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When and How Does In-Role Pro-Environmental Behavior Spill Over to Extra-Role Behavior: Two Experimental Studies in the Retail and Education Industries

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Keywords: Goal commitment, Performance feedback, Pro-environmental behavior, Spillover effect

How and When Does In-Role Pro-Environmental Behavior Spill Over to Extra-Role Behavior? Two Experimental Studies in the Retail and Education Industries

Abstract

Organizations are increasingly introducing green human resource management practices to promote employee pro-environmental behaviors, but engaging in pro-environmental behavior as part of one's role is likely to affect voluntary behavior in complex ways. By integrating theories of goal proximity and crowding-out, we investigate how and when a spillover from employee in-role pro-environmental performance to extra-role pro-environmental behaviors occurs. Using two experiments with employees from the retail (N = 338) and education (N = 448) industries respectively, we found a conditional positive spillover effect of performance feedback regarding employees' in-role pro-environmental behavior on their extra-role pro-environmental behavioral intention, mediated by pro-environmental goal commitment. That is, for employees with low intrinsic motivation to help the environment, perceived in-role pro-environmental behavior progress, indicated by positive feedback, will increase their extra-role pro-environmental behavior intention by increasing their commitment to the pro-environmental goal. However, as expected, in a high intrinsic motivation context this spillover effect was negative (Study 1) or non-significant (Study 2). To summarize, the positive spillover effect (i.e., a perception that employees are progressing well on their in-role pro-environmental tasks will lead to greater engagement in extra-role pro-environmental behavior) only occurs when the employees are not highly intrinsically motivated. Our findings uncover a missing piece in organizational environmental management literature and carry important implications for employee-oriented initiatives.

Keywords: Goal commitment, Performance feedback, Pro-environmental behavior, Spillover effect

Introduction

Research has now recognized the value of employee pro-environmental behaviors in facilitating organizations to achieve environmental goals (e.g., Boiral et al. 2015; Baldassari et al., 2023; Gond & Moser, 2021; Islam et al., 2021). This is because employees are the agents to implement organizational change and practices and have tacit knowledge to identify and cope with complex environmental issues (Boiral, 2009; Chaudhary, 2020; Dumont et al., 2017; Unsworth et al., 2021). To promote employees' engagement in pro-environmental projects, organizations have introduced a series of green human resource management practices (Ahmed et al., 2022; Pellegrini et al., 2018; Yong et al, 2020), including distributing green responsibilities to employees (Pham et al., 2023) and giving them green performance feedback (Davis et al., 2020). Thus, employees are engaging in pro-environmental behaviors both as part of their job, that is in-role, and in more proactive and voluntary ways, that is, extra-role (Dumont et al., 2017; Jackson et al., 2012; Uddin et al., 2021). A few studies have identified determinants of both in-role and extra-role employee pro-environmental behaviors, such as employee pro-environmental attitude (Khalid et al., 2022), ethical leadership (Islam et al., 2020), and green human resource management (Dumont et al., 2017), however to date there has been no consideration of how knowing the performance of the one will affect engagement in the other. This is a problematic omission because we know from pro-environmental spillover literature that both positive and negative spillovers can occur (for reviews, see Nilsson et al., 2017; Thøgersen & Crompton, 2009; Truelove et al., 2014) meaning that increasing engagement in one form of pro-environmental behavior may result in either (or both) an increase or a decrease in the other. Given that organizations are implementing ever more policies, procedures and initiatives designed to increase employee engagement in in-role pro-environmental behavior, it is therefore vital to understand the knock-on effect that working on in-role pro-environmental behaviors would have on engagement in extra-role pro-

environmental behaviors.

The aim of this research was to investigate how and when receiving feedback in in-role pro-environmental tasks influences employees' extra-role pro-environmental behavior. As we shall discuss in detail below, neither organizational environmental nor spillover theorizing provides much guidance in explaining this particular spillover phenomenon. We argue that the proximity perspective of goal theories (e.g., goal gradient theory; Brown, 1948; Hull, 1932; Lewin, 1938; Losco & Epstein, 1977; Miller, 1944) will be most helpful. It suggests that employees' perceived progress in pursuing the pro-environmental goal, which can be reflected by the feedback they receive in pro-environmental tasks, will motivate more goal-relevant behaviors in the future, such as extra-role pro-environmental behaviors (Ballard et al., 2022; Cryder et al., 2013; Gutt et al., 2020). Thus, a positive spillover effect should exist between in-role pro-environmental behavior and extra-role pro-environmental behavior, so that organizations will benefit from introducing initiatives designed to increase participation in in-role pro-environmental behavior. Yet, research into forced pro-environmental behaviors (e.g., charging for single-use carrier bags and waste management policies) discloses a possible crowding-out effect of extrinsically motivated pro-environmental behaviors on individuals' commitment to the pro-environmental goal (Isbanner et al., 2021; Ling & Xu, 2021a) and research into workplace pro-environmental behavior interventions has highlighted the necessity of paying close attention to those who have high intrinsic motivation for the environment (e.g., Blazejewski et al., 2018; Davis et al., 2020). This would mean that organizations would need to avoid introducing these initiatives. Therefore, to help determine recommendations for organizations, we develop hypotheses integrating these different perspectives leading to a model whereby there is an indirect positive spillover effect of in-role pro-environmental behavior on extra-role pro-environmental behavior, via goal commitment, for those low in intrinsic motivation, but an indirect negative spillover effect for those high in

