

The Psychology of Grocery Shopping by Car

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Abstract:

The aim of the present study is to examine the influence of personality traits and human values on grocery shopping by car. The analysis is based on a survey of 1,694 respondents, representative for the Swedish population. Personality traits were assessed using the Big Five Inventory, BFI-10. Human values were measured through Rokeach Value Survey of terminal values.

Grocery shopping by car is associated with a low degree of the personality trait Openness to experience, which implies ignorance of information and resistance to behavioural change. Grocery shopping by car is also associated to a high degree of conservative values (i.e. security) and a low degree of self-transcendence values (i.e. universalism). We discuss how policy makers and marketers can gain from knowing personality and values among the people who most frequently shop groceries by car.

Keywords: car, grocery shopping, psychology

Track: Consumer behaviour

1. Introduction

Shopping travels in general represent approximately 20 percent of private traveling in developed economies (Guy, 2009; Jiao, Moudon and Drewnowski, 2011). Although numerous efforts have been made to promote other modes of transport, the car continues to be the dominant mode for shopping travels generally (Kent, 2013), and for grocery shopping particularly (Dieleman, Dijst and Burghouw, 2002; Guy, 2009).

The use of cars in grocery shopping is challenged when cities attempt to promote sustainability by introducing pedestrian zones, and congestion charging. Thus, many cities are attempting to reduce car dependence and to promote public transport by various policy measures (Ibrahim, 2003).

Hagberg and Holmberg (2017) have found sociodemographic variables that can help marketers and policy makers to understand grocery shopping by car, such as age, gender, income, presence of children at home and residential location. The effects of psychological values in relation to grocery shopping by car have received less attention. Thus, this paper's goal is to contribute to the understanding of consumer behavior from a psychological perspective in the context of grocery shopping by car. The aim is to investigate how grocery shopping by car is affected by human values and personality traits and how this can be utilized in a policy perspective. Policy implications for states and municipalities are significant as a better understanding of the underlying psycho-logical mechanism can help design better policy measures in order to reduce greenhouse gas emissions related to travel modes (Handy and Krizek, 2012). Transport policy measures applied can be categorized into hard measures, such as regulations and taxes, and soft measures, such as marketing and information (Bamberg, Fujii, Friman, and Gärling, 2011; Cairns et al., 2008).

2. Theoretical Framework

2.1 Personality traits

The most popular model of personality traits is the Five Factor Model of Personality (FFM). It posits that there are five major and universal traits/factors of personality that separate individuals from one another in a way that is relatively consistent and permanent over time (Costa and McCrae, 1992). Openness to experience is described in terms of behavioural flexibility, intellectual curiosity, and unconventional attitudes. People high on Openness to experience enjoy trying new things and usually have a wide range of interests, while people low on Openness to experience tend to be more conservative and cautious.

Conscientiousness is described in terms of responsibility, self-discipline, and dutifulness. People high on Conscientiousness are thorough and efficient, while people low on Conscientiousness are careless and lazy. Extraversion is described in terms of sociability, positive emotions, and assertiveness. People high on Extraversion are outgoing and externally stimulated, while people low on Extraversion are more reserved and withdrawn. Agreeableness is usually described in terms of tolerance, altruism, and cooperativeness. People high on Agreeableness are warm and forgiving, while people low on Agreeableness are suspicious and argumentative. Neuroticism is described in terms of anxiety, distress, and low self-confidence. People high on Neuroticism are anxious and nervous, while people low on Neuroticism are relaxed and emotionally stable. (Costa and McCrae, 1992)

2.1 Human values

Rokeach (1973) identified 18 terminal values, or desired end-states, that apply to many different cultures (Table 1).

Table 1. The relationship between two value theories

Higher- order group of values (Schwartz, 1992)	-	-	Self-Enhancement		Open to change		Self-Transcendence		Conservation		
			Power	Achievement	Hedonism	Stimulation	Self-respect,	Universalism	Benevolence	Conformity/Tradition	Security
Universal values (Schwartz, 1992)	-	-									
Terminal values (Rokeach 1973)	A comfortable life	Happiness	Social recognition	Sense of accomplishment	Pleasure	An exciting life	Self-respect,	A world of beauty, Equality, Inner harmony, Wisdom, A world of peace	Mature love, True friendship	Salvation	Family security, National security,

Note. Table 1 is based on comparing items in the Rokeach Value Survey (1973), and the Theory of Basic Human Values (Schwartz, 1992). The order of values are organized in line with the circular structure in the Theory of Basic Human Values (Schwartz, 1992). - Happiness and A comfortable life are not related to any values in Schwartz (1992).

According to Rokeach (1973), human values are organized into a coherent system that underlies and helps to explain individual decision making, attitudes and behaviour. The coherent structure of values arises from the social and psychological conflict or congruity

between values that people experience when they make everyday decisions. The Rokeach's theory of terminal values intersects with Schwartz Theory of Basic Human Values. Schwartz identify nine universal values which can be organised in four-higher groups, through the two dimensions Conservation (as opposed to Open to change) and Self-Transcendence (as opposed to Self-Enhancement). Table 1 illustrates the relationships between Rokeach's values (1973) and Schwartz values (1992).

