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Can Green Behaviors Really Be Increased for all Employees? Trade-offs for "Deep Greens" in a Goal-Oriented green HRM Intervention.

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ABSTRACT

This study explores the complex interaction between psychological and goal-relevant boundary conditions that influence levels of individual engagement in a green Human Resource Management (HRM) intervention designed to encourage Employee Green Behavior (EGB). Data were collected from 1,112 employees in an automobile manufacturing plant. Consistent with goal setting theory, the level of feedback received predicts EGB. However, a three-way interaction demonstrates how employees with high-levels of autonomous motivation do not gain the expected benefits of high feedback and high goal commitment in the enactment of EGB. Instead, only those with weak autonomous motivation are affected by these goal-related constructs. Findings suggest that both goal-setting and self-determination theories are relevant to green HRM interventions. Managers should consider that interventions that are effective for employees who do not have strong autonomous motivation towards the environment may not be effective for those who do.

Keywords: Pro-environmental behaviors, green HRM, employee green behavior, goal-setting, crowding-out, motivation

Managers and employees are increasingly aware of their organizations' environmental impacts, and environmental sustainability is increasingly being viewed as an important workplace activity (Boiral, 2002; Crane, 2000; Haywood et al., 2013; Law, Hills, & Hau, 2017; Ramus & Killmer, 2007). Many organizations are now recognizing the value of employee engagement in their efforts to improve sustainability performance; for example, initiatives to encourage employees to produce less waste, or use less water or energy, essentially green behaviors (Russell, Evans, Fielding, & Hill, 2016; Temminck, Mearns, & Fruhen, 2015; Young et al., 2015). There is also growing interest within the management community regarding the use of Human Resource Management (HRM) processes and behavioral interventions to support such behavior (e.g., Markoulli, Lee, Byington, & Felps, 2017; Pellegrini, Rizzi, & Frey, 2018; Russell & Hill, 2018), collectively known as 'green HRM' (e.g., Andersson Jackson, & Ruseell, 2013; Kramar, 2014). The examination of the micro-foundations and drivers of Employee Green Behaviors (EGB) in the context of green HRM, however, is still in its infancy and more research remains to be done (e.g., Dumont, Shen, & Deng, 2017; Renwick et al., 2013).

We contribute to this literature by presenting findings from a field study examining a HRM intervention designed to increase EGB. Our over-arching aim is to understand whether all employees benefit from this type of intervention or whether some will be unaffected. In particular, we integrate goal-setting theory (Locke & Latham, 1981) with self-determination theory (Deci & Ryan, 1985) to ask, does autonomous environmental motivation influence the extent to which employees engage in green HRM interventions? To do this, we focus on a large scale goal-oriented EGB intervention in an auto-manufacturing plant and test the interactive boundary conditions of goal commitment, feedback and autonomously-regulated environmental motivation.

Defining and Promoting EGB

We start by defining EGB as 'scalable actions and behaviors that employees engage in or bring about that are linked with, and contribute to, environmental sustainability' (Ones & Dilchert, 2012, p.87). EGB may take a variety of forms, from working sustainably, to avoiding harm, conserving, influencing and taking initiative, from the task-related to more extra-role forms (see Ones & Dilchert, 2012, and Norton, Parker, Zacher, & Ashkanasy, 2015, for further discussion regarding the range of behaviors that fall into each category). Such behaviors are usually prioritized as secondary to work performance (Unsworth & Tian, 2017) and thus require motivational engagement from employees (see also Norton et al., 2015). This definition differs to broader terms such as Pro-Environmental Behavior (PEB) or green behavior that are often used to refer to more general environmental actions that are not work context specific (see e.g., Stern, 2000).

A range of behavior change techniques have been proposed to help promote PEB; however, interventions have enjoyed mixed success (e.g., Abrahamse, Steg, Vlek, & Rothengatter, 2007; Norton, et al, 2015; Semmel, Klein, Ones, Dilchert, & Wiernik, 2012; Steg & Vlek, 2009) and there has been limited examination of interventions within the workplace (Dumont et al., 2017; Paillé & Raineri, 2015; Unsworth, 2015; Young et al., 2015). Although studies have increased our knowledge of behavior within the domestic setting, much less is known about the effectiveness of behavior change techniques with regards to EGB specifically (Dumont et al., 2017; Paillé & Boiral, 2013). Variations in contextual factors and contingencies means that antecedents to PEB may differ between work and home, increasing the importance of studying EGB directly and not assuming that interventions that have been successful in the domestic sphere will necessarily be effective in the workplace (Kim, et al., 2017). Furthermore,

research on EGB has typically focused upon organizational level policies or change (e.g., Davis & Challenger, 2009; Ones & Dilchert, 2012; Renwick et al., 2013) and intervention efficacy has varied (Osbaldiston & Schott, 2012). Therefore it is clear that there is a need for research examining employee engagement in these organizational environmental programs (Unsworth, Dmitrieva, & Adriasola, 2013) and to assess the efficacy of green HRM interventions that seek to engage individual employees (Roscoe, Subramanian, Jabbour, & Chong, 2019).

