

RESEARCH ARTICLE

How to promote pro-environmental behaviour in organizations: the message matters

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Abstract

Environmental management and sustainable development practices in organizations — so called “corporate greening” approaches — currently make up a very bountiful area and at the same time a pressing concern for managers, practitioners and researchers alike. However, literature shows that most interventions on improving sustainable behaviours until now have been carried out only in the private sphere. The current paper aims to explore the efficacy of norm-based interventions for improving employees’ engagement in discretionary, extra-role pro-environmental behaviours. Our study employed a quasi-experimental research design, with pre-test and post-test measures applied to a sample of 84 employees from a number of private companies in Romania. Results provided no support for the efficacy of a norm-based intervention in improving such behaviours over time in an organizational setting. Limitations of the current study and avenues for future research are discussed.

Keywords

corporate greening, OCBE, social norms, quasi-experimental design

Résumé

Le management environnemental et les pratiques de développement soutenable dans les organisations – soit disant des démarches « d’écologisation entreprise » - est actuellement un domaine enrichissant et au même temps une inquiétude pour les managers, pratiquants et les chercheurs. Néanmoins, la littérature fait preuve que la plus parte des interventions pour améliorer les comportements soutenables ont été poursuivis jusqu’en présent seulement dans la sphère privé. L’étude actuelle veut explorer l’efficacité des interventions normatives pour améliorer l’engagement des employés dans des comportements discrétionnaires, extra rôle, pro environnementales. Notre étude a utilisé un modèle de recherche quasi expérimental, avec des mesures avant et après test appliquées à un échantillon de 84 employés choisis parmi plusieurs entreprises en Roumanie. Les résultats ne montrent aucun support vis-à-vis de l’efficacité sur les interventions normatives pour améliorer tels comportements dans le temps dans le cadre d’une entreprise. Les limitations et perspectives pour futures recherches sont abordées aussi dans l’étude actuelle.

Mots-clés

écologisation entreprise, OCBE, normes sociales, le modèle quasi-expérimental

Rezumat

Practicile organizaționale de management al mediului și de dezvoltare sustenabilă – așa-zisa „înverzire a organizației” – constituie în prezent o tematică ofertantă și, în același timp, presantă pentru manageri, practicieni și cercetători. Cu toate acestea, literatura de specialitate ne arată că până în prezent majoritatea intervențiilor de îmbunătățire a comportamentelor sustenabile au fost derulate în sfera privată. Prin studiul de față ne propunem să probăm eficiența în mediul organizațional a unei intervenții de dezvoltare a comportamentelor pro-environmentale voluntare ale angajaților, prin utilizarea mesajelor normative. Studiul utilizează un design de cercetare cvasiexperimental, cu măsurători pre-test și post-test aplicate unui eșantion de 84 de angajați ai unor companii private din România. Rezultatele obținute nu atestă intervenția bazată pe norme ca fiind eficientă pentru a îmbunătăți în timp comportamentele pro-environmentale ale angajaților în contextul organizațional. În cadrul articolului mai sunt discutate limitările studiului, precum și alte potențiale direcții de cercetare.

Cuvinte-cheie

practici organizaționale pro-environmentale, OCBE, norme sociale, design cvasiexperimental

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Introduction

As global concerns for environmental issues have become more pervasive, business organizations are subjected to increasingly strong pressure from a wide range of stakeholders to assume responsibility for the environmental impact of their enterprises and to adjust their practices accordingly (Ramus & Kilmer, 2007). Consequently, companies have started to recognize the pivotal role they can play as promoters of sustainable development. As a result, sustainable organizational measures such as corporate greening are becoming more and more commonplace. This in turn has led to an ever increasing interest in low-impact, green development policies and sustainable consumption behaviours from both practitioners and researchers. Furthermore, current trends seem to indicate that organizational focus on sustainability will continue to grow in importance in the near future (Cooperrider & Fry, 2009).

While this shift in organizational priorities is most welcome, there is still a great need to investigate and clarify the actual behavioural

processes that drive the implementation of such sustainability initiatives, as well as the means by which they can insure optimal results.

On one hand, research into sustainable organizational practices has mostly focused on formal, explicit, and managerial aspects such as the implementation of environmental management systems. By contrast, very little attention is given in most of the literature to the individual intra-organizational behaviours that contribute to the success of corporate greening measures (e.g., Daily, Bishop, Govindarajulu, 2009; Lulfs & Hahn, 2013). The development and implementation of environmental management systems such as ISO 14001 tends to formalize environmental practices within organizations, relegating voluntary non-obligatory employee initiatives to a secondary or insignificant role. However, despite being based on formally prescribed roles and procedures, the successful implementation of said systems in fact requires the active participation of employees (Lulfs & Hahn, 2013), namely an approach not limited to the procedural aspects of the system