intrinsic motivation.

By exploring the spillover effect of feedback of progress in in-role pro-environmental tasks to extra-role pro-environmental behaviors, the current study strives to contribute to organizational pro-environmental research in three ways. First, we introduce the spillover effect across in-role and extra-role behaviors into the organizational context and therefore extend spillover research in the workplace. It is well known that in-role pro-environmental behavior differs from extra-role pro-environmental behavior based on compliance and initiative respectively (Dumont et al., 2017; Norton et al., 2015), yet we know little about how these two sets of behaviors affect each other. By exploring how performance in organizationally assigned pro-environmental tasks influences an employee's subsequent extra-role pro-environmental behavior, our research contributes to the derivative effect of integrating pro-environmental goals into the "day job".

Second, the current research adds to pro-environmental goal research by incorporating intrinsic motivation to the complex spillover relationship. Spillover research shows confounding findings about how one behavior influences the other (for reviews, see Nilsson et al., 2017; Truelove et al., 2014). For example, Thøgersen and Ölander (2003) found that recycling behavior could promote future pro-environmental purchasing, while pro-environmental purchasing could decrease individuals' future recycling behavior. In addition, many studies have found non-significant effects when positive spillover was expected (Lacroix et al., 2022; Thomas et al., 2016; Poortinga et al., 2013). We integrate goal progress theorizing (e.g., Brown, 1948; Hull, 1932; Lewin, 1938; Losco & Epstein, 1977; Miller, 1944) with crowding out effects (e.g., Deci et al., 1999; Frey, 1997; Frey & Neckermann, 2008) to demonstrate how intrinsic motivation moderates the impact of employees' performance in pro-environmental tasks on their goal commitment and subsequent pro-active goal pursuit (i.e., extra-role pro-environmental behavior). In doing so, we disentangle the inconsistent

predictions of spillover from in-role pro-environmental behavior to extra-role pro-environmental behavior.

Finally, by disclosing the spillover effect of employee pro-environmental behaviors from in-role to extra-role, the current study extends the research on antecedents of employee extra-role pro-environmental behavior. A large body of work already exists in this area, demonstrating the ubiquity and importance of these behaviors (e.g., Francoeur et al., 2021; Unsworth, et al., 2021). Yet while these studies have examined a diverse range of factors at the organizational, team, leader, co-workers and employee levels (e.g., Ahmad et al., 2021; Bissing-Olson et al., 2013; Islam et al., 2023; Kim et al., 2017; Norton et al., 2017; Peng et al., 2021; Saifulina & Carballo‐Penela, 2017; Usman et al., 2023), we believe it is important that we look at the feedback of employee's in-role behaviors: We know that employees will be increasingly involved with in-role pro-environmental behavior therefore we need to understand the effects it will have on employee extra-role pro-environmental behavior.

Theory Development

Spillover from In-Role to Extra-Role pro-environmental behavior

Research on spillover in environmental management originates from government and environmental organizations examining the effectiveness of "foot-in-the-door" techniques to raise residents' pro-environmental behaviors (Freedman & Fraser, 1966); persuading residents to take small steps to protect the environment to arouse ambitious actions in the future (Thøgersen & Crompton, 2009; Truelove et al., 2014). Later research defined spillover as the phenomenon that occurs when individuals' performance of past behavior influences the probability of subsequent behavior and identified three types: spillover across behavior, spillover across time, and spillover across context (Nilsson et al.,2017). Many interventions have been tested with personal and home-based behaviors spanning the three types of spillover (e.g., Elf, Gatersleben, & Christie, 2019; Shreedhar & Galizzi, 2021). However, the limited

research examining pro-environmental spillover research in the workplace has generally focused on spillover across context, namely of employee pro-environmental behaviors transferring from home to work or vice versa (Lacroix et al., 2022; Paillé et al., 2019b; Wells et al., 2016) - overlooking the influence of engaging in one pro-environmental behavior on other pro-environmental behaviors in the workplace, especially the interrelationship between in-role and extra-role pro-environmental behaviors.