Moreover, there is a particular need for more in-depth research into goal-oriented approaches. Initial evidence suggests that EGB interventions based on goal-setting techniques may be effective; for example, specific waste reduction goals have been shown to be successful in reducing waste behaviors within the construction sector (e.g., Lingard, Gilbert, & Graham, 2001) and goal-oriented approaches have been identified as core to successful organizational interventions directed at energy reduction (e.g., Siero, Bakker, Dekker, & Van Den Burg, 1996). Nonetheless, an alternative stream of literature deriving from self-determination theory (e.g., Gagne & Deci, 2005; Ryan & Deci, 2000) suggests that such an intervention would create extrinsic motivation, thereby crowding-out the effects on EGB that would otherwise occur due to autonomous environmental motivation (Frey & Oberholzer-Gee, 1997). As such, we believe that, although positive, engagement in the intervention will not be uniform, as we will now discuss.

Self-Determination Theory and Crowding Out

Individual motivations towards environmental actions have consistently been identified as an important antecedent to the performance of PEB (e.g., Steg & Vlek, 2009) and offer a lens for understanding potential differences in engagement with organizational-level green HRM initiatives. Self-determination theory (e.g., Deci & Ryan, 1985, Ryan & Deci, 2000) proposes that motivation can be disaggregated into different types depending on the degree of

internalization, predicting different psychological and behavioral outcomes (Gagné & Deci, 2005). In particular, there is motivation that derives from being autonomously regulated (that is, internalized) motivation and motivation derived from being externally regulated (Pelletier, et al., 1998; Gagne & Forest, 2008). For example, autonomous motivation might stem from intrinsic regulation (e.g., because it is enjoyable), integrated regulation (e.g., because you're that kind of person), or identified regulation (e.g., because you think it's important). On the other hand, extrinsic motivation comes from introjected regulation (e.g., because you would feel guilty if you didn't do it) or external regulation (e.g., because of rewards or punishments).

This perspective on motivation is important because organizations often look for ways to encourage, reward and recognize EGB as part of their green HRM (e.g., Renwick et al., 2013; Norton, Parker, Davis, Russell, & Ashkanasy, 2018). These interventions create extrinsic motivation through their use of external and introjected regulation. However, extrinsic motivation can have a deleterious effect on autonomous motivation and subsequent performance (Deci, Koestner, & Ryan, 1999; Gagne & Deci, 2005). And, although there are boundary conditions, external regulators, such as rewards, generally have negative effects on extra-role behaviors such as creativity (e.g., Byron & Khazanchi, 2012; Gagne & Forest, 2008; Malik, Butt & Choi, 2015). Studies have also demonstrated that extrinsic motivation negatively affects PEB. For example, extrinsic rewards reduced the motivation to engage in energy saving programs (Schwartz, Bruine de Bruin, Fischhoff, & Lave, 2015) and using financial gains as a motivator is detrimental to holding attention to those with pro-environmental values (van den Broek, Bolderdijk, & Steg, 2017).

This phenomenon is known more widely as the crowding-out effect (Frey & Oberholzer-Gee, 1997; Stern, 1999) whereby the provision of extrinsic rewards for behaviors that individuals

would have performed anyway due to their autonomous motivation may reduce or suppress their motivation to engage in the behavior. The rewards essentially reduce the individual's self-determination by increasing the perceived external regulation and the perception that the behavior was not initiated out of free choice (Frey & Oberholzer-Gee, 1997; Lanzini, 2014). To date, studies have predominantly focused upon the effects of financial rewards in relation to crowding-out (e.g., Schwartz et al., 2015), however Hewett and Conway (2016) have shown that even verbal rewards and salient feedback can have a negative effect on autonomous motivation for complex work tasks.

We believe that integrating these findings from self-determination theory is important as it suggests that EGB interventions that incorporate external recognition, feedback or praise, monitoring or external rewards (all common components of EGB interventions, e.g., Young, et al., 2015; Osbaldiston & Schott, 2012) may affect employees differently, depending on whether they were initially autonomously motivated to undertake the encouraged EGB. For example, within a goal-oriented intervention, employees may be encouraged to work towards specific environmental goals (e.g., reducing personal energy consumption, switching travel modes or recycling more), receiving feedback on how they are doing against the goals, and praise or certificates when they achieve such goals. These elements, as we discuss below, all represent traditional and well-validated components of a behavior change intervention (see e.g., Locke & Latham, 1984); however, they may also all present a form of extrinsic reward and motivation for intervention participants. Furthermore, participation in an organizational intervention, where behaviors and actions are influenced and encouraged by an external party, may be considered a form of external regulation and motivation (e.g., Gagné & Deci, 2005). Thus, employees who are engaging in EGB because of an organization's goal-oriented initiative are likely to perceive they

are doing so because of external regulation, even though the EGBs themselves may be extra-role or considered organizational citizenship behavior for the environment (e.g., Boiral, Talbot, & Paillé, 2015). The crowding-out effect would suggest that this will have a negative effect on motivation for those people who wish to engage in EGB based on their environmental motives and thus a negative relationship between autonomous environmental motivation and engagement in goal-setting EGB interventions. However, research in related areas has shown that the salience of the external regulator (e.g., Eisenberger & Armeli, 1997; Hewett & Conway, 2016) will affect the relationship. As such, we now integrate goal-setting theory into our theorizing.

Goal-Setting Approaches to EGB

Goal-setting theory has established itself as one of the most popular motivational approaches in management practice and has also enjoyed frequent use in application to PEB by both academics and practitioners (Osbaldiston & Schott, 2012; Steg & Vlek, 2009). Goal-setting theory defines goals as any action or task that an individual strives to achieve (Locke et al., 1981), with relevant challenging, participative, specific, and realistic goals having been consistently found to lead to better task performance than 'do your best' goals, easy goals, or no goals (Klein, Wesson, Hollenbeck, & Alge, 1999; Locke & Latham, 2004).

