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PRO-ENVIRONMENTAL BEHAVIOUR THROUGH THE LENS OF THE MINI-IPIP6 CONSUMER PERSONALITY SCALE IN SOUTH AFRICA

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Abstract

Daily habits and various antecedents play crucial roles in consumers' pro-environmental behaviour (PEB). Personality traits are significant for environmental engagement since they manifest in habitual green activities and infrequent high-cost decisions motivated by reflective thinking. Personality is also determined by complex interactions between physical, mental, emotional, spiritual, social, and environmental contexts in which individuals function. Hence, personality traits could be a key determinant of PEB. This research analyses the relationship of consumer personalities with PEB as daily green habits in the South African emerging economy context, which may differ from high-income countries. We used an online survey with convenience and snowball sampling to recruit South African respondents (N = 478) aged 18 years and older. The International Personality Item Pool six factors (Mini-IPIP6) scale was used to determine associations between specific traits and daily PEB, especially the honesty-humility (H-H) dimension, which is concluded to be the strongest predictor for PEB. The other five personality dimensions are agreeableness (A), extraversion (E), conscientiousness (C), neuroticism (N) and openness to experience (O). Descriptive data analysis, exploratory and confirmatory factor analysis, and correlational methods were performed. Respondents generally show personality traits conducive to PEB ($m_A = 4.02$; $m_O = 3.83$; $C_C = 3.78$; $m_{H\text{-}H} = 3.65$). Correlations were shown between "C" and "conservation habits" ($r = .261$; $p < 0.05$) and "O" and "wasteful habits" ($r = -.221$; $p < 0$). s "H-H" correlated with "personal effort habits" ($r = .230$; $p < 0.05$) and "wasteful habits" ($r = -.252$; $p < 0.05$). Consequently, respondents who tested higher on these three personality dimensions (C; H-H; O) may perform more habitual PEB, thus revealing the utility of personality dimensions in understanding consumers' PEB in an emerging economy.

Keywords: *Daily habits, consumer personalities, emerging economies, Mini-IPIP6 consumer personality scale, Pro-Environmental Behaviour.*

1. Introduction

Consumers' daily behaviour is shrouded in careless consumption, especially in Western culture, and although such behaviour is deeply ingrained and often difficult to alter, a curbed approach based on a culture of conservation is sorely needed (Lee, 2017). Consumers' daily behaviour contributes to pro-environmental behaviour (PEB), presenting several challenges and often emphasising the disparity between their pro-environmental intentions and their failure to act accordingly, i.e., intention-behaviour gap. Bridging this gap requires more profound insight into various underlying dimensions, such as consumer personalities and potential links to PEB, particularly among culturally diverse and complex consumer populations such as in emerging economies. Therefore, this study aims to investigate the relationship of consumer personalities with PEB, such as daily green habits, in the South African emerging economy context.

2. Background of consumer personality − an internal influence on consumer behaviour

Consumer personality constructs have immense potential to advance understanding of consumers' behaviour and preferences (Abood, 2019). These personality traits reflect much about consumers' inner drives for behavioural patterns that demonstrate their actual or idealised selves

(Palomba, 2021). Personality is also determined by the complex interaction between individuals' physical, mental, emotional, spiritual, social, and environmental contexts (Rakib et al., 2022). Thus, reciprocal determinism is noted where personality influences behaviour and the environment, and vice versa. Therefore, personality traits are often applied to explicate consumers' behavioural patterns (Palomba, 2021), including correlations between certain personality traits and PEB (Soutter et al., 2020). Personality traits are significant for environmental engagement since they manifest in habitual green activities and infrequent high-cost decisions motivated by reflective thinking (Busic-Sontic et al., 2017). Hence, personality traits should be acknowledged as a potential determinant of PEB (Soutter et al., 2020). Given that personality traits distinguish similarities and differences among consumers (Palomba, 2021), assessing personality traits as a precursor of PEB in a diverse, multicultural emerging economy landscape such as South Africa may offer novel insight toward the pursuit of pro-environmental behavioural change and bridging the intention-behaviour gap. Many models are used to study consumers' personalities. We build on the well-known Five-Factor Model [FFM] (Goldberg, 1990) and HEXACO (Ashton & Lee, 2007) to apply the dimensions of the Mini-IPIP6 model (Sibley et al., 2011) to study the relation between consumer personalities and daily habits.