(Boiral, 2009). Behaviours formally prescribed by environmental management positions in organizations encompass only a small fraction of relevant individual behaviour contributing toward corporate greening (Ramus & Killmer, 2007; Boiral & Paillé, 2011). For this reason, a closer look at the pro-environmental behaviours of employees is necessary. This would also shed more light on the contribution of bottom-up sustainable initiatives within the organization for achieving sustainability objectives. The conceptualization and validation of organizational citizenship behaviours for the environment in recent studies is an important development in this area of research (Daily et al., 2009; Chowdhury, 2013; Lamm, Tosti-Kharas, & Williams, 2013), as it provides researchers and practitioners with a clearer understanding of what such behaviours actually entail, how they can be positively applied to environmental issues in organizations, and a scientifically validated instrument for measuring them (Boiral & Paillé, 2011).

Secondly, to our knowledge, there is a significant lack of research describing the determinants and drivers of employees' pro-environmental behaviours at the workplace, or the optimal means for improving and promoting such behaviours. Previous studies have only focused on behaviours in the private sphere, such as household consumption or recycling, personal mobility, etc. Results have shown that information pertaining to personal, social and moral norms can be used to successfully induce changes in sustainable behaviour and to amplify sustainable habits (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007; Schultz, Khazian, & Zaleski, 2008; Carrus, Bonnes, Fornara, Passafaro, & Tronu, 2009). Thus, there is a need to transpose these experimental designs in the organizational setting, and to test whether normative messages can successfully improve sustainable behaviours in a work-related context.

We consider that the lack of insight into the actual sustainable behaviours of employees in organizations and the possible means of aligning these behaviours to the organizational objectives for sustainability constitutes a

considerable gap in the scientific literature. Our paper aims to shed some light on this uncharted territory, by exploring whether organizational interventions based on social norms and normative messages can successfully be employed to stimulate employees' engagement in discretionary, pro-environmental behaviours that can, in aggregate, significantly contribute to the organization's environmental performance. Not only would this clarify and expand existing knowledge about such behaviours, but it would also provide valuable support to organizations' efforts to improve their environmentally-relevant practices, simply by harnessing and facilitating their own employees' environmentally-sound habits and concerns.

Organizational citizenship and voluntary environment-centred behaviours

Studies on the environmentally relevant behaviours of individual employees have mostly restricted their focus to the responsibilities and demands formally prescribed by environmental policies, the degree of the employees' compliance with said policies, or managers' behaviours as figureheads, role models or promoters of sustainable practices and initiatives (Ramus & Killmer, 2007). There are numerous arguments why this encompasses only a small fraction of relevant individual behaviour contributing toward corporate greening (Boiral, 2009; Lamm et al., 2013).

Comprehensive corporate greening efforts in fact require individual contributions from a large number of employees across the entire company who are not formally required to promote pro-environmental measures as part of their job (Ramus & Killmer, 2007).

Moreover, the success of formal programs may actually hinge on implicit, extra-role employee behaviours (Lulfs & Hahn, 2013). Environmental issues in the corporate context are too complex and ambiguous to be fully resolved by means of formal management systems. The main argument is that it is impossible for formal systems to cover every single aspect of corporate greening processes

or to take into account all possible or desirable behaviours for mitigating ecological impact (Boiral, 2009). As such, many of the green behaviours that contribute to corporate greening are not actually taken into account by formal environmental management systems (Ramus & Killmer 2007; Daily et al., 2009).

In recent years, several studies have attempted to conceptualize this apparent category of environmentally-relevant extra-role behaviours by transposing the principles of organizational citizenship behaviour (OCB) to a more environmentally focused context (Boiral, 2009; Chowdhury, 2013; Lulfs & Hahn, 2013).

OCBs are defined as individual and discretionary social behaviours that are not explicitly recognized by the formal reward system and that help improve the overall effectiveness of organizations (Organ, Podsakoff, & MacKenzie, 2006). Based on this conceptualization, researchers have coined the notion of OCB centred on the environment (in short, OCBE), defined as individual and discretionary social behaviours not explicitly recognized by the formal reward system and contributing to the effectiveness of the environmental management of organizations (Boiral, 2009). Since OCBEs are unlikely to be included in the job descriptions of individual employees, and unlikely to be formally rewarded, while still providing an overall positive influence on the organization at large, it is reasonable to posit that OCBEs are conceptually similar to OCBs (Lamm et al., 2013).

Proponents of this conceptualization argue that the aggregate impact of such voluntary employee behaviour is a crucial factor for the realization of corporate greening (Lulfs & Hahn, 2013). At the same time, OCBEs can have a direct economic value to an organization, by contributing to lowering expenditures, reducing liabilities and insurance costs or improving the organization's reputation (Ramus & Killmer, 2007).