Research has identified two key aspects of the goal-setting process that are required for the full motivational effect. First, participants must be committed to achieving the goal, even if they have not been involved in setting it (Latham, Erez, & Locke, 1988). Goal commitment is the degree to which individuals identify with and are committed to pre-set goals (see e.g., Hollenbeck & Klein, 1987) and Klein and colleagues' (1999) meta-analysis showed a clear positive relationship between goal commitment and performance.

Second, participants must get feedback on their progress towards goal achievement (outcome-oriented feedback), enabling them to gauge progress and enhance motivation (Earley, Northcraft, Lee, & Lituchy, 1990; McCalley & Midden, 2002). This outcome-oriented feedback allows the employee to adjust their effort or internalized goals so that they are most likely to succeed (e.g., Ilies & Judge, 2005; Louro, Peeters & Zeelenberg, 2007); however, because this is an internal process of adjustment, the employee needs to be aware of, and pay attention to, the feedback. Laboratory-based research on undergraduate students has shown that the form that outcome-oriented feedback takes can influence goal motivation and performance - aspects such as the feedback medium, credibility of the source and the discouraging or praising nature of the feedback amongst others (see e.g., Ambrose & Kulik, 1999; Kluger & DeNisi, 1996). The applied nature of our work meant that we were unable to examine all these aspects. Instead, we chose to focus on frequency of attended feedback as this is the main premise of goal-setting theory. Furthermore, from a practical perspective, a HRM intervention is most likely to be able to standardize the form of the feedback, such that employees receive feedback on whether they had demonstrated specific EGBs through both a standard positive written medium and via supervisors. We focus therefore on the variation in outcome-orientated feedback attended to by employees, with the implications of high and low-levels of outcome-orientated feedback discussed below.

Interaction between Autonomous Environmental Motivation and Goal-Setting Characteristics

It would be simplistic to consider goal commitment and outcome-orientated feedback separately and we suggest that these goal-related constructs will interact with autonomous

environmental motivation to explain differing employee engagement in EGB. To begin, we suggest that if a person is not aware of their progress (i.e., low-feedback), then neither positive nor negative outcomes will be observed. That is, if a person is not given feedback then they are unlikely to experience the positive motivational effects due to the goal-oriented approach (Locke et al., 1981; McCalley & Midden, 2002); but nor will they experience the negative motivational effects associated with extrinsic rewards and constraints crowding-out the engagement in EGB (Frey & Oberholzer-Gee, 1997; Hewett & Conway, 2016). Thus, with low-levels of feedback, we expect that there will be a non-significant relationship between autonomous environmental motivation and EGB.

At high-levels of feedback, however, the employee is reminded, and provided with regular cues, about his or her engagement in the EGB intervention. We believe that this is where we will see both positive and negative relationships between autonomous environmental motivation and EGB. More specifically, we suggest that goal commitment will moderate these relationships.

The nature of green HRM interventions means that EGB goals (e.g., specific energy reduction targets or sets of desired behaviors) are often set at an organizational level. This may or may not involve employee representation (e.g., Lingard et al., 2001), however, a degree of separation from the individual worker is likely to be involved. Consequently, although individual workers may sign up to the same initiative, or be subject to a uniform intervention, the degree to which they hold the scheme's goals as personal goals may vary. Goal commitment may therefore affect employee performance within the program (c.f., Klein et al., 1999; Sheeran, Webb, & Gollwitzer, 2005). Those who have a high-goal commitment to the EGB intervention will be more likely to view the program as important and may feel guilty when not participating fully

(e.g., Li, Ahlstrom, & Ashkanasy, 2010; Meyer, Becker, & Vandenberghe, 2004). These perceptions of importance and guilt are related to forms of external regulation, namely identified and introjected regulation (Gagné & Deci, 2005), that constrain one's behavior through external means. As such, they are likely to be related to crowding-out in the same manner as more traditional extrinsic regulators such as overt rewards.

On the other hand, if a person does not have a strong goal commitment to the EGB intervention then they are not likely to view it as important or invoking guilt. In this instance, the intervention will not be as strongly perceived to be an external regulator and thus, the crowding-out effect will not be observed. Instead, we propose that when employees have low-goal commitment, then based on the theories of values (Stern, 2000), attitudes (Ajzen, 1991) and self-concordance (the extent to which a person's behavior expresses their own stable interests, values and beliefs, Unsworth et al., 2015), there will be a positive relationship between autonomous environmental motivation and EGB. Overall, therefore, we hypothesize a three-way interaction between autonomous environmental motivation, feedback, goal commitment and EGB:

> Hypothesis 1a: When feedback is low, there will be no significant relationship between autonomous environmental motivation and EGB regardless of the level of goal commitment;
>
> Hypothesis 1b: When feedback is high and goal commitment is low, there will be a positive relationship between autonomous environmental motivation and EGB;
>
> Hypothesis 1c: When feedback and goal commitment are both high, there will be a negative relationship between autonomous environmental motivation and EGB.

Method

Organizational Context

This study took place in a United Kingdom manufacturing plant of a global automobile company. The plant employs around 3000 employees, with the majority engaged directly in manufacturing-related activities. On a global level, the organization is committed to creating sustainable plants, in which all of their manufacturing facilities have minimal impact on the natural environment. In accordance with this long-term vision, the plant in this study had recently implemented a goal-oriented program to increase EGB amongst their employees.