Existing spillover literature has generally explained the phenomenon through moral licensing, learning or motivation (see Nash et al., 2017 for a review). Of these, we believe that the first two do not apply to behavior spillover in the workplace: 1) It is questionable whether engaging in in-role pro-environmental behaviors – doing one's job – would be perceived as engaging in moral behavior by employees; and 2) Becoming competent in or re-structuring an in-role task (such as identifying environmentally-friendly suppliers) is not likely to affect one's competence in or view of an extra-role task (such as bringing a reusable coffee cup or avoiding food waste; Bretter et al., 2022) because these often operate in different spheres of working life and comprise different tasks and requirements. Thus, although these existing spillover theories are useful for non-workplace settings, they are limited in explaining spillover amongst employees from in-role to extra-role behavior. We therefore build on the motivation spillover mechanism that appears relevant to this setting to develop a new theoretical model that explains how performance in in-role pro-environmental behavior influences an employee's engagement in extra-role pro-environmental behavior (see Figure 1).

Insert Figure 1 about here

Goal Commitment Approach to Workplace Spillover

As noted above, a number of studies have taken a motivational approach to understand spillover. However, support has been mixed with a number of studies finding no motivational

changes (e.g., Elf et al., 2019; Isbanner et al., 2021; Poortinga et al., 2013; Verfuerth et al., 2019). For example, Höchli et al. (2019) found an overall spillover effect for cycling to work, but the intervention designed to elicit greater commitment to a higher-order goal had no stronger effect than the control condition. Liu et al. (2021) found conservation behavior spillover only when people were already pro-environmentally oriented. Finally, quasi-experiments following plastic bag bans have either detected no change (e.g., Sharp et al., 2010) or only small changes in environmental attitudes (Thomas et al., 2016). We note two elements from these studies. First, the mixed findings indicate that there is likely to be a moderator rather than a simple linear relationship. Second, although the specific mediating variables differ, a growing number of studies are focused either indirectly (e.g., pro-environmental values and identities; Fanghella et al., 2019; Whitmarsh & O'Neill, 2010) or directly (e.g., Höchli, et al., 2019; Liu et al., 2021; Nilsson et al., 2017) on goals. Thus, we looked to the goals literature to build our hypotheses.

Following spillover scholars (e.g., Capstick et al., 2019; Liu et al., 2021; Wolstenholme et al., 2020), we began by considering in-role and extra-role pro-environmental behavior as two sets of behaviors related to a superordinate pro-environmental goal. A goal refers to the representation of the desired end state that serves as a reference point for evaluating behavior (Austin & Vancouver, 1996) and in this paper, we are focused on the higher-order goal of helping the environment. In this way, the proximity perspective (e.g., goal gradient theory; Brown, 1948; Hull, 1932; Lewin, 1938; Losco & Epstein, 1977; Miller, 1944) – examining how 'means' or behaviors, such as in-role and extra-role pro-environmental behavior can achieve the superordinate goal – becomes relevant. From this perspective, as employees' performance in in-role pro-environmental behavior increases, the physical or temporal distance toward reaching the pro-environmental goal is reduced, thus progression through achieving a task motivates superordinate goal pursuit (Gutt et al., 2020; Koo & Fishbach, 2012). One's

eagerness to achieve the goal (Roberts & Fishbach, 2020) and reap the perceived contribution of their goal-pursuit behaviors (Cryder et al., 2013; Heath et al., 1999) increases. When people perceive great value and contribution from their goal-pursuit behavior, they will expect fast progress and success, which motivates them to increase their efforts in goal-pursuit (Carver & Scheier, 1998; Cheema & Bagchi, 2011). Thus, we expect that progression in in-role pro-environmental behavior will make employees more motivated to increase their efforts to bring goals to completion. Such motivation, or determination to reach a goal, is the definition of goal commitment (Locke et al., 1981; Locke & Latham, 1990; Hollenbeck & Klein, 1987; Klein et al., 2012).

Employees with higher goal commitment care more about the goal, are more dedicated to the goal, and more likely to have a responsibility for the goal (Klein et al., 2014). As a result, employees are more willing to devote effort to achieve the goal (Fishbach et al., 2009; Koo & Fishbach, 2012), even when the efforts are not recognized or compensated by the organization. Research has shown the positive effect between individuals' goal commitment and effort. For example, Deichmann and Stam (2015) found that employees' commitment to ideation was positively related to the number of ideas they proactively submitted. The results of Bakhsh et al. (2011) and Ng and Feldman (2011) showed that employees' commitment to the organization's goals was positively related to their organizational citizenship behavior. Fabiny and Lovaš (2018) explored the impact of students' commitment to the graduation goal on their effort and disclosed a positive relationship. There is a wealth of evidence demonstrating the effect of goal commitment on performance (see Klein et al., 1999) and constructs related to commitment in the environmental literature also support this premise (e.g., Paillé & Morelos, 2017; Ren et al., 2022; Robertson & Barling, 2013; Zheng et al., 2021). Therefore, we suggest that, in general, there will be positive spillover from in-role to extra-role pro-environmental behavior through an increase in pro-environmental goal commitment.