2.1. The Mini-IPIP6 model and pro-environmental behaviour

Sibley et al. (2011) developed the Mini-IPIP6 personality scale that measures consumer personalities based on six dimensions. These six dimensions include Openness-to-experience (O), Conscientiousness (C), Extraversion (E), Agreeableness (A), Neuroticism (N) and Honesty-Humility (H-H). The items included in the Mini-IPIP6 scale could reliably predict consumers' personality traits and have been successfully applied in several fields; although it seems comparatively neglected in sustainability research (Panno et al., 2021). Some studies have explored the link between personality and environmental attitudes, beliefs and behaviours (e.g., Busic-Sontic et al., 2017; Rothermich et al., 2021), but these remain sparse, especially in South Africa.

The six personality dimensions can differentiate between consumer personalities indicating environmental consciousness or other motivational factors such as attitudes, personal norms, perceived behavioural control, and perceived self-efficacy that may result in PEB (Busic-Sontic et al., 2017). High A, O, C, and E levels generally predict more favourable environmental engagement and several dimensions of PEB (Busic-Sontic et al., 2017). In contrast, results regarding levels of N are more inconsistent (Fatoki, 2020; Hirsh, 2010). The Mini-IPIP6 scale includes self-reported items that load onto the sixth **H-H** factor that are strongly associated with PEB, the belief that climate change is real and the willingness to adjust one's lifestyle to accommodate PEB. Thus, the Mini-IPIP6 model includes a direct measure of personality related to environmentally friendly behaviour. The **H-H** personality dimension is the strongest predictor for PEB (Marcus & Roy, 2019). Although the inclusion and application of the **H-H** construct have been neglected in previous research, especially in a South African context, it can reflect characteristics of consumers' inclination to perform PEB. Therefore, we deemed the Mini-IPIP6 model suitable for studying the relationship between consumer personality and PEB in this context.

3. Methodology

As part of a more extensive descriptive, cross-sectional survey, this paper only reports on the personality construct and its relationship with daily habits. We used convenience and snowball sampling to recruit respondents to participate in an online questionnaire distributed on social media platforms in South Africa. Respondents (N = 478) were mostly White (73%), female (84.7%), well-educated (tertiary = 69.2%) and young (<40 years = 53.1%), which limits the generalizability of the findings, but were nonetheless deemed appropriate for the exploratory purposes of this study.

The measures included the Mini-IPIP6 personality scale (Sibley et al., 2011; Sibley & Pirie, 2013) employing a 24-item Likert scale (1: Strongly disagree; 5: Strongly agree) to determine participants' personality dimensions profile. Additionally, we measured daily habits relating to PEB using an adapted version of the Recurring Daily Habits Scale (hereafter referred to as daily habits) (Understanding Society survey, 2018; Brick et al., 2017; Whitmarsh & O'Neill, 2010; Van der Werff *et al*., 2013) with an adapted 39-item Likert scale (1: Never; 5: Always) used to describe the frequency of consumers' actual everyday green behaviours/habits. Data analysis included descriptive statistics and Spearman's rank-order correlations using IBM SPSS version 25. We only reported correlation coefficients showing **medium** and **large effect sizes** (medium effect size*:* $r = 0.3$; large effect size*:* $r = .5$; $p < .05$).

We established construct validity using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). For EFA, Principal Axis Factoring was applied for extracting factors, using direct Oblimin rotation with Kaiser normalisation. Convergent validity was determined by calculating the

Average Variance Extracted (AVE) and the composite reliability (CR) (Fornell and Larcker, 1981). The CFA models' acceptability was measured against fit indices from three different classes: Chi-square statistic divided by the degree of freedom (χ^2/df), the root mean square error of approximation (RMSEA) and the comparative fit index (CFI). Cronbach's alpha showed internal reliability within factors.

