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UIN: BLL01009191905
Title: Global business & economics review.
Worcester, Mass. : Business &
Publisher: Economics Society International, 1999-
Olney : Inderscience Enterprises
ISSN: 1097-4954
Year: 2022 **Volume:** 26
Pages: 252-284
Author name(s):
Article title
words:

Comments

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The effect of religiosity and demographic variables on Arab women consumers' self-expression through luxury brands: a mixed methods study

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Abstract: This mixed methods study focuses on one category of luxury female consumer products and investigates its relationship with Muslim consumer religiosity and other demographic variables to provide greater understanding of the consumer behaviour of this largely unknown consumer segment. Building on the recommendations of two related earlier studies, this paper tests the four key propositions of complexity theory. Symmetrical testing was done using correlation, cross-tabulation and contrarian case analysis to examine the association among the constructs of religiosity, demographics and self-expression. Then, asymmetrical fsQCA data analyses were done to test major tenets of the theory of complexity. Findings provide further support that utilising a combination of complexity theory, fsQCA and pattern research in service dominant logic is a proper fit for advancing theory, method and practice in service research. The results show that relationships in the emotions–brand domain are not as straightforward as previously thought.

Keywords: complexity theory; nuanced theory; self-expression; religiosity; luxury brands; Arab women consumers.

Reference to this paper should be made as follows: Alserhan, B.A., Halkias, D., Boulanouar, A.W., Komodromos, M., Ayed, T.L. and Althawadi, O. (2022) ‘The effect of religiosity and demographic variables on Arab women consumers’ self-expression through luxury brands: a mixed methods study’, *Global Business and Economics Review*, Vol. 26, No. 3, pp.252–284.

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1 Brands and religion

Historically, only a small number of published papers have attempted to measure religiosity in a consumer context. In fact, Cutler (1992), analysing articles in the marketing literature over the 30+ year period from 1956 to 1989, found only six that related specifically to consumer behaviour (Khraim, 2010b). However, although most of the scant religiosity-related consumer research has been undertaken within an American and Judeo-Christian context (Kennedy and Lawton, 1998; Longenecker et al., 2004; Singhapakdi et al., 2000), studies of Muslims from other sciences point to the importance of Islam for Muslims in all aspects of life (see for example, Amer and Hovey, 2007; Berggren and Bjørnskov, 2011).

Further, within the relatively scant literature on consumers and their religiosity, there have been compelling findings linking religious orientation and intensity of religious commitment with consumption (Alserhan et al., 2014). As stated by Solomon (1992, pp.433–434), “the little evidence that has been accumulated indicates that religious affiliation has the potential to be a valuable predictor of consumer behaviour.” Delener’s (1990) study which investigated consumer decision-making and religiosity found that religion should be considered as a variable in consumption. In addition, the works of Essoo and Dibb (2004), Gibbs et al. (2007), Waller and Fam (2000) and Walker et al. (2014) found that a link does exist between high religiosity and ethical sensitivity.

Muslims, it is argued in a large body of social science literature, are profoundly affected by their religion (Al-Qaradawy, 1995; Maududi, 1960; Nawal, 2009; Roald, 2001), even if their formal exposure to and/or practice of it is limited (Sander, 1997). This extends from boycott behaviours (Muhamad and Mizerski, 2013; Razzaque, 2005) to the influence and importance of families in purchasing (Amer and Hovey, 2007; Briegel and Zivkovic, 2008; Yavas et al., 1994). The importance of Islam to Muslims, as a framework onto which local culture has been hung, is obvious in the replies of respondents to questions as diverse in topic as what they do with their money (Briegel and Zivkovic, 2008; Kashif and De Run, 2015) and how they view their careers and relationships with family (Read, 2004).

In consumption studies involving Muslim populations, some studies have been carried out: those by Fam and Waller concerning the advertising of offensive products (Fam and Waller, 2006; Fam et al., 2004; Waller and Fam, 2000; Waller et al., 2005); several studies on ethics, including the consideration of socio-economic, political and religious factors (Cornwell et al., 2005), the implications of different conceptions of ethics for international marketers (Rice, 1999), and for advertising to Muslim audiences (Rice and Al-Mossawi, 2002); studies on the relationship between people of different religions and their consumer behaviour (Assadi, 2003; Essoo and Dibb, 2004); a study on the role of materialism, religiosity and demographics in subjective well-being (La Barbera and Guerhan, 1997); a study on the relationship between religions and markets (Mittelstaedt, 2002); and a study on luxury brand consumption (Alserhan et al., 2014).

In sum, research on Muslim consumers has shown repeatedly that Islam has an enormous impact on the way they consider purchases (Razzaque, 2005) and what they spend their money on, and this applies particularly to women (Briegel and Zivkovic, 2008; Nydell, 2006). It is, therefore, doubly remarkable that the consumer behaviour of Muslims, to whom religion is an ever-present and all-encompassing framework (Alserhan and Alserhan, 2012), especially considering the vast numbers, youth and spending power of this segment, has been so blatantly under-researched (Aoun and Tournois, 2015; Cherrier and Belk, 2015; Çokgezen and Kuran, 2015).

2 Luxury consumption, cosmetics and the Arabian Gulf

The imperative of beautification is part of the region's dominant religion, Islam, with both the cosmetic and health benefits of kohl and henna, in particular, spoken of within Islamic teaching. Before the discovery of oil, the Gulf population was significantly less wealthy, and reliance on natural sources for beautification was both traditional and commonplace (Alserhan et al., 2014). Since the rapid expansion of the economy, consumption of all forms of branded and luxury goods has been dominant, with some authors attributing a reliance on foreign trade encouraging a view that Western countries produce goods of superior quality compared to those manufactured closer to home (Vel et al., 2011). The dominance of Western-branded goods in the consumer goods markets of the Gulf States can also be attributed to Islamic teaching. Islam encourages the pursuit of quality, and with the increase in the affordability of quality goods for Gulf residents and their increased access when they began vigorously participating in international markets, it is a natural consequence that these populations would begin to consume quality products (Cherrier and Belk, 2015). Given that branded and luxury cosmetics were effectively 'off limits' (due to their pricing and availability) for Emiratis until around 40 years ago, it could also be that a reason for the enthusiastic consumption of branded goods by Arabs in the UAE is inexperience in consumption (Alserhan et al., 2014) – similar to that shown by the newly independent states of Hungary and Romania when they left the Soviet Union (Coulter et al., 2002) – which plays a role in their preference for branded, quality, 'trusted' goods in the Gulf markets. In addition, the Gulf States have very large populations of young people, who have less consumption experience and have been shown to look for cues, such as country of origin, when purchasing (Al-Ashban and Burney, 2003; Khraim, 2010a; Marcoux et al., 1997).

There have been a number of papers in the last 15 years that have looked at the consumption of those living in the Emirates. Much of this work has focused on luxury consumption (Alserhan et al., 2014). Vel et al. (2011) argued that the consumption of luxury and branded goods is prevalent in the UAE because Arabian culture is collective, and when luxury becomes the norm, people are merely conforming to the collective norm by preferring to purchase luxury-branded goods. Similarly, Riquelme et al. (2011) found that conspicuous or status consumption was observable in Kuwaiti society, regardless of the fact that the population is Muslim, and Islam does not promote this type of consumption (Rice, 1999). Miremedi et al. (2011) linked luxury consumption with uniqueness, and find UAE respondents value 'expression of individuality' and also 'social norms' in their consumption.

However, with specific regard to the consumption of cosmetics, Khraim (2010a) found that personality and self-concept are not important factors for consumers in the

UAE for the particular age group 21–40. This finding was supported by the work of Alserhan et al. (2015). Al-Ashban and Burney (2003), in a study of Saudi women, found education and marital status to be important demographic characteristics in the purchase of cosmetics, with the more highly educated using cosmetics both less often and to a lesser degree. There are a number of possible reasons for this. The use of cosmetics in Islamic teaching means that the style in which cosmetics are consumed by Arabs in the UAE could be very different to the way they are consumed in other countries. While one imagines all cosmetic use is aimed at enhancing beauty, it is the locus and purpose of this beautification that may explain the finding. In Islamic teaching, beautification is for a spouse to pursue for the benefit of their spouse, i.e., a private pursuit. While it may be commonplace for Muslim women to appear in public made up – in fact, in Al-Ashban and Burney's (2003) study, 44% of respondents did not use cosmetics at home at all – the application of the cosmetics is less often observed in public than it is in other societies, for example Western ones. This means that while a brand or branded packaging may be easily observable on a woman applying lipstick at her desk, and so have some currency as a publicly and, therefore, conspicuously consumed product, when the lipstick is applied in private that currency is not accessible to the consumer (Alserhan et al., 2014).

This lack of importance as a conspicuously consumed good, in addition to the cultural understanding of what beautification is for, may explain why the consumption of cosmetics by women in the UAE does not follow the same trajectory as is commonly reported in other cultures (Aoun and Tournois, 2015; Wallström et al., 2010).

3 The research problem and the tenets of complexity

It is well documented in the literature that religion has a significant influence on consumers' consumption choices (Hirschman, 1981, 1982). In fact, studies suggest that consumer segments could be built around religion (Khraim, 2010b; Koku, 2011; Stark and Finke, 2002). What is not as clear, however, is the extent and complexity/straightforwardness of that effect in general, let alone its extent in more precise product categories, especially those that were historically off limits to the majority of consumers. This study focuses on one category of luxury female consumer products and investigates its relationship with Muslim consumer religiosity and several other demographic variables. The overarching aim is to provide a greater understanding of the consumer behaviour of this largely unknown consumer segment.

