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Organizational citizenship behaviour for the environment: Measurement and validation

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Abstract

While the importance of employee initiatives for improving the environmental practices and performance of organizations has been clearly established in the literature, the precise nature of these initiatives has rarely been examined (particularly the issue of their discretionary or mandatory nature). The role of organizational citizenship behaviour in environmental management remains largely unexplored. The main objectives of this paper were to propose and validate an instrument for measuring organizational citizenship behaviour for the environment (OCBE). Exploratory (Study 1, N = 228) and confirmatory (Study 2, N = 651) analyses were conducted to examine the factor structure of OCBEs. The factor structure that emerged from Study 1 indicated that the three main types of OCBEs were eco-initiatives, eco-civic engagement and eco-helping. The factor structure found in Study 1 was confirmed by Study 2. Analysis of the three types of OCBEs highlighted the complexity of discretionary initiatives for the environment in the workplace and points to a number of avenues for further research.

Keywords Corporate greening · Eco-initiatives · Employee participation · Environmental Management · Organizational citizenship behaviour (OCB) · Sustainability

Introduction

The greening of organizations is not only based on the formal management systems, activities or technologies. Discretionary initiatives made by employees—such as suggesting improvements to energy efficiency processes, sorting and recycling waste or setting up a green committee—can also have a significant impact on environmental performance (Ramus and Steger 2000; Andersson and Bateman 2000; Walley and Stubbs 2000). As noted by Daily et al. (2009, p. 3), “the success of important environmental programs may hinge on employee behaviour that is beyond the scope of formal reward and performance evaluation systems.” Paradoxically, in spite of its importance, individual and voluntary behaviour has rarely been empirically examined in the literature on environmental management. Most environmental management studies do not distinguish between employees' voluntary involvement (which is neither mandated nor rewarded) and involvement based on compliance with the organization's in-house standards and procedures. The distinction is, however, quite important since many green behaviours are not taken into account by formal environmental management systems (Ramus and Killmer 2007; Daily et al. 2009; Boiral 2009).

The main objectives of this paper were to propose and validate an instrument for measuring organizational citizenship behaviour for the environment (OCBE). OCBE can be defined as “individual and discretionary social behaviours that are not explicitly recognized by the formal reward system and that contribute to a more effective environmental management by organizations” (Boiral 2009, p. 223). These ‘individual and discretionary behaviours’ include different types of initiatives, such as sharing knowledge to prevent pollution in the workplace, suggesting solutions aimed at reducing waste, representing the organization at an environmental conference and collaborating with the environmental department to implement green technology. Taken individually, these behaviours may appear secondary and mundane. However, their promotion throughout the organization can have a significant impact and contribute to improving environmental performance (Ramus 2001; Ramus and Killmer 2007; Boiral 2005).

A number of theoretical studies have examined OCBEs, focusing mainly on their scope, likely determinants and possible impacts (Ramus and Killmer 2007; Daily et al. 2009; Boiral 2009). Although the emerging literature on OCBEs has clearly emphasized the importance of voluntary and unrewarded green initiatives, the measurement and validation of this concept remains unexplored. The nature of OCBEs, the specific behaviours involved and their main characteristics thus remain poorly defined, speculative and empirically unvalidated. As a result, the concept of OCBE is not well established. Empirical analysis of what constitutes OCBEs and how to measure such behaviours is essential for further research in this area. For example, an examination of the main drivers and impacts of OCBEs presupposes the existence and validation of measurement scales to ensure a full understanding and analysis of the concept. Similarly, any potential recommendations aimed at encouraging the development of OCBEs within organizations presuppose that the concept is sufficiently clear and applicable.

No matter what avenues for future research we may contemplate, the development and validation of OCBE measurement scales appears to be a prerequisite for further empirical studies. Nevertheless, because of their often discretionary, informal and tacit nature, OCBEs are difficult to describe, analyse and measure rigorously. This paper contributes to clarifying the emerging concept of OCBEs and to establishing how they can be operationalized in future research. The paper also analyses the main categories of OCBEs and their possible implications for organizations.

The rest of the paper is organized as follows. First, the paper examines the contribution of employee initiatives and the underlying role of OCBEs in how organizations address environmental issues. Second, the methods used to develop the OCBE measurement scale and the results analysis are presented. The paper concludes with a discussion of the implications of the study in the broader context of the environmental management literature.

Eco-Initiatives and Environmental Citizenship Behaviour

Individual voluntary initiatives that are not rewarded by the organization are central to the concept of organizational citizenship behaviour (OCB). OCBs have been the subject of a growing literature in the past 20 years (MacKenzie et al. 1991, 1998; Organ et al. 2006; Podsakoff et al. 1997). The literature has shown that the contribution of OCBs to the smooth and

efficient operation of an organization may largely depend on voluntary behaviours not recognized by the organization, including mutual help among employees, involvement in various unrewarded organizational activities, personal development efforts, constructive suggestions and the support of corporate image and values (MacKenzie et al. 1998; Van Dyne et al. 1994; Niehoff 2005). The analytical framework used for OCBs in general can also be applied to environmental issues (Ramus and Killmer 2007; Daily et al. 2009, Boiral 2009). Although there has been very little research on OCBEs to date, the role of employee initiatives in environmental management has been clearly emphasized in a number of studies. A review of these studies will provide a better understanding of the underlying role played by OCBEs in organizations' environmental issues.

The Contribution of Employee Initiatives to Corporate Greening

Employees' environmental initiatives are generally considered to be one of the main success factors in organizational greening (Andersson and Bateman 2000; Hanna et al. 2000; Ramus 2001; Ramus and Killmer 2007; Walley and Stubbs 2000; Daily et al. 2009). Many studies have demonstrated the close relationship between employee initiatives and the environmental performance of organizations (Boiral 2005). For example, studies based on the Environmental Protection Agency's Toxic Release Inventory database have measured the positive relationship between employee environmental commitment and pollution reduction (Ruiz-Quintanilla et al. 1996; Theyel 2000). Other studies have shown the importance of employee participation in various green initiatives (pollution prevention, waste management, environmental committees, etc.) for improving environmental performance (Hanna et al. 2000; Stone 2000; Boiral 2005, 2009). The success stories of a number of green organizations (Interface, 3M, Patagonia, etc.) have also been linked to employee eco-initiatives and environmental awareness (Shrivastava 1995; Anderson 2009; Johansen 1998; Rossi et al. 2000).

