012) models of values

Values that are closer together in the diagram are more closely related and may emerge as highly correlated in empirical studies. Values are conflicting if they are at two opposing sides of the circle. Thus Openness values oppose Conservation, and Self-Transcendence values oppose Self-Enhancement. Values according to this definition have the following characteristics: to serve the interest of some social entity, they motivate action, they serve as a standard to justify and judge actions, and they are formed both based on prominent group values as well as personal experiences.

2.1.2.1 The Structure Debate

Much of the research on values has been concerned with the structure of values, and the relationships between them. The structure of values is different from personality, which can theoretically occur in any combination. Values are not

independent but rather move together and inform each other. Values fall on a continuum, to be compared with a colour circle rather than discrete categories; accordingly, researchers have drawn the dividers between values at different points of the continuum (Eldad Davidov, Schmidt, & Schwartz, 2008). Different numbers of values are thus routinely used in research using Schwartz's values, and this practice is welcomed by and in line with Schwartz's theory (Schwartz et al., 2012). Schwartz himself refined his value theory of the original ten values to first include 15 and then 19 values, some of which are sub dimensions of the ten original values (see Figure 2-1)(J Cieciuch, Schwartz, & Vecchione, 2013; J Cieciuch & Schwartz, 2012; S. H. Schwartz, 1994; S. H. Schwartz et al., 2012).

This is a challenge for values research, both psychometrically and conceptually. Gouveia, Milfont, and Guerra (2014a) criticise a lack of theoretical focus and parsimony in measurement, which particularly causes problems with comparison of results and meta analyses. Particularly problematic is not the fact that the number of values differ but rather that it is unclear what explains the structural relationships between the value dimensions in Schwartz's model, and that it is unclear whether conflict between values must be assumed (Gouveia, Milfont, & Guerra, 2014b). Gouveia et al. (2014a) instead hold that a conflict in values exists in relation to external variables, such that attitude to premarital sex is related positively to excitement but negatively to normative values. Gouveia et al. pose that all values are positively correlated and that values which express the same goal but fulfil distinct needs are highly congruent, values that fulfil the same need but express different goals are medium congruent, and those that express distinct goals and needs have low congruence.

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In addition, studies indicate a non-replicability of the theorised circular structure of the ten basic human values in some countries (Switzerland and France) (Perrinjaquet, Furrer, Usunier, Cestre, & Valette-Florence, 2007). However, a number of studies confirm the circular structure of values. The quasi circumplex structure was first established with a Smallest Space Analysis, a multidimensional scaling method where each value is defined as a point in multidimensional space, and was later confirmed in a confirmatory factor analysis by Schwartz and Boehnke (2004), and a meta-analytical Structural Equation model (Steinmetz, Isidor, & Baeuerle, 2012). The structure has been validated across cultures (S. H. Schwartz & Bilsky, 1990; S. H. Schwartz, 1992) and has been demonstrated at the intra-individual level as well (Gollan & Witte, 2013). In addition, value relations appear to be driven by motivational compatibilities. People can rate pairs of values faster when they are not opposing (Pakizeh, Gebauer, & Maio, 2007).

The debate over methodology and theory of the structure of human values is ongoing. It may be due to the lack of consensus emerging from this debate that much of the research using Schwartz's instruments has largely ignored the circular structure of values (Schwartz et al., 2012). Such research thereby misses out on the framework in which to understand values that the circular structure was intended to serve as (S. H. Schwartz, 2014).

2.1.3   Value Development and Stability Throughout the Lifespan

Values have genetic underpinnings and are affected by upbringing, with the degree of influence varying from value to value (Renner et al., 2012; Schermer, Vernon, Maio, & Jang, 2011). For example media exposure can affect which values people have (Besley, 2008). Parenting also affects values such that authoritarian and indulgent

parenting are associated with high internalisation of Self-Transcendence and Conservation values (Martínez & García, 2008).

Values change over time at the individual level due to physical ageing (less energy, loss of hearing, etc.), and life stages (adolescence, child rearing, etc.). Value changes are not chaotic, rather they occur in congruence with value structure, such that when one value becomes stronger, conflicting values tend to become weaker (Bardi, Lee, Hofmann-Towfigh, & Soutar, 2009). Life stage effects are especially emphasized by Schwartz (2006), who argues that as older people become more tied to their social networks, more committed to their habits, and less preoccupied with themselves, their Conservation (Tradition, Conformity, Security) and Self-Transcendence values become stronger and their Openness (Self-Direction, Stimulation) and Self-Enhancement values weaker.

Background variables can influence values people have, in the sense that people will adapt their values to their life circumstances. Some values may be easier to express in certain contexts than others, such that wealthy people may be more able to express Power values or people living in tolerant peer groups may be more able to express Universalism values. Values either gain or lose importance depending on their attainability in a person's life (Schwartz & Bardi, 1997). For most of the values, if one value is impossible, or difficult, to obtain, that value will lose importance. Values that are, on the other hand, easy to attain increase in importance. The exceptions are Power and Security values, where the opposite is true. Less Security and less Power will lead people to value these more strongly (Ingelhart, 1997).

For example, education is associated with higher Self-Direction, Achievement, and Universalism values. Education provides the intellectual openness and flexibility needed

for Self-Direction. It promotes a focus on meeting external standards and competitive performance that fosters Achievement values. Higher education may provide a broader horizon resulting in an increased importance of Universalism.

More educated samples presented increased Self-Enhancement, Openness to Change, and Self-Transcendence values, and decreased Conservation values (Meuleman, Davidov, Schmidt, & Billiet, 2013). Less educated samples had higher means of Security, Tradition and Conformity values (Steinmetz, Schmidt, Tina-Booh, Wieczorek, & Schwartz, 2009). Those valuing Universalism may also be more drawn to attend higher education (S. H. Schwartz, 2006). Values of Self-Direction tend to become stronger, and values of Conformity weaker, when people perform jobs that award them choice (Kohn & Schooler, 1983).

2.1.4   Gender Differences in Values

Small gender differences in values exist, which follows the patterns of gender differences amongst other psychological variables (Schwartz, 2006). Psychoanalytic, social and evolutionary theories share a view of women as more relational and nurturing, and of men as more autonomous and power oriented. Correlational differences in values somewhat confirm this view with men reporting higher Hedonism, Stimulation, Self-Direction, Achievement, and Power and women reporting higher Security, Conformity, Tradition, Benevolence and Universalism (Schwartz & Rubel, 2005; Schwartz, 2006). Gender value differences hold across cultures (Schwartz & Rubel, 2005).

However, gender differences are not in isolation from generational differences. Gender differences in values were different for baby boomers and generations Xers

(Lyons, Duxbury, & Higgins, 2005). This highlights that gender differences in values are likely to be the result of cultural environment rather than expressions of inherent gendered characteristics. Ingelhart explicitly laid out that there are no gender differences in values (Datler et al., 2013).

2.1.5 Universality of Values and Cohort Changes

Values are universal across cultures and robust over time, with structure being validated across countries (Davidov, 2010). Slight country differences in values are observed, for example US students placed more importance on individualistic values achievement, hedonism, self-direction and stimulation (Ryckman & Houston, 2003). However, gender differences in values were consistent across US and UK students (Ryckman & Houston, 2003).

Values change over time at the cohort level due to historic events (war, depression, etc.), especially emphasized in Ingelhart's theory of value change (Ingelhart, 1997). Cohort changes in Western Europe in the last decades have been attributed to the rise in security and prosperity. These political changes have led to a decrease of Security, Tradition, and Conformity values in young western Europeans, and an increase in Hedonism, Stimulation and Self-Direction (Schwartz, 2006).

2.1.6 Psychometric Measurement of Values

The Schwartz Value Survey (SVS, Schwartz, 1992) was the first measure of Schwartz's ten basic human values developed. The survey contains 30 items presenting desirable end-states in nouns (e.g. equality), and 26 or 27 items presenting desirable ways of acting in adjective form (e.g. pleasure), depending on the precise measure version. Respondents rate the importance of each of the items 'as guiding principles in

my life' on a scale from -1 (opposed to my values) to 7 (of supreme importance). Each item represents one value. Values are scored as the average of answers given to value items. To reflect the conceptual breath of the different values, items per value range from three (Hedonism) to eight (Universalism).

The Portrait Value Questionnaire (PVQ, Schwartz et al., 2001) was developed to reduce the complexity of the SVS, and to be used as a measure suitable for children and the elderly, as well as a less culturally biased instrument (S. H. Schwartz et al., 2001). The PVQ has 40 items, each describing a person's goals, aspirations or wishes that implicitly describe one of the ten value dimensions (e.g. 'Thinking up new ideas and being creative is important to him. He likes to do things his own original way'). The items are gender matched to the respondent. Respondents indicate on a scale from 1-6 how much the described person is like them. As with the SVS, to reflect the conceptual breath of values, the number of items per trait ranges from three (Stimulation, Hedonism, Power) to six (Universalism). The PVQ-40 can be scores so as to distinguish ten (Cieciuch & Davidov, 2012), or even 15 (Saris et al., 2013), value dimensions. An adapted 21 item version of the PVQ (PVQ-21) is used as part of the European Social Survey. The questionnaire was shortened for reasons of time constraints in the large survey, but as a consequence has been criticised for a lack of reliability in assessing all ten value dimensions (Datler et al., 2013; Knoppen & Saris, 2009).

2.2   Values Drive Behaviour

Values research traditionally focused on internal validity and structure of values. Values as predictors of external outcomes, attitudes and behaviours are only sparsely investigated, and research on the relationship of values with external variables is at an

exploratory stage (Datler et al., 2013). However, values influence motivated behaviour; as underlying goals and ambitions they guide the perception of behaviours as more or less favourable and contribute to the adaptation of behaviours. Datler et al. (2013) used data from the World Values Survey to model the relationship between values and specific attitudes and behaviours, including political interests and activism, life satisfaction, church attendance, and views on gender equality. They found that values explained substantial amounts of variance in attitudes even when demographic variables were accounted for. For example, the four higher level values Self-Transcendence, Self-Enhancement, Openness, and Conservation accounted for additional variance to socio demographic factors in explaining left versus right political views (total r^2 = .19, variance explained by values = .11). Values also explained additional variance in Openness towards immigration, placing importance on gender equality, and levels of church attendance. In a similar study, Conservation, Openness and Self-Transcendence values predicted attitudes to xenophobia, end of life issues, sexual permissiveness, unfaithfulness, and non-traditional sexuality (Beckers et al., 2012).

2.2.1   From Value to Behaviour

Several factors influence whether and how values are translated into behaviour. Values need to be activated in order to affect behaviour, and the more important a value is the more easily it becomes activated (Verplanken & Holland, 2002). More important values are thus more accessible and more likely to result in behaviour (S. H. Schwartz, 2006). Reasons for holding certain values also play a role in adapting behaviour congruent with those behaviours. Participants that had previously contemplated their reasons for adapting egalitarian values subsequently behaved in a more helpful manner

than participants who had merely been primed with, or had rated their positive feelings about, egalitarian values (Maio, Olson, Allen, & Bernard, 2001). Situations also play a role in activating values. Security values may become salient in a car accident. Studies on value activation showed that values cause behaviours, such that when a certain value became activated, people acted in accordance with that value (Verplanken & Holland, 2002).

Values affect motivation to act by adding an emotional layer to anticipated or possible actions. When making choices to act, people may be more attracted to behaviours that are congruent with their values. Any action perceived to be in line with values sets off a positive affective response. Actions that go against ones values will set off negative affective responses. Those affective responses in turn, will guide behaviour (Feather, Norman, & Worsley, 1998; Feather, 1995). Values also influence action planning. As values represent underlying goals, actions that are perceived to contribute to those goals more strongly are more likely to be acted out (Gollwitzer, 1996). In addition, values guide people's behaviour to seek out and focus on information and situational aspects relevant to their values. When two individuals consider the same choice option, one may focus on its contribution to their Self-Direction values, whilst another will evaluate the same situation as advancing their Universalism goals (Schwartz, Sagiv, & Boehnke, 2000).

2.2.2 Values as Predictors of Behaviour: Existing Research

Correlations between values and behaviour have been reported for cooperation in a game, voting for the centre-right, and political activism. The strongest correlations were found between cooperation in a game and Power (r = -.37), Benevolence (r = .38)

and Universalism (r = .32); between vote for centre left versus right and Universalism (r = -.28); and between political activism and Security (r = -.31), Universalism (r = .28), and Stimulation (r = .21) (Caprara, Schwartz, Capanna, Vecchione, & Barbaranelli, 2014; S. H. Schwartz, 1996, 2006).

Several studies report a relationship between values and health and wellbeing. Values may impact wellbeing in two ways: First, actualising one's own values promotes wellbeing and blocking one's own values leads to decreased wellbeing (Schwartz & Melech, 2000). Second, certain values are healthy, in that they become more salient in people who achieve to realize their values. These values are Self-Direction, Benevolence, Universalism, Achievement, and Stimulation. People who do not achieve to realize their values on the other hand tend to have lower levels of well-being. This leads people to compensate for deprivation, leading them to develop higher values of Conformity, Tradition, Security, and Power (Bilsky & Schwartz, 1994; Sagiv & Schwartz, 2000). However, this view is problematic because realisation of values is not measured. Hedonism has not been linked to life-satisfaction, although it might imply a focus on enjoyment (Sagiv & Schwartz, 2000).

Some values, namely Stimulation and Tradition, were more strongly related to behaviour than others (Bardi & Schwartz, 2003). The reason for this may be that the relationship between values and behaviour is influenced by the behavioural norms an individual is subject to, and behaviours related to certain values are more regulated by social norms. Bardi and Schwartz (2003) found that Security, Conformity, Achievement, and Benevolence values were most strongly influenced by norms, followed by Hedonism, Power, Universalism, and Self-Direction values (Bardi & Schwartz, 2003).

2.3   Values in Consumer Behaviour

Values play a role in individual preferences and choice. Though preferences and personality traits are criticised for being weak predictors of consumer choice (Caplan, 2003), studies demonstrate that values are predictive of consumer choice (Sandy, Gosling, & Durant, 1994). People are more likely to endorse a product when they perceive it to match their own value profile (Allen, 2002). This is consistent with the concept of self-congruence discussed in Section 1.2, specifically the conceptualisation of consummation as extension of the self. Consumption is a means for the creation and maintenance of one's self-concept (Baumgartner, 2002). Consumers buy products to reinforce their self-views (Gao et al., 2009), and they consume for pleasure rather than the fulfilment of a need (Mehtoglu, 2012). Values also form part of attitude-behaviour models used to understand consumer choice (Worsley, Wang, & Hunter, 2010). Values can be used to understand consumers opinion of the product, and to change their views of a product (Allen, 2006).

2.3.1   Theoretical Link between Values and Consumer Behaviour

Values in consumer research originate in theories of motivation, desire and involvement, most importantly Maslow's needs hierarchy and Dichter's consumption motives. Maslow's hierarchy of needs where needs are activated in order from lowest level (deficiency needs) to highest level (growth needs) was hugely influential in the development of value theory, as well as in consumer psychology (Solomon et al., 2013). Schwartz's values are derived from the needs that humans have to fulfil (S. H. Schwartz & Bilsky, 1987). The influential consumer psychologist and motivational researcher Dichter proposed 13 consumption motives (Durgee, 1991) (See Table 2-2 for a list of

consumption motives). Each motive is related to the consumption of certain product groups. One criticism of Dichter's motives is that they are out dated and include gender stereotypes. Another influence on values research in consumer behaviour are psychographics, 'the use of psychological and anthropological factors to consumer market segmentations (Solomon et al., 2013, p. 9). Here, consumers are profiled according to their activities, interests, opinions or attitudes. Often, such consumer segmentations are specific to situations and life stages.

Table 2-2 Dichter's Consumption Motives from Solomon et al. (2013)

Motive	Products
Power	Sugary products, large breakfasts, bowling, electric trains, pistols, power tool
Masculinity-virility	Coffee, red meat, heavy shoes, toy guns; buying fur coats for women, shaving with a razor
Security	Ice-cream, full drawer of neatly ironed shirts, real plaster walls2, home baking, hospital care
Eroticism	Sweets, gloves, a man lighting a woman's cigarette
Moral purity-cleanliness	White bread, cotton fabric, harsh household cleaning chemicals, bathing, oatmeal
Social acceptance	Companionship: ice-cream (fun to share), coffee Love and affection: toys, sugar and honey Acceptance: soap, beauty products
Individuality	Gourmet foods, foreign cars, cigarette holders, vodka, perfume, fountain pens
Status	Scotch, ulcers, heart attacks, indigestion, carpets
Femininity	Cakes and cookies, dolls, silk, tea, household curios
Reward	Cigarettes, candy alcohol, ice cream, cookies
Mastery over environment	Kitchen appliances, boats, sporting goods, cigarette lighters
Disalienation (a desire to feel connected to things)	Home decorating, skiing, morning radio broadcasts
Magic-mystery	Soups (have healing powers), paints (change the mood of a room), carbonated drinks (magical effervescent property), vodka (romantic history), unwrapping of gifts

Values are different from attitudes in that they do not apply to just one situation. As purchases are made to help attain a goal, people's values as descriptors of their underlying goals are key. The same purchase may be made by two people, but for different reasons. A vegetarian food choice could be made due to concerns for animal

welfare, or out of concerns over health. Consumer value profiles may help to understand the differences in consumer motives for their purchasing decisions. Values answer why a certain product may be chosen over another.

Despite their importance, values are not widely applied in consumer research (Solomon et al., 2013). One of the reasons for this may be that values are broad concepts that may be related to general spending more than specific brand or product preferences. To overcome this issue, consumption or product specific values have been proposed, most notably Holbrook's (1999) eight consumer values efficiency, excellence, status, esteem, play, aesthetics, ethics and spirituality. However, such narrow definitions may abuse the value concept as general underlying drivers for behaviour.

2.3.1.1 The Product Meaning Approach

Values are standards people use to judge and evaluate objects, and hence consumer researchers propose that values are used to evaluate products and brands (Allen & Ng, 1999). Allen and Ng's (1999) product meaning approach further specifies that the influence of values depends on the type of judgement made on the meaning of a product, as well as the meaning of the product itself. Either a direct or an indirect influence of personal values on product choice occurs. A product can, for example, have utilitarian, enjoyment, or identity meaning. Depending on the product meaning, the product is judged in different ways. Utilitarian products are evaluated more rationally. Symbolic products are judged more holistically. In order for values to directly influence product choice, consumers must pay attention to the symbolic meaning of a product, and make an affective judgement. If consumers attend to a product's utilitarian meaning and make a gradual judgement, the influence of values is indirect. Values then influence

product choice via influencing how consumers evaluate the importance of the product's tangible attributes.

2.3.2 Values as Predictors of Consumer Behaviour

Few studies investigates the effect of values on consumer behaviour and choice (Kahle & Chiagouris, 1997; Solomon et al., 2013). An effect of values on consumer choice has been demonstrated for several product categories, for general shopping behaviours, and for attitudes towards consumer goods (Dreezens, Martijn, Tenbült, Kok, & De Vries, 2005; Henry, 1976; Homer & Kahle, 1988; Pitts & Woodside, 1983; Sevgili & Cesur, 2015). Much of the more recent research is focused on food choices, ecological consumption behaviour, and organic products (Hauser, Nussbeck, & Jonas, 2000; Sirakaya-Turk et al., 2013; Thogersen, 2011).

A number of studies illustrate the role of values in general shopping behaviours. Shopping frequency was positively predicted by Self-Enhancement, and negatively by Self-Transcendence and Conservation in a sample of 485 Turkish consumers. The relationship is, however, fully mediated by materialism (Sevgili & Cesur, 2015). Self-Transcendence and Self-Enhancement values were associated with mall shopping behaviours in a sample of 320 Chinese mall shoppers (Cai & Shannon, 2011). This differs from Western samples where self-actualising and social affiliation values tend to play a more important role in mall shopping behaviour (Cai & Shannon, 2011). UK consumers who were registered users of a collaborative consumption site, where people can lend and borrow each other's products, skills or spaces, were significantly different on a number of values to the general UK population (Piscicelli, Cooper, & Fisher, 2013). In a study of 729 Greek consumers responsible for their household food purchasing,

convenience food purchasing was positively associated with values of Self-Enhancement and Openness to Change, and negatively with values of Conservation and Self-Transcendence (Botonaki & Mattas, 2010). In a survey of 2,000 consumers in Spain and Germany, food related lifestyle was associated with the ten basic human values (Brunsø, Scholderer, & Grunert, 2004b). In addition, the relationships followed the circumplex structure of values. Slight differences between countries were observed. In Germany, Benevolence was associated with freshness, and in Spain with an interest in cooking. Taste was related to Security in the Spanish, but Hedonism in the German sample. In both countries, Universalism was related to health and organic products, Tradition with women's tasks, and Stimulation with novelty and social events. Values, as well as demographics, influenced shopping behaviour such as keeping a shopping list and watching for low prices or best quality when shopping (Worsley et al., 2010). The effects were different for men and women. For example, a structural equation model showed that for men, shopping for quality was predicted by Universalism (standardised parameter estimate .31), Benevolence (.21) and age (.15). For women, shopping for quality was predicted by universalism (.36), age (.22), and education (.11), but not benevolence. Some, but not all, values were partially mediated by food attitudes (organic, fair trade, low-budget, fresh convenience, ready-to-eat, light, functional food, fruits and vegetables) (Worsley et al., 2010).

Values also play a role in attitudes towards specific consumer goods or products. For instance, in a study of 100 Dutch consumers, those high on Universalism had positive attitudes towards organic food (regression coefficient .32). Those high on Power had positive attitudes towards genetically modified foods, and negative attitudes towards organic food (regression coefficient = .28) (Dreezens et al., 2005). In both cases, the

relationship was mediated by beliefs about organic food and genetically modified food (e.g. 'genetically modified food offers us interesting possibilities', 'organic food is good for the environment'). The values associated with certain food choices between variants of potato chips, and variants of orange juice were congruent with attitudinal factors found to influence food choice in a means-end chain analysis (Kitsawad & Guinard, 2014). Means-end chain analysis is a method used in marketing to understand consumer choice. Participants are interviewed about their food preferences, and the reasons for those preferences (in this case which orange juice they buy and why). Participants are required to order reasons underlying, and factors influencing choice, by importance. The study thus demonstrated that values capture factors relevant to consumers in their purchasing decisions. Means-end chain analysis offers more detailed information, but also required extensive and expensive interviews. Value questionnaire may thus be a more practical and scalable approximation to the insights offered by means-end chain analysis. In another study, sustainability and price sensitivity values directly predicted purchase of low budget products, whereas the effect of the remaining values was mediated by attitude towards low budget foods. Similarly, for organic food purchase, health, indulgence, and price sensitivity had direct effects. Sustainability values were consistently related to the purchasing of sustainable holidays (Sirakaya-Turk et al., 2013). Finally, consumption of green products, including organic food, was consistently linked to unselfish values such as Universalism in a representative sample of 4,000 Europeans (Denmark, German, UK, and Italy) (Thogersen, 2011).

Chapter 3 Summary and Current Thesis

This chapter outlines research aims addressed in the empirical part of the thesis. It summarises the literature review and describes the framework proposed to address research questions.

Although the self plays an important role in consumer behaviour, research in the area has generated little consensus on the methodologies and conceptual frameworks to best assess the relationship. As a consequence, findings are difficult to compare and summarise. Knowledge about the role of self in consumer behaviour remains anecdotal.

This is unfortunate given recent developments in technology and the subsequent rise in personalised marketing and advertising. The move from broadcasting to conversations with consumers as individuals is pervasive and constitutes a paradigm shift in industry (Summers, Smith, & Reczek, 2016). Individual differences psychology should make substantial contributions in this shift, both to improve new applications and to strengthen its influence as an academic and applied discipline. However, the conceptual and methodological problems outlined above pose a significant hurdle.

This thesis thus aims to understand why individual consumers are drawn towards, and chose, different products by addressing various methodological and conceptual issues in psychometric modelling with behavioural outcomes.

3.1   Outstanding Questions and Criticism

Much of the research on the self in consumer research adapts the concept of congruence as a framework. Personality is used as a metric to measure self, as well as human like attributes of brands and products (brand and product personality). This is problematic as numerous studies demonstrate that brand, products, and consumers cannot meaningfully be profiled along the same personality dimensions. In addition, measures of brand and product personality present methodological problems in that ratings of brands and products are, at least to a small degree, reflections of the rater's own personality.

Another body of research addresses the question of self in consumer behaviour with prediction models. Here, consumer personality traits predict brand and product preferences, or more general consumption behaviours. Such approaches forego methodological issues of congruence based models, but lack theoretical depth. The interpretation of results poses another issue. Most prediction based research uses the Big Five personality traits due to their psychometric properties and popularity. These are broad personality traits and consequently interpretations of research results are equally broad. They offer little insights into the drivers of consumer behaviour and are thus limited in answering the question of why individuals prefer certain products over others.

Values may be a more suitable psychometric for assessing divers of consumer choice, as they measure people's underlying goals and ambitions and act as guidelines for behaviour. Although values are defined as drivers of behaviour and are considered important in consumer choice, research on values and behaviour is at an exploratory stage. Much of the research on values is occupied with exploring the structure of values, rather than their relationship to external variables. In addition, there is debate over theoretical frameworks for the role of values in consumer behaviour. As a consequence, there is no consensus on the number of values, their psychometric properties, or suitable methods for analysing values in relation to external variables. This means that the sparing literature available on values in consumer behaviour employs substantially different methodologies and conceptualises values within at times conflicting frameworks.

3.2   Research Aims and Proposed Model

Given the issues raised above, there is a clear need for a coherent conceptual and methodological framework in which to assess the role of self in consumer behaviour, as well as for additional exploratory research to understand the role of values in different areas of consumer behaviour. Each empirical chapter of this thesis addresses one area, whilst applying the following model of self in consumer behaviour. Given theoretical flaws of congruence models and explanatory limits of the Big Five personality traits, a model of direct influence is proposed in which individual differences in values are related to individual differences in consumer preferences and behaviour. Several statistical techniques, including prediction and dimension reduction, are used in order to describe the relationship between values and consumer behaviour variables. Different modalities for consumer value assessment are used, namely established as well as original self-report value surveys and an original free-text based measure of

values. Consumer choice is conceptualised across three dimensions: Category, product, and brand. Both behavioural as well as self-report data is used (see Figure 3-1).
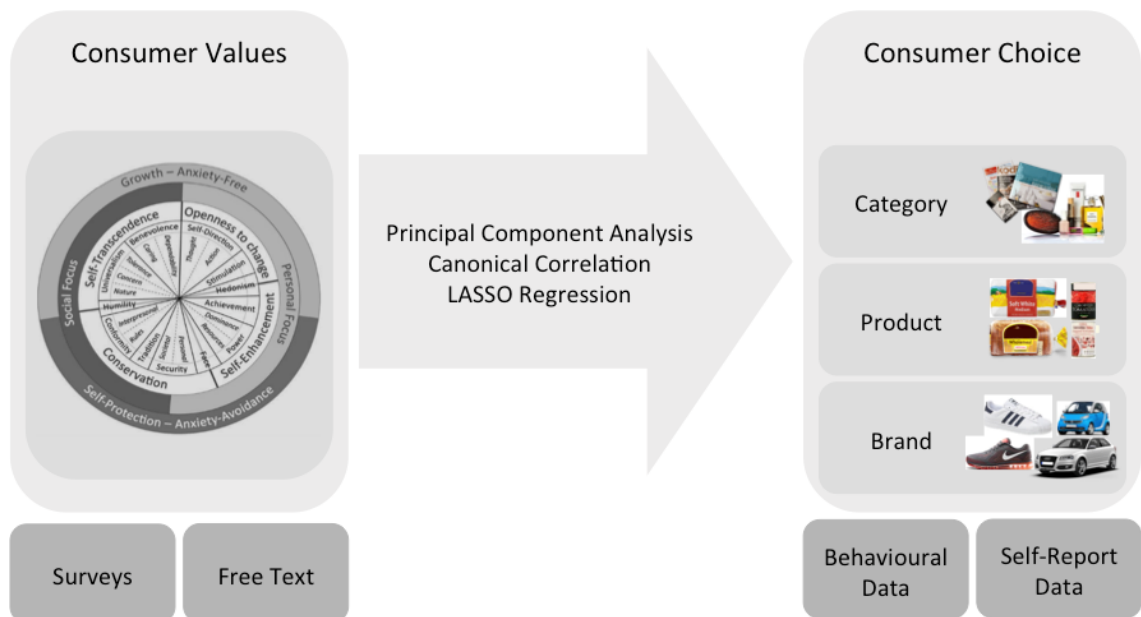
Figure 3-1 Thesis overview: Proposed model and studies (Values figure from Schwartz et al., 2012)

The model is designed to answer two distinct questions: 1. Do values account for a substantial amount of variance in consumer preferences and choices? 2. Do values offer meaningful interpretations for drivers of individual consumer preferences and choices?

3.3   Empirical Studies

In Chapter 4 the above model is applied to consumer preferences of product categories. The study had two aims: 1. Fill an empirical gap in the literature by testing whether values could account for differences in broad consumer preferences, as suggested in theory, and 2. Explore whether values would offer meaningful explanations for drivers of consumer product category preferences. Measurement issues are addressed by developing and validating a short Likert scale version of the Schwartz Values Survey that is reliable, suitable for the online context, and short enough to allow

for the assessment of consumer preferences in the same questionnaire. A measure of product category preference was also developed in order to reliably assess the outcome variable. Self-report data was collected from an online convenience sample of the general population (N 600). Canonical correlation analysis was carried out in order to identify underlying relationships between values and category preference. Results were then used to inform a Confirmatory Factor Analysis and define a Structural Equation Model to assess the amount of variance in category preference explained by consumer values.

In Chapter 5 findings from Chapter 4 are extended to a behavioural set of shopping records. The aims of this study were twofold: First, analyse whether values influence actual purchasing behaviour, rather than self-reported preferences (as used in Chapter 4), which may inflate relationships due to common method variance and measurement error. Second, expand the model to explain narrow consumer behaviour, namely product variant and brand choice. Applying broad traits to specific consumer behaviours presents a challenge in the literature, and this study investigates whether an analysis of consumer values offers meaningful insight into narrow purchasing decisions. Data was collected as part of an industry collaboration with the rewards card company of a large UK supermarket chain. Ten commonly bought products were selected and paired in order to measure choices between either two comparable product variants or two comparable brands. Value profiles as well as purchasing records of over 2,500 UK reward card holders were obtained. Binary logistic regression was used in order to test the hypothesis that values would predict product choice.

Chapter 6 further extends the model to preferences for additional groups of brands, specifically high symbolic brands, as well as to an additional dimension of brand preference, namely brand affiliation. An additional goal of this study was to address barriers to industry application stemming from the need for self-reported assessment of consumer values. To this end, a free text based measure of values was developed. Recent research indicates that free text is a suitable tool for identifying and profiling individual differences in values. Data was obtained as part of a collaboration with Cambridge University's Psychometrics Centre. First, a measure of values based on free text was developed and tested using predictive scoring methods. The developed measure was then applied to score values of a dataset of 60,000 Facebook users. The relationship between values and brand affiliation was then assessed with regression models predicting values based brand affiliation.

Part II: Empirical Studies

Chapter 4 Values Drive Shopping Category Preference in a Sample from the General Population

In this chapter the relationship between the four higher order values and preference for shopping categories is investigated. Results indicate that consumer values, in particular Self-Enhancement, are related to self-reported preference for shopping categories.

4.1 Introduction

As laid out in Chapter 1 and Chapter 2, values are conceptually related to a number of consumer behaviours, including preferences for certain product categories. However, existing studies are largely limited to ethical or political product categories, such as organic foods, sustainable holidays, or responsible brands (Baker, Thompson, Engelken, & Huntley, 2004; De Barcellos, Teixeira, & Venturini, 2014; Hayley, Zinkiewicz, & Hardiman, 2015a; Honkanen, Verplanken, & Olsen, 2006; Sirakaya-Turk et al., 2013). Given that products fulfil many goals not limited to environmental protection or promotion of health, this study aimed to expand existing findings to a number of general shopping categories.

Canonical correlations in a sample of 417 adults demonstrated that values are related to preference for several shopping categories, namely Clothing, Electronics, Health, and Travel. Results also indicated differences between women and men in how values relate to shopping preferences. For instance, a preference for Travel correlated with high Aesthetic and low Security values in men (canonical correlation r = .49), but with low Tradition and low Security values (canonical correlation r = .41) in women.

Results indicated that shopping category preference is, at least partially, driven by consumer's underlying goals. The study demonstrated that values offer insights into the reasons underlying consumer preferences by uncovering consumer motivations.

4.1.1 Values Relate to Consumer Preference for Ethically Significant Product Categories

People buy products not only for what they do but also for what they mean and represent to them (Holbrook, 1999; Solomon, 1983). Products that are in line with ones values are thus thought to be more appealing to consumers (Allen & Baines, 2002; Allen, 2006). Products act as means towards achieving underlying goals. The same line of

thought has been applied by some researchers to product categories, although the literature is less complete. Product categories can reflect characteristics that are perceived as instrumental in achieving certain goals. In addition, as choice must be sufficiently different for values to take an effect, some scholars have argued that values are more influential in product category choice than in brand or product choice (Gutman, 1990; Kahle & Chiagouris, 1997; Reynolds & Gutman, 1988).

Specifically, several researchers have proposed that certain product categories will be more popular with people that have certain values. However, the empirical evidence is sparse and limited to a few distinct product categories. These are categories that are highly loaded and represent strong values such as vegetarian products, green products, organic food, and sustainable holidays.

For example, political consumers, those who consume organic goods, boycott brands for political reasons, and chose companies that have a better ethical track record, rated significantly higher on Universalism and Stimulation values than an overall sample of Brazilian students (De Barcellos et al., 2014). Attitude towards reducing meat and fish consumption was related to consumer values in a sample of Australian adults (Hayley et al., 2015a). Those with high Universalism values had positive, and those with high Power values negative attitudes towards reducing their consumption of meat and fish. Those high in Security had negative attitudes towards reducing their intake of white meat and fish, and those high in Conformity had negative attitudes towards reducing their intake of fish only. The study demonstrates that values help explain why consumers prefer meat or fish product categories.

