ANTECEDENTS OF NORM-VIOLATING BEHAVIOUR IN SUSTAINABLE WATER CONSUMPTION: A GROUNDED THEORY APPROACH

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─Abstract ─

This study attempts to understand the antecedents of norm-violating behaviour in sustainable water consumption. The study was conducted in a water stressed municipality in South Africa. The study adopts a two staged approach that commences with grounded theory to understand why the norm of saving water is failing to embed among households. Data for the first stage was generated using observations and in-depth interviews. The sample was drawn from households who were observed violating water conservation by-laws. The first stage identified awareness of consequences, ascription of responsibility, concern for self-image, low self-efficacy perceptions and expectation of others' cooperation as the main antecedents of norm-violating behaviour. The second stage generated cross sectional quantitative data to test the hypotheses that emanated from the first stage. Ascription of responsibility, expectation of others' cooperation, low self-efficacy perceptions and concern for self-image were found to be the drivers of norm-violating behaviour in water use. The study offers valuable insights to policy makers who intend to promote sustainable water consumption.

Key words: sustainable water consumption, norm-violating behaviour, grounded theory

JEL Classification: N5, Q25

1. INTRODUCTION AND BACKGROUND TO THE STUDY

Access to clean and affordable water is regarded as a universal human right (United Nations, 2014). This right is, however, threatened by increasingly alarming levels of water scarcity and contamination (Dascher, Kang & Hustvedt, 2014). Water scarcity is now considered as one of the most critical challenges confronting humankind in the 21st century (Aprile & Fiorillo, 2017; Otaki, Ueda

& Sakura, 2017). In 2015, the Global Risk Report ranked water scarcity as the most immediate global threat (World Economic Forum, 2015). Globally, water scarcity is fuelled by climate change induced droughts, global warming and escalation in water demand (Dascher et al., 2014; Garcia, Ribas, Llausas & Sauri, 2013). In South Africa**,** low rainfall patterns, limited supply of ground water, population growth and high consumption estimated at 15 billion m^3 per annum are the main drivers of water shortage (World Wildlife Fund South Africa, 2016). To promote the norm of saving water, the South African government, through the Department of Water and Sanitation, has put in place a number of initiatives ranging from educational campaigns and by-laws.

2. PROBLEM STATEMENT

Although South Africa is ranked as the 30^{th} driest country in the world (Water Resource Institute, 2015), the adoption of water saving habits remains low among households (Lindsay & Supski, 2017). Households continue to engage in anti-water saving habits such as watering gardens with hosepipes, filling swimming pools with municipal water, cleaning pavements with hosepipes and using hosepipes to wash cars (Raborife, 2016). During the period 1 September 2016 to 31 March 2017, Ekurhuleni Metropolitan, one of the water stressed municipalities, issued a total of 4530 fines mostly to households for breaching water usage by-laws (Chernick, 2017), while voluntary water saving measures by households resulted in a paltry water saving rate of about 3.5 percent (City of Ekurhuleni, 2016).

It is against this background that this study applies the grounded theory approach to explore the underlying factors that drive norm-violating behaviour in the case of water consumption. It is worth noting that, to date, there is no any known study that has focused on understanding factors that influence norm-violating behaviour in water consumption in South Africa. A notable study by Onyenankeya, Caldwell and Okoh (2015) mainly focused on understanding a culture of indifference in water saving behaviour among students. This study focuses on households as they are identified as key stakeholders in sustainable water use (Department of Water and Sanitation, 2016). Knowledge of antecedents of norm-violating behaviour is expected to contribute to the formulation of effective strategies for promoting sustainable water consumption in South Africa.