This study is based on an extension of the recommendations of two recent studies: Wallström et al. (2010) and Alserhan et al. (2015). In the Wallström et al. study, the researchers explored how the use of brands as vehicles for self-expression might differ across cultures by gauging the perceptions of female consumers in six nations: Australia, China, India, Japan, Malaysia and the Philippines. They used the Personal Involvement Scale Index (PISI), a tool composed of six items, and a 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1), as shown in Table 1. Their sample was limited to employed women in the age groups 21–30 and 31–39 in the listed countries.

The results of Wallström et al. (2010) indicated that the importance of brands for self-expression differs significantly across these countries. Women in India, China and the Philippines perceived these brands to be more important for self-expression than women in Australia, Japan and Malaysia. However, Australian and Japanese women perceived these brands as less important for self-expression than Malaysian women did.

The analysis also showed that a high negative correlation exists between brand expression and wealth. Finally, Wallström et al. recommended considering other factors such as age, gender, education and income level as categorical predictor variables of brand involvement as well as extending this study to other nations and supporting each case with qualitative research.

Alserhan et al. (2014), based on the recommendations provided by Wallström et al. (2010), extended the scope of the original study and used the PISI to investigate the perceptions of female consumers in one more group: Arab women. The results of the study by Alserhan et al. showed that Arab women in the Gulf Cooperation Council (GCC) perceived brands to be less important vehicles for self-expression than all other countries studied by Wallström et al. with a mean score of 2.81 as shown in Table 1. Alserhan et al. also reported – based on qualitative data – that certain factors might explain this outcome, including but not limited to: the influence of religion, visibility of the brand, price, quality, and health concerns. Finally, Alserhan et al. recommended that future research investigate the relationship between these factors and self-expression through brands.

Table 1 Response rates and demographic profile

<i>Country (mean PISI)</i>	<i>Respondents</i>		<i>Age</i>		<i>Occupation</i>		
	<i>Response</i>	<i>Response rate (%)</i>	<i>Age 21–30 (%)</i>	<i>Age 31–40 (%)</i>	<i>Prof./top mgmt. (%)</i>	<i>Mid./lower mgmt. (%)</i>	<i>Office staff (%)</i>
<i>UAE (2.81)</i>	<i>1,981</i>		<i>58.8 (1,165)</i>	<i>12.8 (253)</i>	<i>2.8 (56)</i>	<i>5.1 (102)</i>	<i>16.6 (325)</i>
India (3.86)	160	16	66	34	26	58	16
China (3.69)	185	18	65	35	24	51	25
Philippines (3.66)	198	20	65	35	29	45	26
Malaysia (3.44)	188	19	67	33	28	47	25
Japan (3.13)	186	19	66	34	27	47	26
Australia (2.97)	150	15	65	35	28	48	24

Notes: Other respondent demographics: all women, all completed at least some tertiary degree/diploma or certificate, all live in above-median-income households, all live in one of the selected Tier I cities, and all have access to the internet.

Source: Wallström et al. (2010) and Alserhan et al. (2014)

Moreover, this paper adds a whole new perspective to the study of the effects of religiosity and demographics on consumer behaviour. The study tests the four key propositions of the complexity theory using eight tenets within the context of respondent evaluations of self-expression through brands. These four key propositions as examined in the Wu et al. (2014, p.1647) study are: “(1) no single antecedent condition is a sufficient or necessary indicator of a high score in an outcome condition; (2) a few of many available complex configurations of antecedent conditions are sufficient indicators of high scores in an outcome condition; (3) contrarian cases occur ...; (4) causal asymmetry occurs.” Antecedent conditions in this study refer to religiosity and demographics, while the outcome condition refers to self-expression through brands. This

approach to the investigation of relationships in consumer behaviour has the potential to reveal more subtle relations as evidenced in the above study.

To summarise, Wallström et al. (2010) recommended a regional or ethnic expansion of their study and the inclusion of more demographic variables in the analysis. Alserhan et al. (2015) expanded on the study of Wallström et al. (2010) by including Arab women as a new group. In turn, Alserhan et al. (2014), based on the results of their study, recommended the study of religiosity as a key factor affecting the perception and behaviour of Arab women towards beauty care brands. Moreover, the most recent literature in the area, particularly Wu et al. (2014), provided a novel approach to the study of how antecedent and outcome conditions might relate to each other. Therefore, the current study builds on Alserhan et al. (2015) and applies Wu et al.'s (2014) approach to investigate the relationship between self-expression through brands and religiosity as a factor that was repeatedly referred to by respondents and that is rarely studied within a Muslim group. Moreover, the current study also builds on the study of Wallström et al. (2010), which recommended the inclusion and investigation of more demographic variables as predictor factors. Thus, in addition to using the same scale (i.e., PISI) and measuring its relationship to religiosity, three more age groups were added to the existing two age groups that were used by Wallström et al. (2010). These are: less than 21, 41–50 and over 50. Moreover, respondents were asked to indicate the levels of their education and income. These demographic variables were also tested using the approach of Wu et al. (2014). Finally, respondents were requested to provide comments to further explain their answers to the survey's structured and closed-ended questions.

4 Theoretical framework and study rationale

Luxuries can be seen as brands associating with a premium quality, an appealing design, exclusiveness or rarity (Caniato et al., 2009; Catry, 2003). Such psychological benefits cannot be explained by classical economic theory since they do not serve any utilitarian benefits, assuming that people are rational and buy to maximise utility. Yet, rich consumers and consumers with low income and who can hardly meet their basic needs tend to spend large amounts of their income on luxury brands (Hudders, 2012), such as shoes, purses and dresses (Chao and Schor, 1998; Stokburger-Sauer and Teichmann, 2011). However, despite the large sums spent on these brands and the contradiction to classical rational consumer theory, research on the motives for female luxury consumption remains scarce (Hudders, 2012; Wang and Griskevicius, 2014).

Where classical economic theory falls short in explaining the drive for luxury consumption, the functional theory of attitude provides much needed insights. Attitudes influence the consumption of luxury brands, reflecting an individual's central values and beliefs or the social image they have cultivated and wish to present, or both (Shavitt, 1989; Wilcox et al., 2009). The functional theory of attitude (Katz, 1960; Shavitt, 1989), which this study draws on, highlights the role of attitudes in serving social functions such as self-presentation and self-expression (Grewal et al., 2004; Katz, 1960; Shavitt, 1989). In the context of luxury brands, an attitude of self-expression is viewed as the inclination to purchase luxury brands as a means of presenting individual identity and personal values (Shavitt, 1989) as well as communicating core beliefs (Katz, 1960; Wilcox et al., 2009). In the same context, an attitude of self-presentation toward luxury brands is seen as an inclination to use luxury brands for conveying social image (Wilcox et al., 2009).

Consumer behaviour correlates closely with culture and lifestyle, influencing the satisfaction of needs and consumers' perceptions and evaluations of products and brands on offer (Quester et al., 2000; Thrassou et al., 2012). While Aaker and Schmitt (2001) found that individualist and collectivist (Hofstede, 1983) consumers both used brands for self-expression, their research also highlighted that consumers from individualist cultures used brands for differentiation while those from collectivist cultures used them for assimilation. Although research has offered a substantial body of knowledge with regard to cultural differences, as international markets continue to open up and globalisation proceeds unabated, research now needs to turn its attention to better understanding how consumers use brands across cultures (Aaker and Schmitt, 2001; Foscht et al., 2008; Xue, 2008). In particular, in the context of cross-cultural settings there is still much to be learnt about the consumption of brands as a means of self-expression (Aaker, 1997; Aaker and Schmitt, 2001; Wallström et al., 2010).

5 Research objectives and methodology

Based on the discussion in the previous sections, this study will seek to investigate the relationship between self-expression through brands and the following variables: religiosity of respondents, age, education, income, marital status, and employment. So far, we know that women in different parts of the world have different perceptions of the importance of brands of beauty care products. We also know that Arab women perceive these brands to be less important for self-expression than all other groups studied previously and referred to in this study. We also have qualitative data provided by respondents claiming that there are certain factors such as religion and brand visibility that influence this perception. What we do not know, however, is the significance of these claims and whether they withstand scientific scrutiny.

As part of the scrutiny process, this study will compare the results from symmetric and asymmetric testing to study tenets rather than hypotheses, in compliance with the propositions of the complexity theory. Our study does not include statistical hypothesis testing. There are a number of tenets that "express testable precepts of complexity theory" [Wu et al., (2014), p.1650], they are considered as more restrictive in the prediction than symmetric testing of hypotheses. Their determination depends on the study. Eight tenets are expressed in this study:

- T1 Complex demographic configurations indicate respondents' evaluations of self-expression.
- T2 Causal asymmetry occurs: demographic antecedent configurations leading to negative outcomes are not the mirror opposites of demographic configurations leading to positive outcomes.
- T3 Unique complex antecedent configurations are sufficient but not necessary for high scores in an outcome condition.
- T4 Simple antecedent conditions can be necessary but they are insufficient for indicating high scores in an outcome condition.
- T5 Within different complex antecedent combinations, simple antecedent conditions may appear both as a positive and a negative influence on the outcome.