3. Methodology

3.1 Sample and procedure

The study was conducted with a large national mail survey, which was sent to a representative sample of 3,400 Swedish citizens in the age range of 16 to 85 between September 2014 and February 2015. The survey was followed up by seven reminders via telephone and mail. The survey could be answered on-line or by ordinary mail. The response rate was 53% (1,694 respondents, 762 males and 932 females) The mean age was 52.3 years. The survey, which was administered by the SOM Institute (The institute for Society, Opinion, and Media) at the University of Gothenburg, includes a set of questions on broad topics within the social sciences, including media usage, political opinions, everyday activities, and consumer behavior. The SOM sample is renowned for being representative of the Swedish population. Non-response analysis shows that women and the elderly are moderately overrepresented among those who completed the questionnaires. (Vernersdotter, 2015).

3.2 Measures

Personality traits were assessed using the Big Five Inventory, BFI-10 (Rammstedt and John, 2007), which is a 10-item inventory with 2 items measuring each personality trait in the FFM. The BFI has shown satisfactory levels of convergent and discriminant validity as well as test-retest reliability (Rammstedt and John, 2007). Personality trait items were measured using a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The Neuroticism index was constructed by averaging the responses to "is relaxed, handles stress well" (reversed) and "gets nervous easily" ($r = 0.40$, $p < 0.01$, $M = 2.57$, $SD = 0.87$). The Extraversion index was constructed by averaging the responses to "is reserved" (reversed) and "is outgoing, sociable" ($r = 0.46$, $p < 0.01$, $M = 3.58$, $SD = 0.91$). The Openness to experience index was constructed by averaging the responses to "has few artistic interests" (reversed) and "has an active imagination" ($r = 0.16$, $p < 0.01$, $M = 3.04$,

$SD = 0.94$). The Agreeableness index was constructed by averaging the responses to “tend to find fault with others” (reversed) and “is generally trusting” ($r = 0.04$, $p = 0.1$, $M = 3.69$, $SD = 0.68$). The Conscientiousness index was constructed by averaging the responses to “tend to be lazy” (reversed) and “does a thorough job” ($r = 0.21$, $p < 0.01$, $M = 4.00$, $SD = 0.75$).

Human values were measured through Rokeach Value Survey (Rokeach, 1973). The overall question was “How important are the following values”. The list consists of 18 values (Table 1), each measured on a five-point Likert scale ranging from 1 (“not at all important”) to 5 (“very important”).

Car use in grocery shopping was measured with “How often have you used car for grocery shopping during the past twelve months?” using a seven-point Likert scale, ranging from 1 (“never”) to 7 (“several times a week”). Socio-demographic variables in terms of age, gender, residential context and income were used as control variables in the analyses since previous research has shown that such socio-demographic variables influence transportation modes, especially related to grocery shopping (Hagberg and Holmberg, 2017).

3.1 Statistical analyses

A two steps hierarchical regression analysis was conducted. The dependent variable is the frequency of car use in grocery shopping. In the first step, socio-demographic factors were included as independent variables (i.e. age, gender, residential area of living and income). In the second step, psychological factors in terms of personality traits and human values were included.

4. Results

The transportation of food to home in Sweden is mostly done by car (90%), followed by walking (71%), bicycling (47%), public transportation (27%) and home delivery (8%)¹.

Grocery shopping by car in Sweden is explained by higher age, income and living in rural areas. It is also explained by high degree of Openness to experience, low values of equality, a world in peace and true friendship and high values of mature love, national security and family

¹ Respondents having used the mode for grocery shopping during the past 12 months.

security (Table 3). It is worth noticing that the human values “family security” and “mature love” explain car use for grocery shopping also for respondent without children at home².

Table 2. Predictors of grocery shopping by car ($N = 1,280$). Step 2 continued in Table 3.

Independent variables	Step 1:	Step 2:
Socio-demographic factors		
Gender	-0.02	-0.01
Age	0.09**	0.10**
Income	0.19***	0.19***
Residential area	-0.30***	-0.27***
Psychologic factors		See table 3
R_{Adj}^2	0.12***	0.17***

Note. Entries for predictors are beta weights/standard regression coefficients. * $p < .05$; ** $p < .01$; *** $p < .001$. Step 2 continues in Table 3.

Table 3. Psychological predictors of grocery shopping by car ($N = 1,280$).