4. Results

For EFA, all Kaiser-Meyer-Olkin Measure of sampling adequacy (KMO) values (Table 1) exceeded a value of 0.6—only factors with eigenvalues higher than one were retained. To confirm construct validity, the percentage variance explained was larger or acceptably close to 50% in the case of daily habits. Regarding convergent validity, the CR values indicate that all factors exceeded the minimum reliability of 0.70 (Fornell & Larcker, 1981). The AVE for each extracted factor in Table 1 shows that not all constructs have an AVE higher than the recommended level of 0.50, which is considered acceptable convergent validity. Those above 0.70 are considered good (Fornell & Larcker, 1981). The CFA models' goodness of fit showed two of the three fit indices measured within the parameters of a good fit, confirming an acceptable model fit.

Table 1. Summary of the exploratory and confirmatory factor analysis for the Mini-IPIP6 personality and daily habits scales.

Scale with Factors	**KMO[1]**	**Explained variance %**	**α[2]**	**χ^2/df[3]**	**CFI[4]**	**RMSEA[5] [CI][6]**	**AvE[7]**	**CR[8]**
Personality[9] #	0.713	55.13		**2.790***	0.830	**0.061[0.052-0.59]****		
Honesty-Humility (H-H)			0.740				0.529	0.817
Extraversion (E)			0.756				0.552	0.831
Neuroticism (N)			0.649				0.466	0.775
Conscientiousness (C)			0.706				0.528	0.815
Openness to experience (O)			0.674				0.488	0.792
Agreeableness (A)			0.619				0.434	0.754
Daily Habits[10]	0.867	48.50		**2.453***	0.811	**0.005****		
Dedicated efforts			0.866				0.368	0.845
Transportation habits			0.744				0.542	0.824
Conservation habits			0.751				0.215	0.718
Wasteful habits			0.578				0.319	0.733
Personal effort			0.844				0.568	0.855
Daily food necessities			0.663				0.382	0.728

Bold print with an Asterix (*; **) indicates the fit indices with a good fit (at least two out of three fit indices should be acceptable)
Blue values indicate AVE (≤ 0.50) and CR values (≥ 0.70) within the acceptable range (Fornell & Larcker, 1981).
[1] Kaiser-Meyer-Olkin Measure of sampling adequacy (KMO)
[2] Cronbach alpha (α)
[3]* Chi square divided by degrees of freedom (χ2/df); fit index; should be < 5 (Mueller, 1996).
[4] The comparative fit index (CFI): fit index; should be ≥ 0.9 (Mueller, 1996)
[5]** The root mean square error of approximation (RMSEA) should be beneath ≤ 0.1 to confirm a good fit (Blunch, 2008).
[6] Confidence Interval (CI)
[7] Average variance extracted (AVE) computed by $\Sigma\lambda 2/\Sigma\lambda 2 + \Sigma (1 - \lambda 2)$
[8] Composite reliability (CR): computed by $(\Sigma\lambda)2/(\Sigma\lambda)2 + \Sigma (1 - \lambda 2)$, where λ = factor loadings.
[9] Likert Scale: 1: Strongly disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly agree
[10] Likert Scale: 1: Never; 2: Rarely; 3: Sometimes; 4: Often; 5: Always

4.1. Mini-IPIP6 personality scale

The items included in the Mini-IPIP6 personality scale yielded six factors (Table 1). First, EFA was done, and six factors (containing four items each) emerged that coincide with those identified in current literature (Sibley et al., 2011; Sibley & Pirie, 2013). CFA was also done for this standardised scale, which confirmed the constructs as valid. Thus, we retained the names proposed in the literature: *"honesty-humility" (H-H), "extraversion" (E), "neuroticism" (N), "conscientiousness" (C), "openness to experience" (O)* and *"agreeableness" (A)*. Respondents generally exhibited personality traits instrumental to benefiting PEB (mA = 4.02; mO = 3.83; mC = 3.78; mH-H = 3.65) (only dimensions correlated with daily habits were reported).

4.2. Relationship of personality with daily habits

Most correlations were of medium effect size (i.e., presenting tendencies), with some large, showing practical significance. **Three constructs** of the personality scale, namely *"C", "H-H", and "O",* correlated with PEB. "*C"* correlated with *"conservation habits"* (*r* = .261) which align with *"C"*'s self-discipline facet, a positive predictor of PEB because this behaviour typically needs to be repeated daily (Markowitz *et al*., 2012), exercising conservation activities daily.