3. CONCEPTUALISING NORM-VIOLATING BEHAVIOUR

The promotion and entrenchment of societal norms is encouraged as a mechanism of promoting self-regulating behaviours and responsible communities (Hynes & Wilson, 2016). Water consumption is one of the behaviours influenced by an individual's normative system (Lindsay & Supski, 2017; Corral-Vedugo & Frias-Armenta, 2006). Societal norms have the import of defining behaviours that are deemed to be morally acceptable or unacceptable (Williams, 2011). A violation of established societal norms is often met with disapproval and sanction (Biel & Thogerson, 2007). To be effective in their role as behaviour benchmarks, social norms ought to be agreed upon by the society and there should be consensus on normative expectations and obligations (Hynes & Wilson, 2016). Norms are imparted to group members through the process of socialisation (Williams, 2011). The process of norm socialisation and assimilation thereof is spearheaded by family members, peers and opinion leaders who act as socialisation agents (Prati, Albanesi & Pietrantoni, 2017).

Norms are broadly divided into injunctive and descriptive norms (Terrier & Marfaing, 2015). Injunctive norms refer to behavioural actions that are approved within a particular community (Ajzen & Klobas, 2013). Individuals are compelled to comply with injunctive norms because of the need to belong to an esteemed social group or for fear of sanctions (Terrier & Marfaing, 2015). Descriptive norms refer to the behavioural actions that are commonly shared by the majority of people within a community (Thomas & Sharp, 2013). Descriptive norms are known to influence behaviour much more than injunctive norms (Ajzen & Klobas, 2013:209). Norms influence an individual's behaviour if they are internalised as personal norms (Terrier & Marfaing, 2015). In recent years, norms have been used to promote behaviours that are beneficial to the environment such as recycling (Bertoldo & Castro, 2016) and consumption of organic food (Johe & Bhullar, 2016).

Although norms are influential in promoting socially acceptable behaviours, there is growing evidence that suggests incidences of norm-violating behaviour (Uba & Chatzidakis, 2016). Norm-violating behaviour refers to behavioural acts by individuals that are not consistent with the generally accepted norms (Joireman, Posey, Truelove & Parks, 2009). In sustainability studies, terms such as anti-social behaviour, anti-ecological behaviour and anti-environmental behaviour have been used as synonyms of norm-violating behaviour (Corral-Vedugo et al., 2006). In environmental sustainability studies, norm-violating behaviour has been

explained as driven by the social dilemmas perceived by individuals (Gupta & Ogden, 2009; Vitell, Keith & Mathur, 2011).

Social dilemmas are situations in which an individual has a choice of either engaging in behavioural acts that maximise personal interests or undertaking altruistic acts that benefit the society (Sussman, Lavallee & Gifford, 2016). In sustainability studies, social dilemmas have been reported in organic food consumption (Muposhi, Dhurup & Surujlal, 2015) and energy saving behaviour (Gupta & Ogden, 2009). In order to justify participation in norm-violating behaviour, individuals employ a number of techniques such as moral licensing and rationalisation techniques. Moral licensing or moral justification (Atkinson & Kim, 2015), is a form of motivated reasoning whereby one legitimises or validates norm-violating behaviour (Vitell et al., 2011; Tiefenbeck, Staake, Koth & Sachs, 2013). In addition to moral licensing, Strutton, Vitell and Pelton (1994) identified denial of responsibility, appeal to higher loyalties, denial of injury, denial of victim and condemning the condemners as other rationalisation techniques employed to justify norm-violating behaviour. In order to discourage norm-violating behaviour, Sussman et al. (2016) as well as Joireman et al. (2009) stress the importance of educational campaigns. Noting the time taken by campaigns to effect behavioural change, Garcia et al. (2013) recommended the use of sanctions to stamp out norm violating behaviour.

4. RESEARCH METHODOLOGY

This study followed a two-staged research process that begins with a qualitative grounded theory to discover factors that promote norm-violating behaviour. The second stage builds on themes that emerged from the first stage to generate research propositions that were tested with cross sectional quantitative data.