T6 The presence of religiosity with demographic configurations modifies how respondents evaluate self-expression.

T7 Configurations of religiosity influence high scores for self-expression.

T8 Demographic algorithms indicate high outcome scores for self-expression.

Where antecedent conditions refer to demographics and/or religiosity while outcome conditions refer to self-expression.

Finally, since the population under consideration is Arab women, the PISI was translated into the Arabic language. The translation process was meticulous and included several rounds of revisions in order to make sure that the translation captures what the PISI was designed to capture in its original form in the English language. An online questionnaire was distributed through female students at the United Arab Emirates University to their connections on social media. Students were requested to distribute the questionnaire outside of their direct student connections and outside of the university. In addition to the online survey, 15 women were interviewed by a research assistant. While in the study of Alserhan et al. (2015) the total number of questionnaires collected was 1,981 online and 100 by the research assistant, in this study the total number included only the 1,981 online-completed questionnaires and 15 interviews. The interviewed group comprised married mothers from various age groups, most of whom had children and stable families.

6 Results of the study

As mentioned above, our study has the objective of investigating the relationship between religiosity of respondents and demographic configurations, and self-expression. Firstly, a preliminary symmetrical testing was done using correlation, cross-tabulation and contrarian case analysis to examine the association among the three constructs, namely, religiosity, demographics and self-expression. Then, asymmetrical fsQCA data analyses were done in order to test “major tenets of complexity theory” [Wu et al., (2014), p.1647].

Table 2 EFA of brand relationship information

<i>Items</i>	<i>Factor loadings</i>
	<i>Self-expression</i>
When other people see me using my favourite brand of beauty care products, they will have a positive opinion of me	0.681
You can tell a lot about a person by seeing that they use my favourite brand of beauty care products	0.803
My favourite brand of beauty care products helps me express who I am	0.832
My favourite brand of beauty care products is really me	0.839
Seeing somebody else using my favourite brand of beauty care products tells me a lot about that person	0.828
When I use my favourite brand of beauty care products, others see me the way I want them to see me	0.681
Rotated sum of squared loading	3.792
% of variance	63.197

6.1 Exploratory factor analysis

Exploratory factor analysis (EFA) is a data-driven technique used to reduce the observable data into a set of latent components. It will confirm theoretical rigour elaborated in the literature, and keep the items with high quality of representation (communalities). EFA with Varimax rotation was used and confirmed that the variable self-expression has one factor and the religiosity variable has four dimensions, as shown in Tables 2 and 3. All the items in the study have been retained with factor loadings higher than 0.5. This confirms the rigour of the theory in the literature (Hair et al., 1998).

Table 3 EFA of religiosity information

<i>Items</i>	<i>Factor loadings</i>			
	<i>Religiosity 1 commended worship acts</i>	<i>Religiosity 2 required worship acts</i>	<i>Religiosity 3 ethical religious acts</i>	<i>Religiosity 4 ability religious acts</i>
Read Quran daily	0.748	*	*	*
Perform prayers in groups or Mosque	0.646	*	*	*
I schedule time to watch/ read/listen to religion daily	0.718	*	*	*
Voluntary fasting other than Ramadan	0.660	*	*	*
Perform obligatory prayers on time	0.592	*	*	
Fast at Ramadan	*	0.654	*	*
Seek relief from God when anxious/sad	*	0.598	*	*
Obedient to parents for religious reasons	*	0.703	*	*
Regard religion as personally important	*	0.769	*	*
Advise others to do good and avoid sin	*	*	0.662	*
Give charity as religious duty	*	*	0.507	*
Praise God at the beginning and end of work	*	*	0.662	*
Tolerate others for God's sake	*	*	0.687	*
Mecca pilgrimage if affordable	*	*	*	0.762
Avoid mixing with opposite sex	*	*	*	0.598
Rotated sum of squared loading	2.953	2.741	2.239	1.266
% of variance	18.455	17.129	13.994	7.914

6.2 Correlation

After reducing the observable data of religiosity and self-e into a set of latent components, a meta-analysis, at first, on 45 correlations between all the dimensions of the independent and dependent variables, we found 29 relations statistically significant with an error margin ranging from 0.000 to 0.045. To investigate the relationship between self-expression through brands and the variables religiosity of respondents, age, education, income, marital status, and employment, Figure 1 indicates a variety of statistically significant positive and negative small effect size (from 15.1% to -4.5%).

Figure 1 Correlations of religiosity, demographics and self-expression (see online version for colours)

		Correlations						Religiosity1	Religiosity2	Religiosity3	Religiosity4
		Age	Education	Income	Marital Status	Employment	Self-Expression				
Age	Pearson Correlation	1	.259	.304	-.290	.325	-.045	.155	.036	.153	.127
	Sig. (2-tailed)		.000	.000	.000	.000	.045	.000	.117	.000	.000
	N	1981	1981	1981	1981	1981	1981	1888	1891	1914	1938
Education	Pearson Correlation	.259	1	.211	-.059	.299	-.022	.037	.014	.052	.039
	Sig. (2-tailed)	.000		.000	.009	.000	.321	.108	.533	.023	.086
	N	1981	1981	1981	1981	1981	1981	1888	1891	1914	1938
Income	Pearson Correlation	.304	.211	1	-.166	.514	.053	.187	.042	.128	.089
	Sig. (2-tailed)	.000	.000		.000	.000	.019	.000	.066	.000	.000
	N	1981	1981	1981	1981	1981	1981	1888	1891	1914	1938
Marital Status	Pearson Correlation	-.290	-.059	-.166	1	-.073	.041	-.022	-.076	-.071	-.141
	Sig. (2-tailed)	.000	.009	.000		.001	.071	.330	.001	.002	.000
	N	1981	1981	1981	1981	1981	1981	1888	1891	1914	1938
Employment	Pearson Correlation	.325	.299	.514	-.073	1	.049	.170	-.037	.105	.043
	Sig. (2-tailed)	.000	.000	.000	.001		.029	.000	.106	.000	.056
	N	1981	1981	1981	1981	1981	1981	1888	1891	1914	1938
Self-Expression	Pearson Correlation	-.045	-.022	.053	.041	.049	1	.151	.077	.135	.071
	Sig. (2-tailed)	.045	.321	.019	.071	.029		.000	.001	.000	.002
	N	1981	1981	1981	1981	1981	1981	1888	1891	1914	1938
Religiosity1	Pearson Correlation	.155	.037	.187	-.022	.170	.151	1	.204	.395	.293
	Sig. (2-tailed)	.000	.108	.000	.330	.000	.000		.000	.000	.000
	N	1888	1888	1888	1888	1888	1888	1888	1808	1833	1854
Religiosity2	Pearson Correlation	.036	.014	.042	-.076	-.037	.077	.204	1	.538	.318
	Sig. (2-tailed)	.117	.533	.066	.001	.106	.001	.000		.000	.000
	N	1891	1891	1891	1891	1891	1891	1808	1891	1833	1857
Religiosity3	Pearson Correlation	.153	.052	.128	-.071	.105	.135	.395	.538	1	.315
	Sig. (2-tailed)	.000	.023	.000	.002	.000	.000	.000	.000		.000
	N	1914	1914	1914	1914	1914	1914	1833	1833	1914	1880
Religiosity4	Pearson Correlation	.127	.039	.089	-.141	.043	.071	.293	.318	.315	1
	Sig. (2-tailed)	.000	.086	.000	.000	.056	.002	.000	.000	.000	
	N	1938	1938	1938	1938	1938	1938	1854	1857	1880	1938

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

Highest R

Notes: **correlation is significant at the 0.01 level (two-tailed).

*correlation is significant at the 0.05 level (two-tailed).

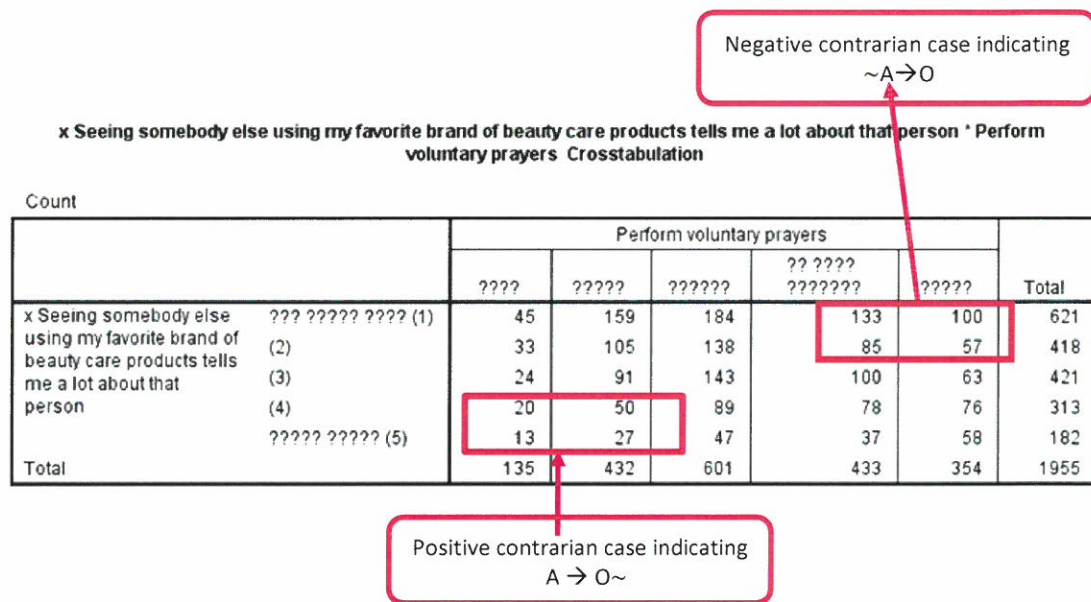
Source: Adapted from Wu et al. (2014)

Figure 1 shows that these symmetric tests indicate that the components of religiosity have a statistically significant positive small effect on self-expression. Regarding the demographics variables, marital status and education did not have any effects on self-expression, while other variables such as age had a weak negative effect and income and employment had weak positive effects.

