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Green, keen, and somewhere in between:

An employee environmental segmentation study

1. Introduction

Increasingly, organizations and researchers are realizing that individual employees and their pro-environmental actions are essential to the CSR performance of the firm (Ciocirlan, Gregory-Smith, Manika, & Wells, 2020; Hejjas, Miller, & Scarles, 2019). A multi-dimensional and complex concept (Francoeur & Paillé, 2022), pro-environmental behavior (PEB) is defined as "environmental efforts that are discretionary acts, within the organizational setting, not rewarded or required from the organization" (Daily, Bishop, & Govindarajulu, 2009, p. 243). Current literature focuses disproportionately on the antecedents of these behaviors (Chou, 2014; Khan & Khan, 2022; Lee & Ha-Brookshire, 2020; Mi et al., 2020; Papagiannakis & Lioukas, 2018), and not enough on what employees value, believe, (Blazejewski, Dittmer, Buhl, Barth, & Herbes, 2020; Ciocirlan, 2017), or feel regarding corporate environmental responsibility (CER) (Aggarwal & Singh, 2022; Duarte & Mouro, 2022). Employees' perceptions about organizational fit (Hicklenton, Hine, & Loi, 2019) and their stable traits, such as personality, are insufficiently studied in organizational environmentalism (Kim, Kim, Han, Jackson, & Ployhart, 2017; Szostek, 2021; Zacher, Rudolph, & Katz, 2023). Essentially, along with an understanding of *the what* of environmental behavior, we need to better understand *the who,* and this study is a step in this direction.

One key aspect that is missing in organizational environmentalism approaches is that they do not explicitly account for employee heterogeneity and assume that employees are all affected by antecedents in a similar manner. In this paper, we use the values-belief-norms (VBN) framework to build a typology of employees and characterize the resulting employee types according to individual and organizational characteristics. While VBN theory has been extensively applied in environmentalism, the balance has been tilted toward private, rather than

organizational environmentalism studies (Chen, 2015; Canlas, Karpudewan & Khan, 2022; Inoue & Alfaro-Barrantes, 2015; Oreg & Katz-Gerro, 2006; Yeboah & Kaplowitz, 2016). In the organizational environmentalism sphere, many studies have employed a shortened VBN model (Dalvi-Esfahani, Ramayah, & Rahman, 2017; Ruepert et al., 2016), and only a few studies use the full VBN model (Ciocirlan et al., 2020; Sahin, 2013; Yeboah & Kaplowitz, 2016). Scholars have argued that the VBN framework should be revisited, revised, and retested (Andersson, Shivarajan, & Blau, 2005; Inoue & Alfaro-Barrantes, 2015), and we apply the theory in a novel context, to build a typology of employees along VBN dimensions. We also contribute to the literature by enriching the VBN theory with additional variables, such as employee personality, Corporate Environmental Responsibility (CER) perceptions, and Green-Person-Organization (GPO) fit, which are largely overlooked in micro-level CSR literature (Aggarwal & Singh, 2022; Allen, 2022; Babu, De Roeck, & Raineri, 2020; Hejjas et al., 2019; Norton, Parker, Zacher, & Ashkanasy, 2015). Hence, we study individual psychographic variables and organizational context variables simultaneously, thus responding to calls for further exploration in this area (Linnenluecke, Russell, & Griffiths, 2009).

Typology research, especially, needs more emphasis on employees situated at any level, not necessarily managerial (Hejjas et al., 2019), because most research depicts employees as mere enforcers of orders from their superiors (Blazejewski et al., 2020). Additionally, more research on employee heterogeneity needs to be conducted in non-manufacturing industry sectors and in different organizational and industry contexts (Hejjas et al., 2019; Zierler, Wehrmeyer, & Murphy, 2017). By studying office workers situated at any organizational level and functioning in a wide span of industries and organizations, our paper helps bridge these gaps.

Thus, we aim to address the following research questions: 1) can employees be accurately categorized in distinct segments based on their environmental values, beliefs, and

norms? and 2) what are the characteristics of those segments with respect to individual traits and organizational context perceptions?

Using cluster analysis methodology, we identify three distinct employee segments, 'Acorns', 'Saplings', and 'Trees' (labelled using different phases of tree maturity), who vary in their values, beliefs, norms, conserving behaviors, personality, GPO fit, and perceptions of CER. 'Trees' tend to translate their stronger ecological values, beliefs, and norms into practice by performing more conserving behaviors than the other clusters. They perceive a stronger GPO fit and CER than the other clusters, are more extraverted and open to experience, more educated, and more likely to hold managerial positions than the other clusters. 'Acorns' and 'Saplings' have weak GPO fit perceptions, suggesting that they feel out of synch with their organizations with respect to ecological values. The stark differences among the segments point to the need to integrate environmental typology research with organizational subculture research (Kok et al., 2019; Linnenluecke et al., 2009), as different segments may form different subcultures or countercultures, which can help or hinder their organization's CER efforts. Since most contemporary environmental problems are addressed by cross-functional teams, researchers could use our study as a starting point to analyze the VBN orientation of these teams and their impact on the organization's overall environmental strategy. Practitioners can use our findings to design improvement strategies that are targeted to the unique characteristics and preferences of each segment (Legault, 2023; Zierler et al., 2017), thus improving the environmental performance of their organizations.

2. Literature Review

VBN theory. VBN theory proposes a causal framework, according to which individuals' values (egoistic, biospheric, altruistic) influence their ecological beliefs (measured through the NEP), which heightens their awareness of consequences (AC) of environmental problems, leads to a feeling of ascribed responsibility (AR) to solve these problems, generates a sense of personal

norm (PN), and ultimately compels them to take pro-environmental action (Stern et al., 1999). Generally, the theory has found empirical support in organizational applications (Christina, Dainty, Daniels, & Waterson, 2014; Ciocirlan et al., 2020; Papagiannakis & Lioukas, 2018; Yeboah & Kaplowitz, 2016).

We build on existing applications of VBN in organizations (*e.g.,* Ciocirlan et al., 2020), but instead of using the theory in a causal way to understand antecedents of employee engagement in PEBs, we use it as a compelling framework to build our typology of employees. Since more applications of VBN in the organizational domain are necessary (Andersson et al., 2005; Inoue & Alfaro-Barrantes, 2015; Ciocirlan et al., 2020), this study advances the literature on green employees and their behaviors. We argue that employees fall in several categories (or clusters) and cannot simply be identified as 'green' versus 'non-green,' because they espouse environmental values, beliefs, and norms to different degrees, which translate into different levels of engagement in PEB.