There is some evidence that values play a role in consumer preference for sustainable product categories. Several values contributed to explaining why some

consumers place importance on using sustainability related food labels. Those high on Universalism, Security, and Tradition were more likely to pay attention to the labels, indicating a preference for sustainable product categories. Those high on Power and Hedonism were less likely to use labels (Grunert, Hieke, & Wills, 2014). Similarly, sustainability values predicted the purchasing of sustainable holidays in a sample of 1,200 north American travellers (Sirakaya-Turk et al., 2013).

Similarly, several studies describe specific value profiles for consumers of organic products. For instance, in a sample of 4,000 European consumers, those with higher Universalism values consumed more green products (Thogersen, 2011). High Universalism and low Power values also were related to positive attitudes towards organic food (Dreezens et al., 2005).

4.1.2 Values and Consumer Preference for General Shopping Categories

The above studies provide some evidence that, similar to products, consumers prefer product categories that represent their own values. Given that the product categories selected in the mentioned studies are highly loaded with meaning, this is not surprising. There is a gap in the literature with regards to how values influence preference for product categories less loaded with meaning, where less loaded with meaning means categories that are commonly consumed and not overtly reflective of ethical values. One study addressing the topic showed that Greek consumers high on Self-Enhancement and Openness to Change values were more likely to purchase convenience foods, whilst those with high Conservation and Self-Transcendence values were less likely to do so (Botonaki & Mattas, 2010).

In addition, the studies presented above look at product categories in isolation, determining whether consumers like a given category or not. They do not look at the relationship between liking different product categories. Consequently, results are limited to insight on one specific product category and fail to portray general relationships between values and category preference.

A connection between values and product category preference is theoretically implied through the same argument that supports a connection between values and product preference: Values describe underlying goals and ambitions, which at times become expressed in behaviour. Such behaviour includes consumption, where products are perceived as means towards achieving the goals important to a given individual. Certain product categories may be more instrumental to achieving specific goals. Buying clothing and fashion, for example, may be more important for the identity claims of people who value recognition or status and aesthetics. Health related products, on the other hand, may be instrumental in achieving security related goals and so on.

4.1.3 Study Aims and Hypotheses

This study addressed two gaps in the literature: 1. the lack of studies investigating the role of values in consumer preference for product categories less loaded with meaning, and 2. the lack of studies investigating the influence of values on several product categories, allowing for comparison between values that affect preference for different categories. Results from existing studies looking at preference for product categories address food related categories (Botonaki & Mattas, 2010), as well as ethical product categories (see Section 4.1.1). To address these gaps, both values and shopping category preference for several common product categories were profiled.

Values theory clearly states a general relationship between values and product category preferences, and this relationship has been tested for several specific product categories such as organic products and convenience foods (Botonaki & Mattas, 2010; Brunsø, Scholderer, & Grunert, 2004a; De Barcellos et al., 2014; Dreezens et al., 2005; Hayley, Zinkiewicz, & Hardiman, 2015b; Sirakaya-Turk et al., 2013; Thogersen, 2011) (see Section 4.1). However, the existing empirical evidence is sparse, and addresses only a small sub section of product categories. There are thus two outstanding areas of investigation for research to understand the relationship between values and shopping category preference: 1. the general relationship proposed by values theory between values and preferences for shopping categories, and 2. the relationships between specific shopping categories and values. Given the lack of existing studies which would indicate relationships between specific shopping categories and values, this study addresses the first outstanding area of research. It expands empirical evidence for a general relationship between values and shopping category preference to a further six categories. Specific relationships between values and each separate category are not hypothesised in this initial, exploratory study, as they would be highly speculative given the lack of exiting research (see Section 4.1.2).

H1: A consumer's values are correlated with their preference to shop different product categories, such that different values will be correlated with preferences for different shopping categories.

4.2   Method

4.2.1   Sample and Procedure

417 (213 females) participants were recruited using social media and free open access participant pools, namely Reddit Samplesize, to complete an online survey. Reddit Samplesize is an online messaging forum on the popular social sharing platform Reddit. For a review of using social media to recruit participants for social sciences research see Stillwell & Kosinski (2012). Registered users can post requests to complete surveys on the forum, which can then be completed by other users. Anyone can join the site, but it is particularly popular with younger users. This is reflected in the age distribution of participants in this survey. Ages ranged from 18 to 72 (Mean 26.97, SD 9.68), with 49.6% of participants younger than 24 and 89.6% younger than 40. The majority of participants came from the USA (52.8%), UK (10.7%), and Germany (8.6%). Two additional countries contributed over 1% of participants each: Canada (4.8%) and France (2.1%). The remaining 21% of participants came from 21 different countries. Although this is a large list of countries, the majority of participant originates from relatively homogenous western countries, all of which have similar values profiles (S. H. Schwartz & Boehnke, 2004).

4.2.2   Measures

4.2.2.1   Short Value Measure (SVM; unpublished)

The SVM has 30 items, three items for each of the ten values. It was developed for this and other studies, which need to include a measure of values with multiple constructs, and where existing value measures would be too long. It is measured on a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree'. Value scores for

participants were obtained by adding up the three items measuring each value, then dividing by three. See Section 4.7 Measure Validation: The Schwartz Short Measure for a validation of the measure and description of its development.

4.2.2.2   Product Category Preference

In order to assess individual product category preference we included a range of items relating to people's preferences. The items were designed to assess different aspects of category liking, and to account for both enjoyment and spending. Six categories were included in the data analysis: Clothing and Shoes, Movies and Books, Apps, Electronics, Travel, and Health.

These categories were derived from an original list of 17 pre-defined categories included in the questionnaire. Pre-defined categories aimed to cover product groups most commonly consumed: Clothing and Accessories; Shoes; Beauty, Fragrance, and Hair; Sports and Outdoors; Electronics; Jewellery; Movies, Music, or Series; Apps, Games and Software; Health; Collectibles and fine Art; Books and Magazines; Automotive; Travel and Holiday; Children's Toys; and Other. Categories that had been selected by less than 150 participants on at least one of the category liking variables were excluded from analysis. Two pairs of shopping categories were summarized into one based on high inter correlations and conceptual overlap in order to enhance the sample size and distribution of the variables. The categories were clothing and shoes as well as movies and books. Categories were combined such that the higher score out of the two variables was retained. That is, if a subject has a preference of 4 for shoes and 2 for clothes, their score on Clothing and Shoes is 4. The combined variables thus describe a preference for clothing or shoes, and for movies or books.

The product category preference scale consisted of four items, developed to indicate which categories a consumer is more likely to spend money on, as well as which categories a consumer is more likely to enjoy. One item assessed preference, whilst the remaining three items assess spending. Preference was assessed by asking which three categories consumers enjoyed purchasing the most. Spending was measured by asking what categories consumers generally spend most of their money on, which categories they had purchased in the last month, and how much they had spent on each category in the last month (See Table 4-1 for a list of items and respective scales).

To score shopping category preference, the four category preference items were combined into a total score. To this end, the amount spent on each category in the last month was transformed into an ordinal variable indicating little (up to 25th percentile), some (up to 50th percentile), considerable (up to 75th percentile) and high (above 75th percentile) spend on a given category. The resulting score weights spending and purchase behaviour higher than enjoyment (see Table 4-1). Spending was weighted as more important because it indicates actual shopping behaviour and is less subjective than enjoyment. Participants could obtain a total of six points on a category for having purchased it in the last month (one point), generally spending most money on that category (one point), and the amount they spend (up to four points). Enjoyment indicates the wanting of a category, regardless of needing an item or not having budget to spend on it. It thus adds an important dimension to product category liking, accounting for the desires of consumers. Participants could obtain up to three points on a category for enjoying it. In total, participants obtained between 0 and 9 points for each category, with a higher score representing a stronger preference for a category.

Table 4-1 Product category items and respective scales

Item	Scale	Score
Which of the below do you most enjoy spending your money on? Please exclude rent and food.	Most favourite category Second favourite category Third favourite category	0,1,2,3
Which of the below do you generally spend most money on? Please exclude rent and food.	Select all appropriate categories	0,1
Thinking about the last month only, which of the below have you purchased?	Select all appropriate categories	0,1
In the last month, how much did you roughly spend on the below?	Amount in £	0,1,2,3,4

4.3 Data Analyses

Gender differences in shopping category preference as well as values were explored using ANOVA. Correlations between values and shopping category preferences were investigated in order to identify any dependencies.

Given several inter correlations between values and shopping preferences canonical correlations were calculated. Canonical correlations are helpful in identifying the relationships between two sets of several variables. Other than in regression analyses where several predictor variables are related to one outcome variable, canonical correlations describe the relationship of several predictor variables with several outcome variables. As such, the analysis is suitable here to explore the relationship between the set of values and the set of shopping category preferences. In addition, several shopping category preference variables in this study were non-normally distributed. Canonical correlation does not require normal distribution if used for descriptive purposes (Tabachnick & Fidell, 2006).

As gender made a significant contribution to the overall canonical correlation model, and given significant mean differences between men and women in preference for four of the shopping categories, gender specific models were deemed useful for

isolating the effect of values on shopping category. Three canonical correlation models were computed. One overall model, one model for females only and one model for males only. All statistical tests were carried out using SPSS 21 (IBM Corp, 2012).

4.4   Results

Descriptive statistics as well as ANOVA results for gender differences in values and shopping category preferences are presented in table 4-2. The ANOVA showed women rated significantly higher on Security than men. Women had a significantly higher preference for shopping the Travel and Clothing and Shoes categories, and men had a higher preference for shopping in the Apps and Electronics categories. Gender differences between shoes and apps were small, and moderate for the remaining categories. To account for multiple comparisons, the p value was adjusted to $p < .01$. Gender differences were non-significant on the remaining value dimensions and shopping categories.

Table 4-2 Gender differences in values and shopping category preference

			Descriptives				Multivariate test	
			Male		Female		Gender	
N			189		213			
	Mean	SD	Mean	SD	Mean	SD	F	p
Conservation	2.97	0.45	2.95	0.43	3.01	0.46	2.30	0.13
Openness	3.48	0.45	3.49	0.46	3.47	0.41	0.36	0.55
Self Enhancement	2.95	0.71	3.01	0.78	2.93	0.63	1.13	0.29
Self-Transcendence	**3.52**	**0.57**	**3.45**	**0.57**	**3.61**	**0.54**	**8.53**	**0.00**
Electronics	**1.45**	**2.00**	**2.11**	**2.27**	**0.89**	**1.57**	**39.87**	**0.00**
Travel	**1.39**	**2.05**	**0.95**	**1.72**	**1.81**	**2.26**	**18.05**	**0.00**
Apps	**1.60**	**1.87**	**1.92**	**1.95**	**1.33**	**1.75**	**10.11**	**0.00**
Health	1.25	1.85	1.19	1.92	1.32	1.80	0.48	0.49
moviesBooks	2.05	2.00	1.92	1.98	2.14	2.01	1.22	0.27
clothingShoes	**2.65**	**2.44**	**1.89**	**2.13**	**3.41**	**2.52**	**41.76**	**0.00**
age	26.36	9.09	25.77	7.87	26.92	10.14	1.61	0.21
1=male, 2=female	1.53	0.50	1	0	2	0	39.87	0

See Table 4-3 for frequencies, skew and kurtosis of the category preference variables. Clothing was the category which most participants reported a preference for (N 302), and Shoes the category which least participants indicated a preference for (N 137). Preference scores for all categories were positively skewed, with less participants indicating strong than weak or no preference for the category.

Table 4-3 Descriptive statistics and frequencies for shopping category preferences

			Preference Score				
N = 417	Skew	Kurtosis	0	1-3	4-6	7-9	Total non-zero
Clothing	0.84	-0.06	115	170	98	34	302
Shoes	2.01	3.36	280	101	34	2	137
ClothingShoes	0.77	-0.19	106	171	105	35	311
Electronics	1.53	1.85	209	140	56	12	208
Travel	1.53	1.62	233	113	58	13	184
Apps	0.99	0.01	180	156	74	7	237
Health	1.68	2.58	231	132	45	9	186
Movies	1.43	1.57	205	146	57	9	212
Books	1.44	1.35	222	152	41	2	195
MoviesBooks	0.89	0.22	126	191	89	11	291

Correlations between values, shopping category preferences, gender, and age are presented in Table 4-4. Significant moderate correlations were observed between the four higher level values, and low correlations between preferences for some of the shopping categories. Gender (being female) correlated moderately with Self-Transcendence values, as well as a preference for Clothing and Travel, and with a lower preference for Electronics and Apps. Age was negatively correlated with Conservation and Self-Enhancement values and a preference for Clothing and Shoes, and positively with a preference for Travel, Health and movies and books.

Table 4-4 Correlations between the four higher level values and shopping category preferences

	Conser	Open	SeEnh	SeTr	Electronics	Travel	Apps	Health	movBooks	clothSh	age	gender
Conser	1	**-0.23**	**0.18**	**0.14**	0.01	**-0.20**	-0.04	0.06	-0.09	**0.17**	**-0.19**	0.08
Open	**-0.23**	1	0.10	**0.15**	-0.01	0.08	**0.17**	-0.01	0.06	-0.01	0.01	-0.03
SeEnh	**0.18**	0.10	1	**-0.13**	**0.13**	0.06	-0.02	-0.07	**-0.12**	**0.24**	**-0.19**	-0.05
SeTr	**0.14**	**0.15**	**-0.13**	1	**-0.12**	**0.10**	-0.01	**0.11**	0.03	0.10	0.06	**0.14**
Electronics	0.01	-0.01	**0.13**	**-0.12**	1	**-0.10**	**0.24**	-0.04	0.03	**-0.11**	-0.03	**-0.30**
Travel	**-0.20**	0.08	0.06	**0.10**	**-0.10**	1	-0.05	0.01	-0.05	**0.13**	**0.23**	**0.21**
Apps	-0.04	**0.17**	-0.02	-0.01	**0.24**	-0.05	1	0.03	**0.10**	0.08	-0.06	**-0.16**
Health	0.06	-0.01	-0.07	**0.11**	-0.04	0.01	0.03	1	0.01	**0.15**	**0.12**	0.03
moviesBooks	-0.09	0.06	**-0.12**	0.03	0.03	-0.05	**0.10**	0.01	1	0.09	**0.14**	0.06
clothingShoes	**0.17**	-0.01	**0.24**	0.10	**-0.11**	**0.13**	0.08	**0.15**	0.09	1	**-0.12**	**0.31**
age	**-0.19**	0.01	**-0.19**	0.06	-0.03	**0.23**	-0.06	**0.12**	**0.14**	**-0.12**	1	0.06
1=male, 2=female	0.08	-0.03	-0.05	**0.14**	**-0.30**	**0.21**	**-0.16**	0.03	0.06	**0.31**	0.06	1

Notes: Significant correlations are bold. Correlations $r > .13$ ($r > .1$) are significant at the $p<.01$ level ($p<.05$ level) (2-tailed).

MovBook = movies or books, clothSh = clothing or shoes, Conser= Conservation, Open = Openness, SeEnh= Self-Enhancement, SeTr = Self-Transcendence.

Gender 1 = male, 2 = female

4.4.1   Canonical Correlations

4.4.1.1   Full model

Canonical correlation was performed between the set of value scores (age and gender were included in this set) and the set of shopping category preference variables. The full model was significant using Wilk's λ = .67 criterion, F (30, 1614) = 5.77, p < .000, and explained 55% of shared variance between the two variable sets. The models with functions two to five and three to five were also significant with F(20, 1340.87) = 3.96, p < .000, and F(12, 1071.82) = 2.78, p < .001. Models for functions four to five and five in isolation did not account for significant amounts of variance between the variable sets.

The first canonical correlation was .44 (55% overlapping variance), the second was .32 (26% overlapping variance), the third was .21 (10% overlapping), the fourth was .17 (7% overlapping variance), and the fifth was .08 (2% overlapping variance). Given the amount of variance explained, only the first three functions were considered noteworthy, accounting together for 91% of variance.

Table 4-5 presents redundancies and canonical correlations as well as the correlations between the variables and the three considered canonical variates, standardised canonical variates coefficients, and within-set variance accounted for by the canonical variates (percent of variance). Structure coefficients above .45 are in bold as, following convention in factor analysis, they are the most useful variables in the variate (Sherry & Henson, 2010).

In the first canonical variates, with a cut-off of .45, the variables in the values set that were correlated with the canonical variate were Conservation (.64), and Self-

Enhancement (.61). Two variables in the shopping category set correlated with the canonical variate: Clothing and Shoes (.54), and Travel (-.48). The first pair of canonical variates indicates that participants who have Conservation and Self-Enhancement values have a stronger preference for Clothing and Shoes, and a weaker preference for travel.

In the second canonical variate, Self-Enhancement (.60) correlated with the covariate above the .45 cut off point. In the shopping category set, both Travel (.81) and Clothing and Shoes (.48) correlated above .45 with the canonical variate. That is, participants who had stronger Self-Enhancement values had a tendency to prefer Travel and Clothing shopping categories.

In the third canonical variate, Conservation (.6), Openness (-.53), and Self-Transcendence (.55) correlated with the covariate above the .45 cut off point. In the shopping category set, apps (-.56) and Health (.7) correlated above .45 with the canonical variate. That is, participants who had stronger Conservation, Self-Transcendence, and weaker Openness values had a tendency to prefer Health, and dislike apps shopping categories.

Table 4-5 Canonical correlations between values and shopping categories: Variance explained, redundancies, structure coefficients and standardised canonical function coefficient for canonical variates one to three

	First Canonical Variate		Second Canonical Variate		Third Canonical Variate	
	Correlation	*Coefficient*	*Correlation*	*Coefficient*	*Correlation*	*Coefficient*
Values and demographics set						
Conservation	**0.64**	0.43	-0.18	-0.38	**0.60**	0.53
Openness	-0.23	-0.15	-0.05	-0.29	**-0.53**	-0.45
Self-Enhancement	**0.61**	0.43	**0.69**	0.93	-0.32	-0.24
Self-Transcendence	-0.12	-0.07	0.24	0.44	**0.55**	0.49
Age	**-0.73**	-0.56	0.38	0.46	0.29	0.32
% of variance	28			14	Total =	64.72
Redundancy	5.44			1.47	Total =	7.87
Shopping Category set						
Electronics	0.21	0.27	0.16	0.38	-0.44	-0.30
Travel	**-0.48**	-0.57	**0.81**	0.77	-0.17	-0.25
Apps	-0.04	-0.14	-0.28	-0.36	**-0.56**	-0.55
Health	-0.18	-0.27	0.04	-0.01	**0.70**	0.68
MoviesBooks	-0.42	-0.51	-0.07	-0.05	0.07	0.10
ClothingShoes	**0.54**	0.75	**0.48**	0.45	0.23	0.16
% of variance	13		17		Total =	48.00
Redundancy	3		2		Total =	5.00
Canonical correlation	**0.44**		**0.32**		**0.21**	

Notes: Correlation = structure coefficient. Coefficient = standardised canonical function coefficient.

4.4.1.2 Females only Canonical Correlation Model

Given the high correlations between gender and shopping category preference (in particular r = .31 with clothing and shoes, r = -.3 with electronics, r = .21 with travel, -.16 with apps), gender specific canonical correlation models were tested.

For females only (N = 213), the full model was significant using Wilk's λ = .61 criterion, F (30, 1002) = 3.55, p < .000, and explained 70% of shared variance between the two variable sets. The model with functions two to five was also significant with F (20, 674.22) = 1.67, p < .03. Models for functions four to five and five in isolation did not account for significant amounts of variance between the variable sets.

The first canonical correlation was .53 (70% overlapping variance), the second was .32 (20% overlapping variance), the third was .19 (6% overlapping), the fourth was .13 (3% overlapping variance), and the fifth was .06 (1% overlapping variance). Given the

amount of variance explained, only the first two functions were considered noteworthy, accounting together for 90% of variance.

Table 4-6 presents redundancies and canonical correlations as well as the correlations between the variables and the two considered canonical variates, standardised canonical variates coefficients, and within-set variance accounted for by the canonical variates (percent of variance). Structure coefficients above .45 are in bold as, following convention in factor analysis, they are the most useful variables in the variate (Sherry & Henson, 2010).

In the first canonical variates, with a cut-off of .45, the variables in the values set that were correlated with the canonical variate were Conservation (.62), and Self-Enhancement (.55), and age (-.76). Two variables in the shopping category set correlated with the canonical variate: Clothing and Shoes (.53), and Travel (-.45). The first pair of canonical variates indicates that women who are younger and have Conservation and Self-Enhancement values have a stronger preference for Clothing and Shoes, and a weaker preference for travel.

In the second canonical variate, Self-Enhancement (.63) and Conservation (-.83) correlated with the covariate above the .45 cut off point. In the shopping category set, both Travel (.71) and Health (-.67) correlated above .45 with the canonical variate. That is, women who had stronger Self-Enhancement and weaker Conservation values had a tendency to prefer Travel and dislike health shopping categories.

Table 4-6 Canonical correlations between values and shopping categories for females: Variance explained, redundancies, structure coefficients and standardised canonical function coefficient for canonical variates one and two

	First Canonical Variate		Second Canonical Variate	
	Correlation	*Coefficient*	*Correlation*	*Coefficient*
Values and demographics set				
Conservation	**0.62**	0.40	**-0.57**	-0.83
Openness	-0.34	-0.24	0.14	-0.06
Self-Enhancement	**0.55**	0.28	**0.63**	0.85
Self-Transcendence	-0.22	-0.18	-0.07	0.16
Age	**-0.76**	-0.63	-0.11	-0.07
% of variance		29	Total =	43
Redundancy		8	Total =	10
Shopping Category set				
Electronics	0.20	0.34	0.21	0.09
Travel	**-0.45**	-0.53	**0.71**	0.67
Apps	0.10	-0.05	0.13	0.07
Health	-0.35	-0.39	**-0.67**	-0.68
MoviesBooks	-0.39	-0.47	0.09	0.13
ClothingShoes	**0.53**	0.70	0.14	0.17
% of variance	14		Total =	17
Redundancy	4		Total =	6
Canonical correlation	**.53**		**.32**	

Notes: Correlation = structure coefficient. Coefficient = standardised canonical function coefficient.

4.4.1.3 Males only Canonical Correlation Model

For males only (N = 189), the full model was significant using Wilk's λ = .61 criterion, F (30, 714) = 3.16, p < .000, and explained 47% of shared variance between the two variable sets. The model with functions two to five was also significant with F (20, 594.63) = 2.53, p < .001. Models for functions three and four to five and five in isolation did not account for significant amounts of variance between the variable sets.

The first canonical correlation was .45 (47% overlapping variance), the second was .38 (31% overlapping variance), the third was .28 (16% overlapping), the fourth was .16 (5% overlapping variance), and the fifth was .07 (1% overlapping variance). Given the amount of variance explained, only the first two functions were considered noteworthy, accounting together for 78% of variance.

Table 4-7 Canonical correlations between values and shopping categories for males: Variance explained, redundancies, structure coefficients and standardised canonical function coefficient for canonical variates one and two

	First Canonical Variate		Second Canonical Variate	
	Correlation	*Coefficient*	*Correlation*	*Coefficient*
Values and demographics set				
Conservation	-0.17	-0.17	-0.31	-0.31
Openness	-0.21	-0.21	0.00	0.00
Self-Enhancement	**0.91**	0.91	**-0.51**	-0.51
Self-Transcendence	0.08	0.08	-0.21	-0.21
Age	**0.63**	0.63	**0.62**	0.62
% of variance	16		Total =	26
Redundancy	3.00		Total =	7
Shopping Category set				
Electronics	0.33	0.50	-0.08	0.02
Travel	**0.73**	0.71	**0.51**	0.67
Apps	-0.36	-0.32	0.14	0.16
Health	0.12	-0.01	-0.13	0.02
MoviesBooks	-0.23	-0.15	0.28	0.41
ClothingShoes	**0.46**	0.36	**-0.68**	-0.77
% of variance	18		Total =	32
Redundancy	4		Total =	6
Canonical correlation	**0.45**		**0.38**	

Notes: Correlation = structure coefficient. Coefficient = standardised canonical function coefficient.

Table 4-7 presents redundancies and canonical correlations as well as the correlations between the variables and the two considered canonical variates, standardised canonical variates coefficients, and within-set variance accounted for by the canonical variates (percent of variance). Structure coefficients above .45 are in bold.

In the first canonical variates, with a cut-off of .45, the variables in the values set that were correlated with the canonical variate were Self-Enhancement (.91), and age (.63). Two variables in the shopping category set correlated with the canonical variate: Travel (.73), and Clothing and Shoes (.46). The first pair of canonical variates indicates that older men who have stronger Self-Enhancement values have a stronger preference for Travel and Clothing and Shoes.

In the second canonical variate, Self-Enhancement (-.51) and Age (.62) correlated with the covariate above the .45 cut off point. In the shopping category set, Clothing and Shoes (-.68) and Travel (.51) correlated above .45 with the canonical variate. That is, older men who had stronger Self-Enhancement values had a tendency to prefer buying Travel, and dislike buying Clothing and Shoes.

For a comparison of all three models see Table 4-8.

Table 4-8 Canonical correlations between values and shopping categories: Overview

Canonical Variate	1		2		3	
	Correlation		*Correlation*		*Correlation*	
Full Model						
Conservation	**0.64**	Self-Enh	**0.69**	Conservation	**0.60**	
Self-Enh	**0.61**			Openness	**-0.53**	
Age	**-0.73**			Self-Tra	**0.55**	
Canonical correlation	0.44		0.32		0.21	
Travel	**-0.48**	Travel	**0.81**	Apps	**-0.56**	
ClothingShoes	**0.54**	ClothingShoes	**0.48**	Health	**0.70**	
Female model						
Conservation	**0.62**	Conservation	**-0.57**			
Self-Enh	**0.55**	Self-Enh	**0.63**			
Age	**-0.76**					
Canonical correlation	0.53		0.32			
Travel	**-0.45**	Travel	**0.71**			
ClothingShoes	**0.53**	Health	**-0.67**			
Male model						
Self-Enh	**0.91**	Self-Enh	**-0.51**			
Age	**0.63**	Age	**0.62**			
Canonical correlation	0.45		0.38			
Travel	**0.73**	Travel	**0.51**			
ClothingShoes	**0.46**	ClothingShoes	**-0.68**			

Notes: Correlation = structure coefficient. Coefficient = standardised canonical function coefficient. Self-Enh= Self-Enhancement, Self-Tra = Self-Transcendence

4.5 Discussion

This study explored relationships between consumer values and preference for widely used product categories in a general population sample. Results indicate that the four high level values Conservation, Openness, Self-Transcendence, and Self-Enhancement are correlated with preference for a number of product categories, namely Apps, Clothing and Shoes, Travel, and Health, confirming the hypothesis. Furthermore, the relationship differed between the female and male sample. In the

female sample, Conservation and Self-Enhancement values as well as age were correlated with preference for Travel, Clothing and Shoes, and Health. In the male sample, Self-Enhancement was the only relevant value, correlating with a preference for Travel and Clothing and Shoes. These results offer empirical evidence for the theorised link between values and product category preference (Gutman, 1990; S. H. Schwartz, 2006). They are also in line with evidence supporting the role of psychological variables in consumer behaviour (Sandy et al., 1994).

Although Universalism and Benevolence, the two values that constitute Self-Transcendence, had been indicated in a number of previous studies as relevant in category preference, Self-Transcendence showed significant correlations with a preference for Health products and disliking of Apps only in the overall model. In the gender specific models, Self-Transcendence did not correlate with shopping category preference. One explanation for this is that the current study explicitly looked at categories not loaded with ethical meaning, whereas previous studies focused on such categories, including organic food, sustainable holidays, or politically correct goods (De Barcellos et al., 2014; Dreezens et al., 2005; Grunert et al., 2014; Hayley et al., 2015a; Thogersen, 2011). The finding that values other than Universalism and Benevolence related to the categories in this study supports the theoretical concept that different categories are perceived to contribute to the achievement of different motivational goals, and that this is expressed in different categories being preferred by people with distinct value profiles. For instance, younger females high in Self-Enhancement and Conservation values were more likely to prefer clothing and shoes. Women high in Self-Enhancement but low on Conservation values, in turn, were more likely to prefer Travel.

They were also less likely to prefer Health products, indicating that spending on health products is related to values of Security, Tradition, and Conformity.

Power values, which together with achievement constitute Self-Enhancement, are related to a lower preference for organic, sustainable, and vegetarian food choices (Dreezens et al., 2005; Grunert et al., 2014; Hayley et al., 2015a). Results of this study indicate that Self-Enhancement is also related to preferences or aversion for clothing and shoes, in both males and females. Clothing and shoes are directly linked to demonstrating image and status to others as well as oneself (Adam & Galinsky, 2012; Galak, Gray, Elbert, & Strohminger, 2016). As Power values refer to social status and control over people and resources, it makes theoretical sense that people with high Self-Enhancement values would prefer a product category that is linked to representing status. This is also reflected in personality differences across more or less fashion conscious consumers, with more fashion conscious consumers being higher on Extraversion, Agreeableness and Conscientiousness (Casidy, 2012b).

Some gender differences in how values connect to shopping category preference were found. This may be because men may perceive a given category as supporting different motivational goals then women do. Several socio-cultural theories lend support to such an interpretation of gender differences. According to social constructionist theories, gender is the result of social construction rather than simply biological sex (Berger & Luckman, 1966; Butler, 1990). Gender is accomplished or performed, and social norms and notions guide any expression of gender. Consequentially, actions are in part performed to express and reinforce one's gender (Ahl, 2006). Defined as such, the goal to express one's gender may interact with any other motivational goals, including values. When men evaluate whether a given

behaviour, such as purchasing of a specific shopping category, is congruent with their values, the social norms and notions around masculinity will affect this evaluation. To accomplish and perform one's gender within the given social context, shopping categories are used as cues to communicate one's gender role to others (Graeff, 1996; Solomon, 1983). As Ahl (2006, p. 612) puts it: 'A man who starts a beauty parlour should, in my country, consider this very carefully if he wants to project a heterosexual, unambiguous "he-man" image'. Indeed, there is a strong relationship between gender and behaviours, including preference for brands and popular culture items (Kosinski et al., 2013).

In accordance with this, gender differences in the relationship between values and consumer behaviour have been reported previously, where the values that predicted shopping behaviours quality, price minimization, and pre-planning differed between men and women (Worsley et al., 2010). This study also offers some evidence that the same behaviours may be evaluated to contribute to the expression of distinct values by men versus women. In the male sample, a preference for Travel together with a preference for Clothing was related to Self-Enhancement values and older age. A preference for Travel and an aversion for Clothing, in turn, were related to low Self-Enhancement values and older age. In the female sample, a preference for Travel was relate to a dislike for Health in females that had high Self-Enhancement and low Conservation values. For women with high Self-Enhancement and Conservation values, no aversion against Health products was present, but in turn an aversion against Travel and a preference for Clothing. This suggests that for females but not males travelling was related to expressing low Conservation values, which makes intuitive sense given that travelling entails the exploration of the unknown and taking of risks, and that those

risks, both actual and perceived, are higher for women than men (British Foreign and Commonwealth Office, 2013; Carr, 2001; Lepp & Gibson, 2003). Women appeared to perceive Travel as a means to achieve low Conservation goals, such as breaking with prevalent customs. In turn, high Conservation values may inhibit women's desire to travel due to associated risks. This is in line with the finding that Conservation values in this study also related to a preference for health products in females. Indeed, Security plays a role in some health related category choices, such as the use of sustainability labels and attitudes towards reducing the intake of fish (Grunert et al., 2014; Hayley et al., 2015a). However, similarities in values and category preference between men and women also emphasise the similarities between genders. The connection between Self-Enhancement and a preference for clothing, for example, seems to be equally present for men and women.

4.5.1   Limitations and Future Research

The present study tested a general hypothesis, to serve as a guide, due to the lack of existing literature. It is thus an exploratory study, and findings should be interpreted as such. Results give support to the hypothesis that values are one factor that affects preference for shopping categories, as well as demonstrating that values can help explain underlying reasons for preferences. Future studies should formulate precise hypotheses to establish whether findings are spurious or indeed describe meaningful relationships.

This study explored the effect of values at a broad level of behaviour. This is suitable given the broad nature of the four higher order levels. According to the bandwidth fidelity debate, criteria and predictors in psychometric research need to be at the same

level of specificity and generality in order to detect meaningful relationships. Bandwidth describes the breadth of a scale's content, and fidelity describes a scale's reliability and dependability (Chronbach & Gleser, 1965). Future studies should investigate the effect of values on different levels of specificity and generality, such as looking at lower level values and more specific shopping behaviours.

All findings in this study are based on self-report data. This is problematic in particular with regards to purchasing preferences. Accounts of money spend heavily rely on participant's accurate recall and awareness of their spending and may thus be inaccurate reflections of actual spending. Future studies should attempt to replicate findings with objective purchasing data. However, as the goal was to assess which categories participants most enjoyed, self-report may have advantages over objective spending data in that it more accurately describes the subjective experience of participants.

The list of categories included in the list was limited due to a lack of data. Data collection was confounded by the self-report format, which allows only a limited amount of questions to be asked per survey. This does not affect detected relationships between measured categories and values, but it limits the generalisability of findings. Values may relate differently to other sets of shopping categories, as exemplified by studies reporting relationships between Self-Transcendence values and ethical consumption. Future studies should explore a broader set of shopping categories. In particular, all food related categories, such as restaurants and supermarkets, were excluded from the present study. In addition, categories at different levels of specification may be investigates. Values may have stronger or weaker effects when investigating more narrow categories.

As an avenue for future research, congruence between personal values, and values perceived to be portrayed by a given shopping category could be explored. The congruence hypothesis is popular in product personality theory, with some evidence demonstrating that people prefer products that have personalities similar to their own (Govers & Mugge, 2004; Govers & Schoormans, 2005). However, methodological and theoretical limitations around the measurement of product personalities remain persistent problems with research investigating the congruence hypothesis.

4.6   Conclusion

This chapter demonstrates that values are related to preference for product category, explaining non-negligible part of variance in shopping preference. Canonical correlations deliver interpretable results that offer insights into drivers of consumer preference. Conservation and Self-Enhancement values appeared to be most relevant in determining preferences for shopping categories. Where previous studies on values in consumer choice have focused on ethical consumption categories, this study suggests that in preferences less ethically loaded categories, values also make a contribution to choice. Specifically, values falling into the Self-Protection and Anxiety-Avoidance cluster (S. H. Schwartz et al., 2012) played a more prevalent role in such ethically ambivalent choices, whereas values falling into the Growth and Anxiety-Free cluster are indicated in previous research to play a role in ethical consumer choices.