4.1 STAGE 1: GROUNDED THEORY APPROACH

Data was collected through the use of observations and in-depth interviews from households in Ekurhuleni Municipality's residential areas which include Bedfordview, Edenvale and Primrose. The interviews were conducted from 10 August to 30 September 2016, a period which was characterised by water shortages. Consistent with grounded theory, data collection and analyses were synchronised. Data analyses commenced soon after the first interview. In line with the tenets of grounded theory, data driven sampling was utilised (Corbin & Strauss, 1990). Interviews were conducted up to the 18th interview, a point at which no new insights were emerging from subsequent interviews.

Trustworthiness of interview data was enhanced through prolonged engagement, member checks and peer debriefing (Lincoln & Guba, 1985). Interview transcripts were analysed by following a three-step approach suggested by Corbin and Strauss (1990) which involved open coding, axial coding and integration. Table 1 summarises the themes and sub-themes that emerged from interview transcripts including representative excerpts.

Table 1: Themes, sub-themes and representative interview excerpts

Theme	Sub-themes	Example quotes
Ascription of responsibility	• Role of households in water consumption • Government role in water conservation	I believe it is very important for everyone to conserve water but my view is that the municipality is to blame for all this water mess….a lot of water is lost through leaks (#interview 10). I believe I am doing my part…I always pay my bill on time…so it is the duty of the city to provide water and plan for drought, honestly I believe it's my right to use water (#interview 4).
Awareness of consequences	• Consumer education • Water saving attitudes • Role of socialisation	I am trying to save water but the problem is my kids….they want their swimming pool…this other day I showed them the water fines but they don't understand (#interview 6).
Concern for self-Image	• Status • egoistic values • self-interest	I like my garden… it is part of me, I feel good when my garden is good...all my colleagues look after their lawn and gardens well…it's something that is valued in this area (#interview 16). I now know the time when these municipalities are moving around and I have changed my gardening routine…everyone is doing that (#interview 11).
Self-efficacy perceptions	• Low efficacy Effectiveness of individual behaviour	We tried to save water by using shower heads and water saving appliances but we realise that we are not going to change anything (#interview 2).
Expectation of other's cooperation	• Law obedience • Cost of cooperation • Injunctive norms	I used to obey these municipality water laws but I realise that others are not doing the same …even if you do what you get … (#interview 17).

4.2 STAGE 2: QUANTATIVE APPROACH

As shown in Table 1, ascription of responsibility, awareness of consequences, concern for self-image, self-efficacy perceptions and expectations of others' cooperation emerged as the main themes from analysed interview transcripts. The relationship between the foregoing themes with sustainable water consumption was further examined using cross sectional quantitative data. The value-belief-norm theory (Stern, Dietz, Guagnano & Kalof, 1999) identifies awareness of the consequences and ascription of responsibility as predictors of sustainable behaviour. Additionally, Gupta and Ogden (2009) found that individuals are likely to engage in sustainable behaviour if they perceive that they have the capacity to address environmental problems and when important others are engaging in such behaviour. Concern for self-image has been identified as a major impediment of sustainable behaviour (Heberlein, 2012). Based on data generated in stage 1 and the foregoing insights, the following hypotheses were posited:

H1: There is a positive relationship between awareness of consequences and sustainable water consumption.

H2: There is a positive relationship between ascription of responsibility and sustainable water consumption.

H3: There is a positive relationship between expectation of other's cooperation and sustainable water consumption.

H4: There is a positive relationship between self-efficacy perceptions and sustainable water consumption.

H5: There is a negative relationship between concern for self-image and sustainable water consumption.