6.3 Contrarian case analysis

Another symmetric analysis was done crossing all the independent observable variables (16 items of religiosity and 5 of demographics) by the 6 items of the dependent variable which is self-expression. Variable by variable we obtained 126 cross-tabulations, 91 of which are statistically significant. Religiosity seems to be more relevant than demographics in explaining self-expression. In 30 cross-tabulations between demographics and self-expression only 8 relationships are significant, whereas in 96 cross-tabulations between religiosity and self-expression 83 relationships are validated. The percentage of Phi and Cramer’s V values indicating the importance of association in the cross-tabulation tests are higher in the relationship between religiosity and self-expression.

Figure 2 One item of religiosity and one item of self-expression (see online version for colours)



Notes: $\sim A \rightarrow O$ = low score for the antecedent condition leads to high score for the outcome condition.
 $A \rightarrow \sim O$ = high score for the antecedent condition leads to low score in the outcome condition.
 The two sets of contrarian cases are counter to the main effect size ($\phi^2 = 3\%$) positive relationship, $A \rightarrow O$.

Source: Adapted from Wu et al. (2014)

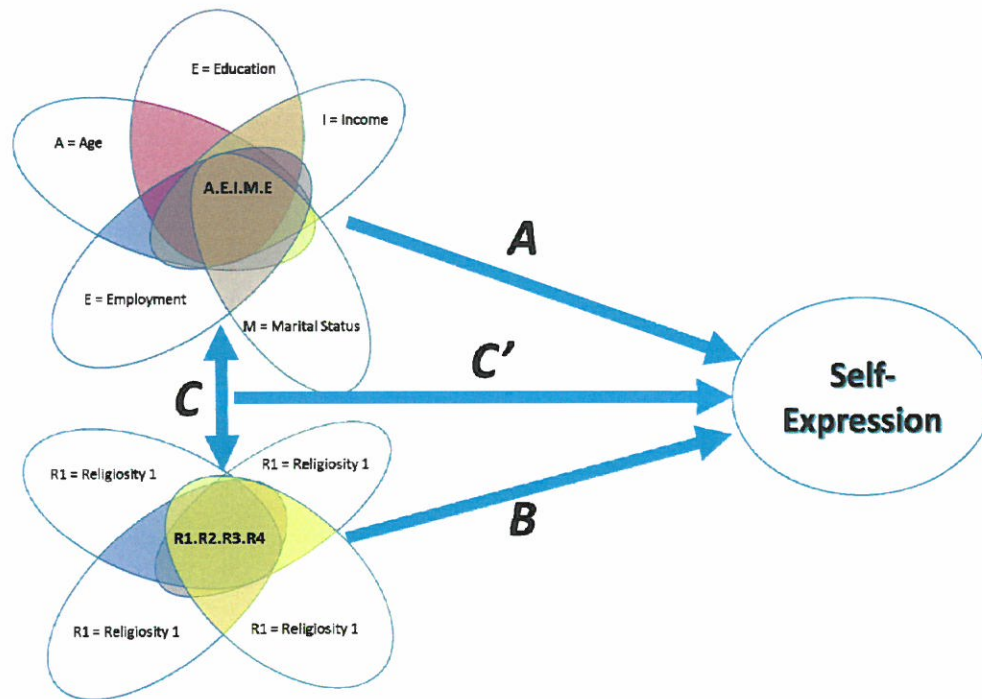
Starting from crossing some variables we can illustrate the occurrence of contrarian cases that run counter to the symmetric relationship (Woodside, 2014; Wu et al., 2014). Figure 2 illustrates a quintile analysis. It is a cross of one indicator of the religiosity and another of self-expression. The ϕ^2 value shows a positive significant size effect. Many cases with positive evaluation about performing voluntary prayers give positive evaluation about the item “seeing somebody else using my favourite brand of beauty care

products tells me a lot about that person” ($78 + 37 + 76 + 58 = 249$ or $249/1,955 = 12.7\%$). Likewise, a substantial majority of cases with negative evaluation by the respondent of the item ‘perform voluntary prayers’ have also negative evaluation of the item regarding self-expression ($45 + 33 + 159 + 105 = 342$ or $342/1,955 = 17.5\%$). On the other hand, both negative and positive contrarian cases do occur as shown in Figure 2. Respondents who never or rarely perform voluntary prayers, agree with “seeing somebody else using my favourite brand of beauty care products tells me a lot about that person” ($20 + 13 + 50 + 27 = 110/1,955 = 5.6\%$) as well as respondents who most times or always perform voluntary prayers, disagree with “seeing somebody else using my favourite brand of beauty care products tells me a lot about that person” ($133 + 85 + 100 + 57 = 375$ or $375/1,955 = 19.2\%$). This means that about a quarter of the total cases in this association counter the symmetric relationship. Following all the cross-tabulations done, a key point has been observed: that a set of independent variables (items of demographics and religiosity) related to the dependent variables (items of self-expression) positively, negatively and not at all in the same set of data. These findings showed numbers of cases that have independent and dependent contrarian relationships that should deepen our understanding of the results. Consequently, asymmetrical complex configural models looked useful to predict outcomes including combinations of antecedent conditions.

7 Complexity theory

Complexity theory is considered as a new perspective in explaining results with a maximum of objectivity. This means that asymmetric analyses provide a solid foundation and efficient means for testing emanating from the modelling of the indicators (Woodside, 2014; Wu et al., 2014). Complexity theory and asymmetric analyses give solutions to the symmetric analyses limits such as the linear relationship and the measurement and the nature of the effect. Certain logic must be adopted in order to explain and understand objectively the reality. “... a change requires that we reconsider marketing basics and abandon mainstream methodological rigidity and move toward a more pragmatic and holistic research agenda” [Gummesson, (2008), p.16, p.17].

It should be said that in complexity theory we examine configurations in order to explain combinations of features and not variance (Woodside, 2014). Figure 3 represents the foundational complex relationships and describes the major flows of the theoretical model. The bold arrows indicate the relationship that our theory predicts. In other terms, it represents the major flows of configural relationship that our modelling predicts. Demographic configurations along with religiosity dimensions may predict high and low scores of outcome condition which is the self-expression (C and C’). Demographics configuration and religiosity dimensions may explain independently the self-expression (A and B).

Figure 3 Foundational complex configural model (see online version for colours)

8 Calibration

Calibration is an operation of adjusting measurements instruments that make them conform to dependably known standards and therefore interpretable (Ragin, 2008). Original scaled values are transformed to fuzzy set values ranging from 0.00 to 1.00 that attach a truth value. These fuzzy sets offer a middle path between quantitative and qualitative measurements (Wu et al., 2014). In our case, we transform some variables in crisp sets (marital status, employment); the mixture in this case between crisp sets and fuzzy sets is acceptable. Also, we found that indicators representing religiosity form four dimensions and the indicators of self-expression form one dimension. As their indicators are strongly correlated, we create an index using the indicators. For example, you convert each indicator to z scores and then average the scores for each case (assuming all the correlations are positive).¹

9 Fuzzy set analysis

Figure 3 shows the flow of the configural relationships (bold arrow) that our theory study predicts. Specifically, the complex antecedent conditions that include demographic characteristics (age, education, income, marital status, and employment) along with the four dimensions of religiosity predict high scores in the outcome condition which is self-expression.

T1 Receives support – complex demographic configurations do indicate respondents’ evaluations of self-expression.

Table 4a Demographics and religiosity complex model predicting high scores in self-expression

	<i>Raw coverage</i>	<i>Unique coverage</i>	<i>Consistency</i>
<i>~relig2cal * ~relig3cal * relig4cal * incomecal * ~educational * agecal * ~employmentnew * maritalstatusne</i>	0.057128	0.016272	0.930490
<i>relig1cal * ~relig2cal * relig3cal * ~relig4cal * incomecal * agecal * ~employmentnew * maritalstatusne</i>	0.058192	0.016347	0.950791
<i>relig1cal * ~relig2cal * ~relig3cal * ~relig4cal * ~incomecal * educational * agecal * ~employmentnew * maritalstatusne</i>	0.055127	0.022179	0.926489
<i>Solution coverage: 0.099336</i>			
<i>Solution consistency: 0.909924</i>			

Results shown in Table 4a support the tenet as three models including demographics configurations with the variables related to religiosity indicate high scores in the outcome of self-expression. The first model has a consistency index equal to 0.95 and a coverage index equal to 0.058. Consistency evaluates “the degree to which a subset relation has been approximated, whereas the second measure, ‘coverage’, assesses the empirical relevance of a consistent subset” [Ragin, (2006), p.291]. The consistency is analogous to a correlation and the coverage to R² in statistical analysis (Wu et al., 2014).