The organizational program involved employees using 'eco' cards to track their progress at carrying out specified EGB. Each card represented a color, with six EGB on each card (covering a broad range of behaviors, e.g., energy and water conservation, waste minimization, and more efficient transport behavior). Supervisors verified when an EGB specified by the organization had been demonstrated by stamping the employee's eco card and providing verbal feedback on progress against the program's target EGBs. When an employee successfully completed all the activities on their eco card, they moved onto the next level (i.e., from green to silver to gold). The employees received public praise and recognition as they demonstrated EGBs and progress through the eco card program; they also received environmental gifts as they reached each level in the program. The eco card program provided employees with clear and standardized target behaviors, required a commitment to the program's goals, provided explicit outcome feedback, and program verification. Participation in the program was voluntary, although widely advertised and encouraged.

Sample and Procedure

We surveyed employees at the auto plant approximately a year after the establishment of the eco card program. Prior to beginning the surveying, we conducted a number of focus groups

with staff at the auto plant to help tailor the wording and presentation of the questionnaire so that it was relevant to both production and office workers, in addition to providing insight into how staff engaged with the eco card program. Four 45-minute focus groups were conducted with 30 employees in total, representative of the workers participating in the program at the auto plant. Two of the focus groups consisted of shopfloor workers, one was comprised of office workers, and one consisted of managers. Following the focus groups, we designed and then piloted the questionnaire with several employees to check for comprehension.

We distributed questionnaires in paper form during team briefings over a two-month period and 1147 employees returned completed questionnaires; of these 1108 were retained for the analyses (39 respondents were not involved with the program and were excluded). The sample, drawn from across the site, represented a response rate of approximately 39% of the plant's staff. The sample consisted of 95.6% male and 4.4% female respondents, with 93.2% production workers and 6.8% office workers. The high male response rate was reported as representative of the workforce by the organization, with the production staff being overwhelmingly male. The mean age was 38 years and the mean tenure was 9.4 years (please see Table 1 for means and standard deviations for all measures).

Measures

EGB. Information regarding the respondents' EGB (status achieved in the program and thereby the range of EGB demonstrated) was collected to provide a factual report of EGB. The levels were coded: 0 = not participating in program, 1 = working towards green status, 2 = achieved green status and working towards silver, 3 = achieved silver status and working towards gold. At the time of the research no employees had achieved gold status. Although this information was collected in the survey and completed by the participants, the factual nature was

simple to understand and unambiguous in its distinction. Previous studies have demonstrated high concordance between other factual reporting such as self-reported organizational performance measures and actual organizational performance (Wall et al., 2004) offering confidence in this collection method. The proportion of respondents in each of the eco card categories was reported as representative of the scheme's membership by the organization. Of the whole sample, 3.5% were not participating in the Eco Card program and were removed from the subsequent analysis, 16.4% were working towards green status, 29.4% had achieved green status and were working towards silver, and 50.7% had achieved silver status and were working towards gold.

Goal commitment. The degree to which respondents held, and were committed to, completion of the 'eco card' program as a personal goal was assessed by two items based upon Latham, Steele, and Saari (1982). The program contained three achievement levels (green, silver and gold). The goal was emphasized in each item. The items were "Completing the different [eco card] levels (green, silver, gold) is a goal I have" and "How committed are you to attaining the [eco card] goal?" The items were measured on a five-point Likert type scale (1 = not at all, 5 = a great deal). The measure demonstrated good internal reliability (Cronbach's $\alpha = 0.91$).

Feedback. The provision of outcome-oriented feedback on eco card progress, and the extent to which employees paid attention to this, was measured using two items, based upon the pilot focus groups: "How much feedback do you receive on your [eco card] progress?" and "Do you pay attention to the feedback you receive regarding your [eco card] performance?". The items were measured on five-point Likert-type scales (1 = not at all, 5 = a great deal). The measure demonstrated acceptable internal reliability (Cronbach's $\alpha = 0.69$).

Autonomous environmental motivation. The shortened version of the revised New Environmental Paradigm (NEP) scale (Dunlap, Van Liere, Mertig, & Jones, 2000 & Jones, 2000; Whitmarsh & O'Neill, 2010) was used as a proxy for autonomous environmental motivation (e.g., van den Broek, Bolderdijk, & Steg 2017). Environmental beliefs have been demonstrated to correlate significantly with environmental motivation, with stronger positive correlations for more self-determined motives (most strongly with intrinsic) and weaker and negative correlations with less self-determined motivation (e.g., Pelletier, Tuson, Green-Demers, Noels, & Beaton 1998). An additional item from the revised NEP scale was included to capture participants' view of the state of the environment ("the 'so-called' ecological crisis facing humankind has been greatly exaggerated"; Dunlap, Van Liere, Mertig, and Jones, 2000). The measure consisted of seven items that were measured on a five-point Likert scale (1 = strongly agree, 5 = strongly disagree). The items consisted of both positively and negatively weighted items, negatively weighted items were recoded prior to analysis so that a high score on the recoded measure indicates more positive autonomous environmental motivation. The measure demonstrated acceptable internal reliability (Cronbach's $\alpha = 0.75$).

Demographics. Finally, respondents were asked to indicate their gender (female coded as 0, male coded as 1), their age (in years), their tenure with the organization (in years and months, recoded to months for analysis) and their job role (coded as shop floor or office based).

Results

We first present a check for Common Method Variance (CMV) and examine zero-order relationships before presenting the results of multiple regression analyses that examined the independent variables as predictors of EGB. Finally, we describe the nature of the interaction between the three constructs.