Employee eco-initiatives and participation have generally been associated with various environmental best practices and key success factors, of which four in particular are worthy of note, namely:

One, the shift towards environmental responsibility in organizations often depends on individual champions challenging the status quo and taking the lead in promoting new environmental initiatives (Walley and Stubbs 2000; Andersson and Bateman 2000; Branzei et al. 2004). These champions are not necessarily environmental experts, since they are generally employees concerned about ecological issues who act as "green intrapreneurs" and who, "through formal organizational roles and/or personal activism, attempt to introduce or create change in a product, process, or method within an organization" (Andersson and Bateman 2000, p. 549).

Two, the development of eco-innovations in organizations is often the result of individual ideas and suggestions (Ramus 2001; Fernández et al. 2003; Branzei et al. 2004; Walley and Stubbs 2000). Because they work directly with the technologies and processes that may be the sources of pollution, production workers are generally well positioned to offer efficient and practical environmental solutions (Hart 1995; Daily et al. 2009; Boiral 2002, 2005).

Three, pollution prevention initiatives aimed at reducing the sources of pollution in the production process presuppose employee involvement in applying or improving environmental procedures, recycling residual materials, limiting polluting behaviours in the workplace and so on (Hart 1995; Kitazawa and Sarkis 2000; Boiral 2005; Ramus 2001).

Four, employee involvement is necessary to implement environmental management systems successfully. For example, the impact of ISO 14001 on environmental performance largely depends on voluntary employee participation in implementing the system, identifying environmental issues, documenting procedures and correcting non-compliance (Jiang and Bansal 2003; Yin and Schmeidler 2009; Christmann and Taylor 2006; Boiral 2007).

Although the importance of employee involvement is widely recognized in the environmental management literature, the nature, characteristics and measurement of individual initiatives in this area remain undefined. Employee initiatives, involvement and participation are generally treated as a desirable general principle or ideal in organizational greening (Florida 1996; Hanna et al. 2000; Hart 1995; Remmen and Lorentzen 2000; Stone 2000). However, the definition and scope of these initiatives have rarely been examined clearly and directly in the literature.

Exploring Organizational Citizenship Behaviour for the Environment

With the exception of a small number of recent studies (Ramus and Killmer 2007; Daily et al. 2009; Boiral 2009), the pro-environmental involvement of employees has not been analysed as a possible form of OCB. Employee involvement has mainly been viewed as a general requirement that is positively correlated with the success of a range of organizational greening practices (Hanna et al. 2000; Andersson and Bateman 2000; Jiang and Bansal 2003; Walley and Stubbs 2000; Boiral 2007; Theyel 2000). According to Ramus and Killmer (2007), corporate greening behaviours are generally based on unrewarded and extra-role behaviours contributing both to the collective welfare and to organizational effectiveness. Because they are often complex, time-consuming and unrecognized, corporate green behaviours are rarely given priority and are often made to compete with intra-role behaviours that are more likely to be considered in performance evaluations. However, as shown by the growing literature on OCBs, formal job descriptions and work responsibilities only represent a portion of possible employee activities (Organ et al. 2006; MacKenzie et al. 1991; Podsakoff et al. 1997). A wide variety of organizational behaviours are thus neither prescribed by job obligations nor explicitly rewarded by management systems. Although not directly required or recognized, these voluntary and extra-role behaviours can contribute significantly to improving organizational operations and performance (MacKenzie et al. 1998; Van Dyne et al. 1994; Niehoff 2005). For example, innovative suggestions and individual initiatives aimed at reducing waste or cutting costs are not necessarily formally required or included in an employee's job description. While this type of OCB contributes to organizational effectiveness, the questioning of internal routines may be irritating to many. Other OCBs may involve cooperation, helping and altruism between employees, such as maintaining good interpersonal relations, helping new employees to perform their tasks, resolving interpersonal conflicts and recognizing the accomplishments of others (for a review, see Organ et al. 2006; Hoffman et al. 2007). The OCB literature has identified and measured a wide range of discretionary behaviours and shown their importance in improving organizational effectiveness and the workplace climate (Organ et al. 2006).

In this context, analysing the main drivers of pro-environmental extra-role behaviour appears to be critical to improve our understanding of the initiatives that are likely to improve environmental performance. In an attempt to shed light on the causes and consequences of extra-role eco-initiatives, Ramus and Killmer (2007) proposed a conceptual framework based on a range of motivating factors. They argued that the motivations for eco-initiatives depend on supervisory support (through resources or behaviour), social norms (policies, the values of senior management), personal predisposition (pre-existing values, attitudes and habits) and self-efficacy (belief in one's own effectiveness). Drawing on expectancy theory and the theory of reasoned action (Ajzen 2002; Cordano and Frieze 2000), Ramus and Killmer's model suggests that employee eco-initiatives can be predicted and measured from a behavioural perspective. However, the nature of these extra-role eco-initiatives and the appropriate measurement method remain unclear. The assumption that these initiatives are based on non-prescribed and pro-social behaviours does not in itself help to clarify what type of environmental behaviours is involved nor to identify their characteristics and their relationships with OCBs in general.

The same remark applies to the model of environment-focused OCBs proposed by Daily et al. (2009). The objectives of this model and the types of variables it uses to explain OCBs are relatively similar to those proposed by Ramus and Killmer (2007). According to this model, an organization's environmental performance ultimately depends on the intensity of OCBs.

However, the specific ways in which OCBs improve environmental performance and the reasons why they should be encouraged by managers remain unclear. The nature and scope of OCBs have likewise not been clearly explained. What type of green behaviours can be defined as OCBs? How can these OCBs be measured? What are the specific variables and characteristics of these behaviours? These key questions remain as yet unanswered. In addition, some of the identified antecedents of OCBs appear to call into question their supposed voluntary and unrewarded nature. Even though supervisory support clearly plays an important role in fostering employee initiatives, the discretionary nature of these initiatives remains questionable. Similarly, if employees perceive that the organization has a strong environmental commitment and good environmental performance, their own initiatives in this area cannot necessarily be viewed as extra-role behaviours. Whatever the case, what constitutes an OCB needs to be clearly defined prior to analysing its possible antecedents and outcomes.