Personality *"O"* negatively correlated with *"wasteful habits"* (*r* = -.221), showing those higher in *"O"* less engaged in wasteful activities. In previous studies, individuals testing higher on the O were associated with more reasoning, flexibility, ecology, environmental concern and PEB (Pavalache-Ilie & Cazan, 2018). Additionally, Rothermich et al. (2021) confirmed that those higher on the O dimension more often believed in the reality of climate change and that it would harm them personally, which might explain the negative correlation in our study between *"O"* and *"wasteful habits".*

In the current study, *"H-H"* correlated positively with *"personal effort habits"* (*r* = .23) and negatively with *"wasteful habits"* (*r* = -.252). Thus, *"H-H"* may increase "*personal effort habits*" and reduce *"wasteful habits",* which makes *"H-H"* a probable indicator of possible PEB, echoing previous findings (Pavalache-Ilie & Cazan, 2018). Moreover, the H-H dimension measures mutual unselfishness, an individual's honest idea of the abilities and likeliness to have an accurate self-concept (Kähli, 2021), how a person endorses (or not) personal interests above those of others and the interest in wealth and external signs of status. These findings explain why *"H-H"* was associated with increased individual efforts to green behaviour as well as efforts to reduce wastage in the present study.

"N", "E", and *"A"* showed no practical significant correlations with daily habits. Most studies by other scholars also omit that *"E"* influences PEB, attitudes or environmental concerns (Markowitz *et al*., 2012; Milfont & Sibley, 2012), except for a South African study showing significant associations of **A** and **E** with green purchasing behaviour (Fatoki, 2020). In contrast to our research on daily green habits, former studies reported associations of N with EC (Hirsh, 2010) and PEB (Kvasova, 2015). Yu and Yu (2017) confirm that findings may differ regarding personality dimensions when looking at environmental intentions and attitudes compared to actual behaviour, such as daily green habits.

Based on the literature, our respondents generally showed personality traits conducive to PEB, and this study highlights explicitly three consumer personality dimensions that are associated with PEB in an emerging economy context; *"C", "H-H", and "O".* These findings can be interpreted that those respondents who test higher on these three personality dimensions may act more environmentally friendly and perform more pro-environmental daily habits.

5. Conclusion and unique contribution

The timely application of the Mini-IPIP6 model revealed consumer personalities (C; O; H-H) that offer a better understanding of consumers' PEB, grouped as daily habits in our study. Ultimately, specific consumer personality dimensions rendered associations with certain groups of daily habits (*"conservation habits"; "wasteful habits"; personal effort habits").* These results align with similar findings in developed countries, although the N and E dimensions did not render associations with PEB in our study. However, we confirmed that "H-H" is a probable indicator of possible PEB, as this dimension is associated with increased efforts to adopt green behaviour and to reduce wastage. Thus, the practical applications of these findings highlight that the H-H personality dimension can help accomplish PEB when individuals acknowledge their destructive habits of conspicuous consumption. However, identifying interventive solutions should include multiple influencing factors due to the intricacy of PEB.

Future studies should consider studying consumer personality with other personal constructs such as pro-environmental self-identity, environmental consciousness, and perceived self-efficacy, which can widen the understanding of consumers' PEB in an emerging economy context and acknowledge patterns of behaviour among consumers. When these personal determinants are linked with daily habits (behavioural determinants) and situational factors (external determinants), a new understanding of PEB may emerge, adding to consumer behaviour knowledge and knowledge of consumers in emerging economies.

References

Abood, N. (2019). Big Five traits: a critical review. *International Journal of Business, 21*(2), 159-186.

Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review, 11*(2),150-166.

Blunch, N. J. (2008). *Introduction to structural equation modelling using SPSS and AMOS*. London: Sage.

Brick, C., Sherman, D.K. & Kim, H.S. (2017). "Green to be seen" and "brown to keep down": Visibility moderates the effect of identity on pro-environmental behaviour. *Journal of Environmental Psychology, 51*, 226-238. https://doi.org/10.1016/j.jenvp.2017.04.004

Busic-Sontic, A., Czap, N. V., & Fuerst, F. (2017). The role of personality traits in green decision-making. *Journal of Economic Psychology, 62*, 313-328. http://dx.doi.org/10.1016/j.joep.2017.06.012

Fatoki, O. (2020). Personality traits and green purchasing behaviour of young consumers. *Journal of Management Information and Decision Sciences, 23*(1), 254-261.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50. https://doi.org/10.2307/3151312

Goldberg, L. R. (1990). An alternative "description of personality": the big-five factor structure. *Journal of Personality and Social Psychology, 59*(6), 1216-1229.