Indeed, most current literature uses dichotomous terms to depict employees ("green" versus "non-green") (Blazejewski et al., 2020; Ercantan & Eyupoglu, 2022; Kim, Kim, Choi, & Phetvaroon, 2019; Norton et al., 2015). Green employees were theoretically defined as having "an environmental identity, an intrinsic motivation to protect the environment through work, and [aiming] for consistency between home and work environmental behaviors" (Ciocirlan, 2017, p. 52), and empirical support was found for these traits (Ciocirlan, 2022). However, scholars argue that there are more shades of green, and thus, a more finely grained understanding of employee characteristics, preferences, and perceptions is necessary (Ciocirlan, 2017; Davis, Unsworth, Russell, & Galvan, 2020; Francoeur & Paillé, 2022; Inoue & Alfaro-Barrantes, 2015; Zierler et al., 2017). Thus, this paper adds to the limited typology research in organizational environmentalism (Blazejewski et al., 2020; Du, Bhattacharya, & Sen, 2015; Dubois, Astakhova, & DuBois, 2013; Hejjas et al., 2019; Paillé, Raineri, & Boiral,

2019; Zierler et al., 2017; Linnenluecke et al., 2009). Based on the VBN theory adapted to the organizational context, and the literature on segmentation (Dubois et al., 2013; Paillé et al., 2019; Zierler et al., 2017, Linnenluecke et al., 2009) in combination, we formulate a baseline hypothesis:

H_1. Employees can be categorized into distinct and homogeneous segments according to their VBN orientations[1] and differences among segments are expected to be statistically significant.[2]

Based on the theoretical considerations described above and the principles of cluster methodology (Ketchen & Shook, 1996), one set of variables (in this case, VBN orientations) is employed to *create* the segments, additional variables (PEBs, personality, CER, GPO fit) are used to *profile* the resulting segments. More detail is presented in the *Methodology* section.

Assuming that the first hypothesis is supported, and distinct homogeneous clusters are identified, we aim to understand these clusters better by exploring under-utilized dimensions in employee segmentation research. These dimensions are chosen for a range of reasons, detailed below. Some have been useful in predicting private environmentalism but not employed extensively in the workplace setting. Others reflect the differences between private and organizational environmental behavior (*e.g.,* the role of management), or have worked well in describing employee segments in prior studies. They are described below.

Personality. While personality variables are utilized extensively in psychology studies, they have been largely overlooked in organizational environmentalism (Katz, Rauvola, Rudolph, & Zacher, 2022; Zacher et al., 2023). It is important to understand the role of personality traits in determining cluster membership because these traits are stable over time, and they can help or hinder the formation of ecological values and employee engagement in PEBs (Katz et al., 2022). The Big Five theory is a widely used personality framework, consisting of five dimensions: agreeableness, openness to experience, conscientiousness, emotional stability, and

extraversion (McCrae & Costa, 1999). This framework has been widely used in studies of private or public environmentalism but has not been employed to a large extent in studies of PEB in organizations.

Given the dearth of personality studies in employee PEB (Zacher et al., 2023), and the conflicting nature of existing findings – e.g., Kim et al. (2017) found that conscientiousness was positively and significantly related to PEBs, while Szostek (2021) found the opposite – we derive our personality hypothesis based on a recent meta-analysis (Katz et al., 2022), according to which conscientiousness and openness to experience were moderately and positively associated with PEBs, while the other three traits were not. Conscientiousness is related to most other work outcomes (Katz et al., 2022), and conscientious individuals tend to reflect intentionally on their daily experiences with morality, which may explain the positive link between conscientiousness and PEB engagement (Kim et al., 2017). Individuals high in openness tend to hold stronger ecological values (Blok, Wesselink, Studynka, & Kemp, 2015) and to focus more often on environmental causes (Katz et al., 2022). The remaining three traits, neuroticism, extraversion, agreeableness, are more related to interpersonal, pro-social behaviors (Katz et al., 2022) than to the conserving behaviors analyzed here. Hence, we propose:

H_2. Employees from segments characterized by stronger VBN orientations tend to be more conscientious and open to experience than employees from segments with weaker VBN orientations.

Regardless of how committed they are to ecological values, employees are generally constrained by the norms, values, and beliefs of their organization. Unethical or non-green individual behavior may be due not to moral deficiencies, but to bureaucratic impediments, lack of organizational commitment to environmental causes, or a non-green culture (Blok et al., 2015). Indeed, in a comprehensive synthesis of the literature, the lack of an internal green

culture was one of the most frequent barriers to voluntary PEBs (Yuriev et al., 2018). Thus, incorporating organizational factors is important, as they are understudied in typology research (Paillé et al., 2019). The relevant literature is reviewed below.

Perceptions of Corporate Environmental Responsibility (CER). Literature suggests that employees respond positively to the CSR activities of their employers (Gregory-Smith, Wells, Manika, & Graham, 2015; Hansen, Dunford, Boss, Boss, & Angermeier, 2011; Lamm, Tosti-Kharas, & Williams, 2013; Manika, Wells, Gregory-Smith, & Gentry, 2015). Employees who perceive their employer as socially responsible were more likely to engage in PEBs (Boiral & Paillé, 2012), and vice versa: when they perceived their organizations as socially irresponsible, employees exhibited negative behaviors and attitudes (Hansen et al., 2011; Lee & Ha-Brookshire, 2020). In particular, younger employees who felt that their organization did not take steps to conserve energy were reluctant to save energy themselves (Zierler et al., 2017).

Employees often form perceptions of their organization's CER efforts by observing whether their leaders 'walk the talk,' and whether leaders are supportive of employees' environmental initiatives (Young et al., 2013). Past research suggests that top management commitment helps enhance an organization's ability to meet environmental standards and its environmental performance (Wei et al., 2023). Additionally, employees may perceive objective factors such as formal policies, codes of conduct, infrastructure, or incentive systems, as helping or hindering environmental initiatives (Lülfs & Hahn, 2014). Thus, we hypothesize:

H_3. Employees situated in segments characterized by stronger VBN orientations hold relatively strong perceptions of CER and vice versa.

Green-Person-Organization Fit (GPO). A subset of P-O fit,[3] the concept of Green- Person-Organization Fit (GPO) is defined as "the extent to which an organization's commitment to environmental protection is congruent with its employees' environmental values" (Hicklenton et al., 2019, p. 2). Empirically, GPO fit positively influenced job satisfaction, creativity

(Spanjol, Tam, & Tam, 2015), employee engagement (Hicklenton et al., 2019) and voluntary PEB (Mi et al., 2020).

Green employees are more likely to notice misalignments between their values, and organizational values and practices (Wright, Nyberg, & Grant, 2012). They are more likely to perceive a stronger GPO misfit and to be critical of their organization than employees with weaker green values (Li, Li, Seppänen, & Koivumäki, 2022). For instance, Wright et al. (2012) highlight how sustainable managers form different identities and how these identities bridge conflicts between individual and organizational narratives with respect to climate change. Managers who developed an identity as a 'green change agent' faced organizational resistance stemming from a short-term, bottom-line, focus, and a lack of commitment from the top.

Indeed, green employees are harsher critics of how the organization performs in relation to the environment, probably because they have a heightened sensitivity to environmental issues and greenwashing (Manika et al., 2015). Perceived greenwashing had a negative effect on discretionary behaviors, and this effect was stronger when employees held green values and weaker when they did not. Perceived greenwashing also contributed to organizational cynicism, and this effect was also stronger for green employees (Li et al., 2022). While Li et al. (2022) studied discretionary behavior in general, not necessarily PEBs, their findings suggest that particular attention must be paid to how green employees perceive GPO fit. Literature shows that, when employees have strong biospheric and altruistic values, and when these values do not match their organization's values (resulting in a large GPO misfit), employees will engage in stronger PEBs (Lu, Liu, Chen, & Long, 2019), perhaps to compensate (Paillé et al., 2019).