Personality traits	Terminal values	R_{Adj}^2
Neuroticism		0.17***
Extraversion		0.14***
Openness to experience		0.06*
Agreableness		-0.04
Conscientiousness		-0.07*
A comfortable life		0.11**
Happiness		-0.12***
Social recognition		0.01
A sense of accomplishment		-0.03
Pleasure		0.05
An exciting life		-0.08*
Self-respect		0.00
Freedom		0.02
A world of beauty		-0.01
Equality		0.04
Inner harmony		0.01
Wisdom		-0.03
A world at peace		0.05
Mature love		-0.08*
True friendship		0.00
Salvation		0.02
National security		-0.01
Family security		0.01

Note. Entries for predictors are beta weights/standard regression coefficients. * $p < .05$; ** $p < .01$; *** $p < .001$.

5. Discussion

5.1 Discussion of the findings

Although numerous efforts have been made to promote other modes of transport, the present study shows that car continues to be the dominant mode of transport for grocery shopping in Sweden, which correspond to previous findings in developed countries (Dieleman, Dijst and Burghouw, 2002; Guy, 2009). The present study shows that two

² “Family security”: 1.6 %, $F(1, 1147) = 19.13, p < .001$; $\beta = .128, p < .001$; “Mature love”: 0.6 %, $F(1, 1150) = 7.56, p < .001$; $\beta = .08, p < .01$.

psychological factors are especially important to consider in order to understand grocery shopping by car. Firstly, people who do grocery shopping by car score low on Openness to experience in the FFM and high on conservative values (i.e. family security and national security) in the Rokeach Value Survey. People who score low on Openness to experience are characterized by conservative values, according to the FFM (Costa and McCrae, 1992). Such people have more difficulties to think in new patterns and are less open for knowledge and information (for instance related to sustainability) than people in general (Costa and McCrae, 1992). Secondly, people who frequently do grocery shopping by car are less concerned by self-transcendence values, especially related to universalism, such as equality and a world at peace. Such values are also related to environmental concerns (Schwartz, 1992).

5.2 Discussion of the methodology

The results of this study must be viewed in the light of some limitations. First, the participants' transport behaviors were self-reported instead of actual behaviors, which cause well-known problems in the field of consumer behavior (Baumeister, Vohs and Funder, 2007). Second, the FFM were measured by a short scale with substantial losses and clear psychometric disadvantages in comparison to full-length personality scales (Rammstedt and John, 2007). Cautiousness should also be taken in generalizing the results to other countries, since transportation behaviour, especially related to grocery shopping, must be viewed in a social context (Hagberg and Holmberg, 2017).

6. Conclusions and contribution to the marketing discipline

People who do grocery shopping by car are less open to experience and more conservative than people in general. They do also have less self-transcendence values in terms of universalism such as equality and a world at peace. If the main challenge is to reduce car use in societies, the findings of this study might be useful for psychologists, policy-makers, transportation planners and transport innovators who would like to change transport behaviors. If we cannot change the personality (Costa and McCrae, 1992), we might change the external environment of the person (e.g. marketing communication and transportation design). The results presented here can be useful in infrastructural design, service design, transport innovations and marketing communication to target groups. We know that different people depending on their personality traits and human values are attracted by different kind

of design and marketing appeals in communication (Norman, 2004; Roos, 2014; Solomon, Bamossy, Askegaard and Hogg, 2013). For instance, investments in more environmental-friendly transportation systems and use of ecological sustainable marketing appeals might be inefficient to change behavior for people with low degree of Openness to experience and/or conservative values and/or people who are less concerned by universalism. Soft policy measures (e.g. information and persuasion) often appeal to universalism and open to change values (Table 1), such as environmental concerns, sustainable cities and appealing urban environment. Such policy measures might be less effective in order to influence people who frequently do grocery shopping by car. Policy makers should consider targeting more conservative values such as security, law and order and traditional family values. Hard policy measures (e.g. prohibitions and regulations) relate better to the conservative's values of the car users as they are non-optional and follow traditional patterns. However, hard measures have been criticized for being less efficient than soft measures in reducing car use, although their effect could improve if supported by appropriate soft policies (Gärling and Schuitema, 2007; Richter, Friman and Gärling, 2011; Stopher, 2004). Policy makers should therefore strive at adapting soft policy measures to include more conservative values to reduce the use of cars. It is worth noting that the behavioral change challenge is largest among conservative people, because their values and traits are related to ignorance of new information and unwillingness to change behavior. Since it is important to move fast toward more sustainable transportation we need to learn more about how we can move conservative people from car use to more sustainable transportation innovations.

The focus of this paper has been a policy perspective. However, the findings can also be used in business models (see eg. Osterwalder and Pigneur, 2009) and marketing strategies for food retailers and grocery chains targeting car users. For instance, stores with large car parks outside the cities might attract consumers through communicating conservative values, such as well organized, family friendly and safe.

Marketing and communication become more effective if it aligns with the target customer group's values and personality (Matz, Gladstone and Stillwell, 2016). Successful communication is of particularly importance when aiming at car user as this is a customer group with typically large purchasing power, and large impact on our ecological sustainability.

The findings need to be replicated both inside Sweden and in other cultural contexts. Future research also needs to explore if conservatism and lack of universalism explain car use in other contexts than grocery shopping.

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