The next chapter addresses limitations of this study by using behavioural rather than self-report data. It will extend findings of this study to an additional shopping category, food, as well as a narrower level of values, by looking at the ten basic human values rather than the four higher order values.

4.7 Measure Validation: the Short Value Measure

This section describes the development and validation of the short value measure used in the study presented in the previous Sections 4.1 to 4.6. The measure was developed to carry out the study described in this chapter, where a short values assessment was necessary in order to allow for the lengthy assessment of shopping category preferences.

4.7.1 Sample and Procedure

A sample of 400 respondents (47% males) was collected using Amazon Turk. Amazon Turk is a platform originally designed to provide remote workers for easy tasks but has become increasingly popular as a way of recruiting participants for social science experiments (Buhrmester, Kwang, & Gosling, 2011). The age ranged from 18 to 65 and over, with 26 to 35 year olds making up the largest age group (45%), followed by 35-54 year olds (32%), 18 to 25 (19%), 55-64 (3%) and 65 and over (1%). Part time employment was the most common occupation (53%), followed by Business owner/Self-employed (26%), Student (10%), Other (9%), and Unemployed (6%).

4.7.2 Measures

4.7.2.1 Short Value Measure

A Short Value measure was designed to measures the four higher order levels of the ten basic human values. The measure was designed to measure four higher order rather than ten lower order values in order to allow for statistical consistency of the measure despite its brief format. The more items a measure uses to assess the same underlying construct, the higher the measure's consistency. Assessing ten distinct constructs would thus require a much larger number of items than assessing four

distinct constructs. In addition, the four higher order values were deemed sufficient for hypothesis testing in the study presented in Sections 4.1 to 4.5 of this chapter. The measure is intended to serve as a brief, user-friendly assessment of values that can be used in situations where longer questionnaires are unfeasible or where IP requirements restrict the use of existing values measures.

Short form measures are often designed by selecting the best performing items from an existing measure. A different methodology was adopted here, as the goal was to cover the breath of the four higher order value constructs. Accordingly, items that best reflected the content of each of the four values were designed. This methodology maximises content validity, and was used successfully by researchers including Gosling, Rentfrow, and Swann (2003) for creating a ten item Big Five personality measure. When creating short measure items, it is thus recommended to add descriptive and clarifying information to the items in order to avoid ambiguity and ambivalent meanings (Oliver P John & Srivastana, 1999). Thus, items on the short measure were formulated as whole sentences (e.g. 'If we all do our bit, we can improve the world for everyone'), rather than single words as used in the SVS (e.g. 'Equality'). To cover the entire breadth of each of the four higher order values, three items were formulated to measure each underlying value. The generated measure thus consists of 30 items, with six to nine items per value. Items are rated on a scale from one 'strongly disagree' to five 'strongly agree', for example Self-Enhancement 'I am very competitive'. Value scores are calculated by summing the items measuring the respective value. For measure items, see Appendix 1 Short Value Measure items (page 201).

4.7.2.2 Schwartz Value Survey (SVS, Schwartz, 1992)

The SVS (S. H. Schwartz, 1994) asks participants to rate how much each value is a guiding principle in their life, on a 9-point Likert scale. The SVS has been validated across cultures in numerous studies and demonstrates good reliability and validity (Sagiv & Schwartz, 1995; S. H. Schwartz, 1992, 1994; S. H. Schwartz et al., 2001). The survey has 57 items: 3 items each for the values stimulation and hedonism; 4 items each for the values conformity, achievement, and power; 5 items each for the values tradition, benevolence, self-direction, and security; and 8 items for the value universalism. The remaining items are used for scale use correction only, but do not contribute to value scores. The score for each value is the mean of items measuring that value. Note that in the following analysis scores are adjusted for individual differences in use of response scales. This scale use correction was done by calculating individual scores on all 57 items and dividing this score by 57. Individual responses were centred on that score. Scale use correction is recommended for the SVS in order to improve comparability of values cores across individuals, such that individual scores reflect the relative importance of values (S. H. Schwartz et al., 2012).

Schwartz's ten basic human values can be grouped into four or two higher order values (Schwartz et al., 2012). For the purpose of this study, the four higher order values Openness to Change (Self-Direction, Stimulation, Hedonism), Self-Transcendence (Universalism, Benevolence), Self-Enhancement (Power, Achievement), and Conservation (Conformity, Tradition, Security) were computed by summing up the respective lower order values (see Figure 2-1). Where values fall in between two higher order categories, they were grouped with the category that exhibited higher correlations.

4.7.3 Data Analysis and Results

Participants that may not have replied honestly and selected similar answers on all questions were excluded from the analysis. Specifically, the 20 cases with the lowest variance in their responses to either of the two values measure were excluded from the analysis. Value scores for both the Schwartz Value Survey and the Short Value measure were computed as described above. Gender differences were tested for both measures.

It is standard to conduct confirmatory factor analysis when designing personality inventories (Brown, 2015). This is less suitable for values, where the different values overlap (S. H. Schwartz, 2006). In addition, the SVM was designed to measure established value constructs rather than validate them. Hence, the following analysis of the SVM focuses on its concurrent validity, which is its ability to replicate scores from the SVS.

First, inter item correlations were computed to establish the internal consistencies of the SVM. Unlike Chronbach's alpha, average inter item correlation are not influenced by scale length. They are thus a more suitable measure for assessing internal consistency of short scales. Average inter item correlations should fall between .15-.5, where broader constructs should have lower, and narrower constructs higher inter item correlations (Clark &Watson 1995).

Concurrent validity of the SVM was investigated by comparing scores to SVS. As an additional test for concurrent validity, linear regression models were run for each of the four values, with the SVS score as the predicted, and the respective SVM items as the predictor variables.

4.7.4 Results

Significant mean differences in values between men and women were found for Self-Enhancement on both the SVS and the SVM, with women scoring lower on the value. No significant mean differences between men and women were observed on the remaining values. See Table 4-9 for a list of means, standard deviations, and results for the multivariate comparison between genders.

Table 4-9 Gender differences in values as measured by the Schwartz Value Survey and the Short Values Measure

		Schwartz Value Survey			
		Openness to Change	Conservation	Self-Enhancement	Self-Transcendence
Male	Mean	0.22	-0.43	-0.82	0.69
	SD	0.87	0.73	0.97	0.74
Female	Mean	-0.01	-0.24	-1.11	0.86
	SD	0.84	0.79	0.92	0.67
Multivariate	F	7.27	5.90	8.88	5.86
test	p	0.01	0.02	0.00	0.02
		Short Value Measure			
Male	Mean	3.57	2.85	2.94	3.41
	SD	0.47	0.47	0.70	0.47
Female	Mean	3.54	2.97	2.73	3.41
	SD	0.43	0.47	0.71	0.49
Multivariate	F	0.27	5.77	8.75	0.00
test	p	0.60	0.02	0.00	0.97

Skew and kurtosis values for the four higher level values as measured by the SVS as well as the SVM indicate that the scores are normally distributed on both measures. Inter item correlations on the SVM between r = .23 and r = .27 (both p < .001) for each of the four higher level values indicate that the measures are reliable. See Table 4-10 for descriptive statistics and average inter item correlations.

Correlations between the SVM and the SVS are reported in Table 4-10. The highest between measure correlations were observed for Self-Enhancement at r = .6, and the lowest for Self-Transcendence at r = .32.

Linear regression models with items of the SVM as predictor, and scores on the SVS as the predicted variables were run. All four models were significant: Self-Enhancement (F(6,373)=44.84, $p<.000$, $R^2 = .41$), Self-Transcendence (F(6,373)=24.71, $p<.000$, $R^2 = .27$), Conservation (F(9,370)=57.83, $p<.000$, $R^2 = .57$), and Openness to Change (F(9,370)=27.66, $p<.000$, $R^2 = .39$), suggesting that the SVM is a good indicator of SVS scores.

Table 4-10 Descriptive Statistics, Inter Item Correlations, between measure correlations, and gender differences for the Short Values Measure

	Openness to Change	Conservation	Self-Enhancement	Self-Transcendence
Between measures correlation	0.47	0.51	0.6	0.32
	Short Value Measure			
Inter item correlation	0.24	0.26	0.27	0.23
Mean	3.56	2.9	2.81	3.42
SD	0.45	0.48	0.71	0.49
Median	3.56	2.94	2.83	3.42
Range	2.78	2.89	3.83	2.83
Skew	0	-0.19	0.13	-0.46
Kurtosis	0.05	0.23	-0.19	0.37
	Schwartz Value Survey			
Mean	0.1	-0.35	-1	0.81
SD	0.87	0.78	0.95	0.71
Median	0.05	-0.26	-1.06	0.84
Range	5.89	5.15	6.82	4.54
Skew	0.23	-0.31	0.44	-0.47
Kurtosis	0.46	0.26	0.9	0.8

Notes: All correlations are significant at $p<.001$

4.7.5 Discussion and Conclusions

Results from the validation study indicate that the 30-item measure has internal consistency as well as concurrent validity with Schwartz's Value Survey. Satisfactory inter item correlations with $r >.2$ ($p = .001$) were achieved for each of the four higher level values. These correlations fall within the range of recommended inter item correlations to demonstrate internal consistency (between $r = .15$ to $r = .5$, Clark &Watson 1995). Given the broadness of the measured value constructs, correlations

towards the lower end of the recommended range are acceptable, and indicate internal consistency of the SVM.

Similarly, correlations of between $r = .6$ and $r = .32$ ($p = .001$) were observed between the higher order values measured on the two different scales. Given that higher order values are broad constructs, a between measures correlation of .3 was deemed acceptable. Correlations were moderate to high (average $r = .48$, $p < .001$), and comparable with concurrent validity correlations reported in other validation studies of short form measures (see Gosling et al., 2003). In addition, scores for all four values on the SVS were significantly predicted by responses to items on the SVM.

The results were thus deemed satisfactory to reasonably compare the two measures, as well as to use the Short Value Measure as a measure for the four higher order values.

Chapter 5 Values Predict Purchasing in a Sample of UK Supermarket Shoppers

The previous chapter discussed the role of values in consumer preferences for shopping categories. This chapter uses a sample of supermarket shoppers to examine *whether values play a role in purchasing decisions. Significant mean differences between shoppers of comparable products were observed, with shopper values predicting their purchasing decision between comparable products.*

5.1   Introduction

Given that results from Chapter 4 indicate a relationship between values and consumer preferences for different shopping categories, the aim of this study was to investigate whether values were related to consumers' real world shopping behaviour, that is their purchases in the supermarket. Purchasing records and self-reported value scores for a sample of over 2,000 UK supermarket shoppers were obtained.

Study one demonstrated that consumers values were significantly different for consumers who purchased similar products, but from different brands. Similarly, consumers who held certain values had an increased likelihood for purchasing the same product from one brand over another. Study two demonstrated that consumer values were significantly different for consumers who purchased different product variants within the same brand. Apart from consumer values, the perception of product values may also play a role in determining product preferences, as consumers rated the same products from different brands to have significantly different values.

This chapter demonstrates how values affect consumer preferences at the product level, indicating that values account for variance in preferences for both branding and product type.

5.2   Study 1: Predicting Purchasing of Similar Products from Different Brands

Human values play a role in consumer choice, including food choices (Allen & Baines, 2002; Feather & Norman, 1998) and purchasing decisions (Belk, 1985). For example, food related values such as health and indulgence had a direct effects on consumer choice between different food categories in a sample of 851 Swiss adults (Hauser et al., 2000). Additionally, the purchase of ready to eat food was directly related

to indulgence (r = .-12) and convenience (r = .16) values in a structural equation model (Hauser et al., 2000). Basic human values are related to food consumption and food shopping habits (Povey, Conner, Sparks, James, & Shepherd, 2000; Sparks, Hedderley, & Shepherd, 1992). For example, self-direction was associated with pre-planning of food shopping in men (Worsley et al., 2010). In a qualitative study of values underlying food choice consumers consistently mentioned values related to wellbeing and health, enjoyment, altruism and commercial interests as guiding principles of their food consumption (Baker et al., 2004). In addition to this, human values can help to understand the motivation behind product choice: In a qualitative analysis of grocery shoppers' choices of orange juice and potato chips shoppers fell into two value clusters (Kitsawad, & Guinard, 2014): One cluster embraced open values and consumed products with the motivation to obtain pleasure. The other cluster embraced conservative values and consumed products with the motivation to obtain financial security and familiarity.

Beyond values, a vast body of research illustrated that individual differences in personality are related to food consumption patterns (Goldberg & Strycker, 2002), eating habits (Gibson, 2006), taste preference (Saliba, Wragg, & Richardson, 2009), and preference for organic foods (Guido, Prete, Peluso, Maloumby-Baka, & Buffa, 2009).

5.2.1 Brand and Product Personality and Consumer Choice

Brand is a broad concept, and is in this chapter reserved to describe the non-utilitarian characteristics of a product, such as its name, the name of the company that produces it, and it's physical design. This chapter focuses of one aspect of brand in particular, namely brand personality, because the role of values in consumer choice is often described in the context of brand or product personality. Brand personality

summarises the human attributes with which a given brand, or product, is described (Govers & Schoormans, 2005). As consumers purchase to affirm their self-image, their choices reflect their own traits, preferences, and values. The higher the resemblance between a brand's and a consumer's personality, the better the brand relationship (Huang et al., 2012). Several theoretical models have described the effect of consumer values on product preference (Allen, 2000), but the few existing product personality measures typically profile products along the Big Five personality traits and do not take values into account (Mugge, Govers, & Schoormans, 2009).

The effect of product personality on consumer choice is often understood as a result of congruence, where the attributes of consumer and product or brand overlap. Consumers like products with a personality that resembles their own: Product-consumer personality congruence predicted consumer preference for several household appliances (Govers & Schoormans, 2005), cars (Govers & Mugge, 2004; Mugge et al., 2009), and watches (Mugge et al., 2006). Consumers that value sustainability were more likely to purchase sustainable holidays, that is use accommodation and restaurants that promote green practices and care for the environment (Sirakaya-Turk et al., 2013). However, due to methodological issues with product personality measures, measuring personality congruence between a consumer and a product has been notoriously difficult (Avis, 2012). There is no measure that profiles consumers and products along the same personality dimensions (Caprara et al., 2001). Despite this, research demonstrates that products have distinct personalities, and that they play a role in consumer choice (Govers & Schoormans, 2006).

In light of the established link between values and consumer choice and the role of values in food choice, consumption, and purchase in particular, this study examines

the relationship between consumer values and the purchasing of comparable food products. In particular, this study tests two aspects of the effect of values on consumer purchasing: 1. Consumer values, and 2. Consumer perceptions of product values. Consumer perceptions of product values were investigated in order to test whether product values are perceived by consumers in a similar vein as product personality. This is because product-consumer congruence is a prevalent explanation for consumer preferences of non-utilitarian product aspects (see Section 5.2.1). In order to facilitate the measurement of consumer product value congruence, product values are measured along the ten basic human values defined by Schwartz (1994). We hypothesise that when looking at product pairs:

H1: When rating Fast Moving Consumer Goods that are the same in terms of their utilitarian function, but different in terms of their branding, participants perceive and rate those products to be significantly different in terms of the ten basic human values. The differences in ratings of values of different products add explanatory depth to the description of non-utilitarian aspects of the rated products.

H2: Consumers values predict real world purchasing of the same food product from one brand over purchasing of the food product from another brand for: chopped tomatoes, baked beans, cola, and cheddar cheese. Different values will be predictive of purchasing for different product pairs.

5.2.2   Method

5.2.2.1   Sample

4,740 participants who were registered users of a large British supermarket chain's rewards system were recruited. In addition, participants had subscribed to a

customer research panel, agreeing to participate in online surveys. Ages ranged from 20-24 (2.3%) to over 65 (9%), with the remaining age groups being ages 25-29 (6%), 30-34 (9%), 35-39 (11%), 40 – 44 (13.7%), 45-49 (13.6%), 50-54(12.9), 55-59 (12.3) and 60-64 (9.7%) year olds. 71.4% of participants were female. Overall, 83.8% of participants reported to live in England, 7.2% in Scotland, and 9% in Wales.

5.2.2.2   Measures

5.2.2.2.1   Motives, Values, Preferences Inventory (MVPI; Hogan & Hogan, 1996)

The MVPI measures the ten basic human values defined by Schwartz (1994). See Table 5-1 for a list of the ten value dimensions after Schwartz (1994) and Hogan and Hogan (1996). Although the naming of value dimensions differs slightly, both frameworks essentially measure the same values.

Participants rated themselves on the 10 value dimensions using a 5-point Likert scale that ranged from 'disagree' to 'agree'. The ten value dimensions included Affiliation (seeking social interaction), Altruism (motivated by helping others), Hedonism (motivated by enjoyment), Power (placing importance on accomplishments and status), Recognition (placing importance on attention and praise), Security (needing predictability and structure), Tradition (being dedicated to strong beliefs), Commerce (paying attention to business opportunities and money), Science (drawn to research, knowledge and data) and Aesthetics (drawn to design, artistic expression and looks). The MVPI has 200 items, 20 items for each value. Value scores for participants were obtained by summing responses to the 20 items measuring each value. The MVPI has been used in over 200 validated studies, and demonstrates good test re-test reliability

of about .79, as well as showing high criterion-related validity, for example for job performance (Hogan Assessment Systems, 2009).

Table 5-1 Basic human values after Schwartz and Hogan

	Hogan (1996)		Schwartz (1994)
Power	Desiring success, accomplishment, status, and control	Power	Social status, control or dominance over people and resources
Commerce	Interested in money, profits, investment, and business opportunities	Achievement	Personal success
Hedonism	Orientated for fun, pleasure, and enjoyment	Hedonism	Pleasure and sensuous gratification for oneself
Science	Wanting knowledge, research, technology, and data	Stimulation	Excitement, novelty, and challenge in life
Aesthetics	Needing self-expression, concerned over look, feel, and design of work products	Self-direction	Independent thought and action-choosing, creating, exploring
Altruism	Wanting to help others and contribute to society	Universalism	Appreciation and protection of the welfare of all people and nature
Affiliation	Enjoying and seeking out social interaction	Benevolence	Preservation and enhancement of welfare of people with whom one is in frequent personal contact
Tradition	Dedicated to strong personal beliefs	Tradition	Respect and commitment to cultural and religious customs
Recognition	Responsive to attention, approval, and praise	Conformity	Restrain from actions likely to upset others and violate social norms
Security	Needing predictability, structure, and order	Security	Safety and stability of society, relationship and self

5.2.2.2.2 Purchasing History

Participants' purchasing histories were recorded, specifying if they had bought one of 10 products within the past 12 months.

5.2.2.3 Products

All included products are Fast Moving Consumer Goods, classified as groceries. All products were selected out of the top 100 bestselling products amongst participants that had completed the value survey, in order to ensure that enough survey participants had purchased the products. Ten product pairs were selected, such that two products with comparable flavour and use were grouped together.

Two group comparisons are based on quality, comparing retailer's own low range to a branded product. Two further comparisons are based on brand, comparing two products similar in taste and quality from different brands. Table 5-2 lists all products together with price and number of buyers.

Table 5-2 Supermarket food products included in the study

	Group	Product name	Price £	N Consumers	Image
Quality	Tomato	Retailer's own chopped tinned Tomatoes, low range	0.31	569	
		Branded chopped tinned Tomatoes	1.00	92	
	Beans	Retailer's own Baked Beans, low range	0.24	274	
		Branded Baked Beans	0.68	173	
Brand	Cola	Cola one 2 Litre Bottle	0.99	159	
		Cola two 2 Litre Bottle	1.98	227	
	Cheese	Mature Cheddar one	5.00	300	
		Mature Cheddar two	2.50	259	

5.2.2.3.1 Product Value Measure

Participants rated 8 products using an adapted version of the MVPI. Each dimension was rated on a five point Likert scale between two opposing statements (see Table 5-3 for a list of statements). For example, product Aesthetics was measured as: 'Please tell us to what extent you perceive each of these products do the following: Values looks, Values practicality', where 'values looks' and 'values practicality' labelled the extreme points of the Likert scale. Each product was rated by at least 200 raters on all value dimensions. Value scores for products were obtained by adding up all ratings

given on the item measuring that dimension, and dividing that sum by the number of ratings.

Table 5-3 Product values measure items

	Statements at high and low ends of the 5 point Likert scale	
Aesthetics	Values looks	Values practicality
Affiliation	Can help to connect with others	Is best kept to oneself
Altruistic	Cares about others	Does what is best for itself
Commercial	Knows how much it is worth	Is about more than making money
Hedonism	Is about enjoyment	Gets the job done
Power	Is getting ahead of the competition	Repeats the tried and tested
Recognition	Wants to be famous	Keeps in the background
Scientific	Is designed based on facts and research	Has intuitive appeal
Security	Is predictable	Takes risks
Tradition	Sticks to the traditional way of doing things	Is changing the way things are done

5.2.2.4 Procedure

Participants received an invitation to participate in the study via email. They had signed up to receive regular invitations to market research surveys. First, invitations for value ratings were issued. Invitations for product ratings were issued at a later point. The value rating survey took around 50 minutes to complete and was compensated. The product rating survey took less than 6 minutes to complete and was not compensated.

In the values survey, participants (N= 2,577) completed the 200 MVPI items about themselves. In the product survey, participants (N= 2,163) completed the product value sections of the survey, rating five products on one dimension of the MVPI product measure at a time. Consequently, participants that completed the MVPI on themselves did not rate products. Participants that had not completed the value questionnaire rated product values.

5.2.3 Data Analysis

5.2.3.1 Group Differences in Product Personality Ratings

In order to test H1, whether comparable products from one group were rated to have different values by consumers, one-way MANOVAs were carried out. For this analysis, the sample of N = 2,163 participants who rated product values was used. Those participants had not completed the MVPI, and no product purchase data was available for them.

MANOVAs were chosen because they allow for testing the effect of several independent variables (Tabachnick & Fidell, 2006); in this case the product ratings on the ten value dimensions, on several dependent variables, in this case the two products belonging to each group, at the same time. The multivariate test results indicate whether each of the independent variables has a significant effect on all of the dependent variables. This is important as we were aiming to test differences in values between both products contained in a group, rather than each product in isolation. Product type was entered as the dependent variable, and the ten product value dimensions as fixed factors. Due to the high number of MANOVAs carried out, and the relatively large sample size, p values were adjusted to .01.

5.2.3.2 Relation between Consumer Values and Product Choice

In order to test H2, that consumer values predict the buying of one comparable product over another, the sample with N = 2,577 participants who had completed the MVPI, and for whom product purchase data was available, was used. Binary logistic regression analysis was performed for each of the product groups with product purchase

as outcome and the ten value dimensions of customers, their age and gender, as predictors.

In addition, MANCOVAs were carried out in order to test whether buyers of different products within one group differ in their values. MANCOVAs were chosen because they allow for testing the effect of several independent variables, in this case the ten consumer value dimensions, on several dependent variables, in this case the two products belonging to each group, at the same time. The multivariate test results indicate whether each of the independent variables has a significant effect on all of the dependent variables. This is important as we were aiming to test the effect of values on choosing between all products contained in a group, rather than each product in isolation. The test also accounts for covariates, in this case age and gender. Age and gender affect purchasing decisions, such that some products are more popular with given age groups and genders. Results show whether the effect of consumer values on product type holds after controlling for consumer age and gender. Product purchase was entered as the dependent variable, the ten consumer value dimensions as fixed factors, and age and gender as covariates. Due to the high number of MANCOVAs carried out, and the relatively large sample size, p values were adjusted to .01.

5.2.4 Results

5.2.4.1 MANOVA: Differences in Product Value Ratings

Product value ratings significantly differed for the product types in the tomatoes and beans groups (see Table 5-4). Significant differences in value ratings for branded tomatoes and Retailer's own tomatoes were found on Aesthetics, Commerce, Science and Security (branded tomatoes higher), and Hedonism (Retailer's own higher). The two

beans products were rated as significantly differing on the product value dimensions, with branded beans scoring higher than Retailer's own beans on Aesthetics, Affiliation, Altruism, Power, Recognition and Tradition. Cola two was rated as significantly higher on security than Cola one.

5.2.4.2   MANCOVA: Differences in Consumer Values

Consumer values were significantly different for consumers of the two colas (see Table 5-4). Significant differences between consumers who bought Cola one or Cola two were found in Aesthetics, Science and age, with all three being higher in those who purchased Cola two.

Table 5-4 Descriptive statistics and multivariate analysis for value differences across product pairs

	Retailer Tomatoes μ	Retailer Tomatoes SD	Branded Tomatoes μ	Branded Tomatoes SD	Tomatoes F	Tomatoes p	Retailer Beans μ	Retailer Beans SD	Branded Beans μ	Branded Beans SD	Beans F	Beans p	Cheddar One μ	Cheddar One SD	Cheddar two μ	Cheddar two SD	Cheeses F	Cheeses p	Cola one μ	Cola one SD	Cola two μ	Cola two SD	Colas F	Colas p
N consumer	557		80				273		137				300		93				159		227			
N product	199		196				223		192				204		188				227		216			
Product values																								
Aesthetics	1.95	1.28	3.18	1.21	3.86	0.00	1.97	1.32	3.08	1.54	3.47	0.01	3.17	1.46	3.02	1.38	0.32	0.86	3.59	1.26	3.66	1.36	1.27	0.28
Affiliation	3.19	1.23	3.31	1.04	2.96	0.02	2.70	1.22	3.95	1.02	3.45	0.01	3.59	0.89	3.68	0.91	1.17	0.32	3.73	1.02	3.94	1.06	0.65	0.63
Altruistic	2.91	1.39	3.00	1.00	0.64	0.64	**3.07**	**1.38**	**3.19**	**1.31**	**3.49**	**0.01**	2.96	1.16	3.01	1.17	1.40	0.24	2.31	1.18	2.54	1.42	0.31	0.87
Commerce	2.58	1.56	3.39	1.00	4.07	0.00	3.29	1.60	3.94	1.19	0.68	0.61	3.84	1.03	3.66	1.10	0.92	0.45	4.19	0.97	4.26	1.10	1.30	0.27
Hedonism	4.43	1.08	2.87	1.27	5.09	0.00	1.64	1.06	3.17	1.54	1.73	0.14	3.47	1.37	3.26	1.36	0.62	0.65	4.00	1.17	4.25	1.14	0.87	0.48
Power	4.21	1.14	2.86	1.06	1.44	0.22	**1.83**	**1.09**	**3.59**	**1.49**	**7.63**	**0.00**	3.19	1.28	2.98	1.21	2.16	0.07	3.48	1.00	3.85	1.24	2.06	0.09
Recognition	3.71	1.37	3.07	1.33	1.99	0.10	**2.15**	**1.40**	**4.09**	**1.21**	**11.2**	**0.00**	3.93	1.11	3.66	1.14	0.90	0.46	4.50	0.89	4.72	0.67	0.96	0.43
Science	2.44	1.20	3.06	1.05	4.43	0.00	3.30	1.26	3.27	1.47	0.95	0.44	3.24	1.19	3.27	1.12	0.45	0.77	3.23	1.33	3.12	1.50	0.95	0.44
Security	1.26	0.70	3.92	1.11	66.4	0.00	4.65	0.71	4.30	1.15	1.78	0.13	4.21	1.14	4.14	1.06	0.20	0.94	**3.86**	**1.23**	**4.50**	**0.81**	**2.54**	**0.04**
Tradition	2.03	1.23	3.68	1.15	1.24	0.30	**3.94**	**1.20**	**4.36**	**1.03**	**3.72**	**0.01**	4.02	1.09	3.86	1.04	1.68	0.15	3.41	1.26	4.11	1.20	1.31	0.27
Consumer values																								
Aesthetics	2.48	0.68	2.47	0.66	0.82	0.93	2.49	0.69	2.33	0.56	0.56	0.57	2.40	0.64	2.39	0.66	0.93	0.70	**2.32**	**0.67**	**2.42**	**0.69**	**1.45**	**0.00**
Affiliation	3.31	0.43	3.40	0.45	1.06	0.33	3.29	0.41	3.21	0.47	1.13	0.16	3.29	0.44	3.30	0.42	1.07	0.31	3.29	0.43	3.33	0.43	1.03	0.41
Altruistic	3.41	0.49	3.41	0.50	1.16	0.12	3.42	0.51	3.28	0.61	1.20	0.09	3.40	0.46	3.39	0.50	0.99	0.52	3.40	0.46	3.41	0.49	0.93	0.70
Commerce	3.01	0.48	3.06	0.47	1.08	0.27	3.03	0.47	2.82	0.53	0.89	0.80	3.05	0.44	3.02	0.46	0.80	0.93	2.96	0.43	3.02	0.47	0.95	0.63
Hedonism	3.05	0.47	3.14	0.39	1.18	0.11	3.03	0.44	3.05	0.35	0.71	0.99	3.03	0.45	3.04	0.44	0.92	0.70	3.09	0.45	3.08	0.45	0.79	0.94
Power	3.03	0.52	3.05	0.50	0.79	0.95	3.04	0.51	2.93	0.52	1.01	0.47	3.07	0.49	3.02	0.50	1.13	0.17	3.03	0.45	3.07	0.50	1.08	0.26
Recognition	2.66	0.54	2.65	0.50	1.05	0.35	2.67	0.53	2.55	0.48	0.91	0.75	2.59	0.47	2.63	0.50	1.01	0.44	2.63	0.53	2.67	0.58	0.88	0.82
Science	2.93	0.66	2.89	0.68	0.98	0.54	2.95	0.65	2.93	0.59	1.23	0.05	2.92	0.62	2.88	0.63	0.70	1.00	**2.85**	**0.68**	**2.87**	**0.61**	**1.38**	**0.00**
Security	3.33	0.38	3.18	0.33	1.07	0.30	3.36	0.40	3.44	0.44	1.14	0.13	3.34	0.35	3.31	0.36	0.84	0.87	3.31	0.39	3.30	0.39	1.04	0.39
Tradition	3.36	0.38	3.36	0.31	0.92	0.70	3.37	0.40	3.40	0.46	1.05	0.34	3.39	0.37	3.35	0.38	1.09	0.26	3.32	0.34	3.32	0.34	1.02	0.42
Age	8.95	2.35	8.86	2.16	2.54	0.08	9.03	2.37	9.31	2.06	0.91	0.72	9.03	2.22	8.81	2.19	0.39	0.68	**8.33**	**2.03**	**8.39**	**2.12**	**5.31**	**0.01**
Gender	1.73	0.45	1.78	0.42	1.96	0.14	1.75	0.44	1.85	0.38	0.50	0.61	1.77	0.42	1.76	0.43	0.89	0.41	1.81	0.40	1.74	0.44	0.55	0.58

Notes: μ = Mean, * Wilks' Lambda

5.2.4.3 Logistic Regression: Predicting consumer choice

Regression analysis showed that consumer values were related to the likelihood of purchasing one product over another in the tomato and cheese groups. Table 5-5 shows odds ratios and confidence intervals for each of the product groups. Consumers high in tradition were more likely to purchase branded tomatoes; one SD increase in Tradition was associated with the odds of .67 (CI 0.49-0.92) for buying Retailer's own tomatoes rather than branded tomatoes. Consumers high on Security were 2.08 (CI 1.51 – 2.86) times more likely to purchase Retailer's own than branded tomatoes. In the cheese group, consumers higher on Power were 1.6 (CI 1.12 – 2.41) times more likely to purchase cheese one than cheese two. Those high in Recognition were less likely to purchase cheese one rather than cheese two, with odds of .64 (CI 0.46 – 0.90) for purchasing cheese one.

Table 5-5 Odds ratios and confidence intervals for likelihood of purchasing comparable products

	Tomatoes Odds increase for buying Retailer's own (=1) over Parioli (=0)			Beans Odds increase for buying Retailer's own (=1) over Heinz (=0)			Cheese Odds increase for buying Cathedral (=1) over Pilgrim (=0)			Cola Odds increase for buying Coca Cola (=1) over Pepsi Max (=0)		
		95% CI			95% CI			95% CI			95% CI	
	Exp(B)	lower	upper	Exp(B)	lower	upper	Exp(B)	lower	upper	Exp(B)	lower	upper
Aesthetics	1.12	0.83	1.51	1.05	0.82	1.35	1.11	0.83	1.48	1.28	0.97	1.71
Affiliation	0.89	0.64	1.23	0.87	0.66	1.16	0.88	0.66	1.19	1.23	0.90	1.69
Altruistic	1.08	0.77	1.52	1.22	0.92	1.61	0.92	0.67	1.26	0.88	0.64	1.21
Commerce	0.69	0.48	1.00	1.01	0.74	1.36	0.91	0.66	1.26	1.24	0.88	1.76
Hedonism	0.74	0.52	1.06	0.90	0.67	1.21	1.05	0.78	1.42	0.79	0.57	1.07
Power	1.28	0.86	1.89	0.79	0.57	1.08	**1.64**	1.12	2.41	0.96	0.66	1.40
Recognition	1.08	0.76	1.53	1.46	1.07	1.99	**0.64**	0.46	0.90	0.98	0.71	1.36
Science	1.06	0.78	1.43	1.11	0.86	1.42	1.01	0.76	1.34	0.91	0.69	1.20
Security	**2.08**	1.51	2.86	1.17	0.89	1.53	1.11	0.82	1.50	1.02	0.78	1.34
Tradition	**0.67**	0.49	0.92	0.93	0.72	1.20	1.12	0.85	1.49	1.03	0.77	1.37
Age	0.95	0.84	1.07	1.05	0.96	1.16	1.05	0.94	1.16	1.00	0.89	1.11
Gender	0.74	0.39	1.41	1.17	0.70	1.96	1.21	0.68	2.15	0.68	0.38	1.19

5.2.5 Discussion

Consumer values have an effect on product (Belk, 1985) and product category choice (Hauser et al., 2000). They also play a role in processes involved in food shopping,

including food consumption (Povey et al., 2000) and shopping habits (Worsley et al., 2010). This study investigated the effect of values on food product choice in a real world shopping context by analysing consumer value profiles in relation to their purchases. In order to better understand why values affect choice at the product level, the study investigated whether consumer perceived products to represent different values. Research on product personality suggests that products are perceived not only to exhibit practical features but to also have distinct personalities (Govers & Schoormans, 2005). Accordingly, consumers choose products to be in line not only with their material needs but also with their own personalities. This study thus investigated whether consumers perceive differences in values between comparable products.