To our knowledge, GPO fit has not been included in segmentation studies of conserving behavior, so it is necessary to explore this concept further. From a practical perspective, organizations derive side benefits from cherishing their green employees, who, when

perceiving a strong GPO fit, are more committed and satisfied than when their GPO fit is weak (Hicklenton et al., 2019). Ensuring that green employees have an accurate perception of their organization's environmental efforts would not only encourage them to contribute further to the greening of their organizations, but it would also increase their commitment and job satisfaction, desirable behaviors for any employer. Thus, by integrating GPO fit into our research, we contribute to the literature that incorporates the interaction level between individuals and organization, a level that needs further exploration (Mi et al., 2020).

Thus, we hypothesize:

$H_{4.}$ Employees situated in segments with stronger VBN orientations hold relatively weak perceptions of GPO fit.

The research framework and hypotheses are summarized in *Figure 1*.

INSERT FIGURE 1 HERE

3. Methodology

Data was collected via an online (Qualtrics) survey that secured access to relevant participants, and ensured an externally valid sample that was cost-effective (Brandon, Long, Loraas, Mueller-Phillips, & Vansant, 2014).[4] The relevant population consisted of full-time office employees working in a wide range of organizations throughout the UK, pre-selected with the help of two screening questions ('over 18 years old?' and 'employed full-time in an office job in the UK?'). We focused specifically on office employees because they would have the ability and exposure to the conserving behaviors analyzed here. We did not specify a particular industry as we were responding to calls for research to be conducted in different organizations and industry contexts (Hejjas et al., 2019; Zierler, Wehrmeyer, & Murphy, 2017). Respondents were selected by convenience sampling and were rewarded by Qualtrics for their survey participation. The survey was pre-tested for clarity, and participants were assured of

anonymous and voluntary participation. The sample consisted of 714 employees who met the criteria above (a response rate of 71.4%). We used the SPSS v.29 software to analyze the data.

The multivariate outliers were eliminated using the Mahalanobis distance technique (Kosinski, 1998; Ketchen & Shook, 1996). We calculated the *p*-value for a chi-square cumulative distribution function with five degrees of freedom, and there were 12 cases for which the *p*-value was lower than .001, so these cases were identified as multivariate outliers. The remaining sample was demographically and geographically dispersed with 702 usable responses. Demographic characteristics of the final sample can be seen in *Table 1*.

The VBN and additional variables were measured using a 7-point Likert scale, ranging from *1- strongly disagree* to *7- strongly agree*. Workplace PEBs, adapted from Manika et al. (2015), Lamm et al. (2013), and McConnaughy (2014), focused on four types of conserving behaviors: reducing use, reusing, repurposing, and recycling. Values were measured using Snelgar (2006)'s egoistic, altruistic, and biospheric orientations. Ecological beliefs were measured using an adapted NEP scale (Temminck, Mearns, & Fruhen, 2015; Dunlap et al., 2000). The AC scale was adapted from Wynveen, Wynveen, and Sutton (2015), the AR scale was adapted from Zhang, Wang, & Zhou (2013), and the PN scale was adapted from Chou (2014). Our survey is similar to the one used by Ciocirlan et al. (2020), but it includes additional variables (personality, GPO fit, CER perceptions). All scales included within the study are presented in full in the *Annex*.

Table 1. *Demographic characteristics of the sample, including significance of relationship with cluster membership variable.*

Demographic variable	Subset	No. of responses	Cluster membership (Chi-square significance)
Gender	Male	343	5.225 (.073)
	Female	359	
Age	18-30	131	13.475 (.097)
	31-40	151	
	41-50	159	
	51-60	155	
	61+	106	
Education	GCSE	128	12.570 (.05)*
	A-level	175	
	Undergraduate	246	
	Master's or Ph.D.	124	
Position in the organization	Management	302	11.048 (.004)**
	Non-management	387	
Has environmental responsibility?	Yes	113	25.238 (p <.001)***
	No	589	
Organization size	Small (1-50 employees)	162	2.794 (.834)
	Medium (51-250 employees)	143	
	Large (251-5000 employees)	213	
	Very large (5000+ employees)	184	
Industry	Oil and Gas and basic materials	18	14.566 (.557)
	Industrials	68	
	Consumer goods	57	
	Health care	66	
	Consumer services	88	
	Telecommunications and utilities	23	
	Financials	71	
	Technology	49	
	Other	262	
Organization status	Charity	22	9.066 (.526)
	Not for profit	34	
	Private limited co.	375	
	Public limited co.	95	
	Partnership	28	
	Public sector	137	

(p-values in parentheses)
* $p < .05$
**$p < .01$
*** $p < .001$

Personality dimensions were measured using the Gosling, Rentfrow, and Swann Jr. (2003) scale, while employee perceptions of CER was measured using the scale developed by El Akremi, Gond, Swaen, De Roeck, and Igalens (2015). GPO fit was adapted from Cable and Judge (1996) and Saks and Ashforth (1997) (see *Annex* for the complete survey). To help reduce the common method bias usually present in self-reported research, we randomized all

scales. Additionally, assuring respondents of their anonymity helped minimize social desirability bias (Podsakoff, 2003). Demographic questions (see *Table 1*) were also included, and respondents were invited to make comments in an open response format.

3.1. Analysis and Results

3.1.1. Analytical Procedure

Cluster analysis is a technique used to classify many observations along several dimensions (Ketchen & Shook, 1996) and to create somewhat homogeneous groups based on dimensions or characteristics (Hair, Black, Babin, & Anderson, 2014). To identify segments, we used the three-stage approach recommended in the literature: 1) choosing the variables to use to create the clusters; 2) determining the optimal number of clusters, and 3) validating the cluster solution (Aldenderfer & Blashfield, 1984; Du et al., 2015; Ketchen & Shook, 1996). Consistent with Ketchen and Shook's (1996) and Sarstedt and Mooi's (2014) recommendations, we paid particular attention to choosing the correct clustering variables. Three sets of decisions were involved in this phase: *1.1)* the process to select clustering variables; *1.2)* standardizing variables; and *1.3)* addressing multicollinearity among variables (Ketchen & Shook, 1996).

To select clustering variables, we followed a deductive approach, drawing from theory (Ketchen & Shook, 1996, p. 443). Current clustering techniques (Sarstedt & Mooi, 2014) recommend that the variables chosen to create the clusters represent unobservable measures of attitudes, which are linked to attitude-behavior studies (Caruana, Carrington, & Chatzidakis, 2016) and values toward environmental processes at work. These unobservable variables are expected to have some relevance, in turn, for observable measures, such as conserving behaviors.[5] The variables that we chose to create segments, *i.e.,* values, beliefs, and norms, fit Sarstedt and Mooi (2014)'s criteria of stability, reliability, actionability, and parsimony.

Further, we reduced multicollinearity by excluding variables that had high correlation coefficients (Ketchen & Shook, 1996; Sarstedt & Mooi, 2014), and thus, we chose the egoistic

values variable and excluded the altruistic and biospheric variables. All correlation coefficients were lower than .90 among remaining variables, indicating that multicollinearity was not a significant problem for our research (Sarstedt & Mooi, 2014). Thus, based on the considerations described above, the following VBN variables were used to create the clusters: Egoistic values, NEP, AC, AR, and PN.