For the purposes of our research project, we have employed Boiral and Paillé's 2011 conceptualization of OCBE as a three-dimensional construct, comprised of employee-driven pro-environmental initiatives (*eco-initiatives*), contributions to

the organization's environmental initiatives and green image (*eco-civic engagement*), and mutual assistance with matters concerning environmental issues (*eco-helping*).

Antecedents of organizational citizenship behaviours centred on the environment

Two separate directions were identified as drivers for citizenship behaviours directed at the organizations, namely the workplace environment and personality (Smith, Organ, & Near, 1983). Due to the high overlap of the two concepts, OCB and OCBE, it is safe to assume that this might apply to the latter also.

Sharing tacit knowledge and helping to implement sustainable solutions can constitute valuable drivers for improving environmental issues in organizations, considering their high degree of complexity. Since environmental issues generally hold a degree of social legitimacy and relevance, employees with pro-environmental values outside the work context might also feel encouraged to carry out similar unrewarded individual initiatives in their organizations (Boiral & Paillé, 2011).

The extra role character of employee environmental initiatives stems in part from the difficulty of formalizing and rewarding pro-environmental behaviours in organizations. In addition, because unlike typical OCB, these behaviours are not directed toward people but toward the improvement of the external environment, they are often less visible, anonymous, and thus more difficult to recognize (Boiral, 2009).

This does not mean that such behaviours cannot be encouraged indirectly by management (Boiral, 2009). Research on extra-role ecological initiatives suggests that 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) (Ramus & Killmer, 2007). When perceived organizational support and environmental management practices were studied together, the results showed that they are both positively related to OCBE, but the organisational support emerged as the best predictor for OCBE (Paillé, Boiral, & Chen,

2013). Thus, there is significant past empirical support suggesting that perceived organizational support is an antecedent of discretionary behaviours, implying that employees might be more likely to perform these behaviours when they feel their organization supports those (Lamm et al., 2013).

Shifting the focus away from contextual organizational variables, previous research also points to dispositional traits such as positive and negative affectivity as indirect contributors to extra-role behaviour, which can predispose individuals to certain discretionary behavioural patterns (Podsakoff, MacKenzie, Paine & Bachrach, 2000). Dispositional factors were also extensively studied in the relationship with OCB (Williams & Shiaw, 1999; Kaplan, Luchman, Haynes, & Bradley, 2009; Organ & Ryan, 1995). The meta-analytical review conducted by Organ and Ryan (1995) of the attitudinal and dispositional predictors of OCB, revealed that the dispositional factors, such as agreeableness, positive affectivity, negative affectivity, and conscientiousness are more of indirect contributors than direct causes of OCB.

Therefore, both organizational characteristics and dispositional factors play an important role in influencing organizational, voluntary extra-role behaviours.

Promoting sustainable behaviours by means of normative messages

The question of how to encourage and support these behaviours within a given organization now comes into play. This is not quite a clear-cut matter, as the most readily available and easy to implement top-down approaches usually employed in environmental training of employees in this case would be incompatible with the voluntary and non-obligatory nature of OCBs. Then again, in the absence of measures encouraging OCBs, they are at risk of being reduced to uncertain, sporadic, and uncontrollable behaviours (Boiral, 2009).

It is important to note that although in private households personal benefits such as financial savings can constitute an incentive

for adopting pro-environmental behaviour, there is no direct financial gain to be had from exhibiting such behaviour at work. More likely motivations would rather be the benefit of the organization as a whole, the well-being of colleagues and staff, the desire to subscribe to the organization's pro-environmental values, or a personal aspiration to contribute to environmental protection (Matthies, Kastner, Klesse, & Wagner, 2011).

Behavioural models such as the *norm activation theory* (Schwartz & Howard, 1981) and the *focus theory of normative conduct* (Cialdini, Kallgren, & Reno, 1991) argue that personal and social norms are a crucial component in the motivational stage of the decisional process preceding engagement in actual behaviour. Normative processes refer to social or personal norms. They reflect the influence of perceived general normative pressure to behave in accordance with the expectations of relevant others (Lulfs & Hahn, 2013, 2014). Previous studies based on aforementioned models (Matthies et al., 2011) provide evidence that normative processes represent an important influential factor in people's decisions on whether to engage or not in pro-environmental behaviours. The same is argued to be true in the case of the organizational context, though there is little empirical evidence available to confirm this (Biel & Thøgersen, 2007; Ramus & Killmer, 2007).