4.2.1 Sampling method, measures and data collection

Data for stage 2 was collected from 1 October 2016 to 30 November 2016 using convenience sampling. A self-administered structured questionnaire was used to collect data. Awareness of consequences was operationalised using a 5-item scale adapted from Brownlee, Hallow, Moore and Wright (2014). Examples of measurement items used include 'shortage of water will affect livelihoods' and 'shortage of water will affect economic growth.' Ascription of responsibility was measured using a 5-item scale adapted from De Groot and Steg (2009). Some of the items used to measure ascription of responsibility were 'I feel jointly responsible for the problem of water shortages' and 'I feel jointly responsible for

excessive use of water.' Expectation of others' cooperation was measured using 5 items adapted from Gupta and Ogden (2009) and Wiener and Doescher (1994). Examples of items in this scale include 'I am willing to save water if others are doing so' and 'I feel motivated to save water if I see others making an effort to save water.'

Self-efficacy perception was operationalised using a 4-item scale adapted from Ellen, Wiener and Cobb-Walgren (1991) and Sinnappan and Rahman (2011). Examples of items on the scale include 'There is not much that an individual can do about water conservation' and 'Water conservation efforts of one person are useless as long as other people refuse to conserve water.' Concern for self-image was measured using a 4-item scale adapted from Corral-Verdugo, Betchtel and Fraijo-Sing (2003). Examples of items included in the scale are 'I will not sacrifice my personal goals to save water' and 'I will participate in water saving if it does not interfere with my life style.' Finally, a 5-item scale developed by Corral-Vedugo et al. (2006) was utilised to measure sustainable water consumption. 'I take a shower in less than five minutes' and 'brush my teeth using a single cup of water' are examples items included in this scale. A 5-point Likert scale that ranged from (1) strongly disagree and (5) strongly agree was used for all constructs. A pre-test was conducted with a university student sample of 50 and minor modifications were made to the final questionnaire. A total of 180 questionnaires were considered for analysis.

4.3 Data analysis

Data was analysed using SPSS software version 24. Descriptive statistics were used to explain the profile of the respondents. Correlational analysis was conducted to examine the degree of association between variables. Standard multiple regression analysis was employed to test the posited hypotheses.

4.3.1Sample composition

A total of 300 questionnaires were distributed and 180 were valid for analysis representing a response rate of 60 percent. In terms of gender of respondents, 62 percent (n = 110) were women and 48 percent (n = 70) were men. The majority age was 40-50 years accounting for 55 percent (n=100) followed by 30-39 years (33 percent, n = 60) and 50-60 years (12 percent, n = 11). With regards to race, 41 percent (n =75) were black Africans, 39 percent (n =70) were white, 11 percent (n = 20) were Indian and 8 percent (n = 15) were coloured. The majority of

respondents had a post matric qualification 69 percent (n =125) and 31percent (n = 55) had a matric certificate.

4.3.2 Reliability and validity

The Cronbach alpha coefficient was used to measure the internal consistency of measurement items. Cronbach alpha values ranged from 0.884 to 0.907 which are all above the recommended threshold of 0.70 (Malhotra, 2010). The item-to-total correlations are all above 0.5, which is an indication of the cohesiveness of measurement items used in this study as shown Table 2. As shown in Table 3, correlations between variables were high but below 0.7 indicating the evidence of convergent and discriminant validity.

Table 2: Scale Reliability

Variable		Mean	SD	Item-total	Cronbach Alpha
Ascription of responsibility	AR1	2.21	.724	.842	.887
	AR2			.705	
	AR3			.785	
	AR4			.773	
	AR5			.840	
Awareness of consequences	AC1	3.75	.861	.731	.895
	AC2			.751	
	AC3			.632	
	AC4			.807	
	AC5			.803	
Expectation of others' cooperation	EOC1	3.66	.981	.750	.907
	EOC2			.808	
	EOC3			.758	
	EOC4			.815	
	EOC5			.797	
Perceived self-efficacy	PS1	2.12	.711	.690	.884
	PS2			.716	
	PS3			.762	
	PS4			.764	
Concern for self-image	CSI1	3.9	.655	.688	.865
	CSI2			.772	
	CSI3			.705	
	CSI4			.733	
Sustainable water consumption	SWC1			.727	
	SCW2			.692	

	SWC3	3.62	.947	.750	.880
	SWC4			.755	
	SWC5			.765	

SWC = Sustainable water consumption, AC = Awareness of consequences, AR = Ascription of responsibility, PS = Perceptions of self-efficacy, EOC = Expectations of others' cooperation. CSI = Concern for self-image.