To determine the appropriate number of clusters, a combination of hierarchical and non-hierarchical methods was used (Ketchen & Shook, 1996; Hair et al., 2014). First, we used a hierarchical clustering procedure based on agglomerative clustering with the single linkage (nearest neighbor) procedure, based on Euclidian distance. Based on the plot of number of clusters against the distance at which objects or clusters are combined (Sarstedt & Mooi, 2014), the 'break' occurred between a 3-cluster and a 4-cluster solution. Second, we used a non-hierarchical method of clustering, the *k-means* method for three clusters, recommended for samples containing more than 500 observations (Sarstedt & Mooi, 2014). Based on this method, three clusters were created using the VBN variables.

Next, based on Ketchen and Shook's (1996) recommendations, we performed the analysis using both standardized and non-standardized variables and compared the validity of the two cluster solutions. We found that the three clusters were consistent across the two solutions. However, due to the problems of standardization, for instance, eliminating meaningful differences among objects (Ketchen & Shook 1996), we chose not to standardize variables.

The 'Saplings' cluster was relatively large (50% of sample, n=348), while the other two clusters were relatively balanced with respect to size: 'Acorns,' (18% of sample, n=127), and 'Trees,' (32% of sample, n=227). Regarding sample size, research indicates that sufficient statistical power is achieved with relatively small samples (N=20 cases per cluster), provided that clear separation exists between segments, which we have obtained (see Table 2)

(Dalmaijer, Nord, & Astle, 2022), and our cluster size is in fact, much larger (ranging from 127 to 348 cases per cluster). The clusters and their characteristics are discussed below.

3.1.2. Reliability and Validity of the Cluster Solution

To evaluate cluster reliability, we conducted several robustness checks: first, we split the data file into two halves and compared the clustering variables' centroids using *t*-tests (Sarstedt & Mooi, 2014). The *t*-tests could not reject the null hypothesis of equal variance between the two halves of the data set, indicating that our cluster solution is reliable. Next, we conducted a silhouette analysis and found a silhouette value of .236 for the 3-cluster solution, which indicates a "fair" solution (Sarstedt & Mooi, 2014).

To assess the criterion-related validity of our cluster solution, we conducted significance tests with external variables that are theoretically related to the clusters, but not used in creating the clusters (Ketchen & Shook, 1996). Researchers recommend that these variables represent performance measures (Ketchen & Shook, 1996); in our research, these are the conserving behaviors. The Levene test of homogeneity of variance rejected the null hypothesis of equal variances ($p<.05$) for all the conserving behavior variables, suggesting that Welch ANOVA and the Games-Howell post-hoc tests had to be conducted (Rea & Parker, 2014). These additional post-hoc tests showed heterogeneity of variance between clusters, indicating the clusters were different with respect to behavior. Thus, based on the significance tests with the behavioral variables, we can conclude that our cluster solution has strong criterion-validity (Sarstedt & Mooi, 2014), as evidenced by the finding that the clustering variables (the VBN variables) exhibit a strong association with the behavioral variables (the conserving behaviors): The means of conserving behaviors were significantly different among the three clusters (see *Table 2*), indicating that the resulting clusters have distinctly different VBN orientations. Thus, our baseline hypothesis (H_1) was supported.

Table 2. *Validity checks using behavioral (conserving) variables.*

Conserving behaviors	**'Acorns'** **(127 employees)**	**'Saplings'** **(348 employees)**	**'Trees'** **(227 employees)**	**F-tests** (significance in parentheses)
Reducing use	4.97	5.30	5.64	$F_{(2,695)}$= 23.551***
Repurposing materials	5.06	5.41	5.96	$F_{(2, 688)}$=36.042***
Reusing materials	5.30	5.70	6.09	$F_{(2, 692)}$= 25.823***
Recycling materials	5.96	6.36	6.63	$F_{(2, 667)}$=19.216***

*** $p < .001$

Thus, we find evidence that a 'one-size-fits-all' approach to understanding green employees is insufficient, and this aligns with previous research (e.g., Davis et al., 2020). The segmentation model shows significant heterogeneity between the three segments, especially with regards to values, beliefs, and norms. We find that employees who display weak VBN orientations are less likely to perform conserving behaviors, if at all ('Acorn'). By contrast, employees who display strong VBN orientations report strong engagement in conserving behaviors ('Tree'). This finding is largely consistent with previous literature, which suggests that employees with stronger environmental values, beliefs, and norms tend to translate them into practice by engaging in PEBs (Ciocirlan et al., 2020; Papagiannakis & Lioukas, 2018; Yeboah & Kaplowitz, 2016).

3.1.3. The Clusters and their Characteristics

Next, consistent with previous research (Balderjahn, Peyer, Seegebarth, Wiedmann, & Weber, 2018; Guttentag, Smith, Potwarka, & Havitz, 2018), clusters were characterized with respect to all variables, not only those used to identify the clusters. To determine whether the clusters were different with respect to all variables included in the model, Levene homogeneity tests were conducted. The Levene tests rejected the null hypothesis of equal variances for most variables (*Table 3*). Given that the homogeneity of variances assumption was violated, Welch's ANOVA and the Games-Howell post-hoc test had to be conducted (Rea and Parker, 2014). These tests show heterogeneity of variance among clusters, indicating that the clusters

were different with respect to all variables except conscientiousness and agreeableness (*Tables 4* and *6*).

Table 3. *Levene homogeneity tests results*

Variables	***F- statistic***	***Significance***
VBN		
Egoistic values	41.934***	$p < .001$
Altruistic values	53.094***	$p < .001$
Biospheric values	57.440***	$p < .001$
NEP	9.810***	$p < .001$
AC	.066	.936
AR	1.572	.208
PN	22.359***	$p < .001$
CONSERVING BEHAVIOURS		
Reducing use	13.097***	$p < .001$
Repurposing	8.320***	$p < .001$
Reusing	18.621***	$p < .001$
Recycling	32.615***	$p < .001$
PERSONALITY		
Extraversion	3.864*	.021
Openness to experience	.643	.526
Conscientiousness	3.653*	.026
Emotional stability	1.604	.202
Agreeableness	4.423*	.012
PERCEPTIONS OF…		
CER	4.509*	.011
GPO fit	2.785	.062
TENURE	.189	.828

* $p < .05$
** $p < .01$
*** $p < .001$

For all other variables, the Levene test of homogeneity of variances could not reject the null hypothesis of equal variances (*Table 4*).

Table 4. *Welch ANOVA results.*

Variable	**W-test**	**Sig.**
Egoistic values	339.433***	$p < .001$
Altruistic values	157.656***	$p < .001$
Biospheric values	161.392***	$p < .001$
NEP	20.452***	$p < .001$
PN	133.186***	$p < .001$
Extraversion	6.492***	.002
Conscientiousness	1.031	.358
Agreeableness	.030	.971
CER perceptions	26.127***	$p < .001$
Reducing use	20.772***	$p < .001$
Repurposing	34.936***	$p < .001$
Reusing	24.483***	$p < .001$
Recycling	17.752***	$p < .001$

Therefore, one-way ANOVA and Tukey post-hoc tests were conducted to test for heterogeneity (Rea & Parker, 2014). These tests found that clusters were different with respect to all variables except emotional stability and tenure (*Table 5* and *Table 6*).