Results show that consumer values predict food product choice for some of the product pairs. Consumer values were related to consumer choice of one product over another in the cola, tomato and cheese groups. For each product group only a few of the ten measured consumer values were significant. For example, high Tradition predicted purchasing of branded, and high Security the purchasing of retailer's own tomatoes.

5.2.5.1 Product Values, Consumer Values and Consumer Choice

Results suggest that consumers perceive products to have distinct values, though this was not the case for all product pairs. Specifically, products were rated to differ in values in the tomatoes, beans and cola groups. Value dimensions that were rated as different between two products were different from values predicting consumer choice between the same products. Research on consumer personality, product personality, and preference suggests that consumers prefer products that are similar to their own

personality (Govers & Schoormans, 2005; Govers & Mugge, 2004). The same is true for brand preference, such that consumers prefer brands that resemble their own personality traits (Lin, 2010). The present results suggest a more complex relationship between product values, consumer values and choice. Ratings of product values did not directly correspond to values of consumer who were more likely to purchase a product. Rather, results indicate that there are values attached to a product that are perceived as more distinctive than others.

For example, in the cola group cola one was more appealing to consumers high on Science and Aesthetics, such that Scientific and Aesthetic consumers were more likely to purchase cola one. Buying cola one was thus associated with visual pleasure and a concern for product function. This suggests that cola one is associated with looking good as well as having desirable functional characteristics. However, the two cola types were not rated as significantly different on the value dimensions of Science or Aesthetics that predicted consumer choice. Instead, cola one and two differed significantly on Security, with cola one being rated higher. Though products were perceived to differ in values, those values did not correspond directly to the consumer values that predicted product choice. This is not to say that product values and consumer values are independent of each other, and that perceived product values do not affect consumer choice. In keeping with the cola group example, consumers high in Science may be attracted to cola one because it offers Security in terms of the functionality and purpose it serves.

5.2.5.2 Consumer Values as Predictors of Product Choice

Though results do not portray a straightforward relationship between consumer, product values and choice, they offer evidence for the role of consumer values in product choice: Consumer values predicted product choice, and consumers who had purchased one product differed significantly in values form those who had purchased the other product. However, some product groups were more affected by consumer values than others. In the tomatoes and cola groups, values affected two of the three areas only. Tomatoes purchase was significantly predicted by consumer values, and tomatoes were rated to differ in values. The two colas were also rated to differ in values, and values of those who had purchased one cola were significantly different from those who purchased the other. In the beans and cheese group, values affected one area only. The two beans were rated as having different values, and consumer values predicted the purchasing of one cheese over the other. Two main questions arise from the results: First, why some values are more relevant than others, and which values affect consumer choice most. Second, why some products are affected by values more than others.

Results demonstrate that choice across product groups was affected by different values. Consumers high on Security were more likely to purchase Retailer's own than branded tomatoes. This suggests that consumers who need predictability are more comfortable with the Retailer's product. The retailer's brand may be more known than the brand. Purchasing the cheaper retailer's version may also offers financial security. Consumers higher on Tradition, in turn, were more likely to purchase branded tomatoes. The label of this product has a classic appeal and emphasises Italian cuisine. This seems to appeal to consumers who are driven by tradition in their food choices. Consumers high on Power were more likely to purchase the high end cheese one than they were to

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purchase cheese two. Consumers who bought cola one were higher on Aesthetics and Science than buyers of cola two. Different product groups were thus affected by different values. This suggests that only a couple of values are salient for consumers when making purchasing choices. It also suggests that the values that become relevant in choice depend on any given product. However, given the small range of products in this study, these conclusions remain speculative.

Results suggest that some products are more affected by consumer values than others. Values may be less salient in some product comparisons than others due to external factors weighting stronger in decision making, due to product characteristics, or due to product category characteristics. Some products may be more affected by external choice criteria than others. Apart from values, other internal and external factors influence consumer choice, including price, budget, and other demographics (Worsley et al., 2010), motivation (Buettner, Florack, & Goeritz, 2013), availability (Steinhart, Mazursky, & Kamins, 2013), loyalty (Kressmann et al., 2006; Lin, 2010), or dietary needs.

5.2.5.3   Limitations and Future Research

Two aspects should be addressed in future studies: First, our understanding of which values affect what types of brands, and why, is limited. Comparable products of more brands should be studied in order to better understand why certain values matter for differently branded products and not for others. Second, our understanding of why choice of certain products is more affected by consumer values is also limited. In order to investigate this, future research should also examine differently branded products from a range of product categories other than supermarket foods.

The size of the relationship between consumer values and product choice may also be increased by adapting a clearer and more systematic product selection. Products selected should be presented in comparable pairs, and represent a range of categories, where categories are high in symbolic value and less affected by external factors than supermarket foods. Purchasing of such categories should be less influenced by material needs driven, thereby increasing the relevance of values. Example categories may be fashion, home accessories, or recreational items.

Though the values measure used in this study is a validated and comprehensive measure of human values, not all of those values may be relevant in consumer choice. None of the value dimensions included in this study showed significance consistently across products. Additional values, or lower level facets of the ten basic human values may be stronger predictors of consumer choice. Future research should explore the structure and content of values applied to the consumer choice context.

5.2.6   Conclusion

Consumer values predict consumer choice between comparable food products during supermarket shopping. Consumers of comparable products differ significantly in their values. Findings further show that consumers perceive products to have different values. The strength and presence of the effect of values on consumer choice does, however, vary from product to product and is limited to a subset of the ten value dimensions. Additional studies are needed to clarify why certain products are more affected by values than others, and to determine which value dimensions are most relevant in consumer choice. Despite this, the present study offers evidence for the relevance of individual differences in explaining variance in shopping behaviour.

5.3   Study 2: Predicting Purchasing of Product Variants from the Same Brand

Study one illustrates how values affect consumer purchasing between the same products from different brands, or between the same branded and non branded products. This study aims to extend the findings by investigating an additional area of purchasing choice, namely choice between similar products from the same brand. It thus investigates whether values can help explain why consumers purchase a certain product variant over another. In order to enhance interpretability of results, the study focuses on a product group for which consumer behaviour and preferences are relatively well researched: bread.

Bread is an important staple food, with white bread being it's most popular and most commonly consumed variant in the UK (Whitton et al., 2012). In addition to differences in health benefits and nutritional characteristic, wholemeal and white bread are perceived and experienced differently by consumers (Dewettinck et al., 2008; Hellyer, Fraser, & Haddock-Fraser, 2014). Consumers of white bread are different from consumers of wholemeal bread in their attitudes and general dietary patterns (Barker et al., 2009; Gellynck, Kühne, Van Bockstaele, Van de Walle, & Dewettinck, 2009; Kourlaba et al., 2009).

Consumption of white versus wholemeal bread indicates an individual's wider dietary habits. Wholemeal bread was consumed as part of a healthier diet in a sample of 372 UK women (Barker et al., 2009). Consumption of wholemeal bread was associated with regular consumption of vegetables, vegetable dishes, and vegetarian food, and consumption of white bread with that of added sugar, chips, crisps and snacks, pies, Yorkshire puddings and pancakes (Barker et al., 2009).

Several aspects may explain why consumers chose wholemeal bread as part of a healthier diet. Wholemeal bread is commonly referred to as the healthier option as it helps reduce a number of diet-related diseases (Fardet, 2010; Gil, Ortega, & Maldonado, 2011). This is reflected in consumers' attitudes. Wholemeal bread is considered the more sensible bread choice: consumers of wholemeal bread were perceived as possessing the attributes of respectability and self-efficacy (Hellyer et al., 2014). Wholemeal bread is also a popular choice for weight loss. It is believed to be more satiating than white bread by consumers and its consumption indeed leads to higher saturation levels (Graaf, Wijne, & Staal, 1992; Kristensen et al., 2010).

Consumer attitudes to bread also affect eating habits, in particular healthy eating patterns. Consumers who perceived no health difference between white and brown bread were less motivated to change their eating habits (Gellynck et al., 2009). The same consumers were also motivated by sensory aspects of bread, indicating that they may pay more attention to sensory than health related characteristics of bread (Gellynck et al., 2009). In addition to attitudes and motivation, personality also affects healthy food consumption and eating habits, including a preference for organic foods (Gibson, 2006; Goldberg & Strycker, 2002; Guido et al., 2009).

5.3.1 Values and Bread Choice

Consumer values affect choice motives as well as sensory preferences when consuming bread. In an experimental lab study on bread preference, Traditional and Hedonistic consumers differed in their food choice motives, such that Hedonistic consumers considered mood and price as important in making their food choices (Pohjanheimo, Paasovaara, Luomala, & Sandell, 2010). Traditional consumers

considered natural content, familiarity and health concerns as important factors when choosing food. Values also affected sensory bread preferences. Hedonistic consumers preferred bread with a soft texture. Traditional consumers preferred rye bread (Pohjanheimo et al., 2010). This is in line with research showing that personality is related to taste preferences (Saliba, Wragg, and Richardson, 2009). Values thus play a role both in what tastes people prefer and what product characteristics they consider important in their food choices.

In light of studies demonstrating the differences between white and wholemeal bread, as well as the established link between values and food choice, we propose a study that tests the relationship between consumer values and purchasing of white versus wholemeal bread. We hypothesise that consumer values predict consumer choice between white and wholemeal bread in the supermarket.

5.3.2   Method

5.3.2.1   Sample

330 participants who were registered users of a British supermarket chain's rewards system were recruited. In addition, participants had subscribed to a customer research panel, agreeing to participate in online surveys. Women made up 71.2% of participants. Overall, 88.6% of participants reported to live in England; 10% in Scotland; and 1.4% in Wales. Ages ranged from 20-24 (2.1%) to over 65 (4.7%), with the remaining age groups being ages 25-29 (6.8%), 30-34 (13.2%), 35-39 (14.5%), 40 – 44 (15.3%), 45-49 (16.6%), 50-54 (9.4%), 55-59 (11.5%) and 60-64 (6%).

5.3.2.2   Measures

5.3.2.2.1   Products and Purchase

One wholemeal and one white bread from the same brand were selected for the study (see Figure 5-1). 161 participants had purchased the wholemeal bread, 251 the white bread. Both products cost £1. Participants' purchasing histories specified if they had bought one or both of the breads within the past 12 months.

Figure 5-1 Product choice options white and wholemeal bread

5.3.2.2.2   Motives, Values, Preferences Inventory (MVPI; Hogan and Hogan, 1996)

The MVPI has 200 items, 20 items for each of the ten values. It is measured on a 5-point Likert scale ranging from 'disagree' to 'agree'. Value scores for participants were obtained by adding up the 20 items measuring each value, then dividing by 20. The MVPI has been used in over 200 validated studies, and demonstrates good test re-test reliability of about .79, as well as high criterion-related validity (Hogan Assessment Systems, 2009).

5.3.2.3   Procedure

Participants received an invitation to participate in the study via email. They had signed up to receive regular invitations to market research surveys. Participants (*N*= 330)

were asked to complete the 200 MVPI items. The survey took around 50 minutes to complete and was compensated.

5.3.2.4   Data Analysis

To test the relationship between gender and bread purchase, a chi-square test of independence was carried out. Gender differences in values were investigated using a one way ANOVA. In order to test the hypotheses that consumer values predict the buying of one comparable product over another, binary logistic regression was performed. Product purchase was entered as the outcome variable and the ten value dimensions, customer age and gender, as predictors.

5.3.3   Results

5.3.3.1   Chi Square: Differences in Bread Purchases between Women and Men

More women (N = 157, or 66.8% of females) than men (N = 53, or 55.8% of males) bought white toast. The chi-square test of independence between gender and bread purchase was not significant, X_2 (1, N = 330) = 3.55, p = .06, indicating that both variables are independent.

5.3.3.2   ANOVA: Value Differences between Women and Men

The ANOVA showed significant differences in values of women and men (see Table 5-6). However, mean differences are small with men scoring higher on Science, Recognition, Power and Commerce and women scoring higher on Affiliation and Altruism. To account for multiple comparisons, the p value was adjusted to p< .01.

Table 5-6 Descriptive statistics and multivariate analysis of gender

N	Mean	SD	alpha	Male 95 Mean	SD	Female 235 Mean	SD	Gender F	p
Aesthetics	2.40	0.68	.92	2.42	0.65	2.39	0.69	0.23	0.63
Affiliation	3.27	0.42	.79	3.16	0.41	3.32	0.42	9.25	0.00
Altruistic	3.38	0.51	.89	3.20	0.49	3.45	0.50	16	0.00
Commerce	3.11	0.46	.81	3.32	0.48	3.02	0.43	29.70	0.00
Hedonism	3.07	0.43	.81	3.12	0.41	3.05	0.44	1.71	0.19
Power	3.11	0.50	.87	3.25	0.47	3.06	0.50	10.84	0.00
Recognition	2.70	0.51	.88	2.86	0.52	2.64	0.49	13.80	0.00
Science	2.93	0.63	.90	3.17	0.63	2.84	0.60	19.41	0.00
Security	3.37	0.39	.78	3.30	0.38	3.39	0.39	4.16	0.04
Tradition	3.38	0.34	.73	3.33	0.33	3.40	0.34	3.47	0.06
Age	8.58	2.23		8.85	2.12	8.47	2.26	0.23	0.63

5.3.3.3 Logistic Regression: Prediction of Consumer Choice

Table 5-7 shows the outcomes of the logistic regression model. One SD in Hedonism was associated with reduced odds of .52 (CI 0.36-0.77) to buy wholemeal over white bread, suggesting that higher Hedonism reduced the likelihood of purchasing wholemeal toast by 48%. One SD increase in Commerce was associated with the odds of 2.04 (CI 1.40-2.95) for buying wholemeal bread over white bread; in other words, odds to purchase wholemeal toast were 104% greater. Additionally, one SD increase in Aesthetics, and one SD increase in Science were associated with the odds of 1.39 (CI 1.02-1.88) and 1.44 (1.04-1.99), respectively for buying wholemeal over white bread. Odds to purchase wholemeal bread were thus 39% higher for a SD increase in Aesthetics and 44% higher for a SD increase in Science.

Table 5-7 Odds ratios and confidence intervals for purchasing white or wholemeal bread

	Exp(B)	95% CI		p
		Lower	Upper	
Aesthetics	**1.39**	**1.02**	**1.88**	**0.04**
Affiliation	1.35	0.94	1.93	0.11
Altruistic	1.18	0.84	1.66	0.34
Commerce	**2.04**	**1.40**	**2.95**	**0.00**
Hedonism	**0.52**	**0.36**	**0.77**	**0.00**
Power	0.74	0.50	1.11	0.15
Recognition	0.74	0.50	1.09	0.12
Science	**1.44**	**1.04**	**1.99**	**0.03**
Security	1.17	0.85	1.60	0.34
Tradition	0.75	0.53	1.06	0.10
Age	1.04	0.92	1.17	0.53
Gender	0.66	0.36	1.22	0.19

5.3.4   Discussion

Wholemeal bread is believed to have a number of health benefits, and its consumption is related to generally healthier dietary habits (Barker et al., 2009; Fardet, 2010; Gil et al., 2011).

Consumer values have an effect on product choice (Belk, 1985; Hauser et al. 2000). In food choice, values relating to health, enjoyment and price are of particular importance (Baker et al. 2004; Hauser et al. 2000; Kitsawad & Guinard, 2014; Worsley et al. 2010). Personal values affect the bread tastes consumers preferred as well as which aspects consumers found important when choosing bread in a laboratory study (Pohjanheimo et al., 2010). This study investigated the effect of values on consumption of white versus wholemeal sliced bread using purchase records and value profiles of a UK sample.

Results indicate that consumer values predict the purchasing of white versus wholemeal bread, specifically values relating to Commerce, Hedonism, Science, and Aesthetics. Consumers high on Commerce, Science and Aesthetics were more likely to purchase wholemeal bread. This is in line with existing research highlighting the

importance of these value dimensions in relation to food preferences (Kitsawad & Guinard, 2014). It is also in line with findings that consumers perceive bread types differently in terms of taste and health benefits (Dewettinck et al., 2008). The present study indicates that consumers make their bread choices in accordance with their underlying values and motivations.

Health and enjoyment values have a direct effect on consumer choice between different food categories (Hauser, Nussbeck, and Jonas, 2000). The current study indicates that the same is true for choice between product variants: Wholemeal bread was less appealing to Hedonistic consumers (enjoyment), but more appealing to scientific consumers (health). The present findings also suggest that consumer values affect the dietary choices consumers make, similar to the way in which attitudes towards bread affected consumers' willingness to change their diet (Gellynck et al., 2009). Hedonistic consumers are less likely to purchase the healthier wholemeal bread option. Hedonistic consumers are driven by their desire to obtain pleasure. When choosing bread, they may evaluate white bread as more desirable due to its pleasurable taste. Indeed, consumers who pay attention to the sensory aspects of bread are less motivates to change their eating habits (Gellynck et al., 2009). The pleasure obtained by white bread may be more important for Hedonistic consumers than the health benefits of wholemeal bread. Consumers with scientific values, on the other hand, may place more importance on the nutritional characteristics and health benefits of bread, resulting in a higher likelihood to purchase wholemeal bread.

Values of Commerce and Aesthetics were also associated with purchasing of wholemeal bread in this study. Commercial values may be opposed to Hedonistic values in grocery shopping, such that consumers pay attention either to enjoyment or to price

(Kitsawad & Guinard, 2014). Consumers high on commerce thus may have paid less attention to taste when choosing bread, leading to an increased likelihood for purchasing wholemeal bread.

Aesthetic values have been indicated in relation to healthy food choices (Lee, Lusk, Mirosa, & Oey, 2014; Worsley et al., 2010). This is because Aesthetic values refer to an individual's tendency to reject the status quo and go about things in their own way. The increased likelihood of Aesthetic consumers to purchase wholemeal bread may thus be related to their desire to do things differently, in this case by replacing the most common white bread choice with the less commonly bought wholemeal bread. Indeed, consumption of wholemeal bread was part of the hippie counterculture in the US of the 1960s (Bobrow-Strain, 2012). In addition to this, Aesthetic consumers' preference for wholemeal bread may be related to the particular packaging of both bread variants used in this study. The wholemeal bread packaging might be more aesthetically pleasing.

5.3.4.1   Limitations and Future Research

The study included more women than men, reflecting gender differences in the population of UK supermarket shoppers. Given gender differences in values, shopping habits, and the effect of values on shopping habits, results of the present study may be more applicable to female than to male shoppers (Worsley et al., 2010).

This study provides evidence that consumer values drive consumer choice between different breads. Given the relation of white and wholemeal bread to health choices, the study has implications for healthy food consumption. Results indicate that individuals who chose less healthy bread did so because of their desire to experience enjoyment. Hedonistic consumers may not be susceptible to nutritional or health

information as an incentive to purchase healthier food. However, the evidence presented here is limited to two products and cannot necessarily be expanded to bread types other than sliced bread.

5.3.5   Conclusion

Consumer values influence bread purchasing. Consumers who valued Science, Commerce and Aesthetics but not Hedonism were more likely to purchase wholemeal bread. Given the health benefits of wholemeal bread, the findings are particularly interesting in relation to healthy dietary choices. Understanding consumer values may help design effective healthy eating interventions, as well as informing marketers and product designers.

This chapter demonstrated that personal values are related to consumer preferences for fast moving consumer goods. Preferences may arise from a number of product characteristics, including price, product category, or product brand. The next chapter focuses one of those aspects, brand, in isolation by investigating the role of values in preferences for brands.

Chapter 6 Values Drive Brand Affiliation in a Large Sample of Facebook Users

The previous chapter demonstrated the role of values in product and brand purchasing. In this chapter, the connection between values and public affiliation to brands, conceptualised as the liking of brand pages on Facebook, is investigated. To gain a large dataset of value profiles and Facebook likes, a text based measure of values is developed and validated. Brand likes on Facebook were predictive of values, with accuracies above the chance level.

6.1 Introduction

Chapter 4 and Chapter 5 demonstrated how values are related to purchasing of products. Chapter 4 showed that values have an effect on which brands consumers prefer when choosing food products. Given this, the central role of brands in shaping consumer preferences, and the fact that brands are a primary tool for marketers to influence consumer perceptions of their products, Chapter 6 further investigates the relationship between values and brand preferences. Specifically, whether values are predictable from online affiliations with brands, in the form of Facebook likes.

Facebook likes are particularly suitable to investigate the relationship between brand affiliation and values as they offer a structured record of public association with brands. Facebook likes are predictive of personality and other private attributes (Kosinski et al., 2013), but no studies to date have investigated Facebook likes related to brands in isolation, or the association between Facebook likes and values.

The aims of this study were twofold. First, to test whether online affiliation with brands is predictive of values, in order to better understand the role of values in brand preferences. Second, to establish whether brand-value associations are meaningful descriptions of brands that could add to the understanding of which brand characteristics appeal to different consumers. To achieve this, a language based measure of values was created and validated.

6.1.1 Brands and Consumer Preference

Brands are an important aspect of products. They are used to communicate product characteristics and attach meaning and character to a product. Through branding, products are distinguished from one another beyond their purpose. The branding of a product influenced consumer decision making and product value is increased through

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its association with the brand (Fallis, 2013). As such, brands play an important role in determining consumer preferences (D. A. Aaker, 1996).

One way in which consumers interact with, and express their preference for, brands is through brand affiliation (Banet-Weiser & Lapsansky, 2008). That is, expression of consumer preference for brands is not restricted to brand purchases or loyalty, but can also be expressed through affiliation with a given brand, for example through online posts, by mentioning the name in conversation, or by displaying brand symbols.

Section 1.1 discussed brands as tools for self-expression, focusing on the idea that consumers use brands to communicate their own characteristics to others (Hollenbeck & Kaikati, 2012). Consequentially, people prefer brands that are similar to them, a concept referred to as self-congruence (a more detailed discussion can be found in Section 1.2). Endorsing a brand is a means for showing others who you are, what you like, and what you consider important. People frequently display their preference for brands to others, whether through purchase and use of branded products, in conversation, or through linking and sharing online.

6.1.2   Facebook as a Platform for Brand Affiliation

This is especially true on Facebook, a platform where liking content plays a central role. People use Facebook to communicate their personalities and selves to others (Biel & Gatica-Perez, 2013). Facebook is a tool for self-presentation, to seek self-status, and to look cool (Nadkarni & Hofmann, 2012; N. Park, Kee, & Valenzuela, 2009). Users form impressions of others based on their profiles and likes (Rosenberg & Egbert, 2011). As much of the linked content originates from, or is related to, companies and brands, brands are an important element used for impression management on Facebook.

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Liking brands on Facebook thus represents one way of brand endorsement, or brand affiliation. It indicates that a person wants to be identified with a certain brand, and feel the brand is a good representation of them.

6.1.3   Facebook Likes and Personal Values

Indeed, Facebook likes correlate with personality traits (Kosinski et al., 2013) (see 1.3 for a review), showing that the liking of content is directly related to a person's underlying traits. Given that brand affiliation is expressed through Facebook likes of brand related content, such likes should be related to personal values if values do indeed have an effect on brand affiliation. Personality scores predicted from Facebook likes significantly correlate with value scores on the SVS for all values except Security and Achievement, although correlations are low with an average of r = .14 (Youyou et al., 2014). In this study, continuous personality scores were predicted from individual Facebook likes using linear regression. The predicted scores were then correlated with scores on the SVS. These results give an indication, albeit indirectly, that Facebook likes are related to values. The study included all types of likes, and did not investigate likes related to branded content in isolation. The same is true for existing studies on Facebook likes and personality traits (Lambiotte & Kosinski, 2014).

6.1.4   Study Aims and Hypotheses

Given that marketing is one of the main areas of application for research on personality and online behaviour, and given that much of Facebook likes are directly related to brands, it is surprising that no investigation to date has focused on brand related likes. In addition, much of the research on values and brands has focused on

comparing the values of consumers who own competing brands (Evans, 2014), or on specific types of brands, such as ethical brands (Honkanen et al., 2006).

Given the connection between Facebook likes and personality, and gaps in the existing literature on values and consumer preferences, this study is thus aimed at exploring how brand affiliation through liking of brands on Facebook relates to personal values. This exploration has both theoretical and practical implications. From a theoretical perspective, the study clarifies whether values are expressed through brand affiliation, adding to the literature exploring connections between values and behaviour (see Section 2.2). Form a practical perspective, the study examines whether data from social media is suitable to generate insights on the values underlying brand preference. Given that online data is readily available, this has implications for the applicability of value theory in marketing and consumer segmentation.

The hypothesis that publicly stated brand affiliation is indicative of personal values, such that publicly stated brand affiliations are predictive of personal values, is tested. This is accomplished in two studies: In study one (Section 6.2), a text based measure of values is developed and validated in order to generate a large dataset of value scores and brand related Facebook likes. In study two (Section 6.3), the hypothesis is tested, using the generated dataset, by testing whether linear regression models result in non-negligent prediction of values based on Facebook likes of brands.

6.2   Study 1: Validating a Language Use Based Measure of Values

In this study, the development of the predictive measure of values based on language use is described. A predictive model was built to classify people's values based

on their online language use. Predicted scores are then used in study 2 to test the hypotheses laid out in the introduction (Section 6.1.4).

6.2.1 The Connection of Values and Language Use in Free Text

The words we use are related to personal concerns and express the things we value (Chung & Pennebaker, 2014). The lexical approach, the idea that underlying psychological characteristics are embedded in the structure of language, has a long tradition in psychometrics and the connection of language use and personality has been demonstrated in numerous studies (Gosling, Gaddis, & Vazire, 2007; H. A. Schwartz, Eichstaedt, Kern, et al., 2013; Vazire & Gosling, 2004). Modern technology, specifically the ability to mine and analyse large amounts of free text data, has led to a surge in publications on semantics and personal characteristics (Lambiotte & Kosinski, 2014; H. A. Schwartz, Eichstaedt, Kern, et al., 2013). Text based measures may have advantages over self-report measures in that they can be carried out remotely and without involvement of the person being profiled, require less effort from the test taker, and are less prone to response bias (Bardi, Calogero, & Mullen, 2008).

Several researchers have attempted to measure values using free text rather than self-report (Bardi et al., 2008; Boyd et al., 2015; Chen, Hsieh, Mahmud, & Nichols, 2014; Renner, 2003). Boyd et al. (2015) extracted values from language use on Facebook, arguing that word use patterns are better indicators of human values than self-report questionnaires. The derived values showed some correlations with Schwartz's ten basic human values, in particular with Self-Direction and Universalism. Correlations between behavioural clusters extracted from language use on social media and human values

were also observed, specifically with Achievement, Conformity, Hedonism, Security, Stimulation, and Tradition (Boyd et al., 2015).

Bardi et al. (2008) developed a lexicon of words associated with each of the ten basic values. Measures of values based on the lexicon showed convergent validity with self-report measures, as well as a relationship to behaviours associated with each of the values (Bardi et al., 2008).

Chen et al. (2014) took a predictive approach to demonstrate that individual word use predicts personal values. The authors used language use variables form the Language Inquiry and Word Count Analysis software (Pennebaker, Booth, Boyd, & Francis, 2015) to predict the four higher level human values Self-Transcendence, Self-Enhancement, Conservation, and Openness-to-Change, as well as Hedonism. These language use variables are related to several real-life outcomes, including social status (use of pronouns, Kacewicz, Pennebaker, Davis, Jeon, & Graesser, 2014) and academic success (use of function words, Pennebaker, Chung, Frazee, Lavergne, & Beaver, 2014). Moderate prediction accuracy for values was achieved (Area Under the Curve of .56 to .61) (Chen et al., 2014). However, no analysis was conducted for the ten lower level values, an undertaking the authors call for in future research.

6.2.2 Study Aims

Given the relationship between language use and values demonstrated in previous studies, a language use based measure of values is developed. The study employs a predictive design similar to Chen et al. (2014), in which values are predicted from language use variables. The methodologies used, specifically prediction of personal

characteristics, have been established in previous studies (Kosinski et al., 2013; Yarkoni, 2010).

A language based measure is deemed useful as it facilitates the access to large datasets of value scores. Beyond applicability of the measure, results from prediction models will generate insights into the relationship between language use and the ten basic human values.

6.2.3   Method

6.2.3.1   Data Source and Procedure

Data for this study was obtained as part of a research collaboration with the Cambridge Psychometric Centre's myPersonality project. Data was collected via the myPersonality application, a Facebook application that allows users to complete a number of different personality questionnaires (Stillwell & Kosinski, 2012). People were given the option to make their personality score and Facebook profile information, including their status updates, available for research (Bachrach, Kosinski, Graepel, Kohli, & Stillwell, 2012).

Data collected on social networks has several methodological advantages compared with traditional data collection. Participants tend to be less WEIRD (western, educated, industrialised, rich and democratic) (Stillwell & Kosinski, 2012), and more diverse in terms of age, social economic status, geographic region, and gender (Gosling, Vazire, Srivastava, & John, 2000). Collecting data online can also help with reducing presentation bias, as data collection is generalised across different presentation contexts, and the adverse effects of non-serious responders (Gosling et al., 2000).

6.2.3.2 Participants

The sample collected through the myPersonality application is largely representative of the Facebook population, with an average age of 24.15 (SD=6.55) and 58% of females (Stillwell & Kosinski, 2012). For the current study, two datasets were build using the myPersonality data. The first dataset was used to derive the predictive model and contained those participants for whom language use as well as Schwartz value variables were. The second dataset was used to predict value scores based on the derived model. This dataset contained all participants for whom language use, age, and gender, but not Schwartz values variables were available. Dataset one contained 2,088 participants (55% female), with a mean age of 26.58 years. Dataset two contained 129,431 participants (56% female), with a mean age of 26.96 years.

6.2.3.3 Measures

6.2.3.3.1 Language use: Linguistic Inquiry and Word Count (Pennebaker et al., 2015)

Language use variables were available for participants in dataset one and two. The LIWC program is a popular text analysis program which is commonly used in studies investigating language use and personal characteristics (Yarkoni, 2010). The LIWC program classifies words use along 64 categories (adverbs, positive emotion, family etc.), with each category containing a large number of words. Scores on each category are obtained by calculating the percentage of words, out of all the words used by an individual, that fall into each given category.

The categories consist of 6 summary categories (function words, affect words, social words, cognitive processes, perceptual processes, biological processes, relativity, punctuation); 26 categories representing linguistic processes such as word count, words

with over six letters, pronouns (e.g. our), tense (e.g. does), adverbs (e.g. very), and swear words (e.g. fuck); and 32 categories representing psychological processes such as family (e.g. aunt), positive emotion (e.g. nice), insight (e.g. know), hear (e.g. listen), sexual (e.g. love), and time (e.g. until). Seven variables representing personal concerns including work (e.g. job), leisure (e.g. chat), home (e.g. family) and achievement (e.g. win). And three variables representing the spoken categories assent (e.g. agree), non-fluencies (e.g. hm) and fillers (e.g. you know). See Pennebaker et al. (2015) for more detailed descriptions.

6.2.3.3.2   Schwartz Values Survey (SVS, S. H. Schwartz, 1994)

Value scores as measures on the SVS were available for participants in dataset one. For a description of the survey, see Section 4.7.2.2.

For the purpose of this study, values were binarised, such that participants ranked either high or low on each of the ten values. Participant who scored one standard deviation higher than the mean on a given value were classified as high, and participants who scored one standard deviation below the mean were classified as low. All participants that were within one standard deviation of the mean were excluded from the analysis. Value scores were binarised in this way so as to improve performance of the predictive model of values.

6.2.4   Data Analysis Overview

The language use based measure of human values was developed in three steps. First, predictive models were defined using participants from dataset one. Second, the model was tested using a training and test split of the data. Third, the predictive model

was applied to generate value scores for participants in dataset two. See Figure 6-1 for a step-by-step overview of the analysis.

For each of the ten values: Conservation, Tradition, Benevolence, Universalism, Self-Direction, Stimulation, Hedonism, Achievement, Power, Security

Prediction Model
- Predicted variable: Personal Value
- Predictor variables: language use
- Logistic regression with LASSO regularisation (with stratified 5-fold cross validation)

Model Testing

50x
- Split into Training and Test set (stratified)
- Probability of correct classification in test set

Predictive Value scoring
- Language use for 120,000
- Prediction of personal Value based on the developed prediction model

Dataset one: 2,088 participants

Dataset two: 120,000 participants

Figure 6-1 Analysis strategy for predicting values from free text

6.2.4.1   Prediction Model

Data preparation was carried out in order to ensure model assumptions were met. Predictor variables were tested for multicollinearity using the Variance Inflation Factor statistic. Outliers were detected using a combination of statistics, and deleted (see Section 6.2.5.1.2 for a detailed description). Ten separate regression models were generated, with language use variables, age and gender as predictors, and the respective binary personal value as the predicted variable. Value scores were binarised and logistic regression was used as binarised outcomes are less demanding on the predictive model whilst still retaining the desired interpretability of results.

Given the large amount of predictor variables, a feature selection model was used in order to increase interpretability and accuracy of the model. Specifically, Least Absolute Shrinkage and Selection Operator (LASSO) regression with 5-fold cross

validation, a regularisation method that identifies predictor variables with non-zero regression coefficients, was applied (Hastie, Tibshirani, & Friedman, 2009). During 5-fold cross validation, the sample is split into five equally sized sub samples, with predictions for one subset being made based on parameter estimates for the remaining subsets. Stratification was applied to the folds, such that the distribution of scores on the predicted variable in each fold was similar to the distribution of scores in the overall sample. That is, each of the five folds contained the same amount of participants ranking high or low on the predicted value. The application of folds allows for estimation of out of sample prediction accuracy. Based on this, the algorithm learns which features most contribute to model accuracy as the model is build, thereby biasing the model to reducing complexity.

6.2.4.1.1 Strategy for Model Testing

In order to measure model accuracy, the sample from dataset one was split into training and test set (80% and 20% of the sample, respectively). The split was random but stratified, in order to ensure the same distribution of high and low scores on the outcome variable in both test and training set. The 5-fold cross validated LASSO regression model was fit to the training set, and used to predict scores on the outcome variable for the test set. As LASSO splits the data into 5 folds to derive the best model, each time the LASSO is applied it produces different results, depending on the distribution of participants across folds. The allocation to test and training set is also random, resulting in models created based on different splits being different. The procedure was thus repeated 50 times in order to increase reliability, with reported Area

Under the Receiver-Operating Characteristic Curve (AUROC) representing the average from 50 runs.