We first performed Harman's ex-post single factor test to check for CMV (Podsakoff & Organ, 1986). The Exploratory Factor Analysis (EFA) results did not indicate the presence of any single uncorrelated latent variable that significantly explained the majority of covariance amongst the questionnaire items, suggesting that CMV is not an issue within these data (Noblet, Rodwell, & McWilliams, 2006).

Zero order correlations (Table 1) indicate that the demographic variables correlate significantly with the study variables and should be included as controls in the subsequent analyses. Age and job role correlated significantly with autonomous environmental motivation. Gender was negatively correlated, whilst age and tenure were positively correlated, with goal commitment. Age, tenure and job role were all positively correlated with feedback, while gender was negatively correlated. Age, tenure and job role were all significantly positively correlated with EGB, while gender was negatively correlated.

INSERT TABLE 1 ABOUT HERE

To test the direct and interactive relationships between goal commitment, feedback and autonomous environmental motivation on EGB, moderated multiple regression analyses were undertaken. The continuous variables were centered, in line with recommended procedures (Aiken & West, 1991). The regression analyses were run in four steps, in accordance with the recommended procedure for this test (e.g., Arnold & Evans, 1979; Dawson & Richter, 2006). The control variables (gender, age, tenure, and job role) were entered at Step 1, the main effects (goal commitment, feedback and autonomous environmental motivation) at Step 2, the two-way interaction terms (the cross-products of the independent variables) at Step 3, and finally the three-way interaction term (the cross-product of all three independent variables) at Step 4. The results are summarized in Table 2.

INSERT TABLE 2 ABOUT HERE

The control variables entered at Step 1 accounted for a significant 28.4% of the variance in EGB, F (4, 1103) =109.235, p<0.01. Of these, only tenure was found to be a significant predictor, with higher tenure significantly predicting higher EGB (β = 0.51, p <0.01). In Step 2, the direct relationship between feedback and EGB was significant (β = 0.12, p <0.01), however, goal commitment and autonomous environmental motivation were not significant predictors of EGB in the model (F(7, 1100) =65.700, p<0.01, *F Change* (3, 1100) =5.766, p<0.01). The three two-way interaction terms, entered at Step 3, were non-significant (a*b β = -0.06 p >0.05, a*c β = -0.04 p >0.05, b*c β = 0.03 p >0.05) but the three-way interaction term entered at Step 4 was statistically significant (β = -0.09, p <0.01). This therefore supports our premise that there is an interaction between goal commitment, feedback and autonomous environmental motivation in their effects on EGB.

To better understand the nature of the identified interaction, four feedback– goal commitment groups were created and one autonomous environmental motivation slope was plotted per group (Aiken & West, 1991) using Dawson's Excel worksheet (Dawson & Richter, 2006). The slopes are plotted graphically in Figure 1.

INSERT FIGURE 1 ABOUT HERE

We examined the differences between the slopes following good practice (e.g., Perry, Witt, Penney, & Atwater, 2010) and employing Dawson and Richter's (2006) test of slope difference. The slopes difference tests are reported in Table 3.

INSERT TABLE 3 ABOUT HERE

Examining the plot of the interaction and the results of the slopes difference tests provides support for the hypothesized nature of the interaction. In support of our hypotheses, slopes relating to the low feedback groups did not differ significantly from one another. In other words, supporting *Hypothesis 1a*, the groups receiving low levels of feedback did not differ significantly in terms of EGB regardless of the levels of goal commitment or autonomous environmental motivation expressed ($t=-3.19$, $p<0.01$). As predicted by *Hypothesis 1b*, employees with high feedback and low goal commitment showed a significantly positive relationship between autonomous environmental motivation and EGB (gradient of simple slope=0.344, $t=2.077$, $p<0.05$). Also as hypothesized by *Hypothesis 1c*, individuals receiving high levels of feedback on their progress in the eco card program and with high goal commitment showed a significant and negative relationship between autonomous environmental motivation and EGB (gradient of simple slope=-0.400, $t=-4.066$, $p<0.01$).

Additional post-hoc checks

To check for the robustness of our findings, we conducted the three-way interaction test again but this time included the additional data belonging to 40 employees who had responded to the survey but who reported that they were not taking part in the eco card program. We felt that it would be prudent to check that the results held for people who had reasons for not engaging in the intervention at all. We again found the significant 3-way interaction ($\beta = -0.072$, $p < 0.05$).

We then checked that a short-length of tenure was not influencing the findings, e.g., individuals who had been employed by the organization for a short period may not have had time to progress through the initial levels of the eco card program. Of the employees in our sample, 15.2% had a tenure less than 6 months and 17.9% reported a tenure below 12 months. We

conducted our regression analyses again and found that the three-way interaction remained significant when we excluded those employees with tenure below 6 months ($\beta = -0.10$, $p < 0.01$) and when we excluded those with tenure below 12 months ($\beta = -0.11$, $p < 0.01$).

Discussion

Management scholars are increasingly interested in understanding the drivers of EGB and in particular how to promote such behaviors using green HRM (e.g., Andersson et al., 2013; Markoulli et al., 2017; Renwick et al., 2016). Whilst research has been conducted to investigate different PEB change techniques in general (Osbaldiston & Schott, 2012; Semmel et al., 2012) there have been limited evaluations regarding such interventions in the workplace (Davis & Challenger, 2009; Dumont et al., 2017; Paillé & Boiral, 2013; Young et al., 2015). Our over-arching aim was to understand whether employees' autonomous environmental motivation influences the extent to which they engage in such organizational initiatives.