4.3.3 Correlations

Spearman's rho was used to examine the degree of association between variables. Table 3 summarises correlations between variables.

Table 3: Correlations between variables

	SWC	AC	AR	PS	EOC
SWC	1.00				
AC	.549**	1.00			
AR	-.632**	-.376**	1.00		
PS	-.615**	-.430**	.465**	1.00	
EOC	-.576**	-.406**	.334**	.343**	1.00
CS1	-.426**	-.266**	.236**	.211**	-266**

** Correlation is significant at 0.01 (2tailed).

4.3.4 Regression Analysis

Standard multiple regression analysis was computed in order to test the posited hypotheses. The results are shown in Table 4.

Table 4: Regression analysis results

Dependent variable: Sustainable water consumption	Beta	T	Sig	Collinearity Statistics	
Independent variables				Tolerance	VIF
Awareness of consequences	0.183	3.494	.001	.719	1.391
Ascription of responsibility	-0.335	-6.424	.000	.728	1.373
Expectation of others' cooperation	-0.294	-5.855	.000	.782	1.279

Perceived efficacy	-0.280	-5.245	.000	.694	1.440
Concern for self-image	-0.364	-6.938	.000	.855	1.571
R = 0.809; R^2 = 0.654; Adjusted R^2 = 0.646; F change = 82.712, Cook's Distance Highest value =0.89.					

4.4. DISCUSSION OF RESULTS

The study explored and examined antecedents of norm-violating behaviour in the case of water consumption. The results are discussed as follows:

Awareness of consequences was identified in stage 1 and stage 2 as a factor that influences sustainable water consumption. A positive relationship between awareness of consequences and sustainable water consumption was confirmed in stage 2 ($\beta = 0.183$, t-value = 3.494, $r = 0.549$, $p < 0.01$). Additionally, the items that were used to measure awareness of consequences scored a summated mean of 3.75 out of 5 implying that respondents in this study were aware of the effects of not conserving water. Although this result is encouraging for policy makers, Heberlein (2012) points out that awareness of consequences does not always translate into pro-environmental. Heberlein (2012) emphasises the importance of continuously reinforcing the importance of conserving water in campaigns.

Ascription of responsibility was identified as another factor that influence norms related to sustainable water consumption. Stage 1 results show that respondents perceived that conserving water is not their responsibility. The result was confirmed in stage 2 with a negative relationship between ascription of responsibility and sustainable water consumption ($\beta = -0.335$, t-value = -6.424, $r = -0.632$, $p < 0.01$). This result is consistent with a study conducted by Strutton et al. (1994) that found that individuals often rationalise their norm-violating behaviour by denying responsibility. Overall, this result suggests the need for more educational campaigns that reinforce the role of households in sustainable water consumption.

Expectation of others' cooperation also emerged as a factor influencing norms related to water consumption. Results of stage 1 and stage 2 show that respondents perceived that others are not cooperating in saving water hence their reluctance to do the same. In stage 2, this was shown by a negative association between expectation of other's cooperation and sustainable water consumption (β

= -0.294, t-value = -5.855, $p < 0.01$). This result is consistent with that of a study conducted by Gupta and Ogden (2009) that showed that individuals are more likely to conserve energy if they perceive that others are doing so. This result emphasises the importance of descriptive norms (what others are doing) in promoting water conservation.