In seeking to explore the nature and scope of OCBs, Boiral (2009) used the six main categories of OCBs proposed by Organ et al. (2006): (1) helping; (2) sportsmanship; (3) organizational loyalty; (4) organizational compliance; (5) individual initiative; and (6) self-development. Using this framework, there are types of OCBs that can be based on helping and altruism inside the workplace, such as encouraging other employees to act for the environment, helping to resolve environmental issues, collaboration with other departments and so on. Environmental sportsmanship can also be viewed as a form of OCB, including tolerance for difficulties related to environmental initiatives and acceptance of additional work and time required to perform environmental actions. Organizational loyalty might include support for the organization's environmental policies, participation in pro-environmental events involving the organization and positive representation of the organization in public debates. Organizational compliance could include compliance with explicit or implicit organizational values and rules relating to

environmental concerns. Individual initiatives could be based on internal involvement and participation in environmental activities, including making suggestions, sharing information and seeking to minimize waste. Finally, self-development might involve the development of personal knowledge likely to improve the integration of environmental issues within the organization.

According to Boiral (2009), there are several reasons why OCBEs need to be taken into consideration in both research and practice, including the diversity of environmental issues, the limitations of formal management systems, the role of tacit knowledge, the importance of helping relationships and collaboration in pollution prevention actions, social legitimacy and the civic nature of voluntary ecological initiatives. OCBEs take on relevance primarily because of the complexity of environmental issues, which cannot be managed through formal systems alone. As such, these issues require that employees become voluntarily involved in sharing tacit knowledge and helping to implement pollution prevention solutions. The legitimacy and social relevance of environmental issues also encourage employees to carry out unrewarded individual initiatives that are in keeping with their values outside the work context.

That being said, the six categories of OCBEs proposed by Boiral (2009) are exploratory at best and require empirical validation. Certain categories (such as organizational compliance) can hardly be considered OCBs since they depend to a certain extent on prescribed policies, plans or procedures (Podsakoff and MacKenzie 1994). Contrary to the models proposed by Ramus and Killmer (2007) and Daily et al. (2009), the main determinants and effects of OCBEs have not yet been explicitly modelled. Therefore, the development and validation of an OCBE measurement scale is clearly a prerequisite for further empirical research in this field.

Method

The purposes of this study were to propose and validate a measurement instrument that can facilitate our understanding and analysis of the main dimensions of OCBEs. There are several steps involved in developing and validating a new measurement tool if we are to ensure “the correspondence between a construct (conceptual definition of a variable) and the operational procedure to measure or manipulate that construct” (Schwab 1980, p. 6). To do so, two independent studies were conducted. In line with previous recommendations (Gerbing and Hamilton 1996; Hurley et al. 1997; Anderson and Gerbing 1988), an exploratory factor analysis (EFA) of one sample was used as a precursor to a confirmatory factor analysis (CFA) of another sample. While the main objective of the EFA was to explore the underlying factor structure of OCBEs, the objectives of the CFA were to examine the factor structure revealed by the EFA and to confirm it.

Participants

Sample 1—(Study 1, exploratory factor analysis). A survey was administered to 242 graduate students enrolled in the MBA programmes of a large Canadian university. Students were invited to participate after having read the general objectives of the study and the information contained in the consent form summarizing the study’s ethical guidelines (ethics, anonymity of participants and confidentiality of responses). A total of 228 participants (125 women and 103 men) returned

the completed questionnaires, for a response rate of 94.2%. The mean age of the sample was 24.30 years (SD = 2.70), while the mean total duration of work experience was 5.09 years (SD = 3.96).

Sample 2—(Study 2, CFA). Survey forms were sent to 2,441 employees enrolled in the executive MBA programmes of a large university in Canada between 2004 and 2009. Of these, 731 responses were returned, for a response rate of 29.9%. After reading the invitation to participate (which explained the overall objectives of the study) and the consent form (summarizing the ethical guidelines of the study), 16 respondents decided to withdraw from the study. Of the 715 completed questionnaires, 64 were discarded, either because too much data were missing or because the respondent was not currently employed. Therefore, the final sample included 651 people employed at the time of the study. Table 1 shows the characteristics of the sample.

Measures

The typology of OCBs proposed by Boiral (2009) was used to generate a pool of questionnaire items. The typology was used to define the environmental applications of the six main categories of OCBs as described by Organ et al. (2006). A list of items was developed from the definition of each of these categories (helping, sportsmanship, organizational loyalty, organizational compliance, individual initiative and self-development) as they apply to OCBs.

Table 1 Characteristics of the sample (N = 651)

Gender	
Women	69.7%
Men	30.3%
Age (years)	
<30	6.8%
30–40	35.1%
40–50	45.1%
50–60	13.0%
Job tenure (years)	
<5	3.4%
5–10	12.6%
10–15	16.6%
15–20	20.8%
20–25	24.3%
Over 25	22.4%
Organization size (number of employees)	
<10	1.6%
10–50	7.6%
50–250	10.5%
250–500	12.4%
Over 500	68.0%

The list of items was submitted to three environmental management researchers (graduate students) in random order. The researchers were asked to form groups of similar items and to make connections between these groups and the six original categories of OCBs. To facilitate this process, the six categories were clearly defined. The exercise revealed that most of the items related to sportsmanship and self-development behaviours were relatively difficult to group and classify, unlike the other items. Therefore, only two items related to these categories were retained. In addition, the organizational compliance items raised questions about the original definition of OCBs (Podsakoff and MacKenzie 1994). If OCBs are defined as being based on voluntary behaviours that are neither required nor rewarded (Organ et al. 2006; Podsakoff et al. 1997), it follows that compliance with environmental standards, policies and procedures can hardly be viewed as OCBs. Following the recommendations of Podsakoff and MacKenzie (1994), all items related to organizational compliance were removed.

Table 2 describes these items and their possible relationships to the main OCB categories identified in the literature.

While the proposed questionnaire items may appear to be relatively general, they encompass a wide range of OCBs and can apply to various types of organizations and occupational activities. More specific OCBs such as the disposal of toxic materials in accordance with safety and environmental precautionary measures or the sharing of tacit knowledge to reduce greenhouse gas emissions in the workplace could have been used. However, as OCB items become more specific, the likelihood increases that they will apply only to specific organizations, activity sectors, occupations or circumstances. The application and generalization of these items may therefore be problematic. For the same reason, most OCB measurements developed and used in the literature (Organ et al. 2006) remain relatively general and unspecific. The list of items concerning OCBs used in this study (Table 2) is thus in line with the OCB literature.