In line with our earlier theorizing, we identified a significant interaction between autonomous environmental motivation, goal commitment and feedback with EGB. Given the well-recognized difficulties in identifying hypothesized interaction effects in applied field settings, this is a significant observation despite the relatively small effect size as compared to laboratory studies (McClelland & Judd, 1993). As expected, there was no significant difference in EGB for those individuals who received little outcome-oriented feedback on their performance – that is, individuals who were unaware of their progress in the program appear to have been neither positively nor negatively affected by their autonomous environmental motivation or commitment to the intervention goals (Hypothesis 1a). Thus, our study reinforces the notion that employees must be aware of their involvement in a green HRM scheme before effects will be

evident. This may seem like an obvious point – indeed, one that should not even be considered a "contribution" - but it is surprising that in most of the pro-environmental intervention studies, an employee's awareness of their progress is rarely considered.

On the other hand, there were significant differences between the groups who reported high levels of feedback. When goal commitment was low, we found the expected positive relationship between strength of autonomous environmental motivation and EGB (Hypothesis 1b). However, when goal commitment was high, there was a negative relationship between autonomous environmental motivation and EGB (Hypothesis 1c). Thus, our research suggests that the extrinsic motivation activated through identification with the intervention goals and frequent reminders about progress towards the goals may have undermined the internalized environmental motivation of individuals. Our results provide support for the crowding-out phenomenon and are thereby congruent with self-determination theory (Ryan & Deci, 2000), suggesting that EGB may differ to the pattern of findings identified with regards crowding-out in other areas of workplace behavior (see e.g., Cerasoli et al., 2014). Our study provides further evidence regarding the nature of rewards or incentives that may contribute to crowding-out. Whilst most previous studies have focused on the influence of financial rewards (van den Broek, et al., 2017), our findings suggest that non-financial incentives such as low value gifts, external recognition and praise may also be sufficient to undermine autonomous environmental motivation.

This interpretation is strengthened through the observation that there was a significant simple slope for the relationship between goal commitment and EGB for individuals who expressed weak autonomous environmental motivation. In other words, the goal-oriented

intervention worked as expected for those who had weak autonomous environmental motivation; it did not work as expected for those who had strong autonomous environmental motivation. This finding suggests that for individuals that have low autonomous motivation toward performing EGB, the goal setting process, supported by feedback and goal commitment, motivates them to perform EGB. Such an interaction offers support to the premise of goal-setting theory (Locke et al., 1981) that strong identification with and commitment to specific and realistic goals, coupled with feedback, should provide a motivating effect towards the target behaviors. It is therefore possible to motivate individuals towards EGB, especially where they do not hold strong autonomous environmental motivation.

The question remains, however, as to how to continue to support the internalized motivation of those employees with strong autonomous environmental motivation. While it may seem counterproductive to focus efforts on this group because they already have high levels of motivation, there is growing evidence that these committed individuals may need support to effectively tackle the contradictions between their observations of organizational action, and their personal commitment to environmental issues (e.g., Wright & Nyberg, 2012; Wright, Nyberg & Grant, 2012). Future research that explores this cohort would certainly be of value to enhance understanding in this area.

Our findings provide the first indication of a crowding-out effect within EGB and demonstrate the complexity of seeking to promote EGB using green HRM interventions. This study goes beyond the evaluation of previous EGB goal-oriented interventions at the group level (e.g., Siero and colleagues, 1996) by exploring individual-level outcomes and moderators. The interaction identified in this study suggests that there are limitations in pursuing interventions

based on engendering external motivation towards EGB. For those individuals who are autonomously motivated towards EGB it is possible that active participation in goal-oriented interventions and the perception of external recognition or rewards may suppress the internal motivation that they would otherwise experience towards the focal behaviors; i.e., feeling that there are expectations and rewards from the organization for engaging in these behaviors may reduce the enjoyment or value that would otherwise be experienced (e.g., Deci et al., 1999). The trade-off between engendering motivation towards specific EGB in individuals with little intrinsic interest or motivation in such behavior, versus undermining the autonomous motivation that may already exist for some employees may limit the ultimate utility of behavior change techniques such as goal-setting.

There was also an unexpected finding. We had anticipated that demographics would influence engagement with the EGB intervention; but the strength of the relationship between tenure and EGB was unforeseen. Within our post-hoc analyses we checked to see whether this may reflect the time needed to progress through the eco card program and to demonstrate the various EGB. This does not appear likely as the three-way interaction was significant even when employees with low tenure were removed. An alternative explanation could be that EGB is in part driven by organizational commitment or citizenship (c.f., Paillé & Raineri, 2015; Robertson & Barling, 2013) relating to tenure, as much as by a motivation to perform environmental behaviors. However, future research is necessary to explore the role of tenure in determining EGB and if so how this might be positively harnessed.

Practical Implications

Our study demonstrates the value for organizations in utilizing goal-oriented approaches in EGB interventions and broader green HRM. Our results support core goal-setting principles (Locke & Latham, 1980; Locke & Latham, 2004) in aiding extrinsic motivation toward EGB goals, however they also indicate that they cannot be used without considering the special requirements of EGB and autonomous environmental motivation.