Table 5. *One-way ANOVA results*

Variable	**F-statistic**	**Sig.**
AC	303.112***	p<.001
AR	576.238***	p<.001
Openness to experience	12.369***	p<.001
Emotional stability	1.225	.294
GPO fit	31.809***	p<.001
Tenure	1.957	.142

Overall, results show that clusters are statistically different with respect to the VBN variables, perceptions of CER, and GPO fit. To determine the nature of these differences (which clusters report higher means, and whether these mean differences are significant), we need to examine *Table 6*. Interestingly, although the 'Trees' hold stronger altruistic and biospheric values than either the 'Acorns' or the 'Saplings,' they also hold stronger egoistic values than them (Table 6). The three sets of values are not mutually exclusive, as one can be simultaneously concerned with the ecosystem and the community, as with own welfare and happiness. It is also possible that individuals consider the natural environment as integral to their own welfare (Ciocirlan et al., 2020; Unsworth, Davis, Russell, & Bretter., 2021). More research is needed to corroborate this finding.

Table 6. *Identified clusters and their characteristics*

Variables		**Clusters**		
		'Acorns'	***'Saplings'***	***'Trees'***
Egoistic values[g]	M	3.30^{***s,t}	4.51^{***a,t}	5.94^{***s,a}
	SD	1.34	0.92	0.72
Altruistic values[g]	M	4.14^{***s,t}	5.36^{***a,t}	6.27^{***s,a}
	SD	1.52	0.84	0.75
Biospheric values[g]	M	4.19^{***s,t}	5.27^{***a,t}	6.30^{***s,a}
	SD	1.65	1.07	0.69
NEP[g]	M	4.59^{***t}	4.81^{***t}	5.14^{***s***a}
	SD	0.97	0.69	0.78
AC[y]	M	2.11^{***s,t}	3.02^{***a,t}	4.69^{***s,a}
	SD	1.02	1.01	1.06
AR[y]	M	1.94^{***s,t}	4.27^{***a,t}	5.35^{***s,a}
	SD	0.94	0.87	0.94
PN[g]	M	4.70^{***s,t}	5.54^{***a,t}	6.28^{***s,a}
	SD	1.17	0.82	0.66
Extraversion[g]	M	3.65^{**t}	3.80^{**t}	4.13^{**s,a}
	SD	1.44	1.37	1.26
Openness to experience[y]	M	4.48^{**s***t}	4.74^{**a,t}	5.03^{**s***a}
	SD	1.05	0.97	1.06
Conscientiousness[g]	M	5.67	5.53	5.61
	SD	1.03	1.00	1.09
Emotional stability[y]	M	4.85	4.67	4.81
	SD	1.42	1.22	1.27
Agreeableness[g]	M	5.00	5.03	5.03
	SD	1.14	0.99	1.15
Reducing use[g]	M	4.97^{**s***t}	5.30^{**a***t}	5.64^{***s,a}
	SD	1.16	0.84	0.81
Repurposing[g]	M	5.06^{*s***t}	5.41^{*a***t}	5.96^{***s,a}
	SD	1.26	0.96	0.91
Reusing[g]	M	5.30^{**s***t}	5.70^{**a***t}	6.09^{***s,a}
	SD	1.35	0.99	0.81
Recycling[g]	M	5.96^{**s***t}	6.36^{**a***t}	6.63^{***s,a}
	SD	1.36	0.95	0.61
GPO fit[y]	M	4.00^{***s,t}	4.52^{***a,t}	5.03^{***s,a}
	SD	1.28	1.11	1.25
CER[g]	M	4.06^{***t**s}	4.53^{***t**a}	5.14^{***s,a}
	SD	1.52	1.28	1.29
Tenure (in years)[y]	M	11.20	10.14	9.19
	SD	9.60	9.22	9.37
Cluster population (# of employees)		**127**	**348**	**227**
Percentage of total sample		**18%**	**50%**	**32%**

s- cluster is different from Saplings
a- cluster is different from Acorns
t- cluster is different from Trees
*** $p < .001$
** $p < .01$
* $p < .05$
g- significance was assessed using the Games-Howell post-hoc test
y- significance was assessed using the Tuckey post-hoc test

H_2 predicted that employees in clusters with stronger VBN orientations tend to be more conscientious and open to experience than employees in clusters with weaker VBN orientations. Consistent with meta-analytic findings, we found that the 'Trees' are indeed more

open to experience than the 'Saplings,' and the 'Saplings' are more open to experience than the 'Acorns.' However, in contrast to prior meta-analytic findings (Katz et al., 2022), neither cluster was more conscientious than the others, as the mean differences between clusters were not statistically significant (*Table 6*). Thus, H_2 was partially supported. The fact that all three groups are equally conscientious may be explained by the possibility that conscientiousness is more related to expected behaviors/ in-role tasks, since this personality trait measures the degree of dependability and the tendency of employees to do what is expected of them and follow through. 'Acorns' are as conscientious as the 'Saplings' and the 'Trees,' but they may not engage in extra-role behaviors, as they just do what is expected of them. This finding, if correctly interpreted, would mean that integrating environmental responsibility into daily tasks by design (Manika et al., 2015; Norton et al., 2015) is crucial. However, further research is needed to examine these unexpected results.

H_3 predicted that employees situated in stronger VBN orientation segments hold stronger positive perceptions of CER than employees situated in weaker VBN orientation segments. The mean of CER perceptions is the highest for the 'Tree' cluster, lower for the 'Saplings' cluster, and the lowest for the 'Acorns' cluster, and the differences are statistically significant, thus H_3 was supported (*Table 6*). Since the 'Trees' are more likely to hold managerial and environmental responsibility positions than the other clusters (*Table 7*), it is possible that they had more positive CER perceptions because they participated actively in developing their organization's environmental policies and programs. It is also possible that the 'Trees' are more committed to their organizations than other clusters, and in past literature, affective commitment to the organization affected PEB engagement directly or indirectly (Paillé et al., 2019; Paillé & Raineri, 2015). Additionally, the 'Trees' had stronger CER perceptions because they have collectively formed a 'sustainability institutional logic,' a

mental model that sees the role of business in society as larger than profit maximization and being responsible to a large set of stakeholders (Kok et al., 2019).

H4 predicted that employees situated in stronger VBN orientation segments perceive a larger GPO misfit (or a weaker GPO fit) than employees situated in weaker VBN orientation segments. Unexpectedly, we found that the mean of GPO fit is the highest for the 'Tree' cluster, lower for the 'Saplings' cluster, and the lowest for the 'Acorns' cluster, and the differences are statistically significant (*Table 6*), thus contradicting *H4*. These results may be explained by the possibility that the 'Trees' did not witness extreme environmentally irresponsible behaviors or greenwashing, while the 'Acorns' and 'Saplings' did. The tendency of the 'Trees' to regard GPO fit positively may also be due to confirmation bias (Nickerson, 1998), as they may seek out information that confirms their ecological beliefs and discard information that does not. It is also possible that the Trees' perceptions were clouded by subjectivity or a positive affective commitment to the organization, as discussed above. Consistent with previous research (Kesenheimer & Greitemeyer, 2021), we found that the 'Trees' are more educated and open to experience than other employees, and both education and openness to experience were strongly correlated with empathy in a large UK sample (Sommerlad et al., 2021); in addition, empathy had a direct and indirect effect on pro-environmental attitudes and behavior (Berenguer, 2007; Yin et al., 2021). Higher education may increase one's cognitive ability to consider others' perspectives and having a creative and imaginative personality would enhance someone's capacity for compassion (Sommerlad et al., 2021). The Trees' potentially higher level of empathy may make them more understanding toward the challenges that their organizations experience when tackling environmental challenges. However, since confirmation bias and empathy were not measured in this study, additional research is necessary to corroborate our findings about GPO fit.