Hirsh, J. B. (2010). Personality and environmental concern. *Journal of Environmental Psychology, 30*(2), 245-248. https://doi.org/10.1016/j.jenvp.2010.01.004

Lee, K. (2017). How emotional, politically civil and local aspects affect young adults' sustainable consumption in transition economies. *Consumption Markets & Culture, 20*(3), 258-274.

Marcus, J., & Roy, J. (2019). In search of sustainable behaviour: the role of core values and personality traits. *Journal of Business Ethics, 158*, 63-79. https://doi.org/10.1007/s10551-017-3682-4

Markowitz, E., Goldberg, L., Ashton, M., & Lee, K. (2012). Profiling the "Pro-Environmental Individual": a personality perspective. *Journal of Personality, 80*(1), 81-111. https://doi.org/10.1111/j.1467-6494.2011.00721.x

Milfont, T. L., & Sibley, C. G. (2012). The big five personality traits and environmental engagement: associations at the individual and societal level. *Journal of Environmental Psychology, 32*(2), 187-195. https://doi.org/10.1016/j.jenvp.2011.12.006

Mueller, R. O. (1996). *Basic principles of structural equation modeling: an introduction to LISREL and EQS*. New York, NY: Springer.

Palomba, A. (2021). How consumers' personalities, lifestyles and demographics predict SVOD genre and SVOD platform consumption. *Journal of Contemporary Marketing Science, 4*(3), 362-384. doi: 10.1108/JCMARS-06-2021-0020

Panno, A., De Cristofaro, V., Oliveti, C., Carrus, G., & Donati, M. A. (2021). Personality and environmental outcomes: the role of moral anger in channelling climate change action and pro-environmental behavior. *Analysis of Social Issues and Public Policy, 21*(1), 853-873. https://doi.org/10.1111/asap.12254

Pavalache-Ilie, M., & Cazan, A. (2018). Personality correlates of pro-environmental attitudes. *International Journal of Environmental Health Research, 28*(1), 71-78.

Rakib, M. A. N., Chang, H. J., & Jones, R. P. (2022). Effective sustainability messages triggering consumer emotion and action: an application of social cognitive theory and the dual-process model. *Sustainability, 14*(5), 2505. https://doi.org/10.3390/su14052505

Rothermich, K., Johnson, E. K., & Griffith, R. M. (2021). The influence of personality on attitude towards climate change – an exploratory study. *Personality and Individual Differences, 168*, 110304. https://doi.org/10.1016/j.paid.2020.110304

Sibley, C. G., Luyten, N., Purnomo, M., Mobberley, A., Wooton, L.W., Hammond, M.D., … West-Newman, T. (2011). The Mini-IPIP6: validation and extension of a short measure of the big-six factors of personality in New Zealand. *New Zealand Journal of Psychology, 40*(3), 142-159.

Sibley, C. G., & Pirie, D. J. (2013). Personality in New Zealand: Scale norms and demographic differences in the mini-IPIP6. *New Zealand Journal of Psychology, 42*(1), 13-30.

Soutter, A. R. B., Bates, T. C., & Mõttus, R. (2020). Big five and HEXACO personality traits, proenvironmental attitudes, and behaviors: a meta-analysis. *Perspectives on Psychological Science, 15*(4), 913-941. doi: 10.1177/1745691620903019

Understanding Society. (2018). *The UK household longitudinal study*. Retrieved from https://www.understandingsociety.ac.uk/documentation/mainstage/questionnaires

Van der Werff, E., Steg, L., & Keizer, K. (2013). The value of environmental self-identity: the relationship between biospheric values, environmental self-identity and environmental preferences, intentions and behaviour. *Journal of Environmental Psychology, 34*, 55-63. https://doi.org/10.1016/j.jenvp.2012.12.006

Whitmarsh, L., & O'Neill, S. (2010). Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. *Journal of Environmental Psychology, 30*(3), 305-314.