The list was initially adapted to suit the first sample population (i.e. university students). For example, the item “I stay informed of my company’s environmental initiatives” was rephrased as “I stay informed of my university’s environmental initiatives.”¹ The list of items was then presented to respondents in random order. The respondents indicated the extent to which they agreed with each item, using a Likert-type scale ranging from 1 (completely disagree) to 5 (completely agree).

Source of Measurement and Common Variance

In both studies, the data were collected using self-report measures. Common method variance may cause a bias in the collected data. The source of measurement is a controversial issue in the OCB literature. Organ and Ryan (1995) argued that OCB measurements need to be based on reports from supervisors in order to limit or prevent bias due to common method variance. However, some studies have indicated that supervisors have an imprecise knowledge of how their subordinates perform OCBs (Cropanzano et al. 1997; Meierhans et al. 2008). This also

¹ To facilitate the presentation of the data, only the item labels used in the company questionnaire (Study 2) were given in the description of the methodology and results analysis.

explains the tendency of supervisors to rate their subordinates according to the benefits accrued from the OCBs (Moorman 1991).

Table 2 Definition of the constructs and items

Main OCB categories (Organ et al. 2006)	Possible environmental applications (Boiral 2009)	Proposed questionnaire items
Helping	Altruism with regard to the environment and future generations; behaviour aimed at encouraging other employees to consider these concerns; efforts to avoid conflicts with stakeholders; collaboration to promote environmental initiatives; aid given to environmental departments to accomplish tasks; etc.	OCBE 1 = I spontaneously give my time to help my colleagues take the environment into account in everything they do at work OCBE 2 = I encourage my colleagues to adopt more environmentally conscious behaviour OCBE 3 = I encourage my colleagues to express their ideas and opinions on environmental issues OCBE 4 = I spontaneously speak to my colleagues to help them better understand environmental problems
Sportsmanship	Acceptance and positive attitude towards the inconveniences and additional work load that can result from environmental practices: waste segregation and recycling, implementation of environmental procedures, etc.	OCBE 5 = Even when I am busy, I am willing to take time to share information on environmental issues with new colleagues
Organizational loyalty	Adherence to pro-environmental policies and objectives; promotion of the organization's environmental concerns among stakeholders; representation of the company at pro-environmental events (roundtables, debates, public hearings); etc.	OCBE 6 = I actively participate in environmental events organized in and/or by my company OCBE 7 = I undertake environmental actions that contribute positively to the image of my organization OCBE 8 = I volunteer for projects, endeavours or events that address environmental issues in my organization
Individual initiative	Participation in environmental activities; sharing knowledge, information and suggestions on pollution prevention; launching new ecological projects; open questioning of practices likely to harm the environment; etc.	OCBE 9 = In my work, I weigh the consequences of my actions before doing something that could affect the environment OCBE 10 = I voluntarily carry out environmental actions and initiatives in my daily work activities OCBE 11 = I make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility OCBE 12 = I suggest new practices that could improve the environmental performance of my organization
Self-development	Acquisition of personal knowledge, skills and values aimed at gaining a better understanding and integration of environmental concerns; participation in training programmes for sustainable development; acquisition of environmental information that could be useful to the organization: green technologies, socio-political trends; etc.	OCBE 13 = I stay informed of my company's environmental initiatives

In addition, based on a test aimed at examining the equivalence of rating sources in the assessment of OCBs, Vandenberg et al. (2005) concluded that the use of supervisor-rating “should not be so hastily adopted (p. 134)” and that it is “inappropriate to claim self-raters are the best rating source (p. 135).” The choice of rating source appears to be more closely linked to the object examined by the investigator than to any potential bias that could be attributed to the rating source. More specifically, the use of supervisor-rating is justified if the study objective is to examine supervisor-subordinate relationships. Equally, if the study objective is to investigate employees' efforts in an activity related to their job, the use of self-rating is justified. However, it is important not to minimize the fact that the use of a self-rating source may generate response biases, the causes of which have been identified in the literature (Bagozzi and Yi 1991; Podsakoff et al. 2003). This explains why common method variance bias was assessed.

This study reflected situation 4 (i.e. only one rating source, different contexts and unidentifiable source of method bias) described by Podsakoff et al. (2003), who provided techniques for assessing common method variance (for a complete list, see Table 4 on pp. 890–892 of their study). As noted above, the design of our research was based on two separate studies. The first study used the EFA technique, while the second study used the CFA technique. Podsakoff et al. (2003) noted that the appropriate procedures for EFA and CFA are Harman’s single-factor test and the single-common-method-factor approach, respectively.

Data Analysis

Exploratory Factor Analysis

A variance–covariance matrix was used to perform the EFA, following the recommendations of Gerbing and Hamilton (1996). This approach generally involves factor rotation to improve the interpretability of factor loadings (p. 62). Oblique rotation (oblimin) was used to analyse the principal components to identify the number of salient forms of OCBE. Items were retained if primary loadings exceeded 0.50 and all secondary loadings were less than 0.35, based on the method developed by Roesch and Rowley (2005).

Confirmatory Factor Analysis

The AMOS 18 statistical program (Arbuckle 2009) was used for the CFA, based on the maximum-likelihood method for estimating the parameters. CFA requires the use of several adjustment indices. The X^2 statistic was used to interpret the results. According to current standards, the lower the value of X^2 , the better the fit. The non-normed-fit index (NNFI), comparative-fit index (CFI) and root mean square error of approximation (RMSEA) were also used to refine the analysis. Some researchers recommend NNFI and CFI values greater than 0.90 (Medsker et al. 1994), while others recommend threshold values above 0.95 (Hu and Bentler 1999). For the RMSEA, values between 0.05 and 0.08 are considered desirable (Browne and Cudeck 1992).

Results

Assessing Common Method Variance

Using EFA, the appropriate procedure for Study 1 is Harman’s single-factor test (Podsakoff et al. 2003). A frequently used technique (e.g. Carson et al. 2003; Fullagar et al. 1995; Khatri and Ng 2000) Harman’s single-factor test recommends factorial analysis of a study’s item pool. Although there are no specific guidelines (Podsakoff et al. 2003), the assumption underlying the test is that if there is a substantial amount of common method variance in the data, a single factor will emerge from the factor analysis when all variables are entered together (Parkhe 1993). In addition, these items should load on different factors. The results of factor analyses (rotated and unrotated) indicated firstly that the items were loaded onto three different factors and secondly

that no “general factor” emerged from the preliminary analysis. We thus inferred that common variance bias was not a significant issue.