On one hand, the norm-activation theory of Schwartz and Howard (1981) looks into the different norms individuals hold, how these norms are activated in certain situations, how they are translated into perceptions of personal responsibility and finally lead to pro-social behaviour. In this model, behaviour is understood as being motivated by the wish to act in a norm-concordant way. Previous studies have shown that social norms can be successfully used to regulate sustainable behaviour. For example, when provided information about the average energy use levels in their neighbourhood, individuals will adjust their own behaviour accordingly, to be more in line with their neighbours' consumption rates (Schultz et al., 2007). In this situation, the change in behaviour is obtained by employing a *descriptive*

normative message. This type of message is used to convey details about what the actual behavioural norm is within a specific social context, or in short, what other people's behaviour actually is, for the most part. Providing study participants with information on the actual energy consumption rates of their peers in the community compelled the participants to adjust their own levels of energy use, in order to match the group norm. For those with above norm consumption rates, this resulted in a significant reduction of energy consumption, providing environmental benefits. However, participants with less than average consumption rates also showed a tendency to adjust according to the salient norm. Consequently, a segment of the participants actually engaged in higher levels of energy use, thus preventing the achievement of sustainability objectives.

On the other hand, according to the focus theory of normative conduct (Cialdini et al., 1991), there is a second type of social norm, in addition to the descriptive norm, that has a powerful influence on behaviour — the *injunctive norm*. Whereas descriptive norms refer to perceptions of what is commonly done in a given situation, injunctive norms refer to perceptions of what is commonly approved or disapproved within the culture. Thus, in situations in which descriptive normative information may normally produce an undesirable boomerang effect, it is possible that adding an injunctive message may prevent that effect, by indicating what sort of behaviour would be desirable and approved of according to salient social norms (Reno, Cialdini, & Kallgren, 1993). Following the research example above, this would mean conveying social approval in the case of lower-than-average energy consumption, and disapproval in case of higher-than-average consumption. By employing such an injunctive normative message in addition to the descriptive information, the rebound effect was indeed eliminated, and on the whole energy use decreased, signifying a shift toward a more sustainable behaviour (Schultz et al., 2007). The successful use of normative messages for amplifying sustainable behavioural tendencies was also recorded in the case of water use (Schultz et al., 2008) and intention to recycle (Carrus et al., 2009).

Promoting OCBEs through the use of descriptive and injunctive normative messages

The aim of this present study is to meld these two approaches to researching sustainable behaviour — in other words, in line with norm activation theory, we intend to use normative messages with the goal of increasing overall prevalence of OCBEs. For this purpose, following the focus theory of normative conduct's prescriptions for eliminating potential rebound effects, we will complement *descriptive* normative messages with *injunctive* normative messages that convey approval or disapproval regarding their engagement in said behaviours.

This would make our paper one of the first to explore the constructive properties of descriptive and injunctive norms on pro-environmental behaviours in an organizational, work-related setting.

Our intervention is built on the idea of making the group norms among co-workers with regards to pro-environmental behaviours more salient to our study participants, by providing them with descriptive and injunctive information on said norms. This is expected to strengthen normative pressures perceived by the participants to behave more in line with prescriptions of the group norm, thus achieving an increase in discretionary, voluntary extra-role behaviours that provide pro-environmental benefits to the organization. It is expected that in an organizational context where group norms referring to OCBEs are not made particularly salient (i.e., injunctive and descriptive information is not provided to the employees), improvements in levels of OCBE over time would be significantly lower than in a salient norms context, if there is any improvement at all to speak of.

We expect that the participants will engage in more OCBEs, i.e. discretionary acts by employees within the organization that are not rewarded or prescribed by role or job requirements, and that are directed toward environmental improvement (Daily et al., 2009; Boiral & Paillé, 2011), when made aware of their peers' general tendencies to engage in and to approve of OCBEs. Thus, we expect to record significantly higher

levels of OCBE following the participants' exposure to normative messages describing the OCBE-related norms at the level of the sample. Hence, we propose the following hypothesis:

H: Levels of OCBE will increase significantly after exposing participants to a normative message.

Methodology

The purpose of the current research was to explore the role of normative information (descriptive and injunctive) in changing environmentally significant behaviour (OCBE). The study has a quasi-experimental pre-test/post-test experimental design. All the instruments used, including the intervention were disseminated to the participants through online means.

Participants

The participants to this study are employees in several private-sector companies from Romania. A total of 84 participants to this study was assigned to either the experimental (n=40) or control group (n=44). Most of the participants in the sample are women (n=63.75%, men n=21.25%), with ages ranging between 21 to 56 years old (mean age = 34.5; SD = 7.47). In terms of their educational status, 38 had finished their university studies (45.2%), 35 have a postgraduate degree (41.7%), 4 have a PhD diploma (4.8%), and 7 reported other studies, such as a high school degree (8.3%). As expected, most of the employees who participated to the study reported no managerial roles (n=74, 88.1%, with managerial role n=10, 11.9%). Taking into consideration the differences between the control and experimental group, there are more women in the first group (n=41, 93.2%, men n=3, 6.8%) in comparison with the second group (n=22, 55%, men n=18, 45%). In the control group, most of the employees are young, with ages ranging between 20 and 35 years old (n=38, 86%, between 36 and 55 years old n=6, 45%), similar to the experimental group (20 to 35 years old n=31, 77.5%, between 36 and 55 years old n=8, 20%, > 56 n=1, 2.5%). For the control group, 23

(53.3%) had finished their university studies, 18 (40.9%) had finished postgraduate studies, and 3 (6.8%) declared other levels of study. As for the experimental group, similar educational levels were reported (university studies n=15, 37.5%, postgraduate studies n=17, 42.5%, PhD degree n=4, 10%, other level of study n=4, 10%).