Self-efficacy perceptions is another factor that shape norms related to water consumption. The results of stage 1 and stage 2 showed that households perceive that they have not capacity to address the problem of unsustainable water consumption. This result was confirmed with a negative association between self-efficacy perceptions and sustainable water consumption ($\beta = -0.280$, t-value = -5.245, $r = -0.615$; $p < 0.00$). This result is a concern for water authorities because low self-efficacy tends to weaken the formation of pro-water conservation attitudes (Otaki et al., 2017). A study by Gupta and Ogden (2009) also note that self-efficacy perceptions tend to be lower if the cooperation of others is low. In order to enhance self-efficacy perceptions, Otaki et al. (2017) stressed the importance of positive feedback. To do this, municipalities should share with households the impact of their voluntary water saving behaviour on a continual basis.

Concern for self-image emerged as one of the main drivers of unsustainable water consumption. For instance in stage 2, a negative association between concern for self-image and sustainable water consumption was confirmed ($\beta = -0.364$, t-value = -6,938, $r = -0.426$, $p < 0.00$). This result concurs with that reported in sustainable behaviour studies (e.g. Royte, 2010; Heberlein, 2012) which showed that individuals tend to have negative attitudes towards conservation behaviours that have a substantial impact on their life styles. This result also finds theoretical support in Hardin's (2009) concept of "the tragedy of the commons," a situation that occurs when individuals attempt to maximise their personal benefit at the expense of the majority.

5. IMPLICATIONS AND LIMITATIONS OF THE STUDY

Denial of responsibility by households suggests the need for educational campaigns that explain the role of households in water conservation. Such campaigns have proved to be effective in developing a responsible citizenry. In order to discourage excessive water use, especially by the cohort of households who are concerned with maximising their own personal interests, hefty fines may be used as a deterrent. It is important though, to note that, this study was contextualised in one water stressed municipality in South Africa and as a result

the findings cannot be generalised to other contexts. The findings of this study may be improved by extending the study to other water stressed municipalities in South Africa. Study 2 relied on self-reported data from households. There is a possibility that some respondents may have understated or overstated their water conservation behaviour. Future studies may use methods such as observations that reduce self-reported data bias.

6. CONCLUSION

The promotion of sustainable water consumption is a strategic issue. Failure to conserve water in stressed environments threatens not only human livelihoods but also constrains attainment of sustainable development goals. For this reason, national governments and municipalities are wrestling with the challenge of stamping out unstainable water consumption practices. This study identified ascription of responsibility, concern of self-image, expectation of others' cooperation and low self-efficacy as the main antecedents of norm-violating behaviour. In order to promote sustainable water consumption, there is a need for households to understand that they are a key stakeholder in water management. It is also important for water authorities to provide positive feedback on the impact of households' water saving efforts. Such feedback has the potential of enhancing self-perceptions of households. Water authorities may also use incentives to reward those who are saving water and at the same time imposing hefty fines for those who are violating water saving regulations. It is also important for water authorities to involve households in formulating water intervention strategies such that any initiatives are jointly shared by the communities.

7. REFERENCES

Ajzen, I. & Klobas, J. (2013). Fertility intentions: An approach based on the theory of planned behaviour. *Demographic Research*, 29, 203-232.

Aprile, M. C. & Fiorillo, D. (2017).Water conservation behaviour and environmental concerns: Evidence from a representative sample of Italian individuals. *Journal of Cleaner Production*, 159, 119-129.

Atkinson, L. & Kim, Y. (2015). I drink it anyway and I know I shouldn't: Understanding green consumers' positive evaluations of norm-violating non-green products and misleading green advertising. *Environmental Communication*, 9 (1), 37-57.

Bertoldo, R. & Castro, P. (2016). The outer influence inside us: Exploring the relation between social and personal norms. *Resources, Conservation and Recycling,* 112, 45-53.

Biel, A. & Thøgersen. J. (2007). Activation of social norms in social dilemmas: A review of the evidence and reflections on the implications for environmental behaviour. *Journal of Economic Psychology,* 28(1), 93-112.