6.2.4.1.2 Metrics Used to Assess Model Accuracy

Out of sample prediction accuracy for the derived model was assessed in terms of sensitivity, the rate of true-positive predictions, and specificity, the rate of false-positive predictions, as measured by the AUROC.

AUROC is especially useful for logistic regression analysis, where each case is assigned a probability of belonging to a given outcome class. The Receiver-Operating Characteristic curve plots prediction specificity for the entire spectrum of assigned probabilities (from 0 to 1). The area under this curve, AUROC, can be interpreted as the probability that a model assigns a higher probability of belonging to a given class to a randomly chosen instance that truly belongs to the class, than to a randomly chosen instance that does not. A perfect prediction is described by AUROC = 1, and a random guess by AUROC = .5.
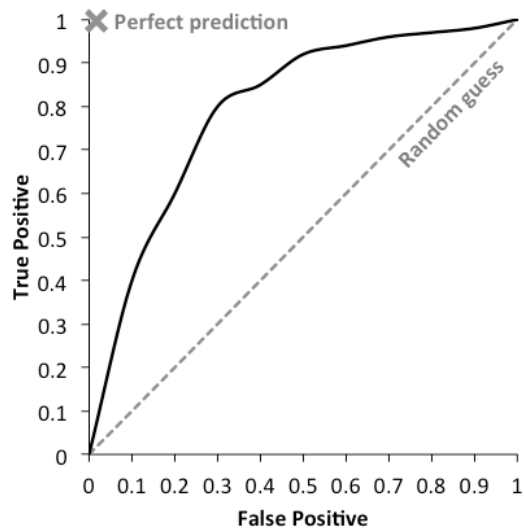
Figure 6-2 Example Area Under the Receiver Operating Curve (AUROC)

6.2.4.2 Predictive Value Scoring

The generated model was then used to score participants in dataset two for whom language use variables, age, and gender were available. Predicted probabilities were translated into scores, such that participants with a probability score higher than .5 were classified as high, and participants with probability scores lower than .5 as low, on the given value. As value scores based on the self-report SVS were not available for participants in dataset two, accuracy for the predicted scores is estimated by investigating the split of high and low predictions made by the model. A split that approaches 50% is therefore similar to that in dataset one is indicator for accurate prediction results.

6.2.5 Results

6.2.5.1 Data Preparation and Descriptive Statistics

6.2.5.1.1 Model Assumptions: Multicollinearity

Multicollinearity is present when one or more predictor variables in a regression model are highly correlated. The absence of multicollinearity is an assumption of logistic

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regression models, commonly assessed using Variance Inflation Factor (VIF) (Tabachnick & Fidell, 2006). A VIF is a statistic that indicates the increase of variance for each regression coefficient compared with uncorrelated predictor variables (Keith, 2015). A VIF > 10, or more conservatively >6, indicates a problem with multicollinearity (Cohen, Cohen, West, & Aiken, 2003). Ten problematic variables with VIF higher than ten were detected and removed from the model: funct, pronoun, ppron, social, affect, negemo, cogmech, bio, relative, percept. The removed variables were latent variables that are provided by LIWC to summarise language use variables. Hence they were highly correlated with their composite variables.

6.2.5.1.2 Outliers

Outliers can disproportionally influence a regression model and result in poor performance. Three statistics were applied to detect outliers. Bonferroni adjusted p-values were obtained for the largest absolute studentised residuals.

In order to detect unusual combinations of scores on predictor variables, high leverage points were identified using the hat statistic. The hat statistic compares an observation's hat value with the dataset's average hat value, which is the number of estimated model parameters in relation to the sample size. Hat values two to three times above the average are considered problematic (Kabacoff, 2011). Cases with hat higher than three times the average were detected and deleted from the models.

Influential observations are cases which result in considerable change in the model parameters. Cook's distance describes the effect that deletion of a given case has on the model by taking into account both leverage and residuals. In logistic regression, cases

with Cook's distance greater than one should be considered highly influential (Hosmer & Lemeshow, 2000).

The statistics described above were computed for each of the ten logistic regression models. Outliers as defined by the three statistics were deleted from the respective models. Outliers made up between 4% and 7% in each respective model (See Figure 6-3 for respective percentages).

Finally, all cases with an age above 80 were excluded for the analysis, as they were deemed likely to be bogus entries and made up less than 1% of the dataset. There were 15 (.72%) such cases in the first, and 686 (.53%) in the second dataset.

6.2.5.1.3 Descriptive Statistics

Binarised value scores are described in Figure 6-3. The figure shows the distribution of participants classified as either high or low on each of the values, and the percentage of outliers deleted from each subset of data. The number of outliers ranged from 23-33 participants, remaining below 7% for all of the ten values.

Descriptive statistics for non-normalised language use variables in dataset one included in the model, age and gender are listed in Appendix 2 Descriptive statistics for language use variables, age, and gender.
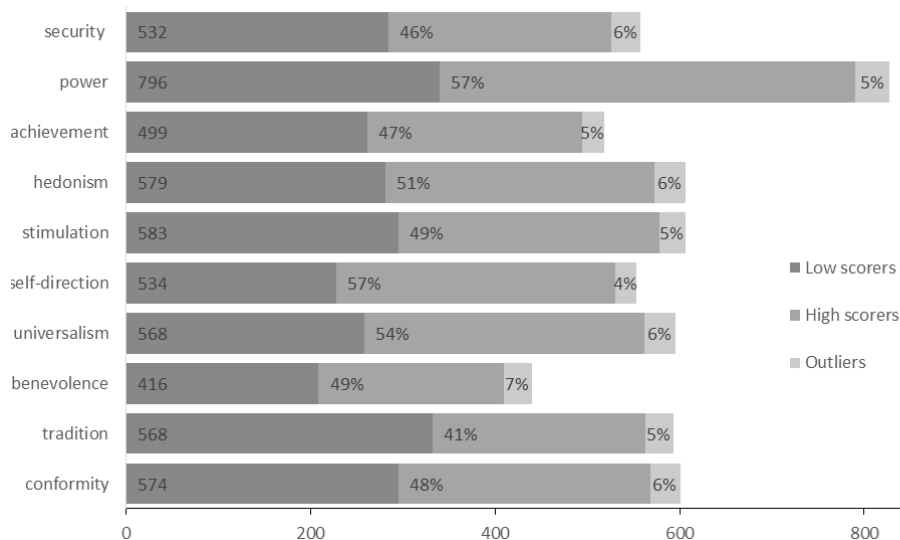
Figure 6-3 Descriptive statistics for value scores. The number of non-outlying participants retained for analysis is displayed at the base of each bar.

6.2.5.2 Regression Model Fitting and Testing

Ten logistic regression models with LASSO generalisation (with 5-fold cross validation), predicting each of the ten values, were fitted. Language use variables, age and gender were entered as the predictors. All predictor variables were normalised (the population mean was subtracted from the respective score, and then divided by the population standard deviation) in order to allow for an easier interpretation of model coefficients. Dataset one was split into a test (20%) and a training dataset (80%) for each respective model. The prediction models were trained on the training sets. Scores for the test set were predicted using the derived model, and predictions were investigated for their accuracy.

6.2.5.2.1 Model Accuracy: AUROC

Figure 6-4 below shows AUROC indicating the model accuracy for each of the ten predicted values in both test and training datasets. The highest prediction accuracy was achieved for Hedonism with 82% accuracy in the in the training set, and 73% in the test

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set. The lowest accuracy was achieved for Universalism, with 65% in the training and 61% in the test set. The model for Security achieved 70% accuracy in the training set, but dropped to 55% in the test set. Drops in accuracy in the test set versus training set are expected due to overfitting in the training set.
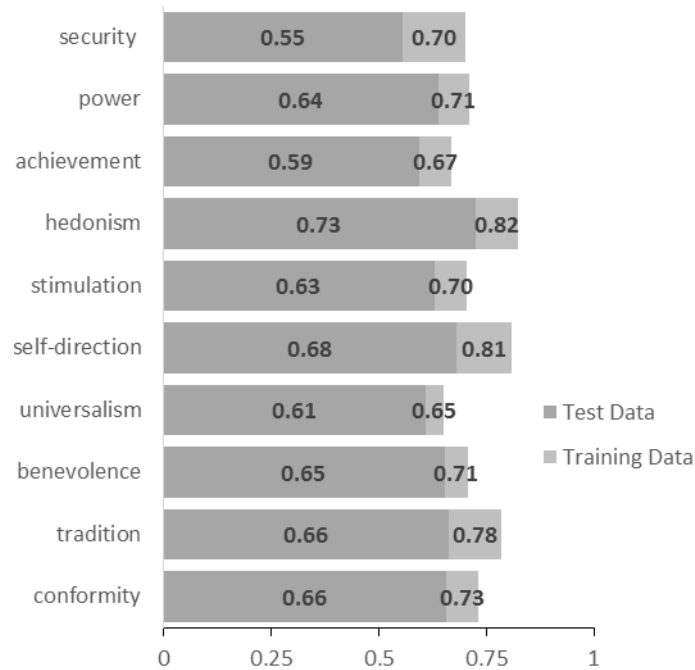
Figure 6-4 Prediction accuracy for values described by AUROC

6.2.5.2.2   Model Coefficients

Coefficients and Intercepts for the models are reported in Table 6-1. Coefficients indicate the relative importance of each of the predictors for the respective model, such that coefficients further away from zero are more strongly related to the outcome variable. For example, use of more I and sexual words and less future and religious words was indicative of Hedonism. Security on the other hand was predicted by a lower use of sexual words, and higher use of future words. Self-direction was predicted by a low use of present and conjugation words, and a high use of insight and tentative words.

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Table 6-1 Coefficients for the ten models predicting values from language variables

	con	tra	ben	uni	sel	sti	hed	ach	pow	sec
(Intercept)	-0.09	-0.51	-0.06	0.19	0.33	-0.04	-0.02	-0.22	0.30	-0.24
i	-0.10	0.18	-0.02	0.01	0.06	-0.14	0.28	0.00	-0.01	0.03
we	0.22	0.48	0.01	0.04	-0.71	-0.29	-0.22	-0.01	-0.01	0.27
you	0.12	0.20	0.00	-0.10	-0.10	-0.15	-0.06	-0.22	0.03	0.29
shehe	0.07	0.27		-0.05	-0.38	-0.32	0.04	-0.03	-0.02	0.13
they	0.06	0.08	0.00	0.01	-0.03	-0.16	-0.22	0.02	0.01	0.21
ipron	0.00	0.56	-0.01	-0.01	-0.34	0.04	0.01	-0.02	-0.02	-0.07
article	0.00	-0.41	0.06	0.02	0.41	0.00	0.28	0.14	0.00	-0.03
verb	-0.02	-0.06	0.00	-0.04	-0.11	-0.04	-0.02	-0.01	0.14	0.13
auxverb	-0.05	-1.26		0.11	1.01	0.36	0.49	-0.02	-0.55	-0.67
past	-0.05	0.78	0.04	-0.07	-0.31	-0.09	0.12	0.10	0.03	0.16
present	0.08	1.72		-0.04	-0.77	-0.34	-0.08	-0.01	-0.01	0.54
future	0.29	0.77		-0.06	-0.40	-0.03	-0.30	0.00	0.01	0.40
adverb	0.01	-0.72	0.00	0.00	0.05	0.09	-0.01	0.03	0.02	0.04
preps	0.05	0.45	0.31	-0.04	0.34	0.02	-0.41	0.02	0.01	0.04
conj	0.03	0.08		-0.03	-0.53	-0.27	0.00	0.01	0.00	0.31
negate	0.07	-0.14	0.00	-0.03	0.00	-0.04	0.04	0.01	-0.02	0.01
quant	-0.01	0.39		0.00	-0.08	-0.07	0.00	-0.09	0.00	-0.44
number	0.06	-0.27	0.00	-0.02	0.28	-0.02	-0.25	0.11	-0.17	0.01
swear	-0.13	0.05	-0.16	-0.05	0.40	0.02	0.26	0.28	-0.02	-0.01
family	0.03	0.03	-0.03	-0.02	-0.09	-0.07	0.18	0.05	0.21	0.06
friend	0.02	-0.61	-0.01	-0.06	-0.19	-0.14	-0.81	0.03	0.08	0.50
humans	-0.14	0.35	0.00	0.03	-0.10	-0.05	-0.38	0.02	0.07	0.29
posemo	0.58	0.73	0.13	-0.13	-0.41	-0.01	-0.27	-0.01	0.00	0.03
anx	-0.34	-0.19	-0.07	0.24	0.15	0.39	-0.04	-0.14	0.00	0.04
anger	-0.25	-0.91	-0.14	0.03	-0.13	0.14	0.01	-0.06	0.08	0.28
sad	0.19	0.21	0.01	-0.02	-0.05	0.04	-0.08	0.17	0.03	0.02
insight	0.00	-0.14	0.01	-0.03	0.58	-0.08	-0.29	0.08	-0.04	-0.31
cause	-0.18	-0.13		0.01	0.03	0.05	0.01	-0.02	0.01	0.12
discrep	0.04	-0.90		0.01	-0.04	-0.09	0.00	0.02	0.00	-0.17
tentat	-0.05	-0.14	0.03	-0.04	0.37	-0.11	0.24	-0.01	0.08	0.01
certain	-0.07	-0.77	0.00	0.00	0.01	0.04	0.04	0.12	-0.01	-0.05
inhib	0.04	0.27	0.00	0.00	-0.27	0.05	-0.13	-0.10	0.15	0.07
incl	-0.05	-0.61		0.01	0.31	0.31	-0.01	0.01	0.19	-0.02
excl	0.06	0.23		0.05	0.02	0.38	0.04	-0.16	-0.02	-0.21
see	-0.26	-0.23	0.00	0.13	0.35	0.20	0.20	0.02	-0.13	-0.32
hear	0.28	-0.19		0.08	-0.02	-0.03	-0.42	0.07	0.06	-0.01
feel	0.15	-0.12	0.02	-0.03	-0.27	0.19	-0.29	-0.05	0.00	0.04
body	0.10	0.24	0.01	-0.03	0.07	-0.03	-0.06	0.03	-0.12	-0.04
health	0.08	0.12	-0.01	0.05	-0.14	-0.12	0.00	0.00	-0.05	-0.09
sexual	-0.25	-0.53	-0.07	0.04	0.04	0.21	0.27	-0.03	0.00	-0.48
ingest	0.01	-0.13	0.00	0.02	0.07	0.02	0.16	0.08	-0.08	-0.07
motion	0.05	-0.14	0.00	-0.01	-0.06	0.00	0.03	0.06	0.01	-0.12
space	-0.19	-0.42	0.00	0.03	-0.08	0.05	-0.13	0.04	0.09	0.00
time	0.06	0.05	0.00	-0.01	-0.45	-0.11	0.03	-0.23	0.00	0.34
work	0.00	0.15	0.07	-0.01	-0.21	-0.23	-0.05	0.06	0.04	-0.26
achieve	-0.03	0.13	-0.01	-0.04	0.26	-0.16	-0.10	0.00	0.08	0.02
leisure	-0.09	-0.06	0.01	0.06	0.33	-0.04	0.01	-0.08	-0.24	-0.07
home	0.13	-0.07		0.00	0.06	-0.09	0.05	0.00	-0.03	-0.04
money	-0.02	-0.13		0.01	-0.04	0.01	0.23	0.23	0.00	-0.23
relig	0.15	0.21	0.01	0.01	-0.25	0.08	-0.30	-0.26	-0.23	-0.09
death	0.03	0.16		0.06	0.23	0.01	0.13	-0.08	-0.13	-0.08
assent	0.01	-0.06		0.01	0.17	-0.01	0.01	0.09	0.03	-0.03
nonfl	0.11	0.40	0.00	0.01	0.15	-0.04	0.04	-0.08	0.10	-0.08
filler	-0.09	0.08	0.00	0.09	0.15	0.21	0.31	-0.11	0.03	-0.15
age	0.16	-0.02	0.00	0.12	0.08	-0.18	-0.05	-0.23	-0.22	0.05
gender	0.01	-0.22	0.00	0.32	-0.06	0.00	-0.05	-0.08	-0.06	-0.01

Notes: Header abbreviations are for CONformity, TRAdition, BENevolence, UNIversalism, SELf-direction, STImulation, HEDonism, ACHievement, POWer, and SECurity

6.2.5.3 *Predicting scores for 120,000 Facebook users*

Given the accuracy achieved for predicting values form language use, the prediction model as specified above was used to score all Facebook users that language use variables were available for (dataset two) on the respective value. First, the dataset was cleaned such that, as with dataset one, participants over the age of 80 were removed (.53%). Mean differences between dataset one and two on the predictor variables (language use, age and gender) were computed in order to establish whether the model could be generalised from the population in dataset one to the population in dataset two. All predictor variables were normalised to the mean and standard deviation of dataset one. Value score were then predicted using the model tested in the previous section for 128,745 Facebook users.

6.2.5.3.1 Descriptive Statistics and Sample Comparison

Descriptive statistics for language use variables in dataset two are presented in Table 6-2. The table also displays mean differences in percent for the two datasets, with the highest mean difference between tentative words (3%) and sexual words (2.5%). All means were significantly different in the two datasets. As significance tests are sensitive to sample size, effect sizes are considered the more suitable metric to detect problematic differences in large datasets (Cohen, 1988). None of the mean differences had large effect sizes (>.138). Nine of the 56 variables had mean differences with medium effect sizes (>.059).

Table 6-2 Descriptive statistics for language use variables in dataset two

Variable	Mean	SD	Median	Min	Max	Skew	Kurtosis	Mean Dif*	Effect Size**
i	3.88	2.11	3.85	0	26.67	0.55	2	-0.10	0.05
we	0.43	0.52	0.32	0	30	7.05	163.08	-0.07	0.01
you	1.43	1.23	1.21	0	20	2.38	14.18	-0.26	0.02
shehe	0.50	0.61	0.36	0	30	5.35	96.26	-0.17	0.01
they	0.29	0.35	0.22	0	10	5.30	71.62	-1.24	0.01
ipron	3.08	1.57	3.18	0	38.57	0.60	6.16	-2.11	0.05
article	3.71	1.61	3.84	0	21.43	0.17	2.57	-2.71	**0.07**
verb	35.24	8.14	34.47	0	100	1.82	9.31	1.88	**0.22**
auxverb	5.97	2.40	6.39	0	33.33	-0.52	1.33	-2.94	**0.08**
past	1.74	1.09	1.77	0	30	1.50	14.58	-0.84	0.04
present	7.09	2.72	7.51	0	37.50	-0.47	1.80	-0.48	**0.09**
future	0.69	0.51	0.68	0	12.50	2.98	32.27	-1.17	0.03
adverb	3.16	1.52	3.33	0	25	0.33	5.00	-2.55	**0.06**
preps	7.55	2.94	8.04	0	28.57	-0.60	0.80	-2.55	**0.09**
conj	3.36	1.64	3.51	0	27.91	0.04	1.78	-2.16	**0.06**
negate	1.28	0.77	1.28	0	19.23	2.31	25.70	-0.99	0.04
quant	1.69	0.98	1.70	0	25	2.51	25.92	-0.60	0.04
number	0.48	0.46	0.44	0	25	7.44	178.69	-0.86	0.01
swear	0.34	0.54	0.17	0	25	6.33	114.07	0.22	0.01
family	0.37	0.51	0.24	0	25.58	7.36	153.01	1.06	0.01
friend	0.22	0.39	0.15	0	16.67	11.36	257.76	0.00	0.00
humans	0.66	0.59	0.59	0	16.67	5.15	73.81	0.89	0.02
posemo	3.89	1.91	3.78	0	36.36	1.52	9.95	0.62	0.06
anx	0.20	0.28	0.17	0	20	17.36	761.37	-0.48	0.01
anger	0.71	0.69	0.58	0	25	4.45	64.01	-1.05	0.02
sad	0.40	0.42	0.35	0	22.22	9.36	238.59	-0.16	0.01
insight	1.25	0.79	1.24	0	16.67	2.17	21.29	-2.10	0.04
cause	0.83	0.59	0.83	0	22.22	3.70	54.86	-1.43	0.03
discrep	1.19	0.79	1.18	0	20	2.70	25.07	-0.20	0.03
tentat	1.55	0.94	1.57	0	20	1.71	16.61	-2.94	0.04
certain	1.06	0.79	1.00	0	30	4.38	57.28	-0.20	0.03
inhib	0.37	0.36	0.34	0	16.67	7.97	180.50	-0.14	0.01
incl	2.50	1.36	2.58	0	30	0.64	5.75	-0.74	0.05
excl	1.65	0.96	1.69	0	20	1.25	10.86	-1.89	0.04
see	0.71	0.60	0.68	0	21.60	6.68	115.07	-0.33	0.02
hear	0.39	0.41	0.35	0	23.08	8.24	223.35	-0.44	0.01
feel	0.47	0.43	0.45	0	25	8.70	239.81	0.15	0.02
body	0.68	0.57	0.64	0	20	4.97	85.09	0.21	0.02
health	0.59	0.55	0.54	0	33.33	8.44	222.23	-0.09	0.02
sexual	0.53	0.60	0.42	0	42.86	8.31	277.07	2.43	0.01
ingest	0.37	0.45	0.29	0	16.67	7.95	176.24	0.13	0.01
motion	1.46	0.85	1.50	0	37.50	2.84	57.55	0.00	0.04
space	3.67	1.63	3.86	0	26.67	0.34	5.21	-1.33	**0.07**
time	5.06	2.26	5.20	0	35.71	0.33	4.15	-0.05	**0.07**
work	1.12	0.91	0.98	0	23.08	3.23	30.44	-1.71	0.02
achieve	1.10	0.77	1.06	0	30	4.18	63.99	-0.42	0.03
leisure	1.23	0.90	1.15	0	37.04	4.05	65.89	0.28	0.03
home	0.45	0.48	0.37	0	25.00	7.09	165.23	0.80	0.01
money	0.36	0.45	0.29	0	33.33	10.86	383.41	-0.21	0.01
relig	0.46	0.66	0.31	0	27.78	6.66	97.55	0.16	0.01
death	0.15	0.28	0.09	0	17.65	15.02	531.56	-0.80	0.00
assent	0.62	0.66	0.49	0	23.33	5.11	79.39	1.28	0.01
nonfl	0.16	0.28	0.10	0	16.67	13.14	418.85	0.00	0.00
filler	0.21	0.28	0.18	0	20	15.61	707.63	-0.18	0.01
age	26.54	9.55	23	1	80	1.63	2.68	0.85	0.00
gender	57% females							2	0.00

Notes: *Percentage difference of means in dataset one (model development) and dataset two (model application).
** Effect size of mean difference in dataset one and two. Mean differences were significant at $p < .001$ for all variables.
Effect size > .059 is considered medium, >.138 large (Cohen, 1988). Language variable values are percentages of words used by an individual falling into the respective group. $N= 128,745$.

6.2.5.3.2 Predicted Scores

Scores with a predicted probability of >.5 for belonging to the class 'high' on each given value, were classified as high. Scores with a predicted probability <.5 were classified as low. Assuming that value scores in the predicted dataset (dataset two) would be similar to those in the dataset for which value scores were available (dataset one), around 50% of scores on each value should be predicted as high. That is, close to 50% of Facebook users should be expected to rank high on each of the ten values. Predictions for Hedonism, Stimulation, Universalism, Benevolence, and Conformity were within 10% of the 50/50 split. The highest imbalance between predicted scores was observed in the model for Security, with 68% of scores predicted as low.
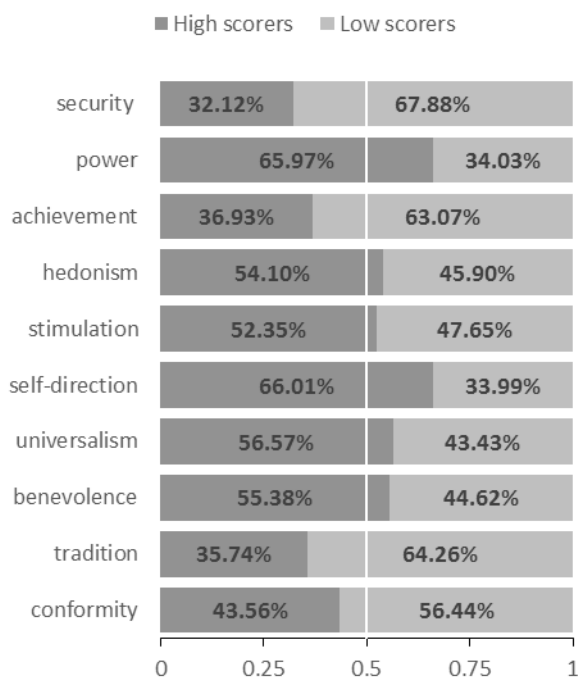
Figure 6-5 Percentage of high and low predicted value scores. The white line indicates the point of a 50/50 split, *N* = 128,745.

6.2.6 Discussion and Conclusions

This section demonstrated how personal values can be inferred from language use in free text. The prediction models developed in Section 6.2.5.2 achieved moderate to high accuracy, predicting each of the ten values above chance (AUROC .73 to .55). The models were then applied to predict values for a large dataset of Facebook users. The even split of predicted binary scores in this dataset indicated that the models were correctly applied, and that predicted scores are accurate. Results of model fitting, testing and application are summarised in Figure 6-6.

For each of the ten values: Conservation, Tradition, Benevolence, Universalism, Self-Direction, Stimulation, Hedonism, Achievement, Power, and Security

Prediction Model

- Moderate to high accuracy in predicting values from language use, with AUROC between .82 and .65

Model Testing

50x

- Expected moderate drop in accuracy levels, to AUROC between .73 and .55

Predictive Value scoring

- Around 50/50 split of predicted scores achieved for five values
- At least 30/70 split for remaining five values

Dataset one: 2,088 participants

Dataset two: 120,000 participants

Figure 6-6 Results from fitting, testing, and applying the predictive model of values

These findings are in line with previous studies demonstrating the relationship between language use in free text and values (Bardi et al., 2008; Boyd et al., 2015; Chen, Hsieh, Mahmud, & Nichols, 2014; Renner, 2003). In particular, results are similar to those reported in Chen et al. (2014) predicting the four higher order values Self-Transcendence (AUC = .60), Self-Enhancement (AUC = .56), Conservation (AUC = .59),

and Openness-to-Change (AUC = .61), as well as the lower level value Hedonism (AUC = .61). Prediction accuracy in the current study was higher for Hedonism (AUC = .82), as well as for the individual lower level traits (average AUC = .73). Better classification performance in this study may result from lower level values having a stronger connection to language use, but it may also be a result of differences in datasets used. Predictions in Chen et al. (2014) were based on free text from 799 Reddit users (i.e. their most recent comments or posts), compared to Facebook posts in the present study. Reddit is an online community for news and information sharing. Facebook posts may have more personal content or be used to communicate and express values more so than Reddit posts which are often topical.

6.2.6.1   Limitations

Whilst achieved prediction accuracies indicate that there is an underlying relationship between values and language use, accuracies are only moderate, with predictions close to chance for some of the values. Security and Achievement values were predicted with AUROC .55 and .59, respectively. As AUROC .5 would be achieved by flipping a coin the models performed only slightly better than chance. Predicted scores for Security and Achievement values should thus be interpreted with caution.

Differences in the datasets used for model training and testing (dataset one) and the dataset for which scores are predicted (dataset two) are a further limitation of the results. If the model is based on a sample that is different to the sample it is applied to, predictions may be inaccurate. The reported accuracies are based on those achieved for test sets derived from dataset one. Differences between the two datasets may result in lower accuracy for predictions in dataset two. One of the sources for differences

between the two datasets may be that participants in dataset one were those who took part in the Facebook application measuring personality and values Participants in dataset two were simply Facebook users. However, effect sizes for differences between predictor variables in both datasets were moderate to low, indicating that the datasets are sufficiently similar to generalise the prediction models from dataset one to dataset two.

Prediction accuracy may be further improved by extending the dataset used for modelling to a larger, representative sample. Another avenue for improving classifications may be the inclusion of additional predictor variables, such as online behavioural data, which may include Facebook likes, cookie data or browsing behaviour. Accuracy may also be improved by using other methods of free text analysis in addition to, or replacing, the LIWC variables.

6.2.6.2   Implications

The possibility to accurately predict values from free text has implications for the application of values to a range of consumer related problems. Being able to predict values from free text eliminates the need for self-report questionnaires. Where free text from consumers is available, values can be inferred and used to generate insight, tailor messaging, personalise offers or develop products. Researchers may also benefit from the possibility to score values based on free text, in contexts where self-report questionnaires are not feasible.

In the context of this study, the successful prediction of values form free text served to provide a large dataset (N = 120,000) of value scores to be used in Chapter 6.

6.3   Study 2: Predicting Values from Brand Affiliation

Given the successful prediction of value scores from free text in Study 1 (Section 6.2), study two addresses the research hypothesis formulated in the introduction to this chapter (Section 6.1.4), that Facebook likes of brand related content are predictive of Facebook users' values. The methodology is adapted from that reported by Kosinski et al. (2013) for predicting the Big Five personality traits based on Facebook likes. However, instead of personality, values are predicted. Instead of including all Facebook likes, only those relating to brands are used in this study. In order to facilitate the identification of brand related likes, a different method for dimensionality reduction of likes was used. Instead of reducing the dimensionality of likes with Singular Value Decomposition, the dimensionality of likes in this study was reduced using Latent Dirichlet Allocation which produces interpretable sets of likes (see Section 6.2.3.3).

6.3.1   Method

6.3.1.1   Data Source and Procedure

The data used in this study was obtained in collaboration with the Cambridge Psychometric Centre's myPersonality project, which collects data through a Facebook application. For a detailed description see Section 6.2.3.1.

6.3.1.2   Participants

Two subsamples (dataset one and dataset two) were used in this study. Dataset one contained participants that had both completed the Schwartz values survey and for whom records of Facebook likes were available. This resulted in a sample of 1,211 Facebook users, with 58% females, and an average age of 26.22 years (SD = 11.28). Dataset two contained users that had been scored on the text based value measure

developed in Study 1 (Section 6.2), and for whom Facebook likes were also available. This sample contained 61,406 users, with 58% females and an average age of 25.89 years (SD = 10.61).

6.3.1.3   Measures

6.3.1.3.1   Text Based Values Measure (see Section 6.2 Study 1: Validating a Language Use Based Measure of Values)

The text based measure of values was developed in order to obtain value scores for participants in dataset two. These participants had not completed the SVS as part of the myPersonality application. The text based values measure predicts the ten basic human values from free text. The measure's accuracy is higher than chance, with an average accuracy of Area Under the Receiver-Operating Characteristic Curve (AUROC) = .72 (where AUROC = 1 is a perfect prediction and AUROC = .5 is the toss of a coin). See Section 6.2 for a more detailed description of the measure and its development.

6.3.1.3.2   Schwartz Values Survey (SVS, S. H. Schwartz, 1994)

The SVS measures the ten basic human values on a 57-item scale. The SVS was used in dataset one, such that value scores were available for participants in dataset one. See Sections 4.7.2.2 and 6.2.3.3.2 for a detailed description of the measure.

6.3.1.3.3   Brand Affiliation

Facebook users have the option to like pages of individuals, groups, or brands on Facebook. Such pages can be related to any topic, including 'I love sleep', 'Jesus' and 'Cars'. Many of the pages are, however, related to brands, public figures and entertainment, for example: Gucci, Net-a-porter.com, Oreo, Minecraft, Will Smith, Fight

Club, It's Always Sunny in Philadelphia, ESPN, or The Office. The latter type of Facebook like indicates which brands an individual is happy to be affiliated with publically and is thus used as the basis for this brand affiliation measure.

Given the large number of pages that can be liked on Facebook, likes are summarised by the myPersonality project into 600 topics containing five likes each (Kosinski & Stillwell, 2015). This is done by performing Latent Dirichlet Allocation, a dimension reduction method in which each user is represented as a document containing their likes (Blei, Andrew, & Jordan, 2003). Topical decompositions of users are identified based on the corpus of documents. The method produces topics that are interpretable as preferences for certain brands, political views, religions, or political views. The following are example topics, or groups of likes: Jesus Daily, The Bible, Joyce Meyer Ministries, Jesus Christ, The Bible; Harry Potter, Harry Potter series, Emma Watson, J.K. Rowling, Harry Potter; Bud Light, Budweiser, Jim Beam, Bacardi, Captain Morgan USA; Amnesty International, Greenpeace, WWF, The Nature Conservancy, Earth Hour. Users are then represented as their weights on each of the 600 topics, with the total of weights for all topics for each user being 1.

From the 600 topics provided, those topics where all five likes related to brands were selected for the purpose of this analysis. This resulted in a list of 281 topics. The brand affiliation score for each of these topics is the individual's weight on that topic.

6.3.2 Data Analysis Overview

First, data preparation was carried out. Outliers were deleted and model assumptions were tested. Descriptive statistics were then obtained for both datasets. Given that dataset one with value scores obtained from the SVS contained too few cases

of brand related Facebook likes, dataset one and two were merged for the purpose of the subsequent analysis.

For hypothesis testing, logistic regression models were tested on the merged dataset, where brand related Facebook likes (brand affiliation), age and gender were entered as predictors. Separate models were tested for each of the ten values. Logistic regression was used because the outcome variable was binary. Binary outcome variables are less challenging for prediction models whilst still affording good interpretability of results. As in Study 1, LASSO regression with 5-fold cross validation was used in order to increase model parsimony and identify the strongest predictors for each value (see Section 6.2.4 for a more detailed discussion of LASSO regression).

Model accuracy was tested as outlined in Study 1 by splitting the sample into a test (80%) and a training (20%) dataset, and inspecting AUROC in the test set (see Sections 6.2.4.1.1 and 6.2.4.1.2 for a detailed description of model testing and AUROC).

6.3.3   Results

6.3.3.1   Data Preparation and Descriptive Statistics

6.3.3.1.1   Model Assumptions: Multicollinearity

Logistic regression requires non-multicollinearity of predictor variables, such that none of the predictor variables should be highly correlated. No variables that violated the multicollinearity assumption were detected in dataset one or dataset two. See Section 6.2.5.1.1 for a more detailed description of the criteria used to detect multicollinearity.