Instruments

Several instruments were used to measure the variables taken into this study and the confounding factors.

OCBE is measured using the scale developed by Boiral and Paillé (2011). This scale consists of several items from the Podsakoff and MacKenzie's (1994, as cited in Boiral and Paillé, 2011) measure, adapted to capture pro-environmental behaviour in the workplace. The instrument consists of 10 items and has a three-factor structure (eco-initiatives, eco-civic engagement, and eco-helping). Eco-initiatives are measured using three items. One such item is "In my work, I weigh the consequences of my actions before doing something that could affect the environment". Eco-civic engagement is the second factor and it is measured by four items. An example item for eco-civic engagement is "I volunteer for projects, endeavours or events that address environmental issues in my organization". Eco-helping represents the third factor. A sample item for this sub-scale is "I encourage my colleagues to adopt more environmentally conscious behaviour". The respondents indicate the extent to which they agree with each item, using a Likert-type scale ranging from 1 (completely disagree) to 5 (completely agree). As this scale was never used (to our knowledge) in Romanian settings, we used the standard procedure for translation and back translation (Brislin, 1970). The internal consistency (measured using Cronbach's alpha) for this sample was .90 for the overall scale, .77 for eco-initiatives, .89 for eco-civic engagement, and .78 for eco helping.

Control variables

We took into consideration the influence of individual and organizational factors that were previously found to be determinants of OCBE.

Environmental management practices and perceived organizational support are two organizational factors that were linked to OCBEs in previous research. EMPs and POS were measured using six and four items respectively (Paillé et al., 2013), on a seven-point scale ranging from 1 (completely disagree) to 7 (completely agree). An example item for EMP is “Making employees more responsible for the environmental performance”, and for POS “My employer values my contributions”. The Cronbach’s alpha reliability for the present sample was .92 and .93, respectively.

Affectivity, as an antecedent of OCB (Podsakoff et al., 2000) is taken into consideration as a control variable in this study, and measured with the positive and negative affect schedule (PANAS; Watson, Clark, & Tellegen, 1988). The 20-item instrument comprises two mood scales, one measuring positive affect and the other measuring negative affect. Each item is rated on a 5-point scale ranging from 1 = *very slightly or not at all* to 5 = *extremely* to indicate the extent to which the respondent has felt this way in the indicated time frame. Watson and colleagues (1988) reported Cronbach’s alpha coefficients for the various time reference periods ranging from .86 to .90 for the Positive Affect scale and .84 to .87 for the Negative Affect scale. For the present sample, the Cronbach’s alpha reliability coefficient was similar with the one reported by the authors, .83 for PA and .85 for NA scale.

Demographic data was collected by six questions regarding the participant’s age, gender, education, general work tenure, current job tenure and managerial role.

Procedure

Several private-sector organizations with similar areas of production and industry were invited to participate in the study. The two organizations willing to partner with the researchers were assigned into the control and experimental group respectively, using a simplified time sampling method. Subsequently, difficulties in cooperation and objective hindrances prevented the research team from further collaborating with the

organization initially assigned to the experimental group. A new experimental group was created by following several selection guidelines (such as participants’ employment in the private sector, the city of employment, the business activity and the type of work), in order to mimic the characteristics of the control group. For the control group, 700 participation invitations were launched. For the experimental group, we invited 162 participants to this study. At pre-test level, we received 115 forms for the control group, and 63 for the experimental group. At post-test level, we received 64 (control group) and 40 (experimental group) valid forms, from which 20 cases were removed due to missing values or impossibility to match the unique response ID from pre-test to post-test application.

The participation to the present study was completely voluntary, and a consent form was created in order to ensure it. The experimental group was initially tested using the OCBE instrument. After a two weeks period, the group received a normative descriptive message describing what portion of the participants in the experimental group is generally more frequently engaged in OCBE (*descriptive* norm) and conveying approval or disapproval for each individual participant’s own engagement in OCBE when compared to the group norm (*injunctive* norm). After a subsequent two weeks, a second OCBE measurement is carried out.

The control group received no normative message and was instead just subjected to the two OCBE measurements, scheduled 4 weeks apart. Each online questionnaire was live for seven days.