Brownlee, M. T. J., Hallo, J. C., Moore, D. D., Powell, R. B. & Wright, B. A. (2014). Attitudes towards water conservation: The influence of site-specific factors and beliefs in climate change. *Society and Natural Resources*, 27(9), 964-982.

Chernick, I. (2017). Joburg, Ekurhuleni partially lift water restrictions. http://www.iol.co.za/news/south-africa/gauteng/joburg-ekurhuleni-partially-lift-water-restrictions-8197610. Accessed 2017/02/03.

City of Ekurhuleni (2016), Ekurhuleni implements water rationing measures to save water. https://www.ekurhuleni.gov.za/thecouncil/news/press-releases/ekurhuleni-implements-water-rationing-measures-to-save-water. Accessed 2017 / 02 / 20.

Corbin, J. & Strauss, A. (1990). Grounded theory research: Procedures, canons and evaluative criteria. *Zeitschrift für Soziologie* 19 (6), 418-427.

Corral-Verdugo, V. & Frías-Armenta, M. (2006). Personal normative beliefs, antisocial behaviour, and residential water conservation. *Environment and Behaviour*, 38(3), 406-421.

Corral-Verdugo, V., Bechtel, R. B. & Fraijo-Sing, B. (2003). Environmental beliefs and water conservation: An empirical study. *Journal of Environmental Psychology*, 23(3), 247-257.

Dascher, E., Kang, J. & Hustvedt, G. (2014). Water sustainability: Environmental attitude, drought attitude and motivation. *International Journal of Consumer Studies,* 38(5), 467-474.

De Groot, J. & Steg, L. (2009). Morality and prosocial behavior: The role of awareness, responsibility, and norms in the norm activation model. *The Journal of Social Psychology,* 149(4), 425-449.

Department of Water and Sanitation. (2016). Water and Sanitation intensifies water restrictions. http://www.gov.za/speeches/water-restrictions-be-intensified.- Acessed 2017 / 03 / 20.

Ellen, P. S., Wiener, J. L. & Cobb-Walgren, C. (1991).The role of perceived consumer effectiveness in motivating environmentally conscious behaviours. *Journal of Public Policy & Marketing,* 1, 102-117.

Garcia, X., Ribas, A., Llausàs, A. & Saurí, D. (2013), Socio-demographic profiles in suburban developments: Implications for water-related attitudes and behaviors along the Mediterranean coast. *Applied Geography,* 41, 46-54.

Gupta, S. & Ogden, D. T. (2009). To buy or not to buy? A social dilemma perspective on green buying. *Journal of Consumer Marketing,* 26 (6), 376-391.

Hardin, G. (2009).The Tragedy of the Commons. *Journal of Natural Resources Policy Research,* 1(3), 243-253.

Heberlein, T. 2012.Navigating environmental attitudes. *Conservation Biology,* 26(4), 583-585.

Hynes, N. & Wilson, J. (2016). I do it, but don't tell anyone! Personal values, personal and social norms: Can social media play a role in changing pro-environmental behaviours? *Technological Forecasting and Social Change,* 111, 349-359.

Johe, M. & Bhullar, N. (2016). To buy or not to buy: The roles of self-Identity, attitudes, perceived behavioural control and norms in organic consumerism. *Ecological Economics,* 128, 99-105.

Joireman, J., Donelle, C. P., Truelove, H. B. & Craig D. P. (2009). The environmentalist who cried drought: Reactions to repeated warnings about depleting resources under conditions of uncertainty. *Journal of Environmental Psychology,* 29(2), 181-192.

Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic Inquiry*: Sage Publications.

Lindsay, J. & Supski, S. (2017). Changing household water consumption practices after drought in three Australian cities. *Geoforum,* 84, 51-58.

Malhotra, N. (2010). *Marketing Research: An Applied Orientation*. (6th ed.), Upper Saddle River: Pearson Education International.