The good news is that goal-oriented interventions designed at the organizational-level may achieve a motivating effect for individuals who are not autonomously motivated towards the environment. To achieve maximum effect for those workers less interested in the environment, efforts should be made to maximize goal commitment (in addition to providing high-levels of feedback). This may be through ensuring that program goals are stated and communicated appropriately to maximize the potential for workers to feel that they have a personal meaning and importance to them (McCalley & Midden, 2002; Unsworth & Tian, 2017). This could include the use of worker involvement in the goal-setting (Lingard et al., 2001) or requiring reaffirmation of goals during the course of the program.

However, the bad news is that organizations and practitioners need to consider the potential for differential effects across employees from a single EGB intervention (Unsworth et al., 2013) and that there may be winners and losers due to the crowding-out effect. This suggests that it may be necessary to target interventions that elicit extrinsic motivation on subsets of employees and pursue alternative approaches that capitalize on existing environmental interests and motivations for others (c.f., van den Broek, et al., 2017). For example, it might be possible to encourage those with strong autonomous environmental motivation to be more involved in the intervention and to pursue their inherent interest, or to become leaders or change agents.

Limitations and Future Research

As with all studies, there are a number of limitations that could usefully be addressed in further research. First, whilst we have sought to evaluate the effects of a real-world intervention, the timing of the study design precludes us from drawing causal inferences on the relationship between the variables involved. Additionally, we were unable to implement an experimental design because of the pragmatic considerations of working directly in an organizational setting. To allow causal links to be investigated, future research should seek to utilize controlled or quasi-experimental designs to investigate the causal steps anticipated from goal setting theory and the intervention design (e.g., Grant & Wall, 2009). Such designs would also permit researchers to rule out reverse causal or dynamic models, e.g., that progression in a goal-orientated intervention drives greater feedback seeking, commitment towards the goal through perceived time investment or that the intervention changes the participants' autonomous environmental motivation.

Second, we utilized a short individual self-report questionnaire to collect data. Whilst the use of concise measures and a parsimonious conceptual model kept the questionnaire brief, enhanced cooperation with the organization and contributed to the high participant response rate, this did impose constraints. For example, a shortened version of the NEP measure was utilized (Whitmarsh & O'Neill, 2010). All of the measures were piloted during focus groups and in discussions with managers to ensure that they were relevant across all employee groups however, it is possible that the use of a shortened version of this measure might affect its construct validity. In addition, we focused specifically on outcome oriented feedback within our study, however, future research could explore the implications of differing forms of feedback on EGB

also (e.g., self-directed, or process-orientated). Furthermore, future research could adopt qualitative methods to explore the potential for participation in EGB interventions being pursued as a means of providing extra-role interest and variety, beyond largely environmental motivation.

Thirdly, we focused upon employees' engagement in a range of EGB identified within the intervention. It is a strength of the current research that factual assessments regarding performance against the focal intervention behaviors was utilized, however, measures of other EGB that were not part of the intervention would have added to the breadth of the study. Future research should investigate the extent to which goal-setting, or other green HRM techniques, achieve generalized changes in behavior, i.e., spill over from the focal EGB to other EGB not related to the intervention. Current research suggests that performing one environmental action may not spill over to another (Thøgersen, 2013) and that different behavior change techniques may enjoy differing levels of success depending upon the type or domain of the behavior targeted (Osbaldiston & Schott, 2012) and may spill-over from work to home (Davis & Coan, 2015). These issues require closer examination and the use of appropriate methods to assess broader EGB, e.g., supervisor ratings, travel logs, diaries, or observations (Bissing-Olson et al., 2012; Ones & Dilchert, 2012; Young et al., 2015).

Lastly, although we theorize that the differential effects observed between participants may be partly explained by the impact of external regulation (outcome-orientated feedback) on autonomous environmental motivation, the current study does not directly assess this. Future research should directly examine the forms of motivation driving such decisions to engage in and maintain EGB, enabling direct analysis as to any changes in autonomous environmental motivation.

Conclusion

This study set out to explore the factors that interact to predict performance within a green HRM intervention designed to promote EGB and to contribute to the literature by assessing the relevance of goal-oriented approaches in particular. We sought to examine the complex interaction between psychological and goal-relevant boundary conditions that may influence the levels of individual engagement in EGB. In so doing, we found that a traditional intervention used for many other employee change programs, namely goal-setting, worked well for employees who did not hold strong autonomous environmental motivation. Importantly, however, the intervention was less successful for those who held stronger autonomous environmental motivation. In other words, while goal-setting theory was supported for those without strong environmental motivation, crowding-out theory was supported for those with strong environmental motivation. Our study raises a number of important questions regarding the nature of motivation towards EGB and the boundary conditions to EGB and suggests that we cannot simply extrapolate research from other workplace behaviors to employee EGB. We believe this is an important fundamental step in our understanding of how we can increase EGB through green HRM and encourage researchers to determine where other such divergences occur.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments. The study was covered under covered by University of XXXXX ethical approval reference AREA 11-163. Informed consent was obtained

from all individual participants included in the study. This article does not contain any studies with animals performed by any of the authors.