Using CFA, the best solution for Study 2 involved using the single-common-method-factor approach (Podsakoff et al. 2003). Frequently used in the literature (e.g. Andrews et al. 2008, Carlson and Kacmar 2000; Marler et al. 2009), this approach requires the inclusion of a common factor (latent variable) in the measurement model. Following Marler et al. (2009), items were loaded on their theoretical constructs as well as on a created latent method factor. The significance of the structural parameters was then examined both with and without this latent factor. In Study 2, the measurement model with the method factor fits the data well [$\chi^2(31, N = 651), 213.44; p < 0.000; CFI = 0.96; NNFI = 0.94; \text{and RMSEA} = 0.09$]. However, based on the χ^2 difference test (Bentler and Bonnett 1980), it was concluded that the measurement model with the method factor did not improve the fit of the measurement model (the indices are shown in Table 5). This result indicated that bias due to common method variance was not a serious threat that was likely to influence the results of the study.

Results of Exploratory Factor Analysis (Study 1)

The result of the Bartlett test [$\chi^2(78) = 931.48; p < 0.000$] suggested a dependence between the sample and the base population, indicating that the data were generalizable. The KMO test (Kaiser–Meyer–Olkin) yielded a value of 0.872, indicating that the data were suitable for factor analysis. An initial three-factor solution accounted for 57.3% of the variance in the solution. However, there were a number of problems when the factor loadings were evaluated. Since three items (OCBE 4, OCBE 5 and OCBE 12) had high secondary factor loadings (>0.35), one of the criteria suggested by Roesch and Rowley (2005) was not met. Therefore, the three items were removed and the EFA was rerun.

Table 3 shows the EFA solution after rerunning the analysis excluding three items. The final factor analysis of the remaining ten items resulted in a three-factor solution accounting for 60.3% of the variance. The criteria recommended by Roesch and Rowley (2005) were met. Finally, an examination of the covariance matrix did not indicate any multicollinearity problems. In addition, based on the criteria established by Cohen (1988), the three-factor axes were only weakly correlated with each other.

Factor 1 (variance explained: 35.58%; Eigenvalue: 3.55) was designated eco-initiatives since it includes items relating to individual pro-environmental initiatives in the workplace. The OCBEs classed as eco-initiatives can be defined as discretionary behaviours or suggestions that are not recognized by the formal reward system and that cumulatively help to improve the organization’s environmental practices or performance. Factor 1 captured the following three items: OCBE 9 (In my work, I weigh the consequence of my actions before doing something that could affect the environment); OCBE 10 (I voluntarily carry out environmental actions and initiatives in my daily work activities); and OCBE 11 (I make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility). These items were renamed eco-initiatives 1, eco-initiatives 2 and eco-initiatives 3, respectively.

Factor 2 (variance explained: 14.20%; Eigenvalue: 1.42) was designated eco-civic engagement since it included items related to civic-mindedness with regard to the organization's environmental activities (both organizational loyalty and self-development). In this context, civic engagement means defending the general interests of the organization and supporting its environmental commitments. Therefore, the OCBEs classed as eco-civic engagement were defined as voluntary and unrewarded participation in environmental activities (events, initiatives or projects) that have been instituted by the organization and that contribute to improving its image or practices. All of the items included in this factor were associated with events, initiatives or projects that addressed the organization's overall environmental situation. Factor 2 captured the following four items: OCBE 6 (I actively participate in environmental events organized in and/or by my company); OCBE 13 (I stay informed of my company's environmental initiatives); OCBE 7 (I undertake environmental actions that contribute positively to the image of my organization); and OCBE 8 (I volunteer for projects, endeavours or events that address environmental issues in my organization). These items were renamed eco-civic engagement 1, eco-civic engagement 2, eco-civic engagement 3 and eco-civic engagement 4, respectively.

Table 3 Final factor analysis after exclusion of three items (N = 228)

Old item label (see Table 1)	New item label	Mean	SD	Extraction	Factor		
					1	2	3
OCBE 9	Eco-initiatives 1	3.70	0.96	0.554	0.865	-0.020	0.125
OCBE 10	Eco-initiatives 2	2.81	1.07	0.601	0.630	0.024	-0.264
OCBE 11	Eco-initiatives 3	3.61	1.06	0.486	0.617	0.139	0.063
OCBE 6	Eco-civic engagement 1	1.58	0.95	0.718	-0.094	0.784	0.063
OCBE 13	Eco-civic engagement 2	2.44	1.17	0.589	0.193	0.743	0.049
OCBE 7	Eco-civic engagement 3	2.30	1.15	0.552	-0.069	0.700	-0.059
OCBE 8	Eco-civic engagement 4	2.34	1.34	0.500	0.133	0.642	-0.119
OCBE 1	Eco-helping 1	3.00	1.10	0.616	-0.218	0.090	-0.867
OCBE 2	Eco-helping 2	3.74	1.03	0.688	0.243	-0.128	-0.757
OCBE 3	Eco-helping 3	3.23	1.22	0.684	0.142	0.099	-0.683
				Cronbach's a	0.64	0.71	0.72
				Factor 1	1.00		
				Factor 2	0.231	1.00	
				Factor 3	0.335	0.323	1.00
Eigenvalue					3.55	1.42	1.05
% of Variance					35.58	14.20	10.52
% of Cumulative variance					35.58	49.79	60.31

The significance of bold reflects the relevant items after the analyses

Factor 3 (variance explained: 10.52%; Eigenvalue: 1.05) was designated eco-helping. This factor includes all the items related to support behaviours and camaraderie that take environmental issues into consideration. The OCBEs classed as eco-helping were defined as voluntary and unrewarded behaviours aimed at helping colleagues to better integrate environmental concerns in the workplace. Factor 3 captured the following three items: OCBE 1 (I spontaneously give my time to help my colleagues take the environment into account in everything they do at work); OCBE 2 (I encourage my colleagues to adopt more environmentally conscious behaviour); and OCBE 3 (I encourage my colleagues to express their ideas and opinions on environmental issues). These items were renamed eco-helping 1, eco-helping 2 and eco-helping 3, respectively.