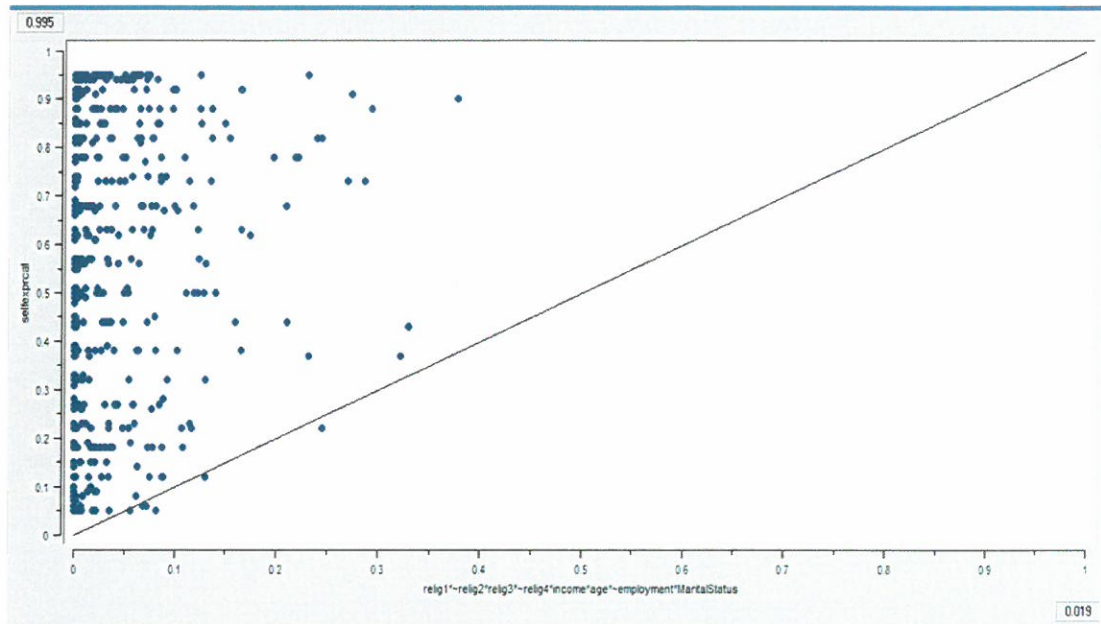
$$relig1cal * \sim relig2cal * relig3cal * \sim relig4cal * incomecal * agecal * \sim employmentnew * maritalstatusne \leq self-expression$$

The first model that indicates the high score of self-expression includes eight ingredients. Respondents with high religiosity 1 and 3 and weak in dimensions 2 and 4, high income, employed and married appeared to indicate high scores in the outcome condition which is self-expression. Therefore, according to Table 4, the findings support the tenets of the complexity theory. For example, higher education appears in one model to have association with self-expression, while in another model lower education explains the outcome condition and in the third one appeared to have no association with self-expression. On the other hand, the situation of respondents who were married with older ages seemed in all cases to have the same effect. The unemployed situation explained the association with high scores of outcome condition. For religiosity, the complexity theory was confirmed since dimension 2 usually has low impact level, whereas the other dimensions have positive, negative and no relationship with the outcome condition.

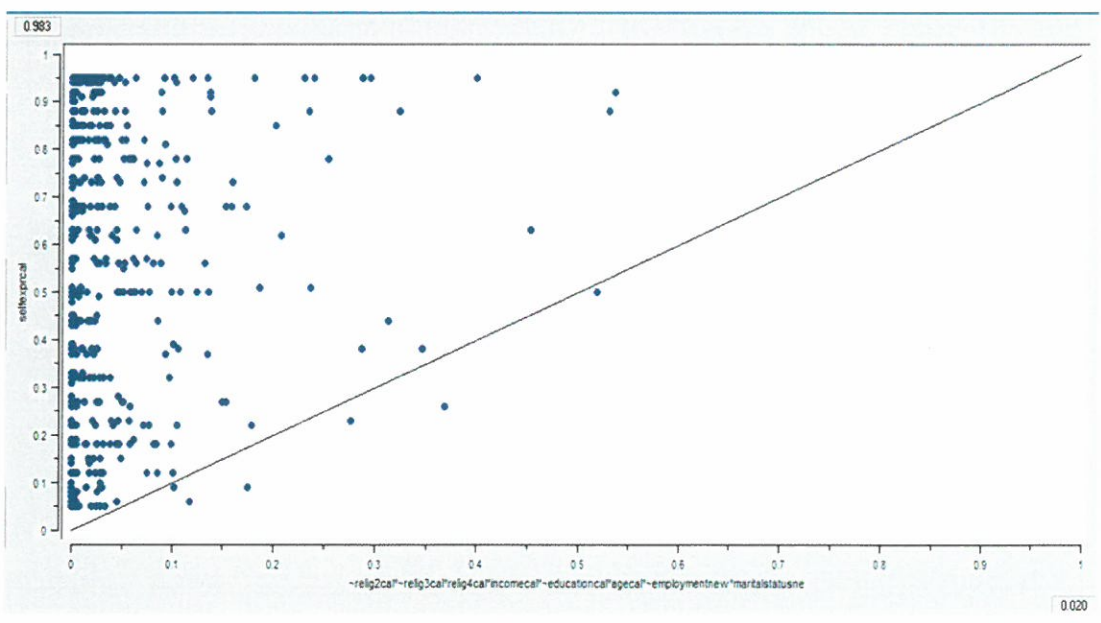
Table 4b Demographics and religiosity complex model predicting high scores in the negation of self-expression

	Raw coverage	Unique coverage	Consistency
<i>~income and income, ~education and education, ~religiosity 3 and religiosity as well as ~religiosity 4 and religiosity 4</i>			
<i>~maritalstatusne * agecal * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.376474	0.013121	0.768109
<i>~employmentnew * agecal * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.185576	0.018371	0.806723
<i>~maritalstatusne * employmentnew * agecal * incomecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.062440	0.008781	0.702191
<i>~employmentnew * agecal * incomecal * relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.274420	0.013614	0.747229
<i>~maritalstatusne * employmentnew * ~educational * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.068463	0.004694	0.789696
<i>employmentnew * agecal * ~educational * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.123235	0.059466	0.809373
<i>maritalstatusne * ~employmentnew * educational * incomecal * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.083962	0.004239	0.743945
<i>~maritalstatusne * employmentnew * agecal * ~educational * ~incomecal * ~relig3cal * ~relig2cal * relig1cal</i>	0.061554	0.010249	0.732791
<i>~maritalstatusne * ~employmentnew * agecal * incomecal * ~relig4cal * relig3cal * ~relig2cal * ~relig1cal</i>	0.167696	0.005403	0.824151
<i>~employmentnew * agecal * educational * incomecal * ~relig4cal * relig3cal * ~relig2cal * relig1cal</i>	0.204161	0.001936	0.851056
<i>~employmentnew * agecal * educational * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.316867	0.000164	0.792759
<i>~employmentnew * agecal * educational * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.168229	0.000544	0.802902
<i>~maritalstatusne * ~employmentnew * agecal * incomecal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.000962	0.755152	0.273546
<i>~maritalstatusne * ~employmentnew * agecal * incomecal * relig4cal * ~relig3cal * ~relig2cal</i>	0.213574	0.001151	0.721245
<i>~maritalstatusne * ~employmentnew * agecal * educational * ~incomecal * ~relig3cal * ~relig2cal * relig1cal</i>	0.106674	0.000519	0.861095
<i>~maritalstatusne * ~employmentnew * agecal * educational * relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.186536	0.000013	0.779148
<i>~maritalstatusne * ~employmentnew * agecal * educational * incomecal * relig4cal * ~relig2cal * relig1cal</i>	0.181728	0.000481	0.768282
<i>~maritalstatusne * ~employmentnew * agecal * educational * incomecal * relig3cal * ~relig2cal * relig1cal</i>	0.160826	0.000025	0.840342
Solution coverage: 0.696263			
Solution consistency: 0.682210			

Figure 4 (a) The fuzzy set XY plot, low scores in our model 2 are associated with low and high scores for the outcome condition (b) Model 1 predicting high scores for self-expression (c) Model 3 predicting high scores for self-expression (see online version for colours)

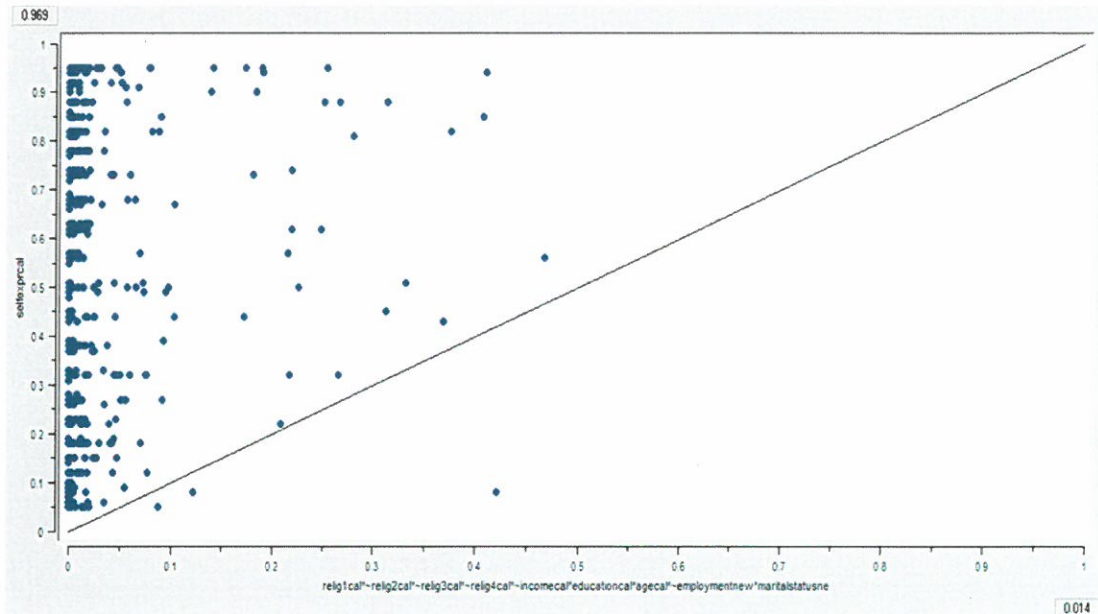


(a)