Intervention

Data from the first instrument administration was used as a base for creating the descriptive messages. Each participant in the experimental group received a personalized message via e-mail that contained:

- a) the sample levels of OCBE for all the dimensions and a short description of the meaning of it,
- b) their score for OCBE and additional explanations with the comparison with the sample, and

- c) a symbol to match if their results are above or below the mean of their counterparts.

pro-environmental behaviours, paired t-tests were employed.

Data analysis

The data was analysed using SPSS and AMOS. Before testing the hypotheses of the present study, a reliability analysis was conducted and for each instrument used, reliability coefficients (Alpha Cronbach) were calculated. Moreover, as to our knowledge, the instrument used to measure our dependent variable was never tested before on Romanian population, we conducted a confirmatory factor analysis in order to assess if the three factor model proposed by the authors of OCBE instrument fits our sample. Descriptive statistics and analysis of correlation were conducted to examine the relations between OCBE, EMP, POS and PA and NA, as the examination of the relations between variables enables comparability of findings within this sample to previously reported studies. A descriptive analysis of participants’ social, demographic and occupational characteristics was made using means and percentages according to the nature of the variables. Due to the sampling method issues, independent t-test was used in order to ensure the equivalence of the two groups, control and experimental respectively at the level of all the variables of interest.

In order to conclude whether or not the intervention has improved the frequency of the

Results

The factor loadings for all items measuring OCBE were analysed. All the items had significant loadings; therefore no item was removed from the instrument. The structure of the OCBE instrument tested using CFA was composed of three factors, namely Eco Initiatives, Eco Civic Engagement and Eco Helping. The final CFA model had an acceptable model fit: $\chi^2 (31) = 47.6, p < .001, CFI = .96; RMSEA = .08$.

Before proceeding to test our hypotheses, due to the fact that the control and the experimental group are differently built, we also analysed the equivalence of the two groups at pre-test level, considering group as the independent variable, and the pre-test data as dependant variable.

We first tested to see if our data meets the requirements for applying independent t-tests, more specifically, we looked for the normal distribution for the VD condition to be met.

The results showed that initially, at pre-test stage, the two groups were not different considering the levels of OCBE ($t(82) = .66, p > .05$ for overall OCBE, $t(82) = .13, p > .05$ for Eco Initiatives, $t(82) = .986, p > .05$ for Eco Civic Engagement and $t(82) = -.38, p > .05$ for Eco Helping).

Table 1. Results of independent t-tests and Descriptive Statistics in testing the groups’ equivalence

Outcome	Group						t	df
	Control			Experimental				
	M	SD	n	M	SD	n		
OCBE Overall	31.70	8.211	44	32.83	7.132	40	-.66	82
Eco Initiatives	10.02	2.706	44	10.10	2.468	40	-.13	82
Eco Civic Engagement	11.43	4.123	44	12.28	3.644	40	-.98	82
Eco Helping	10.25	2.525	44	10.45	2.264	40	-.38	82
EMP	21.02	5.372	44	17.05	5.510	40	3.34**	82
POS	13.86	3.714	44	14.08	3.633	40	-.26	82
PA	33.89	5.127	44	35.40	5.961	40	-1.25	82
NA	17.20	5.214	44	18.20	6.470	40	-.78	82

The results showed that the control group and the experimental group differed at EMP level ($t(82) = 3.34, p < .01$), the control group more frequently encountered formal environmental management practices ($M=21.02$) than the experimental group ($M=17.05$). Regarding the POS, no difference was found between the control and experimental group ($t(82) = .26, p > .05$). Beside the organizational factors that can affect the results of our intervention, we accounted for individual, personal factors, such as affectivity. No differences were found between the control and the experimental group for Positive Affectivity ($t(82) = 1.25, p > .05$) and Negative Affectivity ($t(82) = .78, p > .05$).

Our focus was to analyse if the levels of OCBE had increased after the intervention. The paired t-test showed that, although at pre-test, the group had a lower ($M=32.83$) score on OCBE Overall than after the intervention ($M = 33.75$), this difference is not statistically significant ($t(39) = 1.23, p > .05$). In the same line, the results showed that the difference between the scores for the Eco Initiatives dimension before intervention ($M = 12.28$)

and after the intervention ($M = 10.25$) is not statistically significant ($t(39) = .53, p > .05$). Considering the Eco Civic Engagement dimension of the OCBE, before the intervention the experimental group declared less frequent engagement in such behaviours (12.28), in comparison with after the intervention (12.78), but this difference was not statistically significant ($t(39) = .98, p > .05$). Similarly, for the Eco Helping dimension, after the intervention the frequency of such ecologically driven practices increased ($M = 10.45$) in comparison with before the intervention ($M = 10.73$), however the difference is not statistically significant ($t(39) = 1.15, p > .05$).

Therefore, our hypothesis is not supported by the data.

Since the results indicated no significant differences between pre-test and post-test OCBE scores for the recipients of the intervention, we considered that further in-depth statistical investigations – such as testing for post-test between-group differences – would not provide a notable added value to our analyses.