Table 4 Descriptive statistics and pairwise correlations

Variables	Factor loadings	Mean	SD	CR	AVE	a	q	1	2	3	4	5	6	7	8	9	10	
Eco-initiatives		7.26	2.47	0.94	0.95	0.92	0.98											
Eco-civic engagement		4.10	1.50	0.95	0.90	0.90	0.98											
Eco-helping		4.69	1.34	0.87	0.90	0.81	0.96											
Individual indicators																		
1	Eco-initiatives 1	0.817	4.72	1.66														
2	Eco-initiatives 2	0.882	4.93	1.54				0.833										
3	Eco-initiatives 3	0.942	4.12	1.68				0.771	0.760									
4	Eco-civic engagement 1	0.737	4.18	1.71				0.722	0.764	0.839								
5	Eco-civic engagement 2	0.792	3.88	1.78				0.553	0.596	0.652	0.645							
6	Eco-civic engagement 3	0.756	4.08	1.75				0.599	0.620	0.668	0.664	0.676						
7	Eco-civic engagement 4	0.853	4.53	1.70				0.546	0.572	0.591	0.575	0.675	0.650					
8	Eco-helping 1	0.737	4.03	1.81				0.509	0.563	0.508	0.512	0.555	0.649	0.693				
9	Eco-helping 2	0.792	5.15	1.36				0.694	0.763	0.663	0.643	0.561	0.590	0.536	0.569			
10	Eco-helping 3	0.756	4.73	1.63				0.541	0.620	0.532	0.535	0.552	0.610	0.571	0.653	0.635		

All correlations were significant at $p < 0.01$

SD standard deviation, CR composite reliability, AVE average variance extracted, a Cronbach's alpha, q Jöreskog's index

To summarize, the EFA suggested a solution consisting of three factors, retaining ten items (OCBE 1, OCBE 2, OCBE 3, OCBE 6, OCBE 7, OCBE 8, OCBE 9, OCBE 10, OCBE 11 and OCBE 13). These factors reflect several aspects of OCBE and were defined as eco-initiatives (factor 1), eco-civic engagement (factor 2) and eco-helping (factor 3). This underlying structure was used as a basis for the CFA.

Results of Confirmatory Factor Analysis (Study 2)

The results indicated that the three-factor structure fits the data well [$\chi^2(32, N = 651), 431.06; p < 0.000; CFI = 0.92; NNFI = 0.89; SRMR = 0.13; \text{and RMSEA} = 0.13$]. Although the NNFI and CFI values were far from the thresholds recommended by Hu and Bentler (1999), they were close to the values suggested by Medsker et al. (1994). The RMSEA was above the accepted norm. A thorough examination of the modification indices provided by AMOS suggests that the addition of several correlations between error terms may yield a better fit of the model to the data. The model was therefore rerun by taking these modifications into account, yielding a better estimation of the model ($\chi^2(22, N = 651), 60.54; p < 0.000; CFI = 0.99; NNFI = 0.98; SRMR = 0.04; \text{and RMSEA} = 0.05$).

Table 4 shows the factor loadings, composite reliability (CR), average variance extracted (AVE) and, for each construct, two indices of internal consistency reliability: Cronbach's α and Jöreskog's ρ index. CR estimates the extent to which a set of latent construct indicators share in their measurement of a construct, while AVE represents the ratio of the total variance due to the latent variable. The AVE assesses discriminant validity and was examined using the $q_{(vc)}$ index developed by Fornell and Larcker (1981). Hair et al. (1998) recommended thresholds of 0.70 for CR and 0.50 for AVE. In addition, the internal consistency reliability calculated using both Cronbach's α (range, 0.81–0.92) and Jöreskog's ρ index (range, 0.96–0.98) yielded values well above the 0.70 cut-off usually recommended in the literature (Nunnally and Bernstein 1994). Since the calculated values exceeded the recommended thresholds, it was concluded that the model provided evidence of the reliability, convergent validity and discriminant validity of the measures.

Table 5 Comparison of competing models

competing models	X ²	Df	X ² /df	RMSEA	CFI	NNFI
Null factor	4,425.00	91	48.62	-	-	-
One factor	1,285.36	65	19.77	0.17	0.85	0.82
Two factors (a)	1,277.86	64	19.96	0.17	0.85	0.82
Two factors (b)	1,260.28	64	19.69	0.17	0.85	0.82
Two factors (c)	1,047.88	64	16.37	0.15	0.88	0.85
Three factors (measurement model)	143.45	37	3.87	0.07	0.98	0.97

In order to eliminate the possibility of one or more nested models being present that might have shown a better fit and led to the rejection of the three-factor model (James et al. 2006), the latter was compared to several competing models.

Table 5 shows that the three-factor model provided a better fit with the data than a one-factor model grouping the eco-initiative, eco-civic engagement and eco-helping items on a single factor ($X^2_{diff}(28) = 1141.91, p < 0.001$). Likewise, the three-factor model provided a better fit than any of the two-factor models: (a) grouping eco-initiatives and eco-civic engagement on one factor and eco-helping on another ($X^2_{diff}(27) = 1134.41, p < 0.001$); (b) grouping eco-civic engagement and eco-helping on one factor and eco-initiatives on another ($X^2_{diff}(27) = 1116.83, p < 0.001$); and (c) grouping eco-initiatives and eco-helping on one factor and eco-civic engagement on another ($X^2_{diff}(27) = 904.43, p < 0.001$). The results indicated that the participants distinguished three types of OCBEs: eco-initiatives, eco-civic engagement and eco-helping.

Discussion and Conclusion

Recently, Daily et al. (2009, p. 252) asserted that “OCBEs exist and are necessary.” We agree with this assertion. But stating that OCBEs exist is one thing, providing the tools to make them operational is another matter altogether. Furthermore, the existing constructs related to OCBEs (Daily et al. 2009; Ramus and Killmer 2007; Boiral 2009) are relatively incomplete and have yet to be tested. The main objective of this paper was to develop tools for measuring these behaviours in the workplace. This study identified three main types of OCBE.