6.3.3.1.2 Outliers

Dataset one and two were merged. All cases with age >80 were deleted as they were deemed likely to contain false information on age. The total amount of cases made up 0.5 % of the dataset. See Section 6.2.5.1.2 for a description of the criteria used to detect outliers. Outliers made up 2 to 5% of cases in each respective model. See Figure 6-7 for respective percentages.
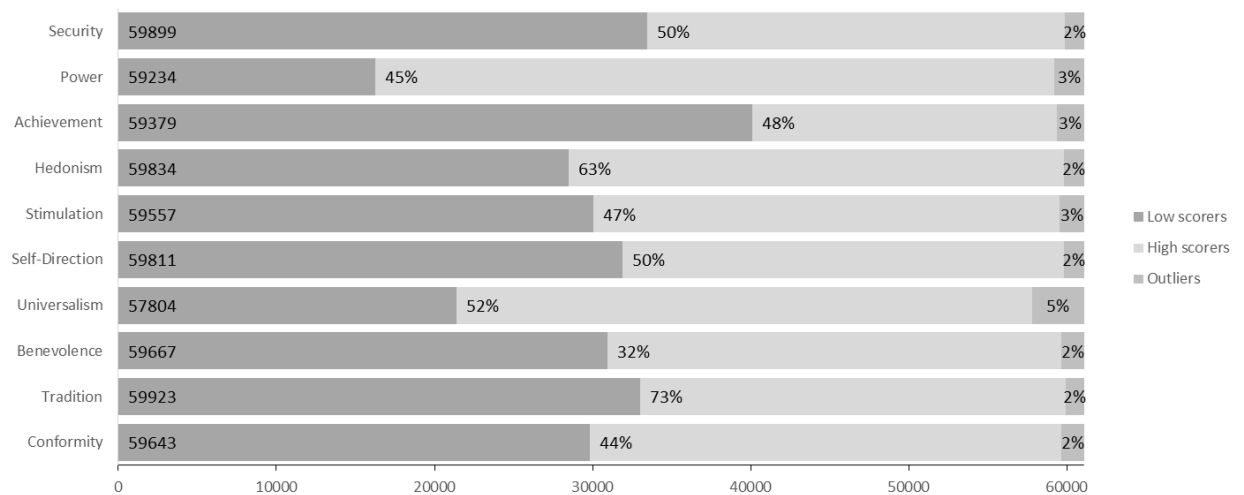
Figure 6-7 Descriptive statistics for value scores. The number of non-outlying participants retained for analysis is displayed at the base of each bar.

6.3.3.1.3 Descriptive Statistics

Binarised value scores in the merged datasets 1 and 2 are described in Figure 6-7. The scores were distributed in both datasets around the 50% mark, with the highest disparity in scores for Power with 27% low scores.

In order to describe the predictor variables, which were the topics or groups of fives of likes, the number of likes per topic in each dataset was counted. Participants whose topic weights indicated that they had liked one of the pages contained in a topic were counted per topic. In dataset one, each topic was liked by an average of 58 users. In dataset two, each topic was liked by an average of 3,025 users. Given the low number

of likes available in dataset one relative to the large amount of predictor variables (281 topics of likes), dataset one and two were merged for subsequent analysis.

6.3.3.2 *Regression Model Fitting and Testing*

Model fitting and testing was carried out on the merged datasets one and two. Ten logistic regression models with LASSO generalisation (with 5-fold cross validation) predicting the respective value, with age, gender, and weights on the 281 like topics as predictor variables were fitted. The predictor variables were normalised by subtracting the population mean and dividing by the standard deviation. The model was split into training (80%) and test (20%) set.

6.3.3.2.1 Model Accuracy and Coefficients

The prediction models achieved moderate to high accuracy, with the highest accuracy achieved for Benevolence (AUROC = .91 in the test set) (see Section 6.2.4.1.2 and Figure 6-2 for an illustration of AUROC). The lowest accuracy was achieved for Security (AUROC = .62). The drop in accuracy between test and training set was small (around 1%) for all of the models, indicating that there was little over fitting in the training sets. Accuracies for all models are displayed in Figure 6-8 below.
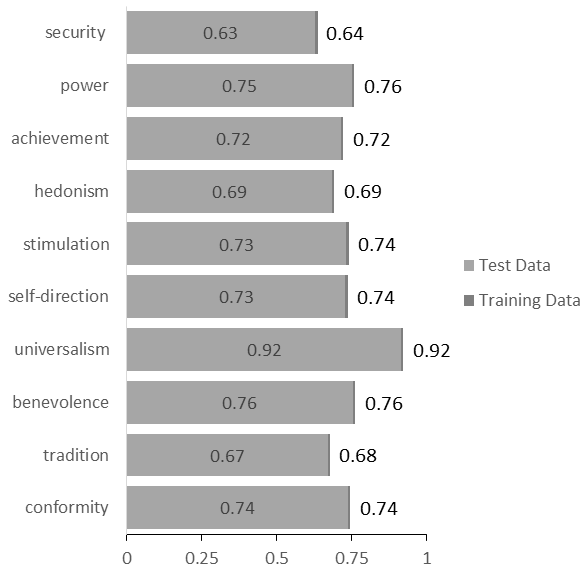
Figure 6-8 Prediction accuracy for values described by AUROC

Table 6-3 below displays the top 5 positive and negative predictors for each model. For example, for the model with the highest accuracy, Universalism, being female, liking hiking, fantasy video games, rush hour (a comedy crime series), and Disneyland increases the likelihood of valuing Universalism. Liking Family Feud (a competitive games TV show), pop stars, popular youth brands, popular animated films, and heavy metal bands decreases the likelihood of valuing Universalism.

Hedonism values are related positively to liking popular male sportsmen, rock bands, basketball teams, and popular crime TV series. They are related negatively to liking a set of post-punk bands, soccer, sports teams from Philadelphia, popular youth brands, and a number of fantasy books and TV shows. For a full list of coefficients and intercepts, see Appendix 3 Coefficients for models predicting values from Facebook like topics.

Table 6-3 Top predictors for each value expressed as like topics with strongest coefficients

	Conformity	Tradition	Benevolence	Universalism	Self-Direction	Stimulation	Hedonism	Achievement	Power	Security
Top positive predictors	Gender (0 = male, 1=female)	FarmVille, FarmVille_Cows, Zoo_World, FarmVille_Sheep, PetVille	Vogue, H&M, CHANEL, Fashion, Urban_Outfitters	Gender (0 = male, 1=female)	Techno, Trance_music, House_music, deadmau5, Daft_Punk	Techno, Trance_music, House_music, deadmau5, Daft_Punk	Roger_Federer, Rafael_Nadal, Tennis, Maria_Sharapova, Michael_Phelps	The_Office, 30_Rock, Modern_Family, Community, Arrested_Development	Chris_Rock, Tiger_Woods, Lance_Armstrong, David_Beckham, Maria_Sharapova	FarmVille, FarmVille_Cows, Zoo_World, FarmVille_Sheep, PetVille
	FarmVille, FarmVille_Cows, Zoo_World, FarmVille_Sheep, PetVille	The_Breakfast_Club, 16_Candles, Pretty_in_Pink, Breakfast_Club, Dirty_Dancing	FarmVille, FarmVille_Cows, Zoo_World, FarmVille_Sheep, PetVille	Hiking, Camping, Snowboarding, Skiing, Biking	Hiking, Camping, Snowboarding, Skiing, Biking	Star_Wars, I_Am_Legend, Little_Miss_Sunshine, Ghostbusters, Forrest_Gump(1994)	House, Psych, Burn_Notice, Monk, NCIS	Dirty_Dancing, Grease, The_Notebook, Pretty_Woman, Titanic	Kelly_Clarkson, Carrie_Underwood, Avril_Lavigne, Taylor_Swift, Christina_Aguilera	Gender (0 = male, 1=female)
	age	Wawa, Philadelphia_Phillies, Philadelphia_Eagles, Philadelphia_Flyers, Philadelphia_Phillies	Wawa, Philadelphia_Phillies, Philadelphia_Eagles, Philadelphia_Flyers, Philadelphia_Phillies	Rush_Hour, Rush_Hour_2, Rush_Hour_3, Will_Smith, Family_Guy	Saw, Saw_II, Saw_1, Saw_III, Scary_Movie_2	Backstreet_Boys, Westlife, Enrique_Iglesias, AKON, Shakira	Chris_Rock, Tiger_Woods, Lance_Armstrong, David_Beckham, Maria_Sharapova	Fable_2, Fable_III, Left_4_Dead, Xbox, Assassin's_Creed	Jason_Aldean, Kenny_Chesney, Tim_McGraw, Brad_Paisley, Zac_Brown_Band	Twix, HERSHEY'S, Wendy's, Frosty, Burger_King
	Wawa, Philadelphia_Phillies, Philadelphia_Eagles, Philadelphia_Flyers, Philadelphia_Phillies	The_Smiths, The_Cure, David_Bowie_(Official), Depeche_Mode, Joy_Division	Taking_Back_Sunday, The_Used, Dashboard_Confessional, AFI, Anberlin	Kingdom_Hearts, Final_Fantasy_VII, Final_Fantasy_X, PlayStation, Video_Games	Girl,_Interrupted, Cruel_Intentions, Juno, The_Craft, Thirteen	Family_Guy, Dexter, The_Hangover, The_Office, South_Park	Metallica, AC/DC, Guns_N'_Roses, Bon_Jovi, Linkin_Park	Roger_Federer, Rafael_Nadal, Tennis, Maria_Sharapova, Michael_Phelps	Rush_Hour, Rush_Hour_2, Rush_Hour_3, Will_Smith, Family_Guy	Family_Feud, Games, MindJolt_Games, Bejeweled_Blitz, FARKLE
	Taking_Back_Sunday, The_Used, Dashboard_Confessional, AFI, Anberlin	Survivor, Big_Brother, American_Idol, The_Amazing_Race, Amazing_Race	Adobe_Photoshop, Photography, Adobe_Illustrator, Nikon, Adobe_Photoshop_Lightroom	Walmart, Target, Walt_Disney_World, Disney, Disneyland	Rugrats, Doug, Hey_Arnold!, Rocko's_Modern_Life, The_Angry_Beavers	Mozilla_Firefox, Newegg.com, Computers, Google, Google_Chrome	LA_Lakers, Kobe_Bryant, Michael_Jordan, NBA, Basketball	Metallica, AC/DC, Guns_N'_Roses, Bon_Jovi, Linkin_Park	Jake_Gyllenhaal, Ryan_Reynolds, Ashton_Kutcher, Johnny_Depp, Leonardo_DiCaprio	Taco_Bell, Coca-Cola, Oreo, Skittles, Dr_Pepper
Top negative predictors	Roger_Federer, Rafael_Nadal, Tennis, Maria_Sharapova, Michael_Phelps	Gender (0 = male, 1=female)	Chris_Rock, Tiger_Woods, Lance_Armstrong, David_Beckham, Maria_Sharapova	Family_Feud, Games, MindJolt_Games, Bejeweled_Blitz, FARKLE	Gender (0 = male, 1=female)	FarmVille, FarmVille_Cows, Zoo_World, FarmVille_Sheep, PetVille	The_Smiths, The_Cure, David_Bowie_(Official), Depeche_Mode, Joy_Division	Gender (0 = male, 1=female)	Gender (0 = male, 1=female)	PostSecret, Cyanide_&_Happiness, John_Green, Looking_for_Alaska, Bo_Burnham
	Techno, Trance_music, House_music, deadmau5, Daft_Punk	Techno, Trance_music, House_music, deadmau5, Daft_Punk	Modern_Family, Official_CHUCK_Page, Fringe, Cougar_Town, Castle	Justin_Timberlake, Black_Eyed_Peas, Shakira, Fergie, Beyoncl©	FarmVille, FarmVille_Cows, Zoo_World, FarmVille_Sheep, PetVille	age	Soccer, Cristiano_Ronaldo, U.S._Soccer, Nike_Football, David_Beckham	Remember_the_Titans, Coach_Carter, Step_Up, Basketball, Friday_Night_Lights	age	Slipknot, Korn, Marilyn_Manson, Disturbed, HIM
	Kelly_Clarkson, Carrie_Underwood, Avril_Lavigne, Taylor_Swift, Christina_Aguilera	Girl,_Interrupted, Cruel_Intentions, Juno, The_Craft, Thirteen	Techno, Trance_music, House_music, deadmau5, Daft_Punk	Hollister_Co., Fred, American_Eagle_Outfitters, Picnik, Picnik	Mashable, Twitter, Facebook_Pages, AllFacebook.com, NetworkedBlogs	Family_Feud, Games, MindJolt_Games, Bejeweled_Blitz, FARKLE	Wawa, Philadelphia_Phillies, Philadelphia_Eagles, Philadelphia_Flyers, Philadelphia_Phillies	age	PostSecret, Cyanide_&_Happiness, John_Green, Looking_for_Alaska, Bo_Burnham	Pulp_Fiction, Fight_Club, Kill_Bill, Inglourious_Basterds, Pulp_Fiction
	Lil_Wayne, Drake, Rihanna, Beyoncl©, Eminem	Bud_Light, Budweiser, Jim_Beam, Bacardi, Captain_Morgan_USA	Finding_Nemo, Up, WALL-E, Toy_Story, Monsters,_Inc.	Finding_Nemo, Up, WALL-E, Toy_Story, Monsters,_Inc.	Family_Feud, Games, MindJolt_Games, Bejeweled_Blitz, FARKLE	Entourage, Ari_Gold, Weeds, Dexter, True_Blood	Hollister_Co., Fred, American_Eagle_Outfitters, Picnik, Picnik	Kingdom_Hearts, Final_Fantasy_VII, Final_Fantasy_X, PlayStation, Video_Games	Hiking, Camping, Snowboarding, Skiing, Biking	Grey's_Anatomy, Private_Practice, Desperate_Housewives, Grey's_Anatomy, Brothers_and_Sisters
	Modern_Family, Official_CHUCK_Page, Fringe, Cougar_Town, Castle	SuperPoke!_Pets, Sorority_Life, SuperPoke!_Pets, YoVille, PetVille	Disturbed, Avenged_Sevenfold, Slipknot, Korn, Metallica	Disturbed, Avenged_Sevenfold, Slipknot, Korn, Metallica	Breakfast_at_Tiffany's, Casablanca, Audrey_Hepburn, Roman_Holiday, Rear_Window	Wawa, Philadelphia_Phillies, Philadelphia_Eagles, Philadelphia_Flyers, Philadelphia_Phillies	Angels_and_demons, Harry_Potter, Angels_&_Demons, Dan_Brown, Harry_Potter	Jake_Gyllenhaal, Ryan_Reynolds, Ashton_Kutcher, Johnny_Depp, Leonardo_DiCaprio	Girl,_Interrupted, Cruel_Intentions, Juno, The_Craft, Thirteen	Lil_Wayne, Eminem, Usher, AKON, Drake

6.3.4 Discussion and Conclusions

This study investigated whether values are related to Facebook likes of branded content, specifically whether brand related Facebook likes are predictive of values. Results indicate that values are predictable from branded Facebook likes, gender, and age. Models for Universalism, Power, and Benevolence were particularly accurate (with 92%, 76% and 76% accuracy, respectively). Models for Security, Tradition and Hedonism were less accurate, but still predicted values above chance (with 63%, 67%, and 69% accuracy, respectively). Results indicate that, despite scholars arguing that values may be more influential in product category than brand choice, values do play a role in brand preferences (Gutman, 1990; Kahle & Chiagouris, 1997; Reynolds & Gutman, 1988).

Another goal in this study was to determine whether results would be interpretable and insightful for answering what consumers are drawn towards certain brands. An investigation of the brand likes most predictive of the different values suggests that looking at brands in terms of values they relate to does indeed offer an additional layer of interpretation. For example, brands predictive of high Hedonism were mostly related to activities and events (concerts, sporting, and entertainment) and highly successful sports individuals. The results thus indicate that the brands appeal to customers' because they perceive them as fun, or contributing to their own enjoyment.

6.3.4.1 *Directionality of Predictions Reflects Circular Structure of Values*

Looking at individual brands, four of the like topics were highly predictive of four or more different values. For example, the like topic including several Facebook application games such as FarmVille and PetVille, two games that were highly popular around 2009 when the Facebook data was recorded by the myPersonality application,

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were predictive of six values. The games require users to grow and manage their own farms. Liking the game positively predicted Conformity, Tradition, Benevolence, and Security. Self-Direction and Stimulation were negatively predicted by liking the games. This pattern of associations matches the structure of values, where Self-Direction and Stimulation are neighbouring values on higher Openness to Change value dimension. Conformity, Tradition, Security and Benevolence are all neighbouring traits as well, falling onto the opposing higher level value dimension of Conservation (with Benevolence falling onto the neighbouring Self-Transcendence). In addition, the opposite direction of prediction is reflected in the opposition of the values on the circular value structure. The same patterns were observed for all four of the like topics predicting several value dimensions: Liking sports teams from Philadelphia was positively related to Conformity, Tradition, and Benevolence and negatively to Stimulation and Hedonism. This indicated that fans of the relevant sports teams support the clubs because they value Conservation, and that they are not concerned with enhancing their pleasure or entertainment (Hedonism and Stimulation). Liking techno and trance music performers was related to low Conformity, Tradition, and Benevolence, and positively related to high Self-Direction. Liking Family Feud and a number of games was positively related to Security, and negatively to Universalism, Self-Direction, and Stimulation. This indicates that Facebook likes are not only predictive of values, but also predict values in patterns reflective of the circular structure of human values. See Figure 6-9 for an illustration of how prediction patterns are reflective of the circular structure of values using the example of the Farmville like topic.
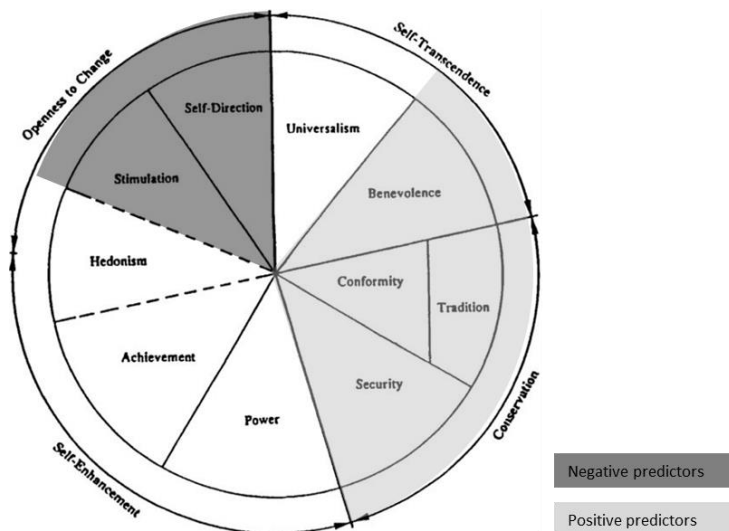
Figure 6-9 Regression coefficients are reflective of the circular structure of human values, demonstrated with the example of the like topic 'Farmville, FarmVille_Cows, Zoo_World, FarmVille_Sheep, PetVille', Figure adapted from Schwartz (1994)

6.3.4.2   Predictors are Interpretable

The individual predictors for the ten values offer interpretable associations of values with brand related Facebook likes. Predictors are interpretable in that they are both similar to one another, and appear as descriptive of the value they predict. For example, the top five like topics predicting Hedonism are all similar in that three out of five relate to famous athletes. They are descriptive of Hedonism in that they are all related to enjoyable activities, i.e. concerts and sporting events.

Food brands, albeit contained in the set of predictor like topics, were top five predictors of Security values only. This indicates that whilst much of the research on values and consumer preferences has focused on food consumption, food brands may be less indicative of values than other brands. High Security values were predicted by liking brand topics 'Twix, HERSHEY'S, Wendy's, Frosty, Burger_King' and 'Taco_Bell, Coca-Cola, Oreo, Skittles, Dr_Pepper'. This indicates that big brands are preferred by customers because they offer Security in the products they sell and the service they

provide. Low Security values on the other hand were predicted by sub culture brands such as Hip Hop or heavy metal artists, and Quentin Tarantino films.

6.3.4.3   Limitations and Future Research

Results from this study are specific to the Facebook environment. Brand affiliation on Facebook is different from buying brands or other dimensions of brand liking. The way in which a product is evaluated by others influences people's own evaluations of products (Kim, Park, Bradlow, & Ding, 2014). In addition, people may present their ideal rather than actual selves on Facebook (Anderson, Fagan, Woodnutt, & Chamorro-Premuzic, 2012), meaning that the image portrayed to others may have a bigger effect on whether someone likes a brand than their actual preference for that brand. However, evidence suggests that people portray their real life personalities on Facebook (Back et al., 2010; Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Ivcevic & Ambady, 2013). Whilst results based on Facebook likes cannot be translated into brand purchasing, likes likely represent brand preferences that translate into the offline world.

Results from this study are based on like topics rather than individual likes. An investigation of individual likes in future studies may produce more accurate results by reducing the noise of combining several likes into one predictor variable. An additional area of investigation would be the relative predictive accuracy of models predicting the Big Five versus the ten values based on brand related likes. Whilst the Big Five offer a comprehensive framework, narrow or task specific personality traits can be better predictors of specific outcomes (Leutner, Ahmetoglu, Akhtar, & Chamorro-Premuzic,

2014). Additional studies could clarify the relative utility of values in explaining consumer choice over and above the Big Five.

In addition, future studies may address several aspects of the prediction model. Model accuracy may be reduced by reducing noise from situational factors as well as demographic variables. Some of the likes appear to have been popular Facebook applications at the time, or relate to local phenomena, rather than reflecting personal values. Given the prominent role of gender and age in consumer preference (Sandy et al., 1994), the effect of brand affiliation on values may be more accurately describes with models controlling for gender as well as age.

6.4 Overall Chapter Discussion

This chapter had two goals: To test the hypothesis that values are related to consumer brand preferences, and to develop a language based measure of values. Values were predicted from free text with moderate accuracy, indicating that free text offers an opportunity for remote value profiling. Brand affiliation on Facebook was predictive of human values with moderate accuracy, indicating that values play a role in brand preferences. Both results have theoretical and practical implications. Theoretically, results add to evidence suggesting that values are related to language use (Bardi et al., 2008; Boyd et al., 2015; Chen et al., 2014; Renner, 2003), as well as behaviours (S. H. Schwartz, 1996), in particular consumers' preferences for brands. Practically, the results demonstrate that values can be profiled remotely to provide insights into the reasons underlying consumer preferences.

6.4.1   Limitations and Future Research

The reliability of results in study two is dependent on the accuracy of prediction of values achieved in study one. Given the low number of likes available for participants with value profiles based on the SVS, no comparison between results obtained for predicted value profiles and measured value profiles was possible. Future studies should replicate the analysis conducted in study two with value profiles assessed by traditional questionnaires in order to estimate the effect of measurement error for values on the prediction accuracy of brand affiliation. Despite this limitation, the accuracy of values profiles based on language use was moderate and the inclusion of predicted value profiles resulted in a larger dataset for study two, allowing for the use of regression models. This is because the inclusion of predicted scores increased the number of likes available for the prediction model. Therefore, whilst the use of predicted value scores introduced measurement error and thereby noise to the dataset, it improved the prediction model by increasing the number of data points available to the model.

The prediction models used in this study are basic in that they do not control for the external and demographic factors that affect consumer behaviour. Whilst this is an important task in modelling consumer behaviour, it goes beyond the realms of this dissertation. However, the primary focus in this study was to determine whether an effect of values on consumer brand preference was at all detectable, and whether results would be interpretable in the sense that they offer insights into why consumers prefer certain brands.

6.5 Conclusion

This chapter demonstrated how values can be profiled remotely, using both social media likes and free text. Eliminating the need for questionnaire based assessment of values makes them an applicable psychometric for real world marketing and consumer profiling tasks. Findings add to the growing literature demonstrating that values are related to real life behaviour, as well as illustrating how values can be used to expand understanding of brands.

Part III: Discussion

Chapter 7 Discussion

Results will be discussed to evaluate whether research hypotheses have been confirmed. Findings will be discussed in relation to each hypothesis. A summary of key findings is given. Avenues for future research are outlined and industry as well as academic implications are discussed.

7.1 Overview

This dissertation argued that consumer values are a suitable metric for profiling consumers, notably because they offer insights into the reasons underlying consumer preference and choice. Empirical results offer support for this argument in that they demonstrate that values are related to several aspects of consumer preference and choice, including real life purchasing behaviour. Results also illustrate what insights about brands, products, and consumer choices can be gained from profiling consumers on values. In addition, Chapter 6 outlined a methodological approach to profiling consumers remotely, thereby offering a more flexible approach to applying consumer value profiles to real world marketing problems. This dissertation thus provides an outline for understanding the role of values in consumer choice, as well as for applying values to consumer profiling.

Individual differences in personal characteristics are an important factor in consumer choice (Bosnjak, Bratko, Galesic, & Tuten, 2007; Sandy et al., 1994). Much of the research on individual differences in consumer choice has focused on personality aspects. However, personality describes typical behaviour and thus offers limited insight into what makes products or brands more appealing to individual customers. Results from this dissertation support the claim that values are a more suitable framework for profiling the factors that underpin consumers' preferences for brands and products, as they describe underlying goals and ambitions. Given that consumption serves to advance both material and identity related goals (Solomon et al., 2013), values offer insights into the individual goals consumers aim to accomplish with their purchases. Values have been a popular metric in social sciences research, indicating their relevance in explaining human behaviour. For example, values are assessed as part of the

European Social Survey, an international research project to advance social conditions and structure in Europe. Given that marketing and consumer psychology also aim to explain, understand and predict human behaviour, human values represent a promising avenue for exploration. Despite this, the application of values to these disciplines has been limited. When values are investigated in the consumer psychology context they are often looked at in isolation.

7.2 Research Questions and Findings

The goal of this dissertation was thus to investigate whether values were a suitable metric for understanding individual differences in the motivations underlying customer preferences. Given that customer preferences are expressed in many forms, research questions for this thesis were divided into three distinct areas of inquiry: Preferences for product categories (Chapter 4), preferences for purchasing comparable fast moving consumer goods (Chapter 5), and preferences for affiliation with brands (Chapter 6). In addition, two higher level questions were answered by investigating these three areas, namely whether individual differences in values help to explain the why of consumer choice, and whether values are practically applicable to the problems faced by marketing and consumer profiling today.

The first set of questions relates to establishing a link between values and consumer preference, and demonstrating that values play a role in consumer behaviour. The second set of questions addresses the applicability of individual differences frameworks, in particular values, to understanding consumer preferences. Detailed Discussions of findings and implications specific to each empirical study can be found in the respective study chapters (Chapter 4, Chapter 5, and Chapter 6). The following

Section 7.2.1 provides a general discussion of findings from research presented in this thesis. Section 7.4 highlights limitations that apply generally to values profiling in consumer research, and Section 7.6 gives broad recommendations for future avenues of research as well as describing implications of the study of values to academic theory and the consumer insights industries.

7.2.1 Do Values Influence which Product Categories Consumers Prefer to Shop?

Results from Chapter 4 indicate that preference for certain shopping, or product, categories is related to the four higher order values Conservation, Openness, Self-Transcendence, and Self-Enhancement. This is in line with scholars arguing that values, because they describe higher level tendencies, should be connected to high level outcomes (Gutman, 1990; Kahle & Chiagouris, 1997; Reynolds & Gutman, 1988). Existing research had demonstrated a connection between values and product categories with high symbolic or ethical significance, such as green products (Thogersen, 2011). Results from Chapter 4 expand results to include additional product categories, in particular categories that have no direct ethical implications namely Apps, Clothing and Shoes, Travel, and Health.

Criteria and predictors in psychometric research should be at the same level of specificity and generality (bandwith fidelity, Chronbach & Gleser, 1965). Chapter 4 indicated a relationship between values and consumer preference at the higher level of analysis.

7.2.2 Do Values Affect Consumer Purchasing Decisions?

Chapter 5 thus moved both predictor and criterion to a lower level of analysis, as well as investigating the effect of values on real life consumer behaviour, specifically

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product purchasing. Results confirmed that consumers who had purchased comparable products in the supermarket differed in their values. The effect was observed for the same products from different brands, as well as for different product variants from the same brand. This indicates that values may have driven the choice between comparable products, lending support to the hypothesis that values guide behaviour (S. H. Schwartz, 1996). Previous research had demonstrated the influence of personal values on consumer behaviours such as meat consumption, mall shopping, food shopping habits, and collaborative consumption (Cai & Shannon, 2011; Hayley et al., 2015b; Piscicelli et al., 2013; Worsley et al., 2010). Findings of the studies presented in Chapter 5 showed that different values were indicated in choice of different products. This is consistent both with research indicating that the different values vary in the strength of their influence on behaviour (Bardi & Schwartz, 2003), as well as with research findings suggesting that consumers chose products based on the characteristics they perceive them to exhibit (Govers & Mugge, 2004). Depending on the values that consumers perceive a product to have, their own values may or may not become salient in making the purchasing decision. Indeed, results from Chapter 5 also showed that consumers perceived products to reflect different values. This highlights the complex relationship between consumer self and perceived product, or brand, characteristics.

7.2.3   Are Values Related to Consumer Brand Preference and Affiliation?

Results from Chapter 6 demonstrated that values affect another type of consumer behaviour in addition to product purchase, namely brand affiliation, in a sample of over 100,000 Facebook users. Value scores for this large sample of participants were generated by training a predictive model on a smaller subset of participants for whom

value scores were available. By employing this methodology, studies in Chapter 6 provide first empirical proof for a framework that allows the generation of value based consumer insight through remote profiling of values.

The brands Facebook users liked were predictive of their values, as demonstrated by the LASSO regression models used in the studies. This expands findings demonstrating the predictability of personality from online behaviour, to values (Kosinski et al., 2013). Whilst existing studies illustrate that liking any category on Facebook is predictive of personality (Kosinski et al., 2013), studies in Chapter 6 investigated this effect by looking at brand related online behaviour in isolation. By doing so, this study demonstrated that values play a non-negligible role in influencing Facebook user's brand affiliation behaviour.

In addition to brand affiliation behaviour on Facebook, results from Chapter 5 demonstrated that values had an effect on supermarket customers' choices between products from different brands. Together, findings from Chapter 5 and Chapter 6 confirm the hypothesis that values affect which brands consumers prefer, supporting theories of brands as extensions of the self (Baumgartner, 2003; Solomon et al., 2013).

7.3   Explaining Consumer Preferences with Personal Values

This dissertation, and in particular results from Chapter 4 to Chapter 6, demonstrated that values offer an additional dimension to understanding consumer preference. Value profiles of consumers gave insights into the reasons underlying their choice as individuals. Personal values had an effect on the product categories people preferred to spend their discretional income on. The relationships give insights into the aspects of a product category that are appealing to customers. For example, Clothing

and Shoes were preferred by consumers who valued Self-Enhancement. People who value Conservation preferred shopping health related products. This gives insights both into the individual motivations to purchase certain consumer goods, as well as into the aspects of different products that affect customers' choices. Health products should be marketed by appealing to customers Security, Tradition, and conformity values, whilst clothing and shoe should be marketed by appealing to achievement and power.

This idea was also exemplified by results from Chapter 5, where consumers were more likely to purchase white bread over wholemeal bread if they valued Hedonism. The finding indicated that consumers chose the bread that is less healthy because they were not driven by a desire to be healthier but instead by a desire to increase enjoyment. To encourage purchasing of wholemeal bread, marketing campaigns would have to address the customer's desire to enhance their enjoyment.

In addition to providing insights into individual product variant choices, values also helped to understand why consumer chose products of different brands. However, the values affecting brand choice varied from brand to brand. This indicates that brands appeal to different values, highlighting the importance of brand image (D. A. Aaker, 1996). Value profiles of customers who preferred a given brand thus offered insight on the brand's image.

Importantly, the values framework offers flexibility across different dimensions of products and brands. Values offer insights into the reasons behind consumer choice of a brand over another, a product variant over another, or a product category over another.

7.4 Limitations

Like any scientific inquiry, the framework and methodology used in this dissertation have several limitations, both conceptually and practically. The values framework used in this dissertation is itself debated on the basis of conceptual as well as measurement problems (see Section 2.1.2.1 for a discussion). The circular structure of values, how values are defined as separate as well as in relation to each other, is criticised both on the basis that it does not replicate across cultures (Perrinjaquet et al., 2007), and because there is no theoretical explanation for the emergence of a circular structure (Gouveia et al., 2014b). The definition of each of the separate values themselves have been adapted and revised over time (J Cieciuch et al., 2013; J Cieciuch & Schwartz, 2012; S. H. Schwartz, 1994; S. H. Schwartz et al., 2012). This results in a lack of comparability across measurements (Gouveia et al., 2014a). However, uncertainty surrounding the circular structure of values has been taken into account in this dissertation by using research designs and methodologies that are not dependent on the relationships between values, for example by using statistical methods that do not assume independence.

Another measurement issue arises from the implementation of value measurement in this dissertation. Separate measures of values were used across studies, a short form measure of values based on the SVS survey was used in Chapter 4, the MVPI was used in Chapter 5 and the SVS, as well as the language use based measure of values were used in Chapter 6 (Hogan & Hogan, 1996; Schwartz, 1992). Direct comparisons between all measures were not available. This might lead to findings from one study not being directly comparable to results from another study. However, each measure was

compared to at least one other available measure, and all measures were based on, or adaptations of, Schwartz's ten basic human values (Schwartz, 1992).

All original studies in this dissertation are based, at least in part, on self-report data. This is problematic as self-report data may be subject to faking and measurement error (Dilchert, Ones, Viswesvaran, & Deller, 2006). In addition, the reliance on one methodology increases the chance of attributing the discovered effect to the relationship between values and consumer choice when it may only be a result of the methodology used. However, as values are defined as underlying goals and ambitions, they are inherently subjective and therefore self-report may be the most appropriate methodology for assessing values. Indeed, the only published and widely accepted method for measuring personal values is through self-report questionnaires (Schwartz, 1996), although free text based measure have been gaining traction (Chen et al., 2014).

In addition, the studies in this dissertation made use of multiple methodologies for measuring consumer preference, as well as using different methods for data analysis: Consumer preference was assessed through self-report, through records of shopping behaviour, and though records of online behaviour. Data was analysed using dimension reduction methods, tests of group mean differences, and prediction models.