Although sociodemographic variables were not the focus of our study, we conducted chi-square analyses to determine whether the segments were different with respect to these dimensions (Zierler et al., 2017). Cross-tabulations with the nominal variables suggest that the clusters were statistically different in terms of education, position in the organization, and environmental responsibility, but did not differ in terms of other variables: age, gender, organization size, status, industry type, tenure (*Tables 1, 7*).

Table 7. *Identified clusters and demographic characteristics, which, according to chi-square analysis, show significant differences.*

Education	GCSE or equivalent	A level or equivalent	Undergrad	Master's or Ph.D.
Acorns	22.00%	27.60%	36.60%	13.80%
Saplings	21.10%	26.60%	36.60%	15.70%
Trees	14.20%	24.20%	36.50%	25.10%

Position in the organization	management	non-management
Acorns	34.40%	65.60%
Saplings	41.80%	58.20%
Trees	52.00%	48.00%

Environmental responsibility?	yes	no
Acorns	5.50%	94.50%
Saplings	14.10%	85.90%
Trees	25.10%	74.90%

While the clusters were described statistically above, *Table 8* describes these differences in a qualitative format.

Table 8. *A qualitative description of clusters.*

	Values, Consequences, Responsibility	Behaviors	Personality	CER perceptions	GPO Fit	Education	Managerial Position	Responsibility for Sustainability
Cluster ' Acorns'	Perceive few environmental problems and environmental impacts on own team, department, or organizations. Do not feel a sense of joint responsibility toward environmental problems.	Rarely act to save energy, repurpose, reuse, and recycle materials	More likely to be introverted	Skeptical of their organization's pro-environmental efforts	Perceive little fit between them and the organization	More likely to have an undergraduate degree as the highest qualification	Least likely to hold managerial positions	Least likely to have environmental responsibilities at their jobs
Cluster ' Saplings'	Uncertain about environmental impacts, with some consequences for the own work, team, department or organization. Moderate sense of joint responsibility for saving energy and reducing the scope of environmental problems.	Inconsistent pattern in saving energy, reducing use, repurposing, and recycling materials	Moderately extraverted and open to experience	Perceive the organization to be neither active nor passive in encouraging PEBs	Perceive some match between their values and the organization	More likely to have an undergraduate degree as the highest qualification	Less likely to hold managerial positions	Less likely to have environmental responsibilities as part of their job
Cluster ' Trees'	Very likely to care about negative environmental impact, to hold eco-centric views and to believe that humans are severely abusing the environment. Feel a sense of responsibility for behaving in an environmentally responsible manner and feel jointly responsible for negative environmental impact.	Very engaged in saving energy, reusing, repurposing, and recycling materials	Extraverted, enthusiastic, open to experience, creative and unconventional	Positive views of their organization's efforts to be more pro-environmental	Perceive strong fit between them and the organization	More likely to hold higher degrees.	More likely to hold managerial positions	More likely to have environmental responsibilities at their jobs

4. Discussion

This study makes several unique contributions to literature. Scholars have called for more employee typologies to further understand the preferences of subgroups of employees (Ciocirlan, 2017; Dubois et al., 2013; Paillé et al., 2019), and for the simultaneous integration of individual and organizational determinants (Linnenluecke et al., 2009; Lo, Peters, & Kok, 2012). Thus, this paper advances current research on archetypes, which has largely overlooked the question of environmental profiles (Paillé et al., 2019), and examines organizational and psychographic variables that may explain an employee's tendency toward one archetype versus another. Studying individual psychographic and organizational variables simultaneously can help researchers build multi-level models, which are generally missing from current PEB literature (Zacher et al., 2023).

Our findings point to the need for future research to integrate typology research with organizational culture research, as different segments of employees may create different subcultures or countercultures that can aid or block the implementation of environmental strategies (Linnenluecke et al., 2009; Rodrigues, 2006). Thus, we make an important contribution to the subculture research, which insofar has focused on subculture formation around functional groupings, organizational roles, hierarchical levels, professional identification, understandings of authority structures, or departmental lines (Howard-Grenville, 2006; Kok, de Bakker, & Groenewegen, 2019; Risi et al., 2022). Today's sustainability problems are increasingly tackled by cross-functional teams, which are composed of employees from different functional departments (Windsor, 2021; Schönwälder & Weber, 2022), but who may belong to the same environmental cluster (e.g., 'Acorns'). Using our study as a foundation, future studies may bridge subculture research with environmental cluster research to understand cross-functional teams' environmental orientations. Given their different VBN orientations, our 'Acorns,' 'Saplings,' and 'Trees' may develop different understandings of sustainability issues, which may blur the impact of organizational sustainability policies or create ambiguity around them (Kok et al., 2019). When organizations introduce a new environmental initiative or program, they should anticipate the reactions of different groups to it, as these groups can be barriers or enablers of it. Subcultural groups are not equally powerful (Howard-Grenville, 2006), and in our study, the 'Trees' hold more influence than the other two clusters, as they are most likely to hold managerial positions.

From a practical perspective, our findings suggest that organizations should target employees differently depending on their environmental profiles (Paillé et al., 2019), and should customize their messaging and interventions depending on employee values and motivations (Legault, 2023). As shown above, these values and motivations create subcultures, which may cut across functional lines, and may influence employees' approach to problem

identification and problem solving. However, cluster members themselves are not "cultural dopes […] but active, skillful users of culture" (Swidler, 1986, p. 277), thus boundary crossing between segments is possible, via organizational interventions. These boundary crossing interventions are described below and depicted in *Figure 2*.

While it is difficult to change values, it is possible to make biospheric and altruistic values more salient in a certain context, through informational strategies, such as sharing data about the magnitude of climate change and providing clarity on the steps one can take to help the environment at work. These informational strategies are particularly effective if the behavior that needs to be stimulated involves low costs (De Groot & Steg, 2009), such as the conserving behaviors studied here. Other strategies to increase the power of biospheric or altruistic values are moralization, which induces individuals to associate harmfully environmental behavior with negative emotions, such as shame, guilt, or disgust (De Groot & Steg, 2009), or instilling pride in employees' actions (Dubois et al., 2013).

Witnessing their leaders act in a pro-environmental fashion influenced employee PEB positively (Duarte & Mouro, 2022; Young et al., 20135), but this alone was not enough to transform employees from *apathetics* to *enthusiasts* (Paillé et al., 2019). Thus, organizations must communicate more clearly their efforts toward environmental protection, and this is particularly important for employees with weak ecological values (Duarte & Mouro, 2022), our 'Acorns,' since employees with strong ecological values engage in PEBs regardless of their perception of CER (Ruepert, Keizer, & Steg, 2017). We find that 'Acorns' are particularly skeptical of organizational CER efforts. To overcome this skepticism, managers need to be clear and honest about why environmental actions are being encouraged; additionally, they need to support the development of these actions, provide feedback, and lead by example by taking steps to solve environmental problems under their control (Boiral, Talbot, & Paillé, 2015; Davis et al., 2020).