Nonetheless, because in-role pro-environmental behavior is "forced" upon employees, there are some indications that we need to consider this relationship in greater detail. Some spillover scholars, following non-significant results, have suggested that behaviors driven by extrinsic motivation do not spill over to related behaviors because of the crowding out of intrinsic motivation (e.g., Austin et al., 2011; Blazejewski et al., 2018; Ling & Xu, 2021a; Poortinga et al., 2013; Thomas et al.; 2016; Truelove et al., 2014). However, to our knowledge, this premise has not been developed and tested a priori. Thus, we now consider how the positive spillover expected from the goal proximity perspective would be affected by intrinsic motivation.

Moderation Effect of Intrinsic Motivation

Intrinsic motivation is defined as the innate tendency to engage in an activity because the activity per se is interesting and pleasurable and provides people with positive emotional experiences; extrinsic motivation is generated from external factors such as obligation or reward (Gagné & Deci, 2005; Ryan & Deci, 2000). More specifically, individuals with high intrinsic motivation for the environment normally derive pleasure and satisfaction from performing pro-environmental behaviors (Kruglanski et al., 2018; Fishbach & Woolley, 2022; Pelletier et al., 1998), while individuals with low intrinsic motivation are more likely to be attracted by the reward (or punishment) from achieving (or not) pro-environmental goals (Menges et al., 2017). Unfortunately, research has often shown that these two types of motivation are not additive, but that instead there is a crowding-out effect (Frey, 1994, 1997).

The crowding-out effect was initially noticed in behavioral economics based on the negative effects of incentivizing particular behaviors that are normally engaged in altruistically (e.g., Frey, 1997; Frey & Oberholzer-Gee, 1997). The same notion underpins self-determination theory which suggests that constraints on one's behavior, even if they may be motivating in and of itself, reduces one's willingness to engage in the behavior (Deci et al.,

2017; Ryan & Deci, 2000). In the environmental literature, existing research has shown that incentives and punishment for pro-environmental behavior crowd-out peoples' pre-existing intrinsic motivation for pro-environmental behaviors resulting in decreased overall motivation (Blazejewski, et al., 2018; Davis, et al., 2020; Ling & Xu, 2021b).

Thus, the motivating potential of an extrinsic motivator will depend upon the level of pre-existing intrinsic motivation. When an individual has high pre-existing intrinsic motivation, extrinsic motivation will result in crowding-out and an overall negative effect, but when the individual has low intrinsic motivation then the effect of the extrinsic motivation will be positive (see Rode et al., 2015). As noted above, spillover research into forced behaviors has often found non-significant results and has explained this through the crowding-out effect; we believe that if they had measured intrinsic motivation, they might have found that positive spillover occurred for some people (those low in intrinsic motivation) but negative spillover for others (those high in intrinsic motivation).

In the case of employee pro-environmental behavioral spillover, in-role pro-environmental behavior is compulsory, expected and required by organization, and represents external regulation for employees' behaviors (Ones & Dilchert, 2012; Uddin et al., 2021). Therefore, motivation stemming from its performance is based on extrinsic factors (Tian et al., 2020). As employees receive positive feedback from an increase in in-role pro-environmental behavior, they are confronted with increasingly instrumental values for their behaviors. Thus, feedback regarding high progress in in-role pro-environmental behavior will harm the pro-environmental goal commitment of those who are intrinsically motivated for pro-environmental behavior, which in turn, will decrease employees' intention to conduct extra-role pro-environmental behavior. We therefore predict that negative spillover, via goal commitment, will occur for those who are intrinsically motivated to help the environment. However, for those who have low pre-existing intrinsic motivation for pro-environmental goals,

there will be no crowding-out effect. As a result, they will retain the extrinsically motivating effect of goal progress on pro-environmental goal commitment, leading to positive spillover. Overall, therefore, there is a positive effect of progress in in-role pro-environmental behavior on goal commitment leading to increased engagement in extra-role pro-environmental behavior for those who are not intrinsically motivated; but a negative effect on goal commitment, and subsequent extra-role pro-environmental behavior, for those who are intrinsically motivated to help the environment. Accordingly, we propose:

Hypothesis 1: There will be a conditional indirect relationship between feedback of progress in in-role pro-environmental behavior and engagement in extra-role pro-environmental behavior via environmental goal commitment, such that

(a) positive feedback of progress in in-role pro-environmental behavior will lead to greater environmental goal commitment and subsequent extra-role pro-environmental behavior for employees with low environmental intrinsic motivation; but

(b) positive feedback of progress in in-role pro-environmental behavior will lead to lower environmental goal commitment and subsequent extra-role pro-environmental behavior for employees with high environmental intrinsic motivation.