In addition to measurement, limitations also arise from the research hypotheses. Hypotheses were explanatory rather than specific, such that no direct relationships between values and outcomes were hypothesised. The downside of this approach is that ad-hoc explanations are given for the uncovered relationships. For example, in Chapter 5, the relationship between Hedonism and health related purchasing behaviour was not hypothesised, although it was later related to findings from existing studies. However,

the goal of this dissertation was to determine whether values were relevant factors in consumer choice, rather than investigate the effect of values on specific outcomes.

A methodological limitation to findings from this dissertation is the treatment of situational and external factors. A vast variety of factors are at play in consumer choice. Many relevant variables were not isolated as this would exceed the scope of this inquiry. Although gender, age and to a certain extend income were taken into account in this dissertation, the general approach was to relate values directly to consumer choice. Whilst some measures were taken to reduce the effect of external factors, this was limited to selecting comparable products, or including income in self-report questionnaires. This means that some of the effects discovered may be the result of situational or external factors rather than a direct relationship between values and preference.

7.5   Psychometrics for Consumer Profiling: Implications for Industry

This dissertation investigated personal values as an avenue for understanding consumer preferences. As such, results and findings have the potential to impact marketing, advertising, and branding practices. Therefore, one of the higher level goals of this dissertation was to identify avenues for industry application of consumer value profiling. The need to profile customers on self-report questionnaires represents a barrier to industry application, as it requires access to customers, and is resource intensive in terms of budget and time. In order to address this barrier, a remote profiling methodology for consumer values was developed in Chapter 6, where values were inferred from free text.

Technological advances in data collection, storage and analysis mean that customer research and marketing are more and more data driven and automated (Brosche & Kumar, 2016). This is exemplified by the rise of programmatic marketing. This is a form of marketing where online adds are sold on automated, real-time bidding platforms according to a number of criteria including demographic, behavioural, and psychographic variables (Stevenson, 2015). In addition, recommendation engines and personalised advertising rely on automated segmentation of consumers and matching of content to consumers. Therefore, the values framework needs to work without questionnaires for it to be relevant to today's marketing landscape.

Results from Section 6.2 and Section 6.3 gave first indications that remote profiling of values is possible. This is in line with findings from a growing body of research investigating the possibility to profile individual characteristics based on online behavioural data (Bachrach et al., 2012; Lambiotte & Kosinski, 2014; Youyou et al., 2014) or free text (Boyd et al., 2015; H. A. Schwartz, Eichstaedt, Dziurzynski, et al., 2013; Wang, Kosinski, Stillwell, & Rust, 2012).

In addition to remote profiling of values being possible, results from Chapter 4, Chapter 5, and Chapter 6 indicated that values also offer interpretable insights into the reasons underlying customer preferences. This provides an alternative approach to unsupervised, black box approached to consumer segmentation where segments have statistically desirable properties such as being predictive of certain outcomes, but are not interpretable. The advantage of values over black box or unsupervised customer segmentation is the theoretical framework they are based on. This framework allows for interpretation of customer segments. The research literature supplies in depth information on each value type and how they are related to real world outcomes,

behaviours, and preferences. This means that values can be interpreted and used to inform marketing strategies, advertising materials, and branding and product development.

7.6   Implications and Future Studies

Academic implications of this dissertation are threefold: First, results provide empirical evidence adding to a growing body of research on the relationship between values and behaviour. Second, the dissertation provides a conceptual framework for the role of values in consumer behaviour. Third, the text based measure of values contributes a novel approach to value measurement which is grounded in existing research (Bardi et al., 2008). Future studies should address limitations of the approaches used in this dissertation as well as expand its findings.

In order to provide additional evidence for the connection between values and consumer preferences, future studies should address specific relationships between values and narrow preferences such that the effect and directionality of values is hypothesised and tested. For example, future studies could investigate the hypothesis that Hedonism values are significant predictors of healthy food choices. Similarly, hypotheses could state which values are predictive of liking of a certain brand over another.

Another area that should be addressed is the modelling of external factors, particularly in terms of buying behaviours. This could be achieved by adapting a laboratory based research design in which participants chose from products that appeal to different value types. When investigating real life purchasing data, the analysis model should take into account situational and wealth related factors by, for example, creating

consumer clusters. External variables such as day of purchase, whether an item was on offer, where it was placed in store, and available competitor products should be recorded and accounted for. Such a research design could help understand moderating and mediating variables of the relationship between consumer preferences and values.

The congruency hypothesis holds that consumers prefer products or brands because they match their own characteristics (Aguirre-Rodriguez et al., 2012; Dikcius et al., 2013; Govers & Mugge, 2004). Future studies should investigate whether this is true for values. For example, in order to test whether and how much the perception of a product as conducive to the consumers value goals influences consumer preference, future studies should test whether products that portray different values are more popular with customers. For example, advertising tailored to different value types could be tested in its effectiveness and compared to generic advertising. Similarly, studies could investigate which product aspects elicit different value preferences. This could include studies looking at the effect of changing elements of packaging, branding, placement in store, time of offer, scarcity, or availability on the relationship between values and consumer preference.

Finally, the effect of values on consumer preference should be investigated using additional methods such as qualitative studies, laboratory studies, or studies based on additional types of behavioural datasets such as online data from cookies and website journeys.

7.7   Conclusions

Products and brands make up an increasing proportion of the environment around us. Much of our digital environment today is shaped based on content that is served to

us as a result of automated personalisation and recommendation engines. This dissertation demonstrated how psychological theories can be applied to understand the relationships that consumers, as individuals, form with the commercialised world around them.

Results demonstrate that a persons' values affect which products they experience as more enjoyable, the choices they make when purchasing products, as well as the personal relationships they seek with brands. The effect was demonstrated across different measures of values as well as consumer preference, it was demonstrated using multiple research designs and statistical methodologies, and it was demonstrated across three separately collected datasets including more than 61,000 individuals.

The results have implications for consumer psychology, in particular the application of psychometrics and individual differences to consumer psychology, as well as industry. This dissertation made the case for an application of psychometrics beyond selection, recruitment and training to marketing and personalisation. It may encourage an increased involvement of psychology and psychometric theory with innovation in the areas of programmatic marketing, personalisation, and recommendation.

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Appendices

Appendix 1 Short Value Measure items

Higher order value	Value	Value	Item
Self-Protection, Anxiety-Avoidance	Conservation	Conformity	I often fantasize about being famous
			I want others to admire me for what I do
			I don't care what other people think of me
		Tradition	I have never been a fan of innovation
			Call me old fashioned but there's nothing like traditional values
			I have always disliked authority
		Security	I try to avoid risks at any cost
			I don't like careless people
			Planning is boring, life should be spontaneous
	Self-Enhancement	Power	Most of my role models are powerful people
			I am very competitive
			I don't enjoy being in charge of others
		Achievement	I could never be happy if I didn't have a lot of money
			I enjoy thinking about business ideas and commercial opportunities
			I am not motivated by money
Growth, Anxiety-Free	Openness to Change	Hedonism	The most important thing in my life is having fun
			You should never feel guilty for having too much pleasure
			People should spend more time working and less time enjoying themselves
		Self-Direction	I prefer something creative to something practical
			I have sophisticated tastes in everything
			Unless people explain art to me, I don't see the point
		Stimulation	I love keeping up with the latest developments in science
			Most of my decisions are based on rational facts
			Scientific explanations are often useless in practice
	Self-Transcendence	Universalism	People who care only for themselves are selfish and unethical
			If we all do our bit, we can improve the world for everyone
			Charity starts at home
		Benevolence	I always have time for my friends, even when I'm busy with work
			The most important thing in my life are the people I know
			My friends often complain that I don't see them enough

Notes: Items in italic are reverse scored

Appendix 2 Descriptive statistics for language use variables, age, and gender

Variable	Mean	SD	Median	Min	Max	Skew	Kurtosis
i	3.90	2.11	3.94	0	19.15	0.47	1.72
we	0.44	0.62	0.33	0	15.38	11.35	232.44
you	1.46	1.24	1.25	0	11.43	2.95	18.10
shehe	0.51	0.56	0.38	0	5.95	2.81	14.53
they	0.33	0.35	0.28	0	3.23	3.00	15.91
ipron	3.41	1.53	3.55	0	15.62	0.27	4.60
article	4.06	1.50	4.20	0	12.90	-0.17	1.71
verb	33.61	7.24	33.09	13.50	100.00	1.75	10.42
auxverb	6.46	2.29	6.87	0	16.67	-0.85	1.54
past	1.86	1.08	1.89	0	14.29	1.28	10.43
present	7.20	2.56	7.67	0	23.08	-0.72	2.11
future	0.78	0.58	0.75	0	7.69	3.93	33.54
adverb	3.40	1.48	3.55	0	9.43	-0.13	1.35
preps	8.04	2.82	8.54	0	19.23	-0.96	1.02
conj	3.59	1.53	3.82	0	10.67	-0.47	0.50
negate	1.37	0.77	1.37	0	9.09	1.78	12.38
quant	1.75	0.91	1.80	0	10.00	0.95	7.22
number	0.54	0.47	0.51	0	6.94	4.53	46.38
swear	0.33	0.46	0.17	0	4.50	3.02	13.80
family	0.31	0.39	0.20	0	5.66	4.43	39.07
friend	0.22	0.89	0.14	0	37.50	37.23	1543.16
humans	0.62	0.47	0.59	0	4.48	1.89	9.14
posemo	3.58	1.90	3.51	0	50.00	7.77	179.40
anx	0.23	0.26	0.20	0	6.25	8.12	149.51
anger	0.76	0.62	0.66	0	4.78	1.54	3.72
sad	0.41	0.38	0.37	0	6.38	5.31	63.10
insight	1.45	0.83	1.46	0	9.52	1.66	11.11
cause	0.94	0.60	0.94	0	7.69	2.10	14.55
discrep	1.22	0.75	1.22	0	15.38	4.10	65.55
tentat	1.76	0.91	1.80	0	7.14	0.46	2.36
certain	1.08	0.71	1.04	0	10	2.98	26.24
inhib	0.38	0.39	0.36	0	7.14	6.81	86.05
incl	2.63	1.31	2.77	0	17.65	1.18	13.63
excl	1.83	0.96	1.89	0	9.52	0.99	7.39
see	0.74	0.58	0.73	0	9.09	4.93	57.22
hear	0.43	0.46	0.39	0	9.09	8.77	143.10
feel	0.46	0.38	0.45	0	6.67	4.84	62.21
body	0.67	0.47	0.64	0	4.73	1.27	5.89
health	0.60	0.54	0.55	0	11.11	7.18	111.63
sexual	0.44	0.44	0.34	0	3.70	2.16	7.79
ingest	0.36	0.37	0.30	0	7.69	5.07	77.29
motion	1.46	0.89	1.46	0	10.64	2.78	21.58
space	3.86	1.65	4.03	0	14.29	0.69	6.99
time	5.08	2.29	5.18	0	37.50	1.56	21.55
work	1.31	1.02	1.15	0	11.11	2.82	16.05
achieve	1.16	0.80	1.12	0	14.29	4.07	46.85
leisure	1.19	0.85	1.14	0	14.29	3.72	39.36
home	0.41	0.37	0.35	0	5.02	2.21	14.75
money	0.37	0.35	0.33	0	4.76	3.25	23.97
relig	0.44	0.56	0.34	0	12.50	7.98	131.66
death	0.19	0.28	0.13	0	5.00	6.34	76.81
assent	0.56	0.52	0.47	0	4.69	2.21	9.01
nonfl	0.16	0.28	0.11	0	5.78	9.48	136.64
filler	0.22	0.28	0.19	0	5.56	7.67	107.33
age	26.02	9.73	22	14	75	1.72	2.82
gender	55% female						

Notes: Language variable values are percentages of words used by an individual falling into the respective group. N= 1,991. All variables were normalised before they were entered into the model.

Appendix 3 Coefficients for models predicting values from Facebook like topics

	conBin	traBin	benBin	uniBin	selBin	stiBin	hedBin	achBin	powBin	secBin
(Intercept)	-2.217	-0.762	-1.621	-2.857	0.406	-2.233	1.201	1.280	3.482	-0.596
Megan_Fox, Natalie_Portman, Jessica_Alba, Angelina_Jolie, Eva_Mendes	0.033	0.036	0.080	-0.013	-0.044	-0.042	-0.002	-0.021	0.004	0.015
Adam_Sandler, Will_Smith, Jack_Black, Robin_Williams, Ben_Stiller	-0.009	0.008	0.051	0.000	0.022	-0.006	-0.003	0.014	-0.037	-0.025
Jake_Gyllenhaal, Ryan_Reynolds, Ashton_Kutcher, Johnny_Depp, Leonardo_DiCaprio	0.009	0.025	0.034	0.032	-0.028	-0.012	0.004	-0.048	0.060	0.019
Johnny_Depp, Leonardo_DiCaprio, Christian_Bale, Bruce_Willis, Tom_Hanks	0.003	-0.007	0.021	0.000	0.009	-0.022	0.005	0.014	0.001	0.007
Christopher_Walken, Bill_Murray, Clark_Griswold, ShitMyDadSays, Kevin_Smith	0.006	0.013	0.007	-0.019	-0.011	-0.010	-0.001	-0.001	0.000	0.000
age	0.079	0.024	0.061	0.055	-0.005	-0.091	-0.043	-0.067	-0.089	0.011
PostSecret, Cyanide_&_Happiness, John_Green, Looking_for_Alaska, Bo_Burnham	0.011	-0.011	0.065	0.012	0.029	-0.010	0.004	0.005	-0.079	-0.059
Manga, Anime, One_Manga, Vocaloid, deviantART.com	-0.015	-0.024	-0.032	0.024	0.004	0.005	-0.013	0.001	0.001	0.000
Naruto, Death_Note, bleach, One_Manga, Anime	0.002	0.017	0.000	0.009	-0.007	-0.004	-0.020	0.001	0.009	0.000
Gaia_Online, Anime, Manga, deviantART.com, zOMG!	0.019	0.016	0.033	0.000	-0.015	-0.023	-0.024	-0.019	0.000	0.008
Edgar_Allen_Poe, Oscar_Wilde, Shakespeare, Mark_Twain, Leo_Tolstoy	0.006	0.006	0.027	0.009	0.003	-0.005	0.007	0.000	-0.002	0.000
Stephen_King, James_Patterson, Dean_Koontz, Dan_Brown, Anne_Rice	0.021	0.024	0.047	0.029	0.012	-0.042	0.024	-0.001	0.000	0.022
Hamlet, The_Great_Gatsby, Wuthering_Heights, Frankenstein, Macbeth	-0.012	-0.028	0.027	0.057	0.014	-0.021	0.013	-0.003	0.016	0.000
Animal_Farm, George_Orwell, Brave_New_World, Atlas_Shrugged, Ayn_Rand	-0.021	-0.019	-0.037	0.004	0.001	0.008	0.013	0.022	-0.008	0.010
Eragon, Harry_Potter, Eldest, Harry_Potter, Harry_Potter_series	-0.016	0.002	-0.026	0.041	-0.011	0.003	0.027	0.003	0.016	0.003
Angels_and_demons, Harry_Potter, Angels_&_Demons, Dan_Brown, Harry_Potter	-0.014	0.004	-0.016	0.019	-0.035	-0.007	-0.044	-0.001	0.014	0.000
Pride_and_Prejudice, Pride_&_Prejudice, Jane_Eyre, Sense_and_Sensibility, Jane_Austen	-0.039	0.000	-0.058	-0.026	-0.001	-0.006	-0.012	0.001	0.047	0.002
Bud_Light, Budweiser, Jim_Beam, Bacardi, Captain_Morgan_USA	-0.053	-0.067	-0.029	0.014	0.066	0.021	0.028	0.041	-0.016	-0.016
App_Store, iTunes, Angry_Birds, Facebook_for_Android, Facebook_for_iPhone	0.009	-0.022	0.034	0.011	0.038	-0.001	0.009	0.000	-0.024	-0.012
Sephora, MAC_Cosmetics, Michelle_Phan, Hello_Kitty, Urban_Decay_Cosmetics	0.032	0.015	0.074	0.007	-0.008	-0.034	0.000	-0.001		0.006
Mercedes-Benz, Ferrari, BMW_, Audi_USA, Porsche	-0.044	-0.032	-0.046	0.022	0.026	0.029	0.015	0.017	-0.003	-0.001
NASCAR, Harley-Davidson, Dale_Earnhardt,_Jr., BikerOrNot.com, Jeff_Dunham_	-0.032	-0.029	0.001	0.003	0.053	-0.001	0.047	0.027	0.002	-0.022
Disney, Disney_Pixar, Toy_Story, Minions, Despicable_Me	-0.062	-0.039	-0.035	0.045	0.070	0.039	0.057	0.042	0.000	-0.024
Disney, Walt_Disney_World, Disneyland, Disney_Pixar, Toy_Story	-0.018	-0.003	0.003	0.022	-0.006		0.005	-0.004	0.012	0.000
Hollister_Co., Fred, American_Eagle_Outfitters, Picnik, Picnik	0.003	0.001	-0.021	-0.048	-0.025	-0.001	-0.046	-0.002	0.021	0.001
CHIQ, ShoeDazzle, bebe, Your_Next_Shoes, Net-a-porter.com	0.014	0.012	0.004	-0.003	-0.010	0.000	-0.007	0.001	-0.011	0.006
Victoria's_Secret_Pink, American_Eagle_Outfitters, Forever_21, H&M, Coach	0.004	0.015	0.002	0.003	-0.006	-0.017	0.016	-0.013		0.030
Vogue, H&M, CHANEL, Fashion, Urban_Outfitters	0.028	0.004	0.156	-0.005	0.012	0.059	0.004	0.000	-0.037	-0.006
Hollister_Co., American_Eagle_Outfitters, Abercrombie_&_Fitch, Victoria's_Secret_Pink, Cheerleading	-0.007	0.016	-0.014	0.001	-0.001	0.001	0.007	0.001	0.011	0.002
Target, Redbox, Walmart, Kohl's, Old_Navy	0.012	0.007	0.019	0.001	0.002	-0.001	-0.014	-0.002	-0.014	-0.006
Gucci, CHANEL, Burberry, ZARA, Louis_Vuitton	0.000	-0.013	0.013	0.021	0.000	-0.003	0.002	-0.007	-0.011	0.000
iCarly, Selena_Gomez_, Victorious, Big_Time_Rush, Demi_Lovato	-0.033	-0.034	-0.009	0.002	-0.002	0.000	0.012	0.001	0.014	0.012
Arizona_Iced_Tea, Arizona_Ice_Tea, Slurpee_, Dr_Pepper, Starburst	0.012	0.003	0.034	-0.007	0.001	-0.028	0.000	0.000	0.001	0.000
Nitro_Circus, Travis_Pastrana, Fox_Racing, Rob_Dyrdek, Monster_Energy	-0.040	-0.040	0.024	0.056	0.043	0.003	0.043	0.006	-0.004	-0.044
Skittles, Dr_Pepper, YouTube, Oreo, Reese's	-0.036	-0.004	-0.007	0.021	0.007	0.000	0.015	0.016	0.017	0.009
Skittles, Starburst, Reese's, Oreo, Duck_Tape	0.017	0.001	0.061	0.000	0.025	-0.009	0.000	0.004	-0.005	-0.006
Starburst, Dr_Pepper, Duck_Tape, Sour_Gummy_Worms, Subway	-0.001	0.018	0.010	0.006	-0.008	0.000	0.000	-0.005	-0.001	-0.004

	conBin	traBin	benBin	uniBin	selBin	stiBin	hedBin	achBin	powBin	secBin
Twix, HERSHEY'S, Wendy's, Frosty, Burger_King	0.045	0.039	0.062	-0.032	-0.043	-0.040	0.002	0.001	0.012	0.062
Taco_Bell, Coca-Cola, Oreo, Skittles, Dr_Pepper	0.027	0.011	0.044	-0.010	-0.033	-0.026	0.007	0.001	0.018	0.044
Whole_Foods_Market, Food_Inc, Cascadian_Farm, Tom's_Of_Maine, Seventh_Generation	-0.016	-0.013	-0.019	0.011	0.002	0.003	0.007	0.002	0.001	0.000
Mozilla_Firefox, Newegg.com, Computers, Google, Google_Chrome	-0.055	-0.046	-0.038	-0.015	0.056	0.041	0.042	0.039	0.019	-0.029
Adobe_Photoshop, Photography, Adobe_Illustrator, Nikon, Adobe_Photoshop_Lightroom	0.055	0.033	0.098	0.000	-0.010	0.032	0.000	0.012	-0.017	-0.001
Walmart, Target, Walt_Disney_World, Disney, Disneyland	-0.047	-0.043	-0.014	0.070	0.068	0.032	0.043	0.039	-0.019	-0.012
HGTV, Target, Pottery_Barn, Food_Network, Sephora	-0.028	0.010	-0.010	0.026	0.009	0.001	0.013	0.000	0.002	0.002
Victoria's_Secret_Pink, Victoria's_Secret, Secret, CoverGirl, Gillette_Venus	0.017	0.007	0.049	0.046	-0.016	-0.019	0.010	-0.017	-0.002	
Mashable, Twitter, Facebook_Pages, AllFacebook.com, NetworkedBlogs	0.042	0.025	0.011	-0.038	-0.065	-0.024	-0.005	0.000	0.029	0.002
Twitter, Facebook, Twitter, Google_Chrome, YouTube	0.004	-0.017	0.034	0.052	0.029	0.002	0.003	0.004	-0.011	-0.013
Gatorade, Nike_Football, 5_Gum, Nike_Football, NFL	-0.003	-0.001	0.007	0.036	-0.003	-0.001	0.026	0.001	0.000	0.011
Kenneth_Kenny"_McCormick", South_Park, Eric_Cartman, Kyle_Broflovski_, Family_Guy	-0.049	-0.035	-0.038	0.003	0.018	0.028	0.033	0.015	0.004	
Babies_R"_Us", The_Children's_Place, Toys_''R''_Us, Pampers, Old_Navy	0.013	0.017	0.056	-0.023	0.001	-0.005	0.000	0.010	-0.027	-0.013
Finding_Nemo, Up, WALL-E, Toy_Story, Monsters,_Inc.	-0.009	-0.017	-0.077	-0.040	0.013	0.011	-0.014	-0.039	0.039	0.000
Girl,_Interrupted, Cruel_Intentions, Juno, The_Craft, Thirteen	-0.045	-0.072	0.019	0.064	0.084	0.004	0.029	0.023	-0.057	-0.014
Family_Feud, Bejeweled_Blitz, Zuma_Blitz, Wheel_Of_Fortune, UNO	0.004	0.043	0.011	0.002	-0.018	-0.017	-0.001	0.000	-0.012	0.000
Steam, Portal, Minecraft, Valve, Team_Fortress_2	0.014	0.004	0.002	-0.003	-0.007	-0.001	-0.001	-0.008	-0.004	-0.001
Xbox, Red_vs._Blue, Bungie, Halo:_Reach, Modern_Warfare_2	0.001	0.010	0.001	-0.014	-0.023	-0.038	0.000	-0.002	0.001	0.027
Family_Feud, Games, MindJolt_Games, Bejeweled_Blitz, FARKLE	0.037	0.037	0.057	-0.050	-0.061	-0.081	-0.024	-0.003	0.009	0.054
Monopoly, Scrabble, UNO, Apples_to_Apples, Solitaire	-0.037	-0.025	-0.018	0.019	0.032	0.021	0.019	0.019	-0.002	0.001
Mass_Effect_2, Dragon_Age, BioWare, Assassin's_Creed, Fallout	0.033	0.041	0.053	-0.004	-0.022	-0.027	-0.029	0.001	-0.003	0.000
FarmVille, FarmVille_Cows, Zynga_RewardVille, Zynga.org, FarmVille_Sheep	0.005	0.014	-0.004	0.001	-0.024	-0.014	-0.035	-0.005	0.019	-0.004
FarmVille, FarmVille_Cows, Zoo_World, FarmVille_Sheep, PetVille	0.106	0.120	0.136	0.018	-0.113	-0.187	-0.015	0.000	0.023	0.107
FarmVille, PetVille, FishVille, FrontierVille, YoVille	-0.005	0.016	-0.011	0.000	0.002	0.001	0.001	0.003	0.005	0.002
FrontierVille, FarmVille, CityVille, Zynga_RewardVille, PetVille	0.039	0.037	0.046	-0.017	-0.014	-0.029	-0.003	0.004	0.000	0.031
Happy_Aquarium, Happy_Pets, CrowdStar, Happy_Island, Zoo_Paradise	-0.007	0.009	-0.015	-0.018	-0.010	0.006	0.013	0.000	0.009	0.011
Restaurant_City, Pet_Society, Hotel_City, Playfish, Country_Story	-0.006	0.003	0.013	0.029	0.013	0.002	0.026	-0.001	0.000	
SuperPoke!_Pets, Sorority_Life, SuperPoke!_Pets, YoVille, PetVille	-0.044	-0.067	-0.012	0.042	0.073	0.028	0.027	0.035	-0.036	-0.029
Happy_Island, Zoo_World, Island_Paradise, Tiki_Resort, Happy_Pets	-0.007	-0.003	0.027	-0.017	0.000	-0.020	0.008	0.015	0.000	0.017
Castle_Age, Vampire_Wars, Mafia_Wars, Ninja_Warz, Backyard_Monsters	0.026	0.042	0.042	-0.005	-0.013	-0.011	-0.027	-0.004	0.002	0.029
Mafia_Wars, Texas_Hold'em_Poker, Zynga_Inc., Zynga_RewardVille, Spockholm_Mafia_Tools	0.015	-0.018	0.052	0.002	0.013		0.000	-0.002	0.004	0.005
Mafia_Wars, FrontierVille, Texas_Hold'em_Poker, Social_City, Millionaire_City	0.001	-0.023	0.011	0.031	0.030	0.013	-0.009	-0.005	-0.013	-0.038
Super_Mario_Bros., Sonic_The_Hedgehog, Super_Mario_64, Mortal_Kombat, Mario_Kart	-0.012	-0.037	0.002	0.000	0.041	0.000	0.025	0.027	0.000	-0.019
Pokemon, Original_Pokì©mon, Pokemon, Sonic_The_Hedgehog, Pokemon	0.015	0.000	0.018	0.006	-0.002	-0.002	-0.001	-0.006	0.000	
Blizzard, StarCraft, Warcraft, Diablo, League_of_Legends	-0.002	-0.021	0.042	0.020	0.038	-0.001	0.032	0.023	-0.035	-0.027
Kingdom_Hearts, Final_Fantasy_VII, Final_Fantasy_X, PlayStation, Video_Games	0.007	-0.001	0.029	0.072	-0.004	0.000	0.050	-0.064	0.023	0.025
Fable_2, Fable_III, Left_4_Dead, Xbox, Assassin's_Creed	-0.038	-0.033	-0.014	0.019	0.027	0.000	0.044	0.060	-0.003	0.002
gender	0.427	-0.108	0.086	4.248	-0.705	-0.043	-0.003	-0.732	-0.186	0.103
Trey_Songz, Gucci_Mane, The_Game"", Nicki_Minaj, Waka_Flocka_Flame	0.000	-0.009	0.007	0.058	0.028	0.022	-0.001	-0.001	-0.011	-0.017
DJ_Pauly_D, Jersey_Shore, Mike_The_Situation"", JWOWW, Snookie	-0.026	-0.009	-0.014	-0.007	0.011	0.016	0.025	0.018	0.024	0.004

	conBin	traBin	benBin	uniBin	selBin	stiBin	hedBin	achBin	powBin	secBin
Star_Wars, I_Am_Legend, Little_Miss_Sunshine, Ghostbusters, Forrest_Gump(1994)	0.000	-0.021	-0.068	0.027	0.007	0.054	0.007	-0.008	-0.002	0.002
Shrek, Avatar, Kung_Fu_Panda, WALL-E, Finding_Nemo	0.016	0.021	0.014	-0.018	0.011	-0.001	-0.001	-0.001	0.000	0.000
Amelie, Black_Swan, Love_Actually, Slumdog_Millionaire, Juno	0.001	-0.018	-0.011	-0.001	0.025	0.005	0.014	0.002	-0.004	0.020
Salt, Grown_Ups, Inception, Avatar, The_Other_Guys	-0.001	-0.005	0.024	0.011	0.016	-0.001	0.025	0.004	0.000	0.007
Iron_Man, Iron_Man_2, Transformers, X-Men_Movies, Avatar	-0.030	-0.023	0.000	0.002	0.021	-0.001	0.042	0.038	0.007	-0.001
Crank, Glass, Impulse, Go_Ask_Alice, Burned	0.007	0.000	0.044	0.037	-0.001	0.007	0.007	-0.003	-0.003	0.004
Pulp_Fiction, Fight_Club, Kill_Bill, Inglourious_Basterds, Pulp_Fiction	-0.010	-0.034	0.043	0.020	0.066	-0.020	0.013	0.029	-0.035	-0.050
Wanted, Death_Race, Fast_&_Furious, Crank, The_Transporter	-0.033	-0.033	-0.032	0.011	0.038	0.027	0.034	0.018	-0.009	0.000
Pulp_Fiction, The_Departed, Fight_Club, Shawshank_Redemption, V_for_Vendetta	-0.007	0.003	-0.014	-0.006	0.010	0.005	0.001	0.000	0.007	0.000
Gladiator, 300, Braveheart, Troy, Star_Wars	0.020	0.010	0.036	-0.006	0.006	-0.001	-0.003	0.009	-0.006	0.000
Transformers, Transformers, Transformers2, Avatar, Iron_Man	-0.063	-0.025	-0.053	0.008	0.051	0.022	0.026	0.000	0.002	0.000
Rush_Hour, Rush_Hour_2, Rush_Hour_3, Will_Smith, Family_Guy	-0.051	0.022	-0.057	0.078	-0.027	0.003	0.026	-0.011	0.060	0.016
Ocean's_Eleven, The_Bourne_Supremacy, Die_Hard, The_Bourne_Ultimatum, Bourne_Identity	-0.010	-0.003	-0.001	0.035	0.035	0.001	0.021	0.021	-0.002	
Aladdin, The_Little_Mermaid, The_Lion_King, Mulan, Finding_Nemo	-0.004	-0.005	0.029	0.007	0.016	-0.001	-0.010	0.000	0.004	0.018
Breakfast_at_Tiffany's, Casablanca, Audrey_Hepburn, Roman_Holiday, Rear_Window	-0.057	0.032	-0.052	0.059	-0.054	0.004	0.002	0.008		0.017
Anchorman, Superbad, Wedding_Crashers, Old_School, Knocked_Up	0.030	0.025	0.021	-0.003	-0.008	0.000	-0.015	-0.006	-0.003	0.008
Superbad, The_Hangover, Step_Brothers, Family_Guy, Pineapple_Express	-0.007	0.000	-0.042	-0.023	-0.012	0.011	0.001	-0.022	0.033	0.004
Jackie_Chan, Vin_Diesel, Jet_Li, Will_Smith, Adam_Sandler	-0.018	-0.001	0.033	0.039	0.001	-0.004	0.033	0.006	0.020	0.001
Marvel, Batman, DC_Comics, X-Men_Movies, Iron_Man	0.006	0.014	-0.002	0.025	0.020	0.014	0.014	-0.018	-0.001	0.018
Mean_Girls, Step_Up, Shopping_mall, Dancing, Bring_It_On	-0.007	-0.013	0.018	0.000	0.026	-0.001	0.013	0.016	-0.020	-0.023
Shawshank_Redemption, The_Green_Mile, Inception, Forrest_Gump, Forest_Gump	-0.020	-0.010	0.000	0.014	0.012	0.009	0.006	-0.012	0.000	0.001
The_Lovely_Bones, My_Sister's_Keeper, Juno, Glee, The_Kite_Runner	0.047	0.015	0.059	-0.005	-0.023	-0.023	0.000		0.005	0.030
Dear_John, The_Notebook, The_Last_Song, The_Last_Song, The_Notebook	-0.001	-0.006	0.038	0.001	0.007	-0.021	0.001	0.007	-0.006	-0.004
Shawshank_Redemption, A_Beautiful_Mind, Schindler's_List, The_Sixth_Sense, The_Pianist	-0.015	-0.012	-0.040	0.020	0.030	0.010	0.003	-0.001	0.002	0.001
Star_Trek, Stargate_SG-1, Star_Trek, Stargate_Atlantis, Stargate	-0.020	-0.014	0.027	0.005	0.042	0.004		0.004	0.001	-0.020
Disney, Toy_Story, Harry_Potter, Disney_Pixar, Finding_Nemo	-0.023	0.015	0.013	0.001	-0.002	-0.013	0.000	0.007	0.002	0.024
National_Treasure, Shrek_2, X-Men_Movies, The_Mummy, Spider-Man	0.015	0.014	0.026	0.017	0.000	-0.011	0.006	0.003	0.003	0.001
Edward_Scissorhands, Alice_in_Wonderland, SWEENEY_TODD, Corpse_Bride, Coraline	-0.025	-0.012	0.003	0.036	0.009	-0.001	0.000	0.000	-0.005	0.009
The_Hunger_Games, Catching_Fire, Hunger_Games, Mockingjay, Harry_Potter	-0.016	-0.020	-0.006	0.039	0.061	0.013	0.014	0.020	-0.018	-0.031
Star_Wars, Star_Trek, Star_Trek, Indiana_Jones, The_Hobbit	-0.001	0.008	0.049	-0.001	0.010	0.022	0.009	0.000	-0.005	0.000
Underworld, Resident_Evil_Movie, Underworld:_Evolution, Underworld_2, X-Men_Movies	0.000	0.004	0.023	0.002	-0.005	0.000	0.003	0.008	0.003	0.007
Alien, Predator, Terminator, Terminator_2_(T2), Jurassic_Park	0.030	0.033	0.034	-0.003	-0.027	-0.032	-0.010	-0.032	0.004	0.031
Scarface, The_Godfather, Goodfellas, Casino, Goodfellas	0.001	0.001	0.003	-0.010	0.000	-0.002	-0.012	0.003	-0.001	-0.002
Harry_Potter, Harry_Potter, Emma_Watson, Harry_Potter_series, J._K._Rowling	0.001	0.001	0.005	-0.021	0.015	-0.022	-0.016	-0.011	0.011	-0.023
Stephen_King, Halloween, Saw, Friday_the_13th, Hannibal	0.009	0.003	-0.018	0.011	0.017	0.000	-0.001	-0.020	0.012	0.013
Saw, Saw_II, Saw_1, Saw_III, Scary_Movie_2	-0.027	0.011	0.025	0.031	0.088	-0.001	0.030	0.029	-0.003	-0.025
Harry_Potter, Harry_Potter, Harry_Potter_series, The_Twilight_Saga, Glee	-0.022	-0.012	-0.041	0.000	0.001	0.019	0.048	0.012	0.010	
The_Proposal, 27_Dresses, Bride_Wars, Letters_to_Juliet, Valentine's_Day	0.005	-0.020	0.039	0.024	0.026	0.000	-0.009	0.000	-0.019	-0.041
Dirty_Dancing, Grease, The_Notebook, Pretty_Woman, Titanic	0.001	0.001	0.089	0.033	-0.004	-0.046	-0.012	0.064	0.002	0.004
The_Breakfast_Club, 16_Candles, Pretty_in_Pink, Breakfast_Club, Dirty_Dancing	0.048	0.060	0.035	-0.028	-0.040	-0.039	-0.028	-0.014	0.000	0.040