Based on our study, I-O psychologists could develop, and organizations could use, a questionnaire that measures employees' VBN orientations (Ones & Dilchert, 2012; Wiernik et al., 2018), to identify them as 'Acorns,' 'Saplings,' and 'Trees.' This classification would help organizations make cross-functional team assignments for work problems: when assigning employees into teams, they can avoid composing a team with 100 percent 'Acorns' for instance, or they may intentionally assign a 'Tree' employee to lead the team. Organizations frequently use questionnaires (personality assessments, *e.g.,* Myers Briggs, DISC), and using an environmental orientation questionnaire would communicate to employees the seriousness of their commitment to environmental protection. Additionally, since the *Trees* were more likely to hold managerial positions than the other clusters, there is an opportunity for organizations to consider employee VBN orientations in their promotion process.

Since 'Acorns' and 'Saplings' feel disconnected from their organizations (they have a weak GPO fit), this may impede organizational CER efforts. To make them 'grow' into 'Trees,' organizations should integrate environmental sustainability into daily performance goals and metrics. More than the other clusters, the 'Trees' are more likely to have environmental responsibility integrated in their daily tasks, which suggests that making green behaviors 'in-role' rather than voluntary would position these behaviors as 'expected' and ultimately increase the overall environmental performance of the organization (Manika et al., 2015; Norton et al., 2015). However, formal structures should be implemented with caution, because once 'Acorn' and 'Saplings' become 'Trees,' continuing to use rigid norms and procedures may reduce their intrinsic motivation to act environmentally (Dubois et al., 2013).

When designing training workshops, instead of offering a single workshop that everyone must attend, organizations should offer customized workshops with different narratives, allowing employees to select the narrative that appeals to them. For instance, employees who believe that climate change is not impacted by human action may respond well

to the economic narrative, according to which environmentally harmful actions would be costly/inefficient, while PEB engagement leads to cost savings, efficiencies, or a larger market share (Dubois et al., 2013; Howard-Grenville, 2006; Kok et al., 2019). Another narrative would be to reduce the discomfort or personal sacrifice that employees may experience while engaging in PEBs (Legault, 2023), for example, explaining that 'two-sided printing may reduce the amount of paper one has to carry' (De Groot & Steg, 2009). Choice architecture – changing printer settings to make it inconvenient to print one-sided, placing recycling bins and other environmental infrastructure in such a way as to make it easy for employees to use it – can make PEBs more automatic and habitual (Dubois et al., 2013).

To better understand the Acorns' and Saplings' low levels of GPO fit, we reviewed their qualitative comments, which included, "We could adopt a recycling policy but the company couldn't care less," "lots of talking, much less clear actions for employees, " "There is more focus on profit, than being ethical," "all about saving money, not the environment," "I feel angry at the sheer scale of energy waste that goes on in my office," "Management/company are not interested [in being environmentally responsible] as it is not cost effective or profitable," and "The management always consider commercial aspects before environmental issues."

These comments seem to suggest that the Acorns and the Saplings have developed a form of organizational cynicism (although cynicism was not formally measured in this study). To reduce such cynicism, organizations are urged to improve communication regarding their environmental efforts, and the human resources departments and CSR managers should collaborate to ensure that CER information is communicated frequently and in a substantive manner to all employees, not only internally, but also externally, through media reports, candidate interviews, or verbal accounts. Surveys to measure organizational cynicism should also be conducted, ideally, after each CER initiative is implemented (Li et al., 2022).

As shown in Figure 2, ensuring authenticity of environmental goals and customizing training programs can help reinforce the employees' accurate understanding of the organization's CER and their identification with it. Organizations can increase their employees' GPO fit by improving recruitment practices (recruiting candidates who have an environmental orientation) and by greening their Human Resource practices (Ercantan, & Eyupoglu, 2022; Mi et al., 2020).

INSERT FIGURE 2 HERE

5. Limitations

This research has several limitations. Firstly, the questionnaire used to develop the employee segments was relatively lengthy; future research might develop a shorter screening tool for easier use and to track changes over time. Secondly, we used self-reported measures, which some researchers caution against (Huffman, Van Der Werff, Henning, & Watrous-Rodriguez, 2014), while others suggest that employees tend to underreport their own green behaviors (Gregory-Smith et al., 2015). Future studies should incorporate actual behavior measures, perhaps recorded through observation or experimentation as well as incorporating more sophisticated sampling methods. In addition, including employees' environmental knowledge regarding waste separation (Chen et al., 2021) into the model may help explain their cluster membership. Thirdly, future research should use longitudinal methods to examine cluster membership changes over time (Norton et al., 2015), which could better inform the design of and test behavioral change interventions. Fourthly, our study analyzes conserving behaviors of office employees in the UK, thus geographical generalizations, extrapolations to other PEBs, or other types of employees must be drawn with caution. Using this study as a foundation, future research may analyze other geographical contexts, other types of PEBs, and other types of employment categories beyond office workers.

6. Conclusions

This paper has developed a more detailed, comprehensive, and practical segmentation than extant models in the literature. Based on self-reported measures provided by 702 office employees, three distinct employee segments were identified, using the VBN variables. Several individual and organizational variables were incorporated simultaneously into the model, to help understand the clusters with respect to personality dimensions, and perceptions of CER and GPO fit. The segments differ with respect to most of these variables, indicating that significant heterogeneity exists among groups. Segmenting employees in this way suggests that organizations employ targeted behavioral intervention strategies to improve employee PEB and achieve their organization's CER objectives.

We make several contributions to the literature by building a typology of green employees much needed in the micro-CSR literature (Hejjas et al., 2019), by employing the full VBN framework, under-utilized in an organizational setting (Inoue & Alfaro-Barrantes, 2015), by using several variables to create segments, by studying individual and organizational variables simultaneously (Linnenluecke et al., 2009), and by analyzing a wide range of conserving behaviors (Paillé et al., 2019). Our findings suggest that the VBN theory should be extended by integrating personality traits, and that green culture transformation frameworks must be segmented, not organization wide. Our exploratory study builds a foundation for further investigation of employee archetypes relevant to cross-functional and subculture research, ultimately contributing to an organization's environmental performance.

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ANNEX

Survey instrument

Values

Egoistic:

I am concerned about environmental problems because of the consequences for me.
I am concerned about environmental problems because of the consequences for my future.
I am concerned about environmental problems because of the consequences for my lifestyle.
I am concerned about environmental problems because of the consequences for my health.
I am concerned about environmental problems because of the consequences for my prosperity.

Altruistic

I am concerned about environmental problems because of the consequences for humanity.
I am concerned about environmental problems because of the consequences for children.
I am concerned about environmental problems because of the consequences for people in the community.
I am concerned about environmental problems because of the consequences for future generations.

Biospheric

I am concerned about environmental problems because of the consequences for plants.
I am concerned about environmental problems because of the consequences for trees.
I am concerned about environmental problems because of the consequences for marine life.
I am concerned about environmental problems because of the consequences for birds.
I am concerned about environmental problems because of the consequences for animals.