The first OCBE category identified in this exploratory study, eco-initiatives, was related to employee-driven pro-environmental initiatives. These included environmental actions in the workplace (behaviours for recycling, reducing water consumption, saving energy, etc.), pro-environmental suggestions, voluntary initiatives aimed at reducing greenhouse gas emissions, etc. These voluntary initiatives are an essential aspect of general OCB since they involve actions or practical suggestions aimed at improving an organization’s effective functioning and performance (Organ et al. 2006). This first type of OCBE is action-oriented and appears to be relatively similar to the concept of eco-initiatives (Ramus 2001; Ramus and Killmer 2007; Ramus and Steger 2000). Since eco-initiatives address practices, it can be assumed that they ultimately contribute to improved performance. As suggested by Daily et al. (2009), it is the cumulative effect of OCBEs rather than isolated initiatives that contributes to environmental

performance. In principle, in order to be viewed as OCBEs, eco-initiatives should be discretionary and not rewarded by the organization. However, the pro-environmental commitment of employees undertaking eco-initiatives may rapidly decrease if their actions or proposals are ignored by the organization. In addition, personal initiatives presuppose that employees have a degree of leeway to alter existing practices or to do something for the environment that is not required by the organization. In the light of this, it can be assumed that employee initiatives depend partly on the organizational context, including key factors such as the corporate culture, decentralized decision-making, empowerment and support from management.

The second type of OCBE identified in the study, i.e. eco-civic engagement, was related to contributions to the organization's environmental initiatives, such as participation in environmental events organized by the company, promotion of the green image of the organization and voluntary involvement in events concerning the organization's environmental issues. These acts of eco-civic engagement are related to organizational loyalty (supporting the organization's activities and promoting its image). Paradoxically, this type of behaviour has received relatively little attention in the literature on environmental management. Voluntary participation in debates or forums on the environment, promotion of the green image of the organization among stakeholders or personal involvement in the environmental initiatives taken by the organization (training, communication, implementation of new projects, etc.) have been largely ignored or taken for granted in the literature. However, eco-civic engagement appears to be essential for achieving environmental objectives. The utility of developing a comprehensive environmental policy, of establishing in-house programmes aimed at fostering awareness of ecological issues or of setting up an environmental committee depends to a large extent on voluntary employee compliance with and support of organizational initiatives. As noted in many critical studies of environmental management (Springett 2003; Moneva et al. 2006; Jiang and Bansal 2003; Laufer 2003; Boiral 2007), the concrete actions of organizations are not always in line with their official commitments. These contradictions may be due in part to a lack of eco-civic commitment within organizations, i.e. a lack of real support for the organization's stated policies, programmes and values. The lack of eco-civic engagement applies not only to employees but also to managers, who may exhibit behaviours that are not always in line with the official discourse, policies and actions of their organization (Springett 2003). Generally speaking, eco-civic OCBEs presuppose voluntary employee support of company-driven environmental initiatives. Therefore, if these activities are too limited, if employees are unaware of them or if they do not exist, it is difficult to see how eco-civic behaviour could possibly occur. Eco-civic engagement also requires a degree of alignment between the employees' environmental values and those of the organization. Therefore, it seems reasonable to assume that employees' environmental commitment, motivation and support for the image of the organization will be stronger if the company has made substantial efforts in this area.

The third type of OCBE identified in the study, i.e. eco-helping, was related to mutual assistance concerning environmental issues, including helping colleagues to take environmental concerns into account, to express their ideas on the issue and to adopt more environmentally responsible behaviour. These helping behaviours have clearly been neglected in the environmental management literature, despite the fact that it would be difficult to implement environmental actions in the workplace efficiently without a modicum of cooperation and mutual assistance

among employees. To begin with, these actions often require an interdisciplinary approach. Dialogue between employees with different training, experience and functional responsibility facilitates voluntary sharing of knowledge and expertise (Ramus and Killmer 2007; Boiral 2002; Remmen and Lorentzen 2000). For example, the identification of pollution sources (a necessary step for implementing preventive measures) usually involves a process of collaboration among many staff members, including process operators, environmental specialists and engineers (Boiral 2005; Hart 1995; Florida 1996).

Because of their complexity, environmental actions generally require team effort and a spirit of mutual support to address complex problems that would be difficult to resolve in isolation (Remmen and Lorentzen 2000). In addition, whenever new employees join an organization, they must be brought up to speed on the organization's environmental practices and issues. In the absence of formal training programmes or information campaigns, the organization depends almost exclusively on the informal initiatives taken by experienced employees who are seeking to help new colleagues. However, this type of eco-helping behaviour presupposes a climate of collaboration and exchange within the organization, as well as a clear identification of the environmental actions that need to be implemented in the workplace. However, employees are not necessarily interested in these actions or open to receiving help from their colleagues, which may be viewed as a form of proselytizing or interference.

Table 6 summarizes the main characteristics of the three types of OCBs identified in this paper.

Contributions

This paper makes three additional theoretical contributions. First, the paper highlights the contributions and limitations of the emerging literature on the application of OCBs to environmental issues. Although the recent literature has demonstrated the importance of voluntary and unrewarded environmental initiatives (which had previously been largely ignored), the nature and operationalization of these behaviours has remained largely speculative. This paper proposes a list of items aimed at describing how the main categories of OCBs (helping, sportsmanship, organizational loyalty, individual initiative and self-development) might be applied to environmental issues.

Second, the exploratory study conducted among 228 participants helped to refine the proposed list of items and to identify three main categories of OCBs. Each category centred on a different aspect of environmental management: personal environmental initiatives (eco-initiatives), contributions to corporate environmental activities (eco-civic engagement) and mutual pro-environmental assistance (eco-helping). Although the environmental management literature has shown the importance of eco-initiatives (Andersson and Bateman 2000; Hanna et al. 2000; Ramus 2001; Ramus and Steger 2000), the role of eco-civic engagement and eco-helping has been largely overlooked. This study contributes to a deeper understanding of OCBs and to a better definition of the concept while shedding light on unexplored facets of these behaviours.