Table 2. Results of paired t-tests and Descriptive Statistics OCBE dimensions by Time

Outcome	Time							
	Pretest			Posttest				
	M	SD	n	M	SD	n	t	df
OCBE Overall	32.83	7.132	40	33.75	7.438	40	-1.23	39
Eco Initiatives	10.10	2.468	40	10.25	2.609	40	-.538	39
Eco Civic Engagement	12.28	3.644	40	12.78	3.519	40	-.983	39
Eco Helping	10.45	2.235	40	10.73	2.148	40	-1.15	39

** $p < .01$

Discussion

In the present study, we employed a quasi-experimental pre-test/post-test research design in an attempt to improve levels of Organizational Citizenship Behaviours for the Environment (OCBE) in a sample of adult organizational employees, by providing them with OCBE-related normative messages (containing descriptive and injunctive component).

However, our data did not support the assumption that dissemination of personalized normative messages to the participants in the experimental sample would be followed by significant increases in levels of overall OCBE and sub-dimensions of OCBE. Although we recorded slight increases in levels of overall OCBE, eco-civic engagement and eco-helping, these differences were not statistically significant.

We suspect that one of the most plausible causes for the lack of significant results has to do with discrepancies between the compositions of the two groups used in the study. This is a significant limitation of our study and will be further discussed in the Limitations section of this paper.

It has been argued that normative influence has spatial roots. As pro-environmental behaviours have a territorial basis, and are performed in specific places, it is likely that the social actors sharing that specific area will represent “significant others” whose behavioural patterns may constitute a group norm that an individual in that particular setting will feel compelled to comply with (Carrus et al., 2009). This assumption is equally valid when referring to inhabitants of a single household, a neighbourhood, or co-workers sharing a workspace. This is particularly relevant with regards to OCBEs, which are considered to be typically embedded in daily activities so that this behaviour is easily observed by peers in the workplace (Lulfs & Hahn, 2013). Furthermore, there is regular social contact within companies, departments, and teams (Carrico & Riemer, 2011) so that co-workers and supervisors can have an impact on social norms and thus also influence individual behaviour. It can then be reasoned that due to the mismatch between the experimental group and the control group used in the present study, in addition to the heterogeneous composition of the experimental group, the norm-based intervention designed by the authors could not produce a significant impact on levels of OCBE.

Although preliminary analysis showed that the two groups were adequately matched for OCBE levels, results also revealed a significant difference in levels of EMP between the two groups. As previous studies showed, EMPs are an important antecedent for environmentally-relevant employee behaviours. More specifically, employees tend to engage more readily in discretionary pro-environmental behaviours in an organization where environmental management practices are more visible (Paillé et al., 2013). Therefore we argue that, because EMP levels were significantly lower at baseline for the

experimental group, this prevented a significant increase in levels of OCBE following the intervention when compared to the control group, where baseline EMP was higher. At the same time, based on the available data, we can only speculate whether higher levels for baseline EMP in the experimental group would have allowed for significant increases in OCBE levels following the intervention, and in turn, a significant difference in post-test OCBE levels when compared to the control group.

We also took into consideration other factors that could have adversely impacted our findings. One such issue could have to do with the relatively small sample used in the study, combined with low response rates, particularly in the post-test phase for the experimental group. Since we employed a pre-test/post-test design, each participant’s response in the post-test phase had to be matched with their response in the pre-test phase before testing our hypotheses. As a result of very low response rates in the post-test phase, many of the responses collected in the pre-test assessment also had to be excluded from analysis, therefore drastically lowering the final sample. Since the intervention was applied to all respondents from the pre-test stage (i.e., they were all provided with normative messages based on comparisons between their individual scores and mean values for the experimental sample), it is possible that actual shifts in levels of OCBE may have been larger than what results from the post-test data indicates.

Previous studies have shown the usefulness of normative messages for improving sustainable and pro-environmental behaviours in households and other similar settings in the private sphere. Similarly, we expect employees within a shared organizational context to be sensitive to information related to their peers’ typical engagement in certain behaviours at work and to their commonly held opinions of said behaviours and to adjust their own behaviour to be more in line with the group norms.

If the effectiveness of such norm-based interventions in organizations could be demonstrated, the implications for managerial practices would be very encouraging. The

successful implementation of descriptive and injunctive norms as drivers for enhancing OCBE could mean that even in the absence of formal policies and incentives, progress can be made in organizational greening initiatives or other sustainable development practices by focusing attention on the voluntary initiatives, pro social inclinations and tacit knowledge of the employees.

Limitations and avenues for future research

The study presents several limitations which have to be taken into account.