(b)

Figure 4 (a) The fuzzy set XY plot, low scores in our model 2 are associated with low and high scores for the outcome condition (b) Model 1 predicting high scores for self-expression (c) Model 3 predicting high scores for self-expression (continued) (see online version for colours)



(c)

The fuzzy set XY plot shown in Figure 4(a) (each dot represented one or more cases) demonstrated the model 2 (framed in Table 4a) indicating some respondents having the same scores in the plot. Low scores in our model 2 are associated with low and high scores for the outcome condition equitably.

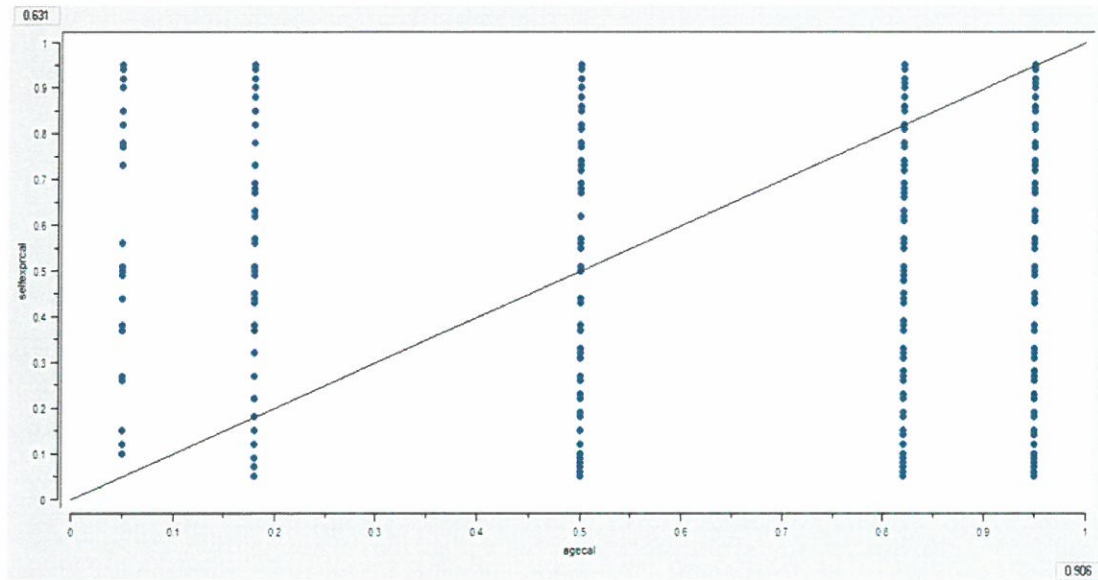
T2 Receives support – demographic antecedent configurations leading to negative outcome (self-expression) are not the mirror opposites of demographic configurations leading to positive outcome (self-expression).

This is called ‘the causal asymmetry principle’ (Woodside, 2014). It indicates that the causes of high scores in self-expression are not necessarily the same in explaining the negation in self-expression. Tables 4a and 4b support Tenet 2. They show high scores in self-expression and in negation of self-expression using complex antecedent conditions which are demographics and dimensions of religiosity.

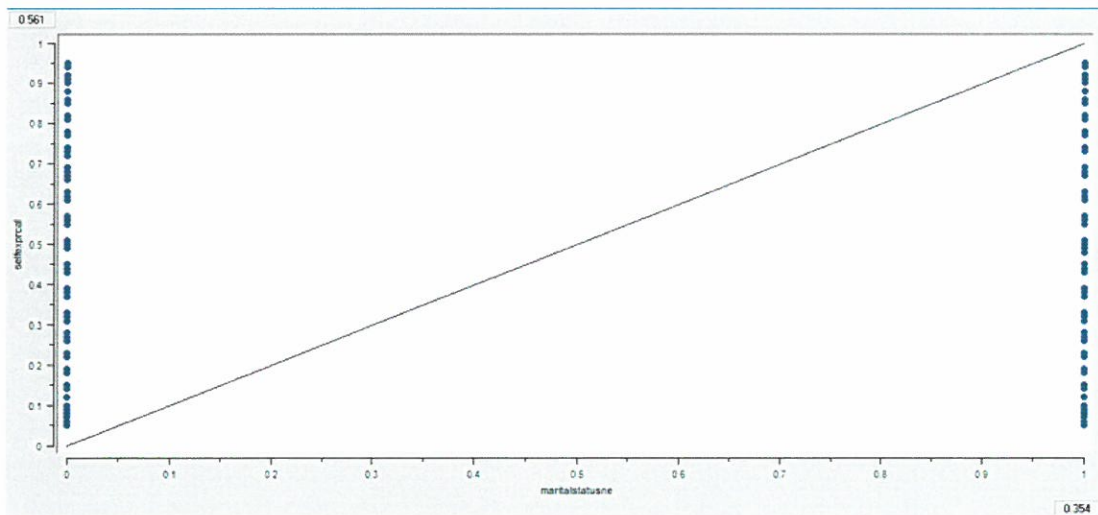
On the other hand, the variables age and religiosity 1 predict self-expression and the negation of self-expression, whereas unemployed respondents with weak religiosity 2 predict self-expression and the negation of self-expression. Married respondents have a positive self-expression but unmarried claimed negative approval towards self-expression. In some cases, ~religiosity 1 and religiosity 1 and ~employment and employment predict the negation of self-expression.

T3 Receives support – a model composed of complex antecedent configurations (demographics and religiosity) is sufficient but may not be necessary for predicting high scores in the outcome condition (self-expression).

Figure 5 (a) The model showing that age is necessary and sufficient antecedent condition in explaining high score of self-expression (b) The model showing that marital status is necessary and sufficient antecedent condition in explaining high score of self-expression (see online version for colours)



(a)



(b)

T5 Receives support – within different complex antecedent combinations, simple antecedent conditions may appear as a positive and a negative influence on the outcome.

According to our results, multiple paths lead to high scores in self-expression. This is called the “equifinality principle when multiple paths occur and lead to the same outcome” (Woodside, 2014). Asymmetric combinations of indicators for demographics and religiosity are sufficient but not one of the complex antecedent conditions is considered necessary for accurately predicting high scores of self-expression. For

example, high level of education may not be necessary for reaching high scores in self-expression (see Table 4a).

T4 Receives partial support – simple antecedent conditions can be necessary but they are insufficient for indicating high scores in an outcome condition.

Tenet 4 is confirmed when a simple antecedent condition may be a necessity to explain the outcome but is insufficient to predict that. For example, having a PhD degree is a necessity to succeed in promotion along the career path, but is considered also as insufficient to reach that. Other factors such as research and publications form fundamental conditions to meet that. More clearly, in our example, crossing all the antecedent conditions (one by one) (demographics and religiosity) by the high score of the outcome condition (self-expression) showed that they are not a necessity. For example, in some cases high education can explain high scores of self-expression. In other cases, a low level of education explains also the high level of outcome condition, and so on for all the variables. To explain that more fully we take as example some XY plots, some simple antecedent conditions explaining the high score of the outcome as shown in Figures 5(a) and 5(b).

The two Figures 5(a) and 5(b) confirmed that a simple antecedent condition (age and marital status) may be a necessity for explaining high score of self-expression but they are at the same time sufficient. They include asymmetric necessary and sufficient relationship. If the display of cases is spread only above the symmetric line, this situation is called not necessary but sufficient relationship. If the opposite occurs, we obtain necessary but insufficient relationship. This is why Tenet 4 received support partially; the simple antecedent condition is necessary and sufficient.²

Contrarian analysis showed many cases where high X indicates high Y, low Y and nothing about Y. On the other hand, the negation of X indicates too high Y, low Y and nothing Y. For example, income and education are positive indicators in some configurations and negative indicators in others. They contribute positively and negatively to high and low scores for self-expression.

T6 Receives support – the presence of religiosity with demographic configurations modifies how respondents evaluate self-expression.

Tenet 6 receives support as the presence of some dimensions of religiosity and the absence of others within complex antecedent conditions explain highly the assessment of self-expression. In the majority of models, weak religiosity with demographic configurations explain high scores of self-expression; in certain cases religiosity 1 and religiosity 4 may play a positive role in explaining high self-expression.

On the other hand, in most models, a majority of weak dimensions of religiosity with demographic configurations provide low scores for self-expression.

T7 Receives support – configurations of religiosity influence high scores for self-expression.