Muposhi, A., Dhurup, M. & Surujlal, J. (2015). The green dilemma: Reflections of a generation Y consumer cohort on green purchase behaviour. *The Journal for Transdisciplinary Research in Southern Africa*, 11 (3), 225-240.

Onyenankeya, K., Caldwell, M. & Okoh, A. (2015). Water conservation and culture of indifference among college students: The nexus of descriptive norms. *Journal of Human Ecology*, 52 (1-2), 15-25.

Otaki, Y., Ueda, K. & Sakura, O. (2017). Effects of feedback about community water consumption on residential water conservation. *Journal of Cleaner Production*, 143, 719-730.

Prati, G., Albanesi, C. & Pietrantoni, L. (2017). The interplay among environmental attitudes, pro-environmental behaviour, social identity and pro-environmental institutional climate. A longitudinal study. *Environmental Education Research*, 23(2), 176-191.

Raborife, M. (2016). Gauteng households needs to save water. http://news-24-com/South Africa/News/ gauteng-households. Accessed 2017/04/03.

Royte, E. (2010).Earth's future rests on better irrigation and shorter showers. *National Geographic Magazine Water Issue*, 217(4), 172-176.

Sinnappan, P. & Rahman, A. (2011).Antecedents of green purchasing behaviour among Malaysian consumers. *International Business Management*, 5(3), 129-139.

Stern, P. C., Dietz, T., Guagnano, G. A. & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6, 49-95.

Strutton, D., Vitell, S. J. & Pelton, L. E. (1994). How consumers may justify inappropriate behaviour in market Settings: An application on the techniques of neutralization. *Journal of Business Research*, 30(3), 253-260.

Sussman, R., Lavallee, L. & Gifford, R. (2016). Pro-environmental values matter in competitive but not cooperative commons dilemmas. *The Journal of Social Psychology*, 156 (1), 43-55.

Terrier, L. & Marfaing, B. (2015). Using social norms and commitment to promote pro-environmental behaviour among hotel guests. *Journal of Environmental Psychology*, 44, 10-15.

Thomas, C. & Sharp, V. (2013). Understanding the normalisation of recycling behaviour and its implications for other pro-environmental behaviours: A review of social norms and recycling. *Resources, Conservation and Recycling*, 79, 11-20.

Tiefenbeck, V., Staake, T., Roth, K. & Olga Sachs, O. (2013). For better or for worse? Empirical evidence of moral licensing in a behavioural energy conservation campaign. *Energy Policy*, 57, 160-171.

Uba, C. D. & Chatzidakis, A. (2016).Understanding engagement and disengagement from pro-environmental behaviour: The role of neutralization and affirmation techniques in maintaining persistence in and desistance from car Use. *Transportation*, 94 (c), 278-294.

United Nations. (2014). Rights to safe water, sanitation must not remain mirage for millions of Kenyans, http://www.un.org/apps/news/ Accessed 2017 /02 /03.

Vitell, S. J., Keith, M. & Mathur, M. (2011). Antecedents to the justification of norm violating behavior among business practitioners. *Journal of Business Ethics*, 101(1), 163-173.

Water Resource Institute. (2015). Ranking the world's most water-stressed countries in 2040. http://www.wri.org/blog/2015/08/ranking-world%E2%80%99s-most-water-stressed-countries-2040. Accessed 2017/ 05/ 03.

Wiener, J. L. & Doescher, T. A. (1994). Cooperation and expectations of cooperation. *Journal of Public Policy & Marketing*, 1, 259-270.

Williams, D. (2011). Why revolution ain't easy: Violating norms, re-socializing society. *Contemporary Justice Review*, 14 (2), 167-187.

World Economic Forum. (2015). Global Risks 2015. *10th Ed.* World Economic Forum, Geneva, Switzerland.

World Wildlife Fund South Africa. (2016). Water Facts and Future. http://awsassets.wwf.org.za/downloads/wwf009_waterfactsandfutures_report_web__lowres_.pdf. Accessed 2017/ 04/08.