Table 6 The three main types of OCBEs explored here

	Eco-initiatives	Eco-civic engagement	Eco-helping
Definition	Discretionary behaviour and suggestions to improve environmental practices or performance	Voluntary participation in an organization's environmental programmes and activities	Voluntarily helping colleagues to better integrate environmental concerns in the workplace
Main focus	Personal initiatives in the workplace	Support for the organization's commitments	Mutual support among employees
Items	In my work, I weigh the consequences of my actions before doing something that could affect the environment	I actively participate in environmental events organized in and/or by my company	I spontaneously give my time to help my colleagues take the environment into account in everything they do at work
	I voluntarily carry out environmental actions and initiatives in my daily work activities	I stay informed of my company's environmental initiatives	I encourage my colleagues to adopt more environmentally conscious behaviour
	I make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility	I undertake environmental actions that contribute positively to the image of my organization I volunteer for projects, endeavours or events that address environmental issues in my organization	I encourage my colleagues to express their ideas and opinions on environmental issues
Relevance and usefulness	Improve internal practices	Achieve the environmental objectives of the organization	Promote discussion, cooperation and resolution of complex problems
	Reduce environmental impacts	Improve the image of the organization	Empower new employees
	Promote green innovation and reduce costs	Eliminate contradictions between words and actions	
Examples	Make suggestions to reduce paper consumption	Participate in a green committee	Help the environmental service identify sources of pollution
	Improve energy efficiency	Meet with stakeholders	Explain environmental procedures to new employees
	Establish a ride-sharing programme	Become involved in the implementation of ISO 14001	Ask colleagues to be involved in a new green committee
	Place recyclable materials in the proper container	Update environmental procedures	Help colleagues to clean up an accidental spill
	Turn off lights and reduce heating before leaving the office	Contribute to the annual sustainability report	
Limitations	Motivation can drop if eco-initiatives are ignored by the organization	Presupposes actual organizational activities or commitments	Presupposes a climate of mutual aid and the existence of environmental practices
	Depends on the organizational context: corporate culture, attitudes of senior management, etc.	Conflicts can arise between the environmental values of individuals and those of the organization	Some colleagues may show a lack of awareness or openness

Third, the second study confirmed the results of the exploratory study and validated the proposed OCBE measurement instrument. This validation should facilitate the use of the proposed constructs in future research.

Managerial Implications

Although these three contributions are mostly theoretical, the paper can have practical implications for managers. Employee eco-initiatives are indeed a key dimension of environmental management in many organizations (Ramus 2001; Hanna et al. 2000; Walley and Stubbs 2000; Boiral 2002). Corporate policies for the environment often call for general employee initiatives and stewardship, without specifying what they mean or imply in practical

terms. This is the case, for example, in PepsiCo's Environmental Policy, which makes a vague, elusive call for their employees' involvement in day-to-day activities and encourages them to "apply good environmental stewardship both in and beyond the workplace." Conversely, our paper helps to clarify what the employees' voluntary initiatives for the environment may actually cover and what the main characteristics of these initiatives are. The paper also provides various examples of eco-initiatives, eco-civic engagement and eco-helping (see Table 6).

The items used to measure the three main types of OCBEs explored in this paper can be used by managers to monitor the intensity of their employees' voluntary environmental initiatives inside the workplace. Given that these initiatives are currently considered to be an essential aspect of corporate greening, it would seem appropriate to measure and monitor their intensity over time. This measurement could explain, to some extent, certain environmental performance indicators depending on voluntary initiatives such as paper recycling, electricity consumption in offices and greenhouse gas emissions from work-related transportation. Nevertheless, the nature of OCBEs is assumed to be discretionary and non-rewarded. From this perspective, organizations can hardly stimulate OCBEs through strategies and environmental management practices.

Limitations and Avenues for Future Research

The main limitations of the study, which stem for the most part from its objectives and the methodology, nonetheless suggest several avenues for future research.

First, this study explored just some of the possible forms of OCBEs. The proposed list of questionnaire items was not exhaustive and did not cover all possible discretionary behaviours for the environment. The development of the list was initially based on possible applications of the main types of OCBs relating to environmental issues (Organ et al. 2006; Boiral 2009). However, the proposed applications remain relatively general, and environmental initiatives in the workplace may differ significantly across sectors or types of organization. In addition, the three types of OCBEs identified in this paper do not cover all facets of OCBs. The literature is still far from having reached a consensus about the various facets and categories of OCBs and how they should best be measured (Organ et al. 2006). Therefore, future research could focus on the measurement of some of the OCBEs overlooked in this paper (such as sportsmanship). Further research could also empirically analyse the possible connections between OCBs in general and those specifically directed towards the environment. This question has been examined only at a theoretical level (Boiral 2009) and has not yet been the object of a specific empirical study.

Second, based on the table 4, several strong correlations involving some items, including those related to eco-initiatives, might initially have been assumed to be indicative of a common variance problem. However, as shown by the calculation of the $q_{(vc)}$ index, discriminant validity is demonstrated, indicating that the participants distinguished between the different indicators of the latent variable (i.e. eco-initiatives 1, eco-initiatives 2 and eco-initiatives 3). Research also indicates that in the two studies, the results were not influenced by a potential bias due to the common method variance. In order to improve the scale used for the measurement of eco-initiatives, future research could rewrite several items in order to increase the accuracy and

precision and to eliminate the perceptual dimension of the item eco-initiatives 1 (labelled OCB9 in Study 1).

Third, although common method variance was not shown to be a serious threat to the results of this study, future research could reproduce the design by adapting it. Podsakoff et al. (2003) identified several potential sources of common method variance bias, such as the rating source, item characteristics and the context of measurement. This study corresponds to situation 4 described by Podsakoff et al. (2003) (i.e. only one rating source, different contexts and unidentifiable source of method bias). Given the design of this research, it was not possible to combine different rating sources or to interview participants based on a longitudinal design. The participants involved in this study also worked in very different contexts. Future research could focus on these potential sources in order to improve the measurement of OCBE. Examples of refinement might include combining different rating sources (supervisor and employee), selecting only one organization as the sample population and conducting a longitudinal study by introducing a time lag.

Finally, the objectives of this study were to explore and validate an OCBE measurement scale. The study did not include an analysis of the determinants and consequences of OCBEs. One possible avenue of research would be to use the constructs developed in this study to operationalize the models proposed in the literature. In particular, it would be interesting to examine whether the determinants identified in the model developed by Ramus and Killmer (2007), i.e. supervisory support, social norms, personal predisposition and self-efficacy, have an impact on eco-initiatives, eco-civic engagement and eco-helping at various levels. Another avenue for future research might involve analysing the possible relationships between OCBEs and more general issues such as company strategy or external pressures. In addition, many studies have shown that general OCBs tend to improve the performance and effective functioning of organizations (Niehoff 2005; MacKenzie et al. 1998; Van Dyne et al. 1994). A similarly positive impact on performance has also been postulated in some research on OCBEs (Daily et al. 2009; Ramus and Killmer 2007; Boiral 2009). The constructs developed in this study should facilitate the exploration of these impacts.

The many possible avenues of research suggest that OCBEs are a particularly fruitful area of investigation. Yet no matter what research is undertaken in this area, it will be important from the outset to clearly define the nature of OCBEs and the constructs used to measure them. In this respect, the results of this study should facilitate more in-depth research on this emerging topic.

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