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Variables	*M*	S.D.	1	2	3	4	5	6	7
1. Gender	0.96	0.21	--						
2. Age	37.98	9.32	0.06*	--					
3. Tenure	113.08	80.56	-0.01	0.67**	--				
4. Role	0.07	0.25	-0.41**	0.06	0.12**	--			
5. Enviro. Motivation	3.62	0.71	-0.04	0.10**	0.00	0.07*	--		
6. Goal Commitment	2.99	1.02	-0.08**	0.10**	0.08*	0.03	0.25**	--	
7. Feedback	2.58	0.93	-0.06*	0.12**	0.15**	0.06*	0.17**	0.60**	--
8. EGB	2.36	0.76	-0.06*	0.37**	0.53**	0.11**	0.02	0.08**	0.18*

$N = 1108$, *p<0.05, **p<0.01

***Table 1*: Means, standard deviations and intercorrelations amongst all variables**

IV's B	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Gender	-0.05	-0.05	-0.05	-0.05
Age	0.03	0.03	0.03	0.03
Tenure	0.51**	0.49**	0.49**	049**
Role	0.02	0.02	0.02	0.02
Enviro. Motivation (a)		0.02	-0.01	0.03
Goal Commitment (b)		-0.04	-0.03	-0.02
Feedback (c)		0.12**	0.12**	0.13**
a*b			-0.06	-0.07*
a*c			-0.04	-0.03
b*c			0.03	0.04
a*b*c				-0.09**
R^2 (%)	28.4**	29.5**	30.2**	30.7**
ΔR^2 (%)		1.10**	0.80**	0.50**

N = 1108

IV = Independent Variables

*p<0.05, one-tailed

**p<0.01, one-tailed

N.B. All continuous variables centered.

Table 2: **Summary of moderated multiple regression analysis**

Slope Difference	***t***
1 (High Feedback, High Goals) and 2 (High Feedback, Low Goals)	-3.19**
1 (High Feedback, High Goals) and 3 (Low Feedback, High Goals)	-2.30*
1 (High Feedback, High Goals) and 4 (Low Feedback, Low Goals)	-3.49**
2 (High Feedback, Low Goals) and 3 (Low Feedback, High Goals)	0.61
2 (High Feedback, Low Goals) and 4 (Low Feedback, Low Goals)	0.64
3 (Low Feedback, High Goals) and 4 (Low Feedback, Low Goals)	-0.25

Note. Group numbers correspond with groups listed in *Figure 1*. Slope difference tests calculated with Dawson and Richter's (2006) recommendations.

**p<.001

*p<.01.

Table 3: **Summary of tests of slope difference**

Please cite as: Davis, M.C., Unsworth, K.L., Russell, S.V., & Galvan, J.J. (2019). Can Green Behaviors Really Be Increased for all Employees? Trade-offs for "Deep Greens" in a Goal-Oriented green HRM Intervention. *Business Strategy and The Environment*. DOI:10.1002/bse.2367

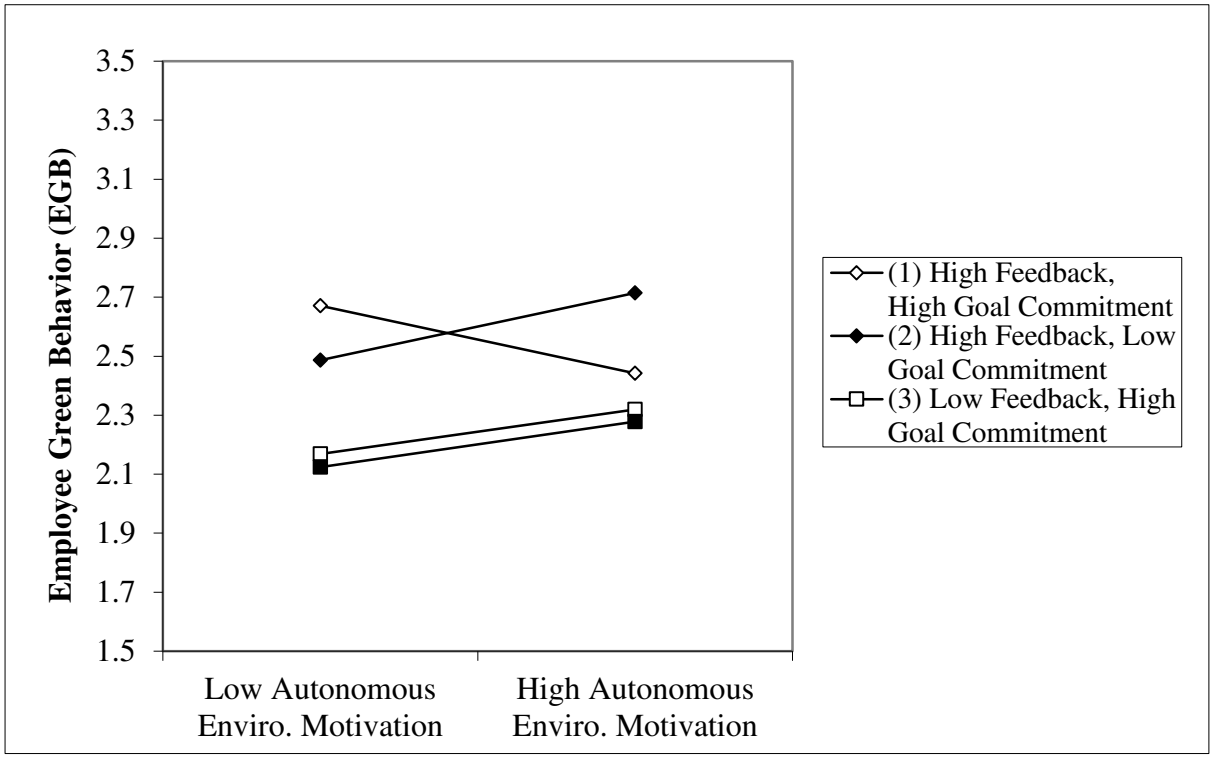

Figure 1: **Plot of three-way interaction between Feedback, Goal Commitment and Autonomous Environmental Motivation with EGB**