We conducted two experimental studies to test our hypotheses. Study 1 introduced an events-based experiment to test the hypotheses with a retail work sample using the participants' own levels of intrinsic motivation. Study 2 was designed to replicate and extend this by adopting a vignette-based experiment with an educational work sample. In this second study intrinsic motivation was manipulated; moreover, we included goal attainment expectancy to check that our underpinning theorizing was supported. Our research was reviewed and approved by a university research ethics committee and ethical approval was granted under protocol number [[redacted]-378].

Study 1

Participants, Design and Procedure

We recruited working adults from the retail industry in the UK through the ethically-approved online survey platform Prolific. A total of 403 participants were randomly assigned to either the negative and positive feedback on in-role pro-environmental behavior progress condition. They received a small payment equivalent to £11.50 (US$13.50) per hour from Prolific for their time. We included an attention check (see below) which was not completed appropriately by 15 participants, and 12 participants had missing data for key variables, thus the remaining data set comprised 376 participants. As with Ahmad et al. (2023), we utilize G*Power, as recommended by Faul et al. (2009) to perform a medium effect-size power analysis for a linear multiple regression. The number of tested predictors was set to 4, total number of predictors was set to 8, with a target power of 0.80, significance level (α) of 0.05, and an effect size of 0.1. This analysis resulted in an estimated sample of 85, verifying that our final sample size is sufficient. Of the 376 participants, 73.40% were aged between 18-35, 69.41% were females, and 41.07% had a bachelor's degree or above.

Procedure and Manipulation

The experiment consisted of three main sections: assessment of true in-role pro-environmental performance, performance feedback intervention, and measurement of the variables. To begin though, participants were asked to read an introduction about the research purpose and data policy before deciding whether to take part in the experiment. After providing consent, participants were asked to report their performance of 15 in-role pro-environmental behaviors in the past two weeks from 0 (never) to 4 (always): As we specifically recruited retail employees, this included items such as "I minimized the volume of packaging I used if I must put package on products" and "I immediately closed freezer doors after arranging food". If any of the tasks were not expected by the participants' company, job, or leader, in the workplace,

they were asked to choose "not applicable". We calculated the participants' actual score of in-role pro-environmental behavior out of 10 using the formula $\sum_1^{15} v_i \times a_i)/6$, where i represents the number of the task, v represents the value of the specific task, a represents whether the in-role pro-environmental task was applicable to the participants, and 6 was used to transfer the scale of in-role pro-environmental behavior from 0-60 (15 statements with a possible high score of four) to 0-10.

We then used piping logic within Qualtrics survey software to present this score back to the participant and manipulate the feedback on employees' in-role pro-environmental behavior progress. The manipulation was based on Fishbach et al. (2006), whereby we manipulated feedback by guiding them to make upward vs. downward comparisons with others' pro-environmental performance, thus, activating their perception of low progress vs. high progress in helping the environment. Specifically, we provided participants with their scores and told them that the average score of pro-environmental behaviors in our past survey was 2 (vs. 8) in the positive (vs. negative) feedback group. Research has shown that asking people to recall concrete actions rather than abstract values in the recent past rather than a long time ago can activate their concrete construal level and lead them to construe the recent events as progress toward the goal (Conway & Peetz, 2012). Thus, by asking participants about their true performance in the past week of several pro-environmental behaviors often included in jobs within the retail industry, we activated their concrete construal for their performance; then by asking participants to compare their score against a high or low standard, they are more likely to perceive low or high progress in in-role pro-environmental behaviors.

As we were using participants' true in-role pro-environmental behavior scores, we had to exclude those in the positive feedback condition who scored lower than our standard (that is, they had a score lower than 2; 30 participants) and those in the negative feedback condition who scored higher than our standard (that is, they had a score higher than 8; 8 participants).

This left our final sample of 338 participants, with 183 in the negative feedback condition and 155 in the positive feedback condition.

Following the manipulation, participants were asked to rate their perceptions of goal commitment to the pro-environmental goal, intentions to engage in extra-role pro-environmental behaviors in the next two weeks, intrinsic motivation for pro-environmental behaviors, as well as reporting on a manipulation check and control variables. Finally, we debriefed our manipulation for feedback on goal progress and re-affirmed their consent for inclusion.

Measures

Attention check. To ensure that participants carefully read our experimental materials, we asked participants to rate whether their in-role pro-environmental behavior score was higher or lower than the average we have found in previous research following the intervention.