This tenet receives support too because religiosity configurations explain positively high scores of self-expression. We note here that in the majority of cases high religiosity plays a positive role in explaining positive self-expression as indicated in Table 5a.

Table 5a Religiosity complex model predicting high scores in self-expression

	<i>Raw coverage</i>	<i>Unique coverage</i>	<i>Consistency</i>
<i>~relig4cal * relig3cal * relig2cal</i>	0.134914	0.006513	0.988229
<i>relig4cal * relig2cal * relig1cal</i>	0.140778	0.012377	0.982253
Solution coverage: 0.147291			
Solution consistency: 0.981561			

Table 5b Religiosity complex model predicting high scores in the negation of self-expression

	<i>Raw coverage</i>	<i>Unique coverage</i>	<i>Consistency</i>
<i>~relig4cal * relig3cal</i>	0.303775	-0.000000	0.810434
<i>relig4cal * ~relig2cal * ~relig1cal</i>	0.309277	0.089678	0.832253
<i>relig4cal * relig2cal * relig1cal</i>	0.155563	0.000822	0.912972
<i>relig3cal * ~relig2cal</i>	0.321121	0.000101	0.789870
<i>relig3cal * relig1cal</i>	0.319666	0.000240	0.775836
Solution coverage: 0.415594			
Solution consistency: 0.754288			

It is to be mentioned too that in the majority of cases high religiosity explains high scores in the negation of self-expression (see Table 5b).

T8 Receives support – demographic algorithms indicate high outcome scores for self-expression.

Complex antecedent demographic models alone indicate high scores for the outcome (see Table 6a) as well as the negation of the outcome. Especially, married, unemployed and young people with low education and high income positively influence self-expression in the majority of cases, whereas unmarried and unemployed people in the majority of cases with a variety in age, education and income strongly influence the negation of self-expression.

Table 6a Demographic configurations complex model predicting high scores in self-expression

	<i>Raw coverage</i>	<i>Unique coverage</i>	<i>Consistency</i>
<i>~employmentnew * agecal * ~incomecal</i>	0.190353	0.055908	0.755163
<i>maritalstatusne * ~employmentnew * educational</i>	0.151642	0.004674	0.734882
<i>maritalstatusne * agecal * educational</i>	0.178990	0.005006	0.765303
<i>employmentnew * agecal * incomecal</i>	0.104315	0.035487	0.746760
<i>employmentnew * ~agecal * ~educational * ~incomecal</i>	0.099743	0.037749	0.814159
<i>~employmentnew * ~agecal * ~educational * incomecal</i>	0.184440	0.053580	0.926337
<i>maritalstatusne * ~employmentnew * agecal</i>	0.211484	0.001422	0.681903
<i>maritalstatusne * ~employmentnew * incomecal</i>	0.198470	0.011203	0.646235
<i>maritalstatusne * agecal * incomecal</i>	0.218070	-0.000000	0.714156
Solution coverage: 0.563623			
Solution consistency: 0.702305			

Table 6b Demographic configurations model predicting high scores in the negation of self-expression

	Raw coverage	Unique coverage	Consistency
<i>employmentnew * agecal * educationalcal</i>	0.117820	0.062604	0.769187
<i>~employmentnew * agecal * ~educationalcal * ~incomecal</i>	0.179760	0.017433	0.797789
<i>~employmentnew * ~agecal * ~educationalcal * incomecal</i>	0.202256	0.061334	0.842839
<i>maritalstatusne * ~employmentnew * ~agecal * educationalcal</i>	0.084792	0.013013	0.749262
<i>~maritalstatusne * employmentnew * ~agecal * ~educationalcal * ~incomecal</i>	0.052142	0.013525	0.774087
<i>~maritalstatusne * ~employmentnew * agecal * ~incomecal</i>	0.137592	0.000757	0.725652
<i>~maritalstatusne * agecal * educationalcal * ~incomecal</i>	0.168939	0.000000	0.820016
Solution coverage: 0.434204			
Solution consistency: 0.726665			

10 Predictive validity

According to Crocker and Algina (1986, p.224, quoted in Alavi, 2012), predictive validity is “the degree to which test scores predict criterion measurements that will be made at some point in the future” [Alavi, (2012), p.225]. In order to test predictive validity, the sample was split into a modelling of two subsamples. Results confirm the conclusion that “highly consistent models for subsample 1 have high predictive abilities for subsample 2” [Wu et al., (2016), p.235]. This is when predicting high scores of self-expression and in the negation of self-expression (see Tables 7a, 7b, 7c and 7d).

Table 7a Demographics and religiosity complex model predicting high scores in self-expression for subsample 1

	Raw coverage	Unique coverage	Consistency
<i>relig2cal</i>	0.150186	0.031425	0.976271
<i>employmentnew * relig3cal</i>	0.068303	0.016591	0.938578
<i>maritalstatusne * incomecal * ~relig4cal * relig3cal</i>	0.077891	0.010302	0.950643
<i>maritalstatusne * ~employmentnew * ~agecal * ~educationalcal</i>	0.078328	0.000766	0.893095
<i>~employmentnew * ~agecal * ~incomecal * relig1cal</i>	0.116237	0.000138	0.956225
<i>maritalstatusne * ~agecal * ~educationalcal * incomecal</i>	0.100698	0.006215	0.904243
<i>maritalstatusne * ~employmentnew * ~educationalcal * relig4cal</i>	0.064876	0.001415	0.907683
<i>~agecal * educationalcal * ~incomecal * relig1cal</i>	0.177388	0.016218	0.943295
<i>maritalstatusne * ~educationalcal * incomecal * relig4cal</i>	0.081638	0.002277	0.913214
Solution coverage: 0.309425			
Solution consistency: 0.901804			

Table 7b Demographics and religiosity complex model predicting high scores in the negation of self-expression for subsample 1

	Raw coverage	Unique coverage	Consistency
<i>agecal * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.307710	0.012817	0.838484
<i>~maritalstatusne * employmentnew * agecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.111696	0.015461	0.674511
<i>employmentnew * ~educationcal * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.133446	0.010211	0.780855
<i>maritalstatusne * ~employmentnew * educationcal * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.097171	0.011931	0.727204
<i>~maritalstatusne * ~employmentnew * agecal * incomecal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.273546	0.078446	0.755152
<i>~maritalstatusne * ~employmentnew * agecal * ~incomecal * ~relig3cal * ~relig2cal * relig1cal</i>	0.121692	0.006542	0.814739
<i>employmentnew * agecal * ~educationcal * incomecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.087429	0.005289	0.748644
<i>~employmentnew * agecal * ~educationcal * incomecal * relig4cal * ~relig3cal * ~relig2cal</i>	0.231262	0.005656	0.790606
<i>~employmentnew * agecal * educationcal * ~incomecal * ~relig3cal * ~relig2cal * relig1cal</i>	0.162460	0.001354	0.826098
<i>employmentnew * agecal * educationcal * ~relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.090731	0.002568	0.810099
<i>~maritalstatusne * agecal * ~educationcal * incomecal * relig4cal * ~relig2cal * relig1cal</i>	0.204236	0.000253	0.800577
<i>~employmentnew * agecal * incomecal * ~relig4cal * relig3cal * ~relig2cal * relig1cal</i>	0.225329	0.016803	0.815693
<i>~employmentnew * agecal * educationcal * incomecal * relig4cal * ~relig2cal * relig1cal</i>	0.240853	0.010793	0.781543
<i>~maritalstatusne * ~employmentnew * ~agecal * ~educationcal * incomecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.130030	0.004226	0.895911
<i>maritalstatusne * ~employmentnew * agecal * ~educationcal * ~incomecal * ~relig4cal * ~relig2cal * relig1cal</i>	0.060479	0.006972	0.817233
<i>maritalstatusne * ~employmentnew * ~agecal * incomecal * ~relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.071398	0.002088	0.761024
<i>employmentnew * agecal * ~educationcal * ~incomecal * relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.073663	0.005580	0.807265
<i>~maritalstatusne * ~employmentnew * agecal * ~educationcal * incomecal * relig4cal * relig3cal * relig1cal</i>	0.122944	0.000316	0.881441
<i>maritalstatusne * ~employmentnew * educationcal * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.060200	0.000278	0.693686
<i>maritalstatusne * ~employmentnew * ~agecal * educationcal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.080862	0.000633	0.742966

Table 7b Demographics and religiosity complex model predicting high scores in the negation of self-expression for subsample 1 (continued)

	<i>Raw coverage</i>	<i>Unique coverage</i>	<i>Consistency</i>
<i>~maritalstatusne * employmentnew * agecal * incomecal * ~relig3cal * ~relig2cal * relig1cal</i>	0.052191	0.000190	0.694678
<i>~maritalstatusne * agecal * incomecal * relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.243535	0.000076	0.749271
Solution coverage: 0.745520			
Solution consistency: 0.665546			

Table 7c Demographics and religiosity complex model predicting high scores in self-expression for subsample 2