Ecological worldview (NEP)

We are approaching the limit of the number of people the earth can support
Humans have the right to modify the natural environment to suit their needs
When humans interfere with nature it often produces disastrous consequences
Human ingenuity will ensure that we do NOT make the earth unlivable
Humans are severely abusing the environment
The earth has plenty of natural resources if we just learn how to develop them
Plants and animals have as much right as humans to exist
The balance of nature is strong enough to cope with the impacts of modern industrial nations
Despite our special abilities humans are still subject to the laws of nature
The so-called "ecological crisis" facing humankind has been greatly exaggerated
The earth is like a spaceship with very limited room and resources
Humans were meant to rule over the rest of nature
The balance of nature is very delicate and easily upset
Humans will eventually learn enough about how nature works to be able to control it
If things continue on their present course, we will soon experience a major ecological catastrophe.

Awareness of Consequences (AC)
Climate change generates…

problems for my organization/employer
problems for my work teams.
problems for my workplace environment (e.g. building, office).
problems for my work colleagues
problems for my daily work activities.
problems for my department

Ascription of responsibility (AR)

I feel jointly responsible for the exhaustion of resources (such as water, paper, energy) at my workplace

I feel joint responsibility for the contribution of resources consumption at my workplace to climate change
I feel joint responsibility for the contribution of resources consumption at my workplace to local ecological damage
I feel joint responsibility for the negative consequences of resources consumption at my workplace

Personal Norms (PN)

I feel a personal obligation to do whatever I can at work to prevent environmental degradation.
I feel a sense of personal obligation to take action at work to stop wasting resources.
I feel morally obliged to save energy at work regardless of what other employees do.
Business and industry should reduce their waste production to help protect environment.
The government should exert pressure on industry to better their job in protecting environment.
Employees like me should do everything they can to reduce energy use.
I feel obliged to bear the environment and nature in mind in my daily work behavior.
Employees like me should do everything they can to recycle materials.
Employees like me should do everything they can to reduce consumption of materials.

Conserving behaviors

Reducing use

I turn off office equipment when not in use, especially overnight (e.g., photocopiers, printers etc.)
I leave the computer on even when not in use for over 30 min (reverse coded)
I switch off lights when not needed
I add or remove clothing rather than turning heating or air conditioning up when it's hot or cold
I open or close windows rather than turning heating or air conditioning up when it's hot or cold
I turn heating or air conditioning down if I can find other ways to remain comfortable
I tend to print emails for ease of reference (reverse coded)
I am a person who prints double-sided
I am a person who reduces water consumption by turning off taps when not in use

Reusing

I am a person who uses a reusable water bottle instead of a paper cup at the water cooler or tap
I am a person who uses a reusable coffee cup instead of a paper cup
I am a person who uses a plastic lunch box
I use a reusable bag/bag for life rather than single use plastic bags
I reduce waste by reusing items

Repurposing

I am a person who uses scrap paper for notes instead of fresh paper
I give materials a new use or purpose instead of throwing them away
I use supplies in new ways
I save extra supplies or materials for a future project

Recycling

I put the following in separate recycling/compost bins: paper
I put the following in separate recycling/compost bins: cardboard
I put the following in separate recycling/compost bins: cans
I put the following in separate recycling/compost bins: plastic cups/ bottles
I put the following in separate recycling/compost bins: glass

Personality

I see myself as:

extraverted, enthusiastic

critical, quarrelsome
dependable, self-disciplined
anxious, easily upset
open to new experiences, complex
reserved, quiet
sympathetic, warm
disorganized, careless
calm, emotionally stable
conventional, uncreative

CER perceptions

My organization takes action to reduce pollution related to its activities (e.g., reducing use of resources, recycling etc).
My organization contributes toward saving resources and energy (e.g., recycling, waste management).
My organization makes investments to improve the ecological quality of its products and/or services.
My organization respects and promotes the protection of biodiversity (i.e., the variety and diversity of species).
My organization measures the impact of its activities on the natural environment (e.g., carbon audit, reduction of greenhouse gas emissions, global warming).
My organization invests in clean technologies and renewable energies.
My organization encourages its members to adopt eco-friendly behavior (sort rubbish/recycling, save water and electricity) to protect the natural environment

GPO fit

I feel my environmental values "match" or fit this organization and the current employees in this organization
I think the environmental values and personality of this organization reflect my own environmental values and personality
The environmental values of this organization are similar to my own values
My environmental values match those of current employees in this organization
I feel my personality matches the "personality" or image of this organization
I think the environmental personality of this organization reflects my own environmental personality.

DEMOGRAPHICS & OTHER

Education: GCSE or equivalent, A level or equivalent, undergraduate degree, master degree, higher degree (e.g. PhD); Other; Prefer not to answer

Age: 18-30, 31-40, 41-50, 51-60, 61-70, 70+; prefer not to answer

Gender: Male/Female/Prefer not to answer

Position in the organization: a) management; e) non-management f) other_____

Length of employment with your current organization: ____years ___months

Do you have any environmental responsibility in the organization? Yes; No; n/a

If yes, please briefly describe your responsibilities: _____

Organization size

Small (1-50)
Medium (51-250)
Large (251-5,000)
Very large (5,000+)

Industry sector:
Oil & Gas (producers, distribution alternative energy etc)
Basic materials (chemicals, forestry, metals, mining etc)

Industrials (construction, electronic & electrical engineering industrial engineering etc)
Consumer Goods (Automobiles, beverages, food, household goods, leisure foods, personal goods, tobacco etc)
Health care (equipment, Services, pharmaceuticals, biotechnology etc)
Consumer Services (retails, media, travel & leisure etc)
Telecommunications
Utilities
Financials (banks, insurance, real estate, financial services)
Technology (software, computer services, technology hardware etc)
Other: _____

Organization status
Charity
Not for profit
Private limited company
Public limited company
Partnership
Public sector
Other _____

Endnotes

[1] To reduce wording, the phrase "VBN orientation" is used to designate stronger ecological values, beliefs, and norms throughout the paper.

[2] The number of segments cannot be hypothesized *a priori;* rather, this number will result from the hierarchical and non-hierarchical methods suggested by the cluster analysis researchers (Ketchen & Shook, 1996; Hair et al., 2014). Therefore, hypotheses H_2-H_4 are formulated in a general fashion, referring to segments with stronger or weaker VBN orientations.

[3] Person-Organization (P-O) fit was conceptualized as "the compatibility between people and organizations that occurs when: (a) at least one entity provides what the other needs, or (b) they share similar fundamental characteristics, or (c) both" (Kristof, 1996, pp. 4-5).

[4] The costs associated with data collection were covered from grants obtained from a UK university and the USA-UK Fulbright Commission.

[5] We conducted an exploratory factor analysis (EFA), using the principal component analysis method of extraction. However, we did not use the factors that resulted from the factor analysis to cluster the segments, because the resulting clustering solution would be more difficult to interpret than when using composite scores. In addition, the factors do not explain a proportion of variance, yielding an incomplete picture of segments (Dolnicar & Grün, 2009; 2011). Moreover, since variables with low loadings would be excluded from the analysis, potentially important information is eliminated before the segments are formed, making it impossible to cluster all observations. Thus, we used item means to reduce scale dimensions and create/characterize segments. The cluster results using the factors are similar to those presented here, and robustness checks indicate that our cluster solution is reliable (see *Methodology*).