Pro-environmental goal commitment. We measured pro-environmental goal commitment using the four-item scale of Klein et al. (2014). This scale was also used by other studies, such as Klein et al. (2020) and Lount et al. (2017) to measure their commitment to the career and competition goals (Cronbach αs were 0.95 and 0.96 respectively). In our Study, participants were asked to rate their attitude towards the goal of helping the environment from 1-not at all to 5-completely. An example was "How committed are you to this goal?" The Cronbach α in this study was 0.93.

Extra-role pro-environmental behaviors intention. To measure participants' intention for performing extra-role pro-environmental behaviors in the future, we used a four-item formative scale adapted from Kim et al. (2017) to fit with retail employees. The original scale was constituted with six items and was widely used to measure employees workplace voluntary pro-environmental behaviors (e.g., Kim et al., 2019, $\alpha = 0.86$; Li et al., 2023, $\alpha = 0.91$; Zhang et al., 2021, $\alpha = 0.83$). Participants were asked to rate to what extent they intend to do the

behaviors such as “Recycle reusable things in my workplace” in the next two weeks (1- Strongly Disagree; 5- Strongly Agree; $\alpha = 0.60$).

Manipulation check. We used Wanberg, Zhu, and Van Hooft,’ s (2010) six-item goal progress scale, which is also used by studies including Song et al. (2023; $\alpha = 0.88$) and Koopman et al. (2016; $\alpha = 0.83$), to check if we successfully manipulated participants’ feedback on in-role pro-environmental behaviors progress. Specifically, we asked participants to rate their agreement with the statements about the goal of protecting the environment (1- Strongly Disagree; 5- Strongly Agree; e.g., “I made good progress on this goal in the past week”). The Cronbach α in this study was 0.88.

Intrinsic motivation for pro-environmental behaviors. Intrinsic motivation for pro-environmental behaviors was measured using the three-item intrinsic work motivation scale of Gagné et al. (2015). An example was “I put or will put effort in doing things for the environment because I have fun doing things for environment” (1- Strongly Disagree; 5- Strongly Agree). This scale was widely used to measure intrinsic motivation, including studies such as Hewett and Leroy (2019; $\alpha = 0.92$) and Taris et al. (2020; $\alpha = 0.85$ (Time 1) and 086 (Time 2)). The Cronbach α in this study was 0.85.

Control variables. To exclude the potential impact of workplace factors on our key variables, we measured participants’ perceived organizational environmental support by the four-item measure of Paillé and Valéau (2021; $\alpha = 0.87$), green human resource management by the six-item scale of Dumont et al. (2017; $\alpha = 0.93$), and in-role pro-environmental score to isolate spillover from broader pro-environmental values (Ansari et al., 2021; Cantor et al., 2012; Graves & Sarkis, 2018). In addition, we controlled for participants’ gender which has been shown to be related to pro-environmental behavior (Paillé & Valéau, 2021). Since participants’ age and educational background were not significantly related to other variables in the model in this sample, we did not control for them (Bernerth & Aguinis, 2016).

Results and Discussion

Descriptive statistics, correlations and scale reliabilities are presented in Table 1. Participants' perception of progress in in-role pro-environmental behaviors in the positive feedback group (the mean value (M hereafter) = 3.45, the standard deviation (SD hereafter) = 0.62) was significantly higher than in the negative feedback group (M = 3.06, SD = 0.73; F = 27.37, $p < 0.001$, $\eta_p^2 = 0.08$). Hence, we successfully manipulated feedback on in-role pro-environmental behavior progress.

Insert Table 1 about here

To test the hypotheses, we conducted bootstrapping analysis (resampled 1000 times) following the recommendation of Preacher et al. (2007) in Mplus 7.4. Results are listed in Table 2. Consistent with our hypothesis, there was a negative and significant interactive effect of feedback and intrinsic motivation on pro-environmental goal commitment (β = - 0.23, p = 0.008). In addition, pro-environmental goal commitment was positively and significantly related to employee extra-role pro-environmental behavior intention (β = 0.27, $p < 0.001$). Moreover, we tested the indirect effect of feedback on extra-role pro-environmental behavior intention as moderated by intrinsic motivation and found that this moderated mediation effect was significant (index of moderated mediation = - 0.06, with a 95% confidence interval (CI hereafter) of [- 0.12, - 0.01]).