	conBin	traBin	benBin	uniBin	selBin	stiBin	hedBin	achBin	powBin	secBin
Pretty_Woman, Sweet_Home_Alabama, You've_Got_Mail, FRIENDS_(TV_Show), The_Holiday	0.019	0.043	0.019	0.012	-0.036	-0.021	0.002	-0.005	0.020	0.012
Pulp_Fiction, Fight_Club, Star_Wars, V_For_Vendetta, American_Beauty	-0.025	-0.060	-0.032	0.015	0.019	0.026	0.009	0.039	0.011	-0.018
The_Twilight_Saga, Twilight, Team_Twilight, Robert_Pattinson, Twilight	0.014	0.012	-0.028	-0.023	-0.030	-0.001	-0.013	-0.010	0.034	0.022
Eclipse, New_Moon, Twilight, Breaking_Dawn, New_Moon	-0.016	-0.027	-0.008	0.041	0.013	0.014	0.025	-0.003	-0.015	0.000
The_Twilight_Saga, Twilight, Team_Twilight, New_Moon, Twilight	0.014	0.012	0.001	-0.019	-0.021	-0.031	-0.003	0.000	0.017	0.034
Gladiator, Braveheart, 300, Troy, The_Patriot	0.013	0.001	0.068	0.020	0.018	0.020	0.000	0.005	-0.037	-0.013
Within_Temptation, Evanescence, Nightwish, Linkin_Park, Flyleaf	-0.013	0.000	-0.030	0.003	-0.019	0.000	-0.001	-0.015	0.009	0.002
John_Mayer, Jason_Mraz, Jack_Johnson, Coldplay, The_Beatles	0.000	-0.009	-0.004	-0.013	0.019	0.002	0.000	0.005	0.013	0.000
The_Beatles, AC/DC, Queen, Bon_Jovi, Metallica	-0.037	-0.008	-0.012	0.014	0.039	0.003	0.022	0.009	-0.024	-0.005
Jack_Johnson, Dave_Matthews_Band, Coldplay, John_Mayer, Ray_Lamontagne	-0.043	-0.016	-0.018	0.001	0.008	0.025	0.003	0.000	0.001	0.000
Arctic_Monkeys, The_Killers, The_Strokes, Muse, MGMT	0.018	0.017	0.032	-0.015	-0.009	-0.030	-0.001	-0.002	0.003	0.012
MGMT, Vampire_Weekend, Passion_Pit, Phoenix, Mumford_and_Sons	-0.040	-0.030	-0.013	0.001	0.042	0.008	0.032	0.031	0.000	-0.011
Kid_Cudi, Lil_Wayne, Drake, Wiz_Khalifa, Bob_Marley	0.054	0.005	0.002	-0.022	-0.031	0.000	-0.030	-0.042	0.000	0.003
Katy_Perry, Bruno_Mars, Jason_Derulo, Kesha, Taio_Cruz	-0.030	-0.006	-0.021	0.031	0.013	0.002	0.025	0.017	0.000	-0.006
Beethoven, Mozart, Bach, Chopin, Frì©dì©ric_Chopin	0.039	-0.002	0.037	-0.004	-0.003	0.001	-0.012	-0.016	-0.013	-0.003
Pink_Floyd, The_Beatles, The_Doors, Bob_Marley, Nirvana	-0.016	0.002	-0.048	-0.006	0.005	0.024	0.000	0.001		0.000
Frank_Sinatra, Ella_Fitzgerald, Dean_Martin, Frank_Sinatra, Billie_Holiday	-0.019	0.000	0.016	0.021	0.040	0.002	0.013	0.004	-0.035	-0.002
Bob_Dylan, Johnny_Cash, Eric_Clapton, Neil_Young, Janis_Joplin	-0.003	-0.025	0.031	0.011	0.056	0.004	0.004	0.002	-0.045	-0.014
The_Beatles, John_Lennon, Paul_McCartney, Pink_Floyd, The_Doors	0.016	-0.005	0.054	0.010	-0.011	-0.031	-0.001	0.000	0.000	-0.010
Madonna, U2, Sting, Phil_Collins, Enya	0.029	-0.009	0.093	0.021	0.018	-0.011	0.000	0.016	-0.026	-0.036
The_Smiths, The_Cure, David_Bowie_(Official), Depeche_Mode, Joy_Division	0.036	0.051	0.082	0.009	-0.015	0.000	-0.066	-0.037	-0.048	-0.016
Jason_Aldean, George_Strait, Country_music, 8_Seconds, Zac_Brown_Band	-0.021	-0.010	-0.023	0.042	0.005	0.010	0.022	0.011	0.019	0.000
Jason_Aldean, Kenny_Chesney, Tim_McGraw, Brad_Paisley, Zac_Brown_Band	-0.061	-0.025	-0.059	0.022	0.004	0.000	0.049	0.017	0.062	0.029
House, Bones, Criminal_Minds, NCIS, Dr._House	0.028	0.009	0.041	-0.004	-0.022	-0.033	-0.006	-0.012	0.008	0.000
Tiesto, Armin_van_Buuren, David_Guetta, deadmau5, Paul_Van_Dyk	0.007	0.002	0.043	0.017	0.000	-0.010	0.006	0.001	-0.013	-0.012
Daft_Punk, MGMT, Bjì¦rk, Massive_Attack, Justice	-0.002	0.001	-0.021	0.003	-0.003	0.006	-0.003	0.004	0.000	0.000
Techno, Trance_music, House_music, deadmau5, Daft_Punk	-0.076	-0.072	-0.081	0.033	0.102	0.062	0.037	0.022	-0.050	-0.027
Kelly_Clarkson, Carrie_Underwood, Avril_Lavigne, Taylor_Swift, Christina_Aguilera	-0.071	-0.034	-0.069	0.006	0.000	0.016	0.060	0.035	0.067	0.029
Adele, Ingrid_Michaelson, Regina_Spektor, Jason_Mraz, Sara_Bareilles	0.029	-0.012	0.028	0.019	0.019	-0.003	-0.001	-0.026	-0.001	-0.017
Regina_Spektor, The_Decemberists, Iron_&_Wine, The_Postal_Service, The_Dresden_Dolls	0.014	0.000	0.025	0.015	-0.002	0.000	0.000	-0.022	-0.018	0.007
New_Boyz, Tyga, Lil_Twist, The_Boondocks, Wiz_Khalifa	0.001	0.003	-0.004	-0.001	0.006	0.007	-0.028	0.011		-0.008
Lil_Wayne, Drake, Wiz_Khalifa, Gucci_Mane, Nicki_Minaj	0.029	0.010	-0.002	-0.031	-0.004	0.006	-0.011	0.000	0.009	0.015
Lil_Wayne, Eminem, Usher, AKON, Drake	-0.025	0.019	0.049	0.028	0.034	0.000	0.028	0.009	-0.020	-0.046
Hip_hop_music, Rap, R&B, R_and_B, Hip_hop	0.001	0.025	0.018	0.001	-0.020	-0.041	0.000	0.023	-0.007	0.014
Wu-Tang, Atmosphere, Wu-Tang_Clan, Mos_Def_Official, Common	-0.005	-0.019	-0.014	0.006	-0.014	0.007	0.010	0.001	0.006	0.013
Lil_Wayne, Drake, Rihanna, Beyoncì©, Eminem	-0.067	0.054	-0.018	0.007	0.053	0.011	0.042	0.051	0.000	-0.010
Lupe_Fiasco, Kid_Cudi, Wiz_Khalifa, Kanye_West, Wale	0.003	0.011	0.009	-0.002	0.000	0.006	0.003	0.000	0.000	0.016
Lil_Wayne, AKON, Drake, Usher, T.I.	0.000	-0.009	-0.018	0.058	-0.001	0.019	0.001	-0.010	-0.001	0.021
2pac, Snoop_Dogg, Dr_Dre, Ludacris, Ice_Cube	-0.008	0.020	0.013	0.004	-0.011	-0.025	0.008	0.010	0.021	0.018
Lil_Wayne, Drake, T.I., Eminem, Nicki_Minaj	-0.057	-0.061	-0.026	0.012	0.062	0.009	0.010	0.009	-0.011	-0.029
Justin_Timberlake, Black_Eyed_Peas, Shakira, Fergie, Beyoncì©	-0.001	0.006	0.024	-0.050	-0.003	-0.049	-0.027	0.012	0.016	-0.019

	conBin	traBin	benBin	uniBin	selBin	stiBin	hedBin	achBin	powBin	secBin
Miles_Davis, John_Coltrane, Thelonious_Monk, John_William_Coltrane, Jazz	-0.036	-0.028	-0.011	-0.006	0.045		0.039	0.024	0.015	-0.017
Wisin_&_Yandel, Daddy_Yankee, Don_Omar, Juanes, Shakira	-0.011	0.002	0.000	0.016	0.016	0.006	0.032	0.029	-0.014	-0.002
Marching_band, Band, Drum_Corps_International, Dr._Beat, Phantom_Regiment	0.011	0.033	-0.025	-0.010	-0.038	-0.006	-0.008	-0.009	0.025	0.030
Saving_Private_Ryan, Band_of_Brothers, Black_Hawk_Down, The_Pacific, Full_Metal_Jacket	-0.013	-0.008	-0.001	-0.005	0.009	0.001	0.000	0.002	0.000	0.000
Disturbed, Avenged_Sevenfold, Slipknot, Korn, Metallica	-0.050	-0.022	-0.072	-0.040	0.011	0.010	0.012	0.002	0.037	-0.001
Slayer_band, Cannibal_Corpse, Megadeth, BEHEMOTH!, Pantera	-0.029	0.000	-0.002	0.028	0.034	0.000	0.027	-0.001	-0.010	0.001
Slipknot, Korn, Marilyn_Manson, Disturbed, HIM	-0.002	0.019	0.048	-0.003	0.044	0.023	0.045	0.000	-0.018	-0.055
Disturbed, Metallica, Slipknot, Korn, Linkin_Park	0.005	0.028	0.001	-0.003	-0.023	0.000	0.000	0.013	0.000	0.005
Bad_Religion, Rancid, Social_Distortion, NOFX, Dead_Kennedys	0.024	-0.001	0.049	0.027	0.018	0.000	-0.002	0.001	-0.023	-0.022
Pantera, Megadeth, Metallica, Slipknot, Dimebag_Darrell	-0.024	-0.032	0.000	0.001	0.034	0.001	0.010	0.024	-0.005	-0.019
Motley_Crue, Guns_N'_Roses, KISS, Def_Leppard, Van_Halen	-0.019	0.000	0.004	0.006	0.011	0.002	0.000	0.001	0.000	0.000
Selena_Gomez_, Miley_Cyrus, Taylor_Swift, Demi_Lovato, Justin_Bieber	-0.008	-0.004	0.006	0.003	0.016	-0.001	0.027	0.015	0.005	-0.001
The_Fray, John_Mayer, Jason_Mraz, Lifehouse, Coldplay	0.003	-0.039	0.047	-0.001	0.030	-0.026	0.000	-0.006	0.002	-0.016
Backstreet_Boys, Westlife, Enrique_Iglesias, AKON, Shakira	-0.035	-0.009	-0.023	0.057	0.044	0.048	0.051	0.028	-0.007	0.000
Miley_Cyrus, Taylor_Swift, Selena_Gomez_, Justin_Bieber, Avril_Lavigne	0.002	0.005	0.033	0.001	0.001	-0.021	-0.017	0.004	-0.001	-0.001
Rihanna, Selena_Gomez_, Lady_Gaga, Taylor_Swift, Shakira	0.000	0.000	-0.037	-0.022	0.023	0.001	-0.014	-0.017	0.031	0.000
Jonas_Brothers, Demi_Lovato, Ashley_Tisdale, Selena_Gomez_, Nick_Jonas	-0.020	0.001	-0.001	0.025	0.034	0.001	0.005	0.001	-0.026	-0.001
Rihanna, Christina_Aguilera, Beyoncì©, Lady_Gaga, Katy_Perry	-0.002	-0.016	0.009	0.054	0.027	0.000	0.005	0.014	-0.012	-0.018
Katy_Perry, Rihanna, Lady_Gaga, Taylor_Swift, Avril_Lavigne	0.010	0.021	0.015	0.017	0.004	-0.001	0.011	0.003	0.000	0.006
Sam_Tsui, Owl_City, Taylor_Swift, Glee, Jason_Mraz	-0.022	0.042	0.025	0.058	0.059	0.001	0.000	0.026	-0.019	-0.018
Lady_Gaga, Rihanna, Katy_Perry, Shakira, Black_Eyed_Peas	0.003	0.020	0.018	-0.001	-0.006	0.000	-0.001	0.006	-0.018	-0.002
Paramore, Linkin_Park, Green_Day, Evanescence, My_Chemical_Romance	0.016	0.022	0.045	-0.026	-0.019	-0.028	-0.010	-0.013	0.001	0.013
Paramore, Boys_Like_Girls, Fall_Out_Boy, My_Chemical_Romance, Green_Day	-0.045	-0.023	-0.021	0.000	0.012	0.001	0.046	0.041	0.000	-0.003
Avenged_Sevenfold, My_Chemical_Romance, Green_Day, Linkin_Park, Fall_Out_Boy	-0.001	0.018	0.018	-0.025	0.001	-0.021	0.000	0.002	0.004	0.008
Fall_Out_Boy, The_Fray, Maroon_5, My_Chemical_Romance, The_All-American_Rejects	0.005	0.022	-0.009	-0.013	-0.021	-0.008	-0.018	-0.001		0.027
Official_Blink-182, Green_Day, Sum_41, Rise_Against, Angels_and_Airwaves	-0.001	-0.036	0.082	0.006	0.039	-0.019	0.002	0.015	-0.009	-0.029
Gyptian, Vybz_Kartel, Jah_Cure, Mavado, Reggae	-0.012	-0.011	-0.020	0.009	0.031	0.005	0.015	0.010	-0.023	0.000
Alicia_Keys, Tyler_Perry, Drake, Lil_Wayne, T.I.	-0.043	-0.025	-0.030	0.033	0.036	0.036	0.012	0.036	0.012	-0.001
T.I., Usher, Keri_Hilson, Trey_Songz, Ciara	-0.002	0.007	-0.004	-0.002	0.007	0.000	0.004	0.009	0.004	0.000
Mariah_Carey, Usher, Trey_Songz, Ludacris, Ciara	-0.032	-0.032	-0.024	-0.018	0.001	0.000	0.043	0.030	0.014	0.001
Radiohead, Animal_Collective, Modest_Mouse, Sigur_Rì_s, Arcade_Fire	-0.025	0.013	0.033	0.021	0.058	-0.022	0.033	0.039	-0.018	-0.025
Eric_Clapton, Journey, Carlos_Santana, U2, Queen	0.031	0.028	0.045	-0.007	-0.013	-0.063	0.000	0.000	0.000	0.011
Sublime, Tool, Pink_Floyd, Incubus, A_Perfect_Circle	0.001	0.020	0.031	0.056	0.007	-0.008	0.011	0.004	-0.018	-0.014
Nickelback, Linkin_Park, 3_Doors_Down, Three_Days_Grace, Breaking_Benjamin	-0.001	0.001	0.008	-0.006	0.002	-0.002	0.008	0.000	0.008	-0.023
The_White_Stripes, Weezer, Nirvana, Modest_Mouse, Muse	0.018	-0.001	0.042	0.002	0.017	-0.014	0.017	0.012	-0.020	-0.004
Attack_Attack!, Escape_The_Fate, Alesana, Asking_Alexandria, Chiodos	0.007	-0.018	0.021	0.005	0.033	-0.001	0.011	0.004	-0.022	0.000
Three_Days_Grace, Breaking_Benjamin, Linkin_Park, Paramore, Evanescence	-0.050	-0.017	0.000	0.032	0.012	0.004	0.022	0.027	-0.009	-0.027
Disturbed, Metallica, Seether, Godsmack, Nickelback	-0.005	0.030	-0.034	-0.006	-0.004	0.000	0.000	0.000	0.004	0.022
Taking_Back_Sunday, The_Used, Dashboard_Confessional, AFI, Anberlin	0.059	0.026	0.107	0.022	0.021	-0.052	-0.011	-0.047	-0.031	-0.026
Chevelle, Seether, Disturbed, Breaking_Benjamin, Staind	0.000	0.031	-0.027	0.020	0.033	0.037	0.002	0.000	-0.013	-0.001
Metallica, AC/DC, Guns_N'_Roses, Bon_Jovi, Linkin_Park	-0.063	-0.049	-0.020	-0.013	0.038	0.002	0.063	0.055	-0.001	-0.007

	conBin	traBin	benBin	uniBin	selBin	stiBin	hedBin	achBin	powBin	secBin
Tool, Alice_in_Chains, A_Perfect_Circle, Nine_Inch_Nails, Soundgarden	-0.016	-0.012	-0.011	-0.002	0.021	0.000	0.014	0.008	0.000	0.000
Nine_Inch_Nails, Mindless_Self_Indulgence, Rammstein, Marilyn_Manson, Depeche_Mode	0.007	0.025	-0.003	-0.006	-0.018	-0.001	-0.004	0.004	0.000	0.037
Journey, The_Eagles, Boston, Queen, Billy_Joel	0.021	0.021	0.045	0.001	-0.014	-0.030	0.000	-0.001		0.019
Coldplay, Muse, U2, Radiohead, Pink_Floyd	-0.039	-0.016	-0.032	0.003	0.021	0.000	0.049	0.031	0.000	-0.006
Nine_Inch_Nails, Beastie_Boys, The_Smashing_Pumpkins, Nirvana, Sublime	0.030	0.015	0.034	-0.028	-0.032	0.009	-0.019	-0.028	-0.019	0.000
AC/DC, Metallica, Pink_Floyd, Black_Sabbath, Ozzy_Osbourne	-0.009	-0.015	0.018	0.029	0.007		0.006	0.005	0.007	-0.002
Erykah_Badu, Sade, Maxwell, Common, John_Legend	0.001	0.004	-0.036	-0.007	-0.023	0.000	-0.024	-0.002	0.011	0.000
American_Idol, Adam_Lambert, Kris_Allen, David_Cook, Glee	-0.020	0.039	0.048	0.003	0.051		-0.003	0.029	-0.001	-0.018
causes.com, causes.com, Fight_Animal_Cruelty, Thank_A_Soldier, Stop-Pit-bull_Fighting	-0.032	0.038	-0.013	0.003	-0.044	0.029	0.044	0.019	-0.001	-0.025
Human_Rights_Campaign, Kathy_Griffin, NO_H8_Campaign, DailyJocks.com, Official_2(x)ist	-0.028	0.038	0.000	0.001	0.040	0.001	0.020	0.007	-0.001	-0.008
Sarah_Palin, Being_Conservative, Glenn_Beck, Conservative, Fox_News	0.028	0.000	0.009	0.014	-0.001	0.000	-0.001	-0.003	-0.002	-0.004
Barack_Obama, Michelle_Obama, The_Daily_Show, Bill_Maher, Democrats	0.006	-0.008	0.001	-0.006	0.032	0.000	0.022	0.003	-0.001	-0.011
The_Economist, Robert_Kiyosaki, CNN, Harvard_Business_Review, Donald_J._Trump	-0.029	-0.026	-0.066	0.004	-0.024	0.007	0.001	-0.028	0.026	0.001
Human_Rights_Campaign, NO_H8_Campaign, The_L_Word, Gay_Marriage, Day_of_Silence	-0.023	-0.018	0.021	0.017	0.055	0.003	0.036	0.009	-0.015	-0.014
Amnesty_International_USA, Greenpeace_International, WWF, The_Nature_Conservancy, Earth_Hour	-0.005	0.031	0.016	0.003	-0.019	0.002	-0.013	0.004	-0.003	0.000
RightChange, FreedomWorks, Being_Conservative, Conservative, Glenn_Beck	0.015	0.011	0.036	-0.014	-0.017	-0.037	0.000	0.000	-0.012	0.015
Barack_Obama, CNN, Michelle_Obama, Anderson_Cooper_360, The_White_House	-0.009	-0.001	-0.005	0.002	0.019	0.001	0.026	0.026	0.000	0.016
Volleyball, Basketball, Softball, Sports, Soccer	0.000	0.000	0.046	0.049	0.020	0.001	0.003	0.001	-0.016	-0.003
Roger_Federer, Rafael_Nadal, Tennis, Maria_Sharapova, Michael_Phelps	-0.079	0.043	-0.070	0.044	0.017	0.034	0.070	0.057	0.008	0.009
Michael_Phelps, Lance_Armstrong, Running, Hiking, The_Olympic_Games	-0.022	0.026	0.006	0.011	0.030	0.000	0.032	0.042	-0.005	-0.017
Track_&_Field, Running, Track, Soccer, Sports	0.016	-0.006	0.059	0.000	0.033	0.019	0.003	0.004	-0.033	-0.025
Basketball, Tennis, Volleyball, Soccer, Bowling	0.024	0.008	0.008	-0.038	-0.042	-0.050	-0.002	0.000	0.003	0.038
NFL, ESPN, New_England_Patriots, Chad_Ochocinco, Troy_Polamalu	-0.022	-0.003	0.006	-0.002	0.010	-0.002	0.001	0.010	0.029	-0.017
Remember_the_Titans, Coach_Carter, Step_Up, Basketball, Friday_Night_Lights	0.040	0.020	0.052	-0.004	-0.046	-0.009	-0.008	-0.071	0.000	0.002
SportsCenter, ESPN, Baseball, Sports, NFL	-0.037	-0.034	-0.009	0.013	0.008	-0.002	0.011	0.008	0.011	0.012
Green_Bay_Packers, Aaron_Rodgers, Milwaukee_Brewers, Wisconsin_Badgers, Donald_Driver	-0.001	0.007	0.012	0.011	0.024	0.006	0.004	0.011	-0.036	-0.010
Michael_Jordan, LeBron_James, Kobe_Bryant, NBA, LA_Lakers	0.003	-0.007	0.006	0.032	0.013	-0.008	-0.036	0.000	0.002	-0.003
LA_Lakers, Kobe_Bryant, Michael_Jordan, NBA, Basketball	-0.038	0.024	-0.018	0.006	0.029	0.005	0.061	0.048	0.000	-0.014
Boston_Celtics, Rajon_Rondo, NBA, Basketball, LeBron_James	-0.019	-0.018	-0.009	0.017	0.036	0.014	0.013	0.024	-0.004	-0.005
Skateboarding, Snowboarding, DC_Shoes, Rob_Dyrdek, Shaun_White	0.017	0.004	0.034	-0.005	-0.001	-0.025	-0.007	0.001	-0.015	0.000
Chicago_Bears, Chicago_Cubs, Chicago_Bulls, Chicago_Blackhawks, Chicago_White_Sox	0.026	-0.001	0.071	-0.010	0.016	-0.018	0.004	0.012	-0.011	-0.020
Cristiano_Ronaldo, Manchester_United, David_Beckham, Real_Madrid_C.F., FC_Barcelona	-0.013	-0.015	0.008	0.027	0.042	0.005	0.019	0.011	-0.019	-0.011
FC_Barcelona, Leo_Messi, Manchester_United, Fernando_Torres, Real_Madrid_C.F.	-0.025	-0.023	-0.003	0.043	0.027	0.012	0.023	0.001	-0.022	-0.004
Soccer, Cristiano_Ronaldo, U.S._Soccer, Nike_Football, David_Beckham	0.007	0.017	0.004	0.010	-0.038	0.008	-0.051	-0.003	-0.031	-0.005
SEC_Football, Nick_Saban, Alabama_Crimson_Tide, Paul_Bear"_Bryant", SEC_Football	-0.034	-0.014	0.007	0.000	0.016	0.000	0.023	0.027	-0.010	-0.004
New_York_Yankees, New_York_City, New_York_Giants, NEW_YORK, New_York_Jets	-0.009	-0.027	-0.005	0.006	0.050	0.011	0.013	0.004	0.000	-0.013
Buffalo_Sabres, New_York_Yankees, Upstate_New_York, Buffalo_Bills, Adirondacks	-0.001	0.011	0.032	0.005	0.020	-0.008	0.021	0.010	0.001	-0.002
Hiking, Camping, Snowboarding, Skiing, Biking	-0.032	0.043	-0.010	0.092	0.088	0.035	0.034	0.031	-0.070	-0.034
Hiking, Camping, Running, Traveling, Biking	0.001	0.005	0.024	-0.006	-0.002	-0.003	-0.003		-0.009	-0.002
Wawa, Philadelphia_Phillies, Philadelphia_Eagles, Philadelphia_Flyers, Philadelphia_Phillies	0.070	0.059	0.132	-0.027	-0.046	-0.065	-0.050	-0.002	-0.024	0.008

	conBin	traBin	benBin	uniBin	selBin	stiBin	hedBin	achBin	powBin	secBin
Chris_Rock, Tiger_Woods, Lance_Armstrong, David_Beckham, Maria_Sharapova	-0.058	-0.037	-0.115	-0.010	0.031	0.035	0.069	-0.028	0.099	-0.039
WWE, Wwe, WWE_Raw, TNA_Wrestling, WWE_SmackDown	-0.050	-0.012	-0.017	0.006	0.016	0.002	0.053	0.032	0.028	-0.001
Modern_Family, Official_CHUCK_Page, Fringe, Cougar_Town, Castle	-0.065	-0.031	-0.098	-0.004	0.022	0.000	0.046	-0.008	0.052	-0.021
Entourage, Ari_Gold, Weeds, Dexter, True_Blood	0.032	0.030	0.092	0.002	-0.012	-0.067	0.009	-0.001	0.000	0.006
Supernatural, Jensen_Ackles, Smallville, Charmed, Bones	-0.034	-0.018	-0.013	0.021	0.019	0.003	0.055	0.000	0.023	0.004
Family_Guy, South_Park, The_Simpsons, House, Futurama	-0.007	-0.013	0.004	-0.023	0.002	0.000	0.000	-0.003	-0.003	-0.012
Family_Guy, Dexter, The_Hangover, The_Office, South_Park	-0.054	-0.054	-0.022	0.001	0.048	0.041	0.045	0.038	0.000	-0.034
True_Blood, Dexter, Weeds, Eric_Northman, Nurse_Jackie	-0.002	0.001	0.000	0.018	0.012	0.004	-0.002	-0.007	-0.002	0.000
Family_Guy, Futurama, South_Park, The_Simpsons, American_Dad_	-0.025	0.003	-0.017	0.005	0.003	0.005	0.036	0.008	0.036	0.009
Family_Guy, South_Park, The_Simpsons, Futurama, The_Simpsons	-0.046	-0.054	-0.039	0.026	0.065	0.030	0.039	0.049	-0.013	-0.015
Family_Guy, The_Simpsons, South_Park, Futurama, The_Simpsons	-0.015	-0.022	0.019	0.017	0.054	0.003	0.011	0.001	-0.016	-0.018
Adventure_Time, Chowder, SpongeBob_SquarePants, Cartoon_Network, Patrick_Star	-0.021	-0.041	-0.033	-0.001	0.038	0.007	0.022	0.004	0.007	-0.012
House, Family_Guy, The_Hangover, Dr._House, South_Park	-0.007	0.003	-0.023	-0.002	0.011	0.000	0.005	0.021	0.028	0.000
The_Hangover, Family_Guy, Superbad, Step_Brothers, Futurama	0.002	-0.012	0.029	0.016	0.019	-0.016	-0.003	0.020	0.002	-0.009
The_Office, 30_Rock, Modern_Family, Community, Arrested_Development	-0.017	-0.043	0.063	0.046	0.040	-0.002	0.024	0.081	-0.003	-0.026
Billy_Madison, Happy_Gilmore, Dumb_and_Dumber, The_Waterboy, Big_Daddy	-0.001	-0.001	0.019	0.003	0.018		0.023	0.026	-0.008	0.001
The_Colbert_Report, The_Daily_Show, The_Office, The_Onion, Scrubs	0.004	0.018	-0.006	-0.008	-0.035		0.000	-0.041	0.001	0.004
The_Office, Saturday_Night_Live, The_Lonely_Island, Will_Ferrell, 30_Rock	0.016	0.006	0.032	0.005	0.011	-0.001	-0.001	0.002	-0.012	0.000
Sheldon_Cooper, BAZZINGA!, Scrubs, FRIENDS_(TV_Show), Zach_Braff	-0.030	-0.016	0.014	0.025	0.053	0.001	0.015	0.040	0.000	-0.016
The_Hangover, Grown_Ups, That_'70s_Show, Step_Brothers, Family_Guy	-0.001	-0.007	-0.005	0.032	0.025	0.002	0.000	0.001	-0.025	0.000
Everybody_Loves_Raymond, Full_House, Seinfeld, I_Love_Lucy, The_Golden_Girls	-0.030	-0.031	0.023	0.067	0.075	0.000	0.049	0.013	-0.001	-0.011
CSI:_Miami, NCIS, CSI:_NY, Criminal_Minds, CSI	-0.034	-0.017	-0.027	0.005	0.018	0.004	0.027	0.031	0.012	0.001
Burn_Notice, Psych, NCIS, White_Collar, Royal_Pains	-0.012	0.004	-0.032	0.021	0.003	0.014	0.004	0.000	0.000	0.002
House, NCIS, Dr._House, Criminal_Minds, CSI	-0.002	-0.006	-0.019	0.001	-0.002	0.017	0.009	-0.007	0.010	0.006
Forensic_Files, Intervention_on_A&E, Hoarders_on_A&E, Cold_Case_Files, MAURY	-0.037	-0.014	-0.048	0.028	0.007	0.023	0.008	-0.006		0.000
House, Psych, Burn_Notice, Monk, NCIS	-0.065	-0.045	-0.056	0.002	0.048	0.011	0.069	0.044	0.001	-0.001
Criminal_Minds, NCIS, CSI, CSI:_Miami, Bones	-0.005	-0.012	0.000	0.013	0.007	-0.002	0.001	0.008	0.009	0.000
History, Discovery_Channel, Animal_Planet, National_Geographic, MythBusters	-0.004	0.011	-0.018	0.001	-0.009	-0.003	0.002	-0.001	0.012	0.019
Gossip_Girl, One_Tree_Hill, 90210, Gossip_Girl, The_Vampire_Diaries	-0.012	-0.001	-0.018	0.000	-0.010	0.001	0.003	0.000	0.027	0.008
24, Lost, Prison_Break_, Jack_Bauer, Official_HEROES_Page	-0.024	-0.017	-0.040	0.008	0.039	0.021	0.028	0.033	-0.019	-0.001
The_Vampire_Diaries, The_Twilight_Saga, Supernatural, True_Blood, The_Vampire_Diaries	0.020	0.005	-0.010	-0.002	0.026	0.000	-0.021	-0.012	0.022	0.010
Ghost_Hunters, Ghost_Adventures, Paranormal_Activity, Jason_Hawes/TAPS, Ghost_Whisperer	-0.010	-0.008	-0.004	0.035	0.007	0.003	0.005	0.009	-0.011	0.000
Sue_Sylvester_(GLEE), Glee, Kurt_Hummel_(GLEE), Rachel_Berry_(GLEE), Will_Schuester_(Glee)	0.011	-0.001	0.027	0.027	0.020	0.000	0.000	-0.004	-0.001	0.000
Jackass, Rob_&_Big, Rob_Dyrdek, Viva_La_Bam, Nitro_Circus	-0.005	-0.037	0.021	0.022	0.019	0.005	0.008	0.000	0.000	-0.017
Grey's_Anatomy, Private_Practice, Desperate_Housewives, Grey's_Anatomy, Brothers_and_Sisters	-0.017	-0.063	0.031	0.018	0.028	0.001	0.017	0.013	-0.043	-0.047
House, Dr._House, Hugh_Laurie, Bones, Scrubs	-0.019	-0.006	0.010	0.001	0.007	0.000	0.000	-0.001	-0.001	0.000
Kim_Kardashian, Kourtney_Kardashian, Khloe_Kardashian, Jersey_Shore, The_Hills	-0.036	-0.044	-0.017	0.024	0.020	0.019	0.027	0.022	-0.003	-0.001
Survivor, Big_Brother, American_Idol, The_Amazing_Race, Amazing_Race	0.033	0.047	0.061	0.001	-0.026	-0.021	-0.025	-0.027	-0.007	0.012
House_of_Night, Vampire_Academy, P.C._Cast, House_of_Night, The_Vampire_Diaries	0.003	0.015	0.057	0.023	0.005	-0.026	0.009	0.002	-0.021	-0.004
Rugrats, Doug, Hey_Arnold!, Rocko's_Modern_Life, The_Angry_Beavers	-0.037	-0.044	0.007	0.032	0.080	0.012	0.028	0.020	-0.037	-0.028

	conBin	traBin	benBin	uniBin	selBin	stiBin	hedBin	achBin	powBin	secBin
South_Park, Family_Guy, Futurama, Scrubs, Inception	0.002	-0.002	0.008	0.042	0.024	0.005	0.001	0.005	-0.012	0.000
FRIENDS_(TV_Show), Chandler_Bing, Barney_Stinson, Matthew_Perry, Inception	-0.010	0.029	0.020	-0.004	0.002	-0.048	0.000	0.000	-0.001	0.031
LA_Ink, Tattoo_&_Piercing, Kat_Von_D, Miami_Ink, Tattoos	-0.003	-0.008	-0.002	0.002	0.000	0.000	0.004	0.005	0.000	0.002