As previously mentioned, one major limitation has to do with the discrepancies between the control group and the experimental group used in our study. The reasoning for choosing a two-group research design was that of ensuring improved robustness compared to a single group repeated measures design. Despite initial plans to use two natural samples made up of employees from two separate private organizations – an appropriate approach for a quasi-experimental research design – in the end, collecting an adequate dataset from a single company for the study's experimental condition proved unfeasible. We therefore resorted to using a different experimental sample composed of employees from a number of different private companies. These new participants were screened by several characteristics (such as employment in the private sector, the city of employment, the business activity and the type of work) in order to achieve a good fit with the control group. The purpose of this measure was to increase the likelihood that the groups are comparable and, thus, the between group differences are not attributable to other factors, but solely (or at least mainly) to the intervention. As explained earlier, many of the supposed antecedents of OCBE, such as organizational and supervisor support for eco-initiatives, workplace norms, formal environmental policies and values in the organization, are strongly embedded in a particular organizational context (Ramus & Killmer, 2007; Boiral, 2009; Lamm et al., 2013). Therefore, it is reasonable to suspect that in a sample where such factors are not

consistent and relatively homogenous, it may be difficult to effectively enact and accurately assess a significant improvement of OCBE levels. Although our preliminary analyses showed that the groups are adequately matched for baseline OCBE levels and most of the control variables (with the exception of EMP), the simple fact that the participants in the two groups perform in different organizations could generate significant differences related to variables beyond the scope of our study. Ideally, this limitation can be addressed in future studies by having people from different organizational settings assigned randomly to the control and experimental conditions.

Furthermore, it must be noted that the study employed exclusively self-report measures. Considering the discretionary, informal nature of OCBEs, which made up the primary focus of our study, it is reasonable to assume that participants' responses may have been biased to some degree or affected by social desirability tendencies. Future research into extra-role pro-environmental behaviours in an organizational setting could strive to counteract such limitations by including objective measurements of pro-environmental performance and environmental impact, such as electricity and heat consumption rates (Schultz et al., 2007; Matthies et al., 2011), or water consumption (Schultz et al., 2008). Additionally, such objective measures could be made even more useful with the inclusion of multiple alternative scales for measuring OCBE. The OCBE scale used in the current study, adapted from Boiral and Paillé 10-item OCBE scale (2011), contains items that are phrased in a very general way, as they are meant to encompass a wide range of workplace behaviours and are meant to be applicable to various types of organizations and occupational activities (Boiral & Paillé, 2011). Since our study did not benefit from a comprehensive assessment of the organizational context, practices and policies of the companies included in the study prior to carrying out the research, a flexible, wide-reaching instrument like Boiral and Paillé's was considered best suited for our aims. On the other hand, it would be interesting for future research into OCBE to complement their measures with alternative scales (or

subscales) available in the literature, and whose items are phrased in a more explicit way and directly target particular pro-environmental behaviours and habits, such as recycling, water consumption, electricity use, etc. (see Smith & O’Sullivan, 2012; Lamm et al., 2013).

Another major limitation of our study has to do with the rather small sample size, along with very low response rates. As such, it is possible that our study might not have accurately assessed the organizational context surrounding discretionary, extra-role pro-environmental behaviours, thus leading to an incorrect assessment of organizational norms related to OCBE. If this is a valid assumption, it would imply that a normative message conveying incorrect information to the employees with regards to the workplace OCBE norms they are immersed in on a day-to-day basis would hold little too sway and as such, would probably not lead to significant behavioural changes – in line with the results of our own study.

A third limitation is represented by the high participant drop-out rate between the pre-test and post-test measures. As explained previously, this may have impacted on the validity of our results, with the possibility that the actual changes of OCBE levels in the sample may not have been accurately assessed during the post-test measurement.

A further limitation which may have affected the accuracy and validity of the study’s findings is the lack of any reliable information detailing the participants’ degree of engagement with the materials provided during the intervention. In other words, after providing the participants with normative messages based on the results of the pre-test measurements, the researchers had no way of checking participants had actually properly read the materials, if at all, before responding in the post-test phase. We recommend that future studies employing similar designs should include in their post-test questionnaires an item for checking whether the participants had indeed read and thoroughly examined the materials they were provided with, for example by typing a individually assigned code included in the materials.

A final limitation we want to point out is that, although our study was explicitly focused on the manipulation of OCBE by means of descriptive and injunctive normative measures, there are a number of contextual and individual variables noted in behavioural models and previous research on discretionary pro-environmental behaviours as notable possible antecedents of OCBE (Schwartz & Howard, 1981; Cialdini et al., 1991; Ramus & Killmer, 2007; Lamm et al., 2013). Our study include measurements of several such factors (e.g. EMP, POS), but only as control variables. Future studies have a lot of potential to gain much insight into OCBE by exploring more in-depth the role of such variable as predictors, moderators and mediators in the processes that drive OCBE and similar extra-role pro-environmental behaviours.

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