Insert Table 2 about Here

We next used the Johnson–Neyman technique to identify regions of moderator values at which the indirect effect is significantly different from zero (Gardner et al., 2017; Preacher et al., 2006). The 95% confidence bands derived Johnson–Neyman technique were presented in Figure 2. In Figure 2, the X-axis represents values of intrinsic motivation, expressed in units of the standard deviation. For example, when the x-axis is set to 0, it represents the mean of

intrinsic motivation. For example, when the X-axis is set to -2, it represents the mean minus double the standard deviation of intrinsic motivation The Y-axis represents the effect size of feedback on employee extra-role pro-environmental behavior via pro-environmental goal commitment. The solid line represents the trend of the indirect effect with intrinsic motivation, and the dashed line represents the 95% confidence bands. According to Figure 2, the indirect effect was positive and significant when intrinsic motivation was lower than 2.10 (M-1.22*SD), thus providing support for Hypothesis 1a. The indirect effect was negative and significant when intrinsic motivation was higher than 3.99 (M+1.10*SD), providing support for Hypothesis 1b.

Insert Figure 2 about Here

We checked that the controls were empirically and theoretically related to the mediating or dependent variable before using (Bernerth & Aguinis, 2016). However in accordance with the current best-practice, we conducted robustness tests without the control variables (see supplementary materials). These provided further support for the positive indirect spillover effect for employees who had low intrinsic motivation, but the negative indirect spillover effect for those with high intrinsic motivation was no longer significant. Given the strengths of our experimental design, we therefore feel confident that positive spillover from in-role to extra-role pro-environmental behavior, via goal commitment, occurs for those who are not intrinsically motivated. However, the mixed support for the negative spillover hypothesis led to the need to replicate our findings with a second study.

Study 2

Study 1 showed support for a positive indirect effect of feedback on in-role pro-environmental behaviors progress on extra-role pro-environmental behaviors via pro-environmental goal commitment when employees have low level of intrinsic motivation for pro-environmental behavior (i.e., Hypothesis 1a) and a negative indirect effect when employees have low level of intrinsic motivation (i.e., Hypothesis 1b). To replicate, generalize

and extend these results, we conducted Study 2 with a 3 (feedback on in-role pro-environmental behavior progress: negative vs. moderate vs. positive) × 2 (intrinsic motivation: low vs. high) between-subjects design in the education industry. In addition, we included the previously unmeasured theorized mechanism of expectancy.

Participants, Manipulation Design and Procedure

A total of 450 participants from school workers in the UK were recruited through the Prolific platform. Only participants who had previously reported that their job involved teaching were invited to participate and they were paid, on average, the equivalent of £10.62 ($12.50) per hour. They were randomly assigned to the six groups. We excluded cases who failed all the attention checks (N = 2), leaving a sample of 448 participants, with 76 in the positive feedback-high intrinsic motivation condition, 74 in the moderate feedback-high intrinsic motivation condition, 75 in the negative feedback-high intrinsic motivation condition, 73 in the positive feedback-low intrinsic motivation condition, 77 in the moderate feedback-low intrinsic motivation condition, and 73 in the negative feedback-low intrinsic motivation condition. Similar to Study 1, we cross-verified whether we have obtained sufficient sample size through a medium effect-size power analysis for an ANCOVA utilizing G*Power (number of groups = 4, number of covariates = 2, df = 2, power = 0.80, α = 0.05, and effect size = 0.25; Faul et al., 2007). This analysis resulted in an estimated sample size of 158, suggesting that our sample size is sufficient. Of the 448 participants, 34.82% were aged between 18-35, 73.44% were females, and 89.51 % had a bachelor's degree or above.

After providing consent to participate, all participants were asked to imagine themselves as a biology teacher working at (the fictional) State High School and read a scenario that introduced the pro-environmental goal (i.e., help the school to meet the standard of the National Green Schools Certification) and the in-role tasks (i.e., incorporate environmental education in the curriculum and increase students' environmental literacy).

Next, we manipulated participants' feedback on in-role pro-environmental behavior progress by telling them the progress they have made and the effort they still needed to invest. We used both text and graphical images to increase comprehension (see Figure 3). Specifically, in the negative feedback group, participants were told that they have made little progress in helping meet the two requirements for the National Green Schools Certification, and that they were far from finishing their task. The graphs indicated the object of each task (i.e., incorporate environmental education across 10% of the curriculum and have at least 80% of students in a class pass an environmental literacy examination) and their specific progress in that task (i.e., 2% of classes integrated environmental education and 20% of students passed the environmental literacy examination). In the moderate feedback group, participants were told that they had made some progress in helping to meet the two requirements for the National Green Schools Certification, and they were more than halfway to finishing their task (7% and 60% on the graphical images). In the positive feedback group, participants were told that they had made a lot of progress in helping to meet the two requirements for the National Green Schools Certification, and that they were close to finishing their task (9% and 75% on the graphical images).

Following Grant and Berry (2011), we manipulated participants' intrinsic motivation by altering the feedback from others in a similar experience and the way in which participants received the in-role pro-environmental task. In the high intrinsic motivation condition, participants were advised that a friend told them that "it was interesting to incorporate environmental education in the class", and "she and her students really enjoyed" it and "got a lot of pleasure" from environmental education. In addition, the participant was told that they had proactively applied to take on the task. In the low intrinsic motivation condition, participants were advised that a friend told them that "it was not that interesting to incorporate environmental education in the class", and "she and her students did not enjoy" it and "got little

pleasure" from environmental education. In this condition, the participants were told that they had been forced to take on the task.

Finally, participants were asked to rate their perceptions of pro-environmental goal commitment, positive affect, goal attainment expectancy, extra-role pro-environmental behavioral intention in the next two weeks, manipulation checks, and their demographic information.

Measures

Attention checks. We included four attention check questions concerning a) Participants' role in the vignette, b) The requirement that the school needed to meet to get certification, c) The reason participants took on the pro-environmental task, and d) The progress of participants in the pro-environmental task. As discussed before, two participants failed all the attention check questions and thus, they were excluded from the analysis. In addition, 118 participants failed at least one of the attention check questions. To be conservative, we kept these participants in our analyses, however we checked the robustness our results by excluding them and only including those who passed all the attention check questions – these additional statistics are provided in the supplementary materials but, in sum, demonstrated the same findings.

Pro-environmental goal commitment, extra-role pro-environmental behavior intention, and manipulation check for feedback. We used the same scales as Study 1 to measure these variables and Cronbach αs demonstrated reliability (0.94, 0.82, and 0.96; respectively).

Expectancy of goal attainment. Following Tubbs et al. (1993), we asked participants to indicate the possibility that they will attain the goal from 0 to 100%.

Manipulation check. Consistent with Grant and Berry (2011), we measured participants' intrinsic motivation by the seven-item task interest scale (e.g., "I enjoyed doing this task very

much"; $\alpha = 0.95$) and the seven-item freedom of choice scale (e.g., "I did this activity because I wanted to"; $\alpha = 0.96$) from Ryan et al. (1991).

Control variables. Given that our intrinsic motivation manipulation might influence affect, we measured participants' positive affect using the ten-item scale of Watson et al. (1988). Examples of positive affect include "Attentive", "Interested", and "Enthusiastic" ($\alpha = 0.94$). In addition, we controlled for participants' age given existing research highlights a relationship with pro-environmental behavior (Wiernik et al., 2013). Participants' gender and educational background were not controlled since they were not significantly related with other variables in the model (see Berneth & Aguinis, 2016). As in Study 1, we conducted robustness tests without the control variables (see supplementary materials).

Results and Discussion

Descriptive statistics, correlations and scale reliabilities are presented in Table 3.

Insert Table 3 about here

Analysis of variance (ANOVA) showed that participants' perception of task interest and choice differed significantly between low intrinsic motivation ($M_{task\ interest} = 2.67$, SD = 0.95; $M_{choice} = 1.80$, SD = 0.81) and high motivation groups ($M_{task\ interest} = 3.96$, SD = 0.69; $M_{choice} = 4.17$, SD = 0.72; $F_{task\ interest} = 267.47$, $p < 0.001$, $\eta_p^2 = 0.37$; $F_{choice} = 1057.08$, $p < 0.001$, $\eta_p^2 = 0.70$). Thus, we successfully manipulated participants' intrinsic motivation for the pro-environmental behavior. There was also a significant main effect of feedback group on perceived in-role pro-environmental behavior progress (F = 621.62, $p < 0.001$, $\eta_p^2 = 0.79$). Post Hoc tests showed that participants in the negative feedback group (M = 2.46, SD = 0.66) perceived significantly lower goal progress than those in the moderate feedback (M = 4.29, SD = 0.53; 95% CI = [1.68, 1.98]) and positive conditions (M = 4.55, SD = 0.46; 95% CI = [1.93, 2.24]). In addition, perceived goal progress in moderate and positive feedback groups were significantly different to each other ($\Delta M = 0.26$, 95% CI = [0.10, 0.41]). We therefore

successfully manipulated feedback in in-role pro-environmental behavior progress.

To test our hypotheses, similar to Study 1, we conducted bootstrapping analysis (resampled 1000 times). In particular, we followed the recommendation of Hayes and Preacher (2014) for statistical analysis with a multicategorical independent variable and used the indicator coding approach to create two dummies for the feedback: moderate feedback (0-no, 1-yes) and positive feedback (0-no, 1-yes). Results are listed in Table 4 and Table 5.

As shown in Table 4, the interactive effect of positive feedback and intrinsic motivation on pro-environmental goal commitment was negative and significant (β = - 0.44, p = 0.003). Similarly, the interactive effects of moderate feedback and intrinsic motivation on pro-environmental goal commitment was also negative and