	<i>Raw coverage</i>	<i>Unique coverage</i>	<i>Consistency</i>
<i>maritalstatusne * ~employmentnew * agecal * ~educational * incomecal * relig4cal * ~relig3cal * ~relig2cal</i>	0.057128	0.011132	0.930490
<i>maritalstatusne * ~employmentnew * agecal * incomecal * ~relig4cal * relig3cal * ~relig2cal * relig1cal</i>	0.058192	0.011068	0.950791
<i>maritalstatusne * ~employmentnew * ~agecal * educational * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.045741	0.010653	0.964109
<i>maritalstatusne * ~employmentnew * ~agecal * ~educational * incomecal * ~relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.065823	0.011196	0.928121
<i>~maritalstatusne * employmentnew * agecal * ~educational * incomecal * relig4cal * relig3cal * ~relig2cal * relig1cal</i>	0.021380	0.021381	0.986739
<i>~maritalstatusne * ~employmentnew * agecal * ~educational * incomecal * relig4cal * relig3cal * relig2cal * relig1cal</i>	0.068569	0.068569	0.984867
Solution coverage: 0.192266			
Solution consistency: 0.942362			

Table 7d Demographics and religiosity complex model predicting high scores in the negation of self-expression for subsample 2

	<i>Raw coverage</i>	<i>Unique coverage</i>	<i>Consistency</i>
<i>agecal * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.307710	0.012817	0.838484
<i>~maritalstatusne * employmentnew * agecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.111696	0.015461	0.674511
<i>employmentnew * ~educational * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.133446	0.010211	0.780855

Table 7d Demographics and religiosity complex model predicting high scores in the negation of self-expression for subsample 2 (continued)

	Raw coverage	Unique coverage	Consistency
<i>maritalstatusne * ~employmentnew * educational * ~relig4cal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.097171	0.011931	0.727204
<i>~maritalstatusne * ~employmentnew * agecal * incomecal * ~relig3cal * ~relig2cal * ~relig1cal</i>	0.273546	0.078446	0.755152
<i>~maritalstatusne * ~employmentnew * agecal * ~incomecal * ~relig3cal * ~relig2cal * relig1cal</i>	0.121692	0.006542	0.814739
<i>employmentnew * agecal * ~educational * incomecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.087429	0.005289	0.748644
<i>~employmentnew * agecal * ~educational * incomecal * relig4cal * ~relig3cal * ~relig2cal</i>	0.231262	0.005656	0.790606
<i>~employmentnew * agecal * educational * ~incomecal * ~relig3cal * ~relig2cal * relig1cal</i>	0.162460	0.001354	0.826098
<i>employmentnew * agecal * educational * ~relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.090731	0.002568	0.810099
<i>~maritalstatusne * agecal * ~educational * incomecal * relig4cal * ~relig2cal * relig1cal</i>	0.204236	0.000253	0.800577
<i>~employmentnew * agecal * incomecal * ~relig4cal * relig3cal * ~relig2cal * relig1cal</i>	0.225329	0.016803	0.815693
<i>~employmentnew * agecal * educational * incomecal * relig4cal * ~relig2cal * relig1cal</i>	0.240853	0.010793	0.781543
<i>~maritalstatusne * ~employmentnew * ~agecal * ~educational * incomecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.130030	0.004226	0.895911
<i>maritalstatusne * ~employmentnew * agecal * ~educational * ~incomecal * ~relig4cal * ~relig2cal * relig1cal</i>	0.060479	0.006972	0.817233
<i>maritalstatusne * ~employmentnew * ~agecal * incomecal * ~relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.071398	0.002088	0.761024
<i>employmentnew * agecal * ~educational * ~incomecal * relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.073663	0.005580	0.807265
<i>~maritalstatusne * ~employmentnew * agecal * ~educational * incomecal * relig4cal * relig3cal * relig1cal</i>	0.122944	0.000316	0.881441
<i>maritalstatusne * ~employmentnew * educational * ~incomecal * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.060200	0.000278	0.693686
<i>maritalstatusne * ~employmentnew * ~agecal * educational * ~relig4cal * ~relig3cal * ~relig2cal</i>	0.080862	0.000633	0.742966
<i>~maritalstatusne * employmentnew * agecal * incomecal * ~relig3cal * ~relig2cal * relig1cal</i>	0.052191	0.000190	0.694678
<i>~maritalstatusne * agecal * incomecal * relig4cal * ~relig3cal * ~relig2cal * relig1cal</i>	0.243535	0.000076	0.749271
Solution coverage: 0.745520			
Solution consistency: 0.665546			

11 Discussion

This is the third study in a series that began with Wallström et al. in 2010. That study was followed by Alserhan et al. in 2015, who followed on the recommendation of Wallström et al. for a regional expansion of the sample. This study uses recommendations from both previous studies and tests new variables that were recommended by these studies and not yet studied. Particularly, this study investigated the relationship between self-expression through brands and the variables of religiosity of respondents, age, education, income, marital status and employment.

The investigation was carried out using eight tenets of the complexity theory within the context of consumer behaviour. Almost all the tenets are supported, except Tenet 4 which is partially supported (age and marital status form asymmetric necessary and sufficient relationship when explaining high score of self-expression). The results demonstrate that the relationships between the study variables are not as simple as they might seem or as might have been portrayed in previous studies.

Results as shown are considerably varied. The interpretation of asymmetric analysis is different from symmetric analysis. As we can see in social studies, complexity theory remains useful and describes reality with more objectivity. Social science is relative and we cannot find out the hidden side of human behaviour when we limit ourselves only to symmetric analysis. For example, when a regression showed a high percentage of explanation with positive beta, does this mean that the effect cannot be negative? In complexity theory things seem more logical; a man known among people as smiley and helpful may not be in some conditions due to some specific reasons.

Another finding, although completely unintended, from the EFA where religiosity was reduced into four factors, is that those factors roughly fit the framework of Islam that was introduced by the early Muslim scholars. Those scholars divided Islam into four different components: faith or *Aqida*, worship or *Ibadah*, dealings or *Muamalat*, and ethics (sometimes referred to as manners) or *Adab*. While the religiosity scale did not include any item from the first component (i.e., *faith*), it included items from the three remaining components. This is a startling result since it statistically verifies the accuracy of this framework and, at the same time, prompts us to recommend that more such religious literature be put under scientific scrutiny using the advanced tools that are available to us these days.

12 Further discussion

Public display of women's beauty is clearly discouraged by the teaching of Islam, where women are supposed to show their beauty only within a limited circle of family members – i.e., those who are considered *Mahram* to them, where a *Mahram* by religion means a person who cannot be a possible husband for a particular woman, such as her brothers, uncles, father-in-law and all her descendants. Also, in women's gatherings a display of beauty is allowed as long as it is not excessive, wasteful or extravagant. In front of all others, such a display – whether through make-up, accessories or ornaments – is strictly prohibited. Therefore, make-up becomes more of a private family practice rather than an act to elicit public admiration. This point could be very significant in explaining what motives Arab women have compared to others when it comes to the consumption of make-up – i.e., Arab women do it for family compared to others doing it for those outside

their family circles. In fact, while an Arab woman will try to look her best in front of her husband and close family, a Western woman might not use cosmetics at all at home.

Moreover, almost all of the interviewed women expressed serious concerns about the health safety of cosmetics. Over and over again, both Arab women who apply and who do not apply cosmetics expressed grave concerns about the effect of cosmetics on their skin. This concern, however, was only related to modern cosmetics – i.e., Western. However, when they do buy they prefer more branded products as a way to reduce their consumption health worries. But, it is worth noting here that these concerns apply to modern cosmetics only; traditional beauty products that have been consumed by Arab women for the past 2,000 years, including kohl and henna, were exempt. They are perceived to be safe. Samah, who uses make-up occasionally, says: *the reason I use make-up sparingly is because I believe that it is harmful to the skin since some of its ingredients are chemicals.*

Many women also noted that cosmetics are not really for them; that it does not make them prettier and that it might not actually be suitable for their ‘Arab’ skin. Also, the way modern make-up is applied does not seem to ‘click’ with Arab women. It actually seems to alienate them by creating a *Barbie effect*. For example, Laila, who is described by other women as a beautiful housewife by all criteria, says: *while watching Arab actress ‘x’ and how she puts her make-up on so beautifully, I can never do that!*

13 Limitations

Although using both the complexity theory and fsQCA has been successful as demonstrated by Wu et al. (2014) and again in this study, the results obtained demonstrate the complexity of a particular situation. They do not offer a simple answer to the research problem, i.e., no hypotheses, and thus some of the managerial implications might not be visible to practitioners, although they might be very interesting to theorists.

14 Suggestions for future research

The approach used in this study provides researchers with a new perspective on investigating relationships. Previously tested or ‘proven’ relationships could be revisited and looked at from a totally new angle as demonstrated in Wu et al. (2014) and in this study. Moreover, the researchers recommend the extension of this approach to new areas within marketing in order to further test its applicability outside of the service and emotions domains. Furthermore, studies within these two domains could also be useful to ascertain the results obtained from the current study and from the Wu et al. study. In addition to that, cross-cultural samples could also be investigated.

15 Conclusions

This study provides further support to the conclusion of Wu et al. (2016, p.235) that “the bringing together of complexity theory, fsQCA, and pattern research in service dominant logic is a fit-like-a-glove union for advancing theory, method, and practice in service research.” Moreover, it extends the use of this pioneering approach outside of the service

domain and into the emotion-brand domain where the relationships between demographics and religiosity and self-expression through brands is analysed. The results, as in Wu's study in services, show that relationships in emotion-brand domain are not as straightforward as previously thought.

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Notes

- 1 This is after consulting Professor Charles Ragin in July 2015 by email.
- 2 This situation is possible. Professor Arch Woodside confirmed that after contacting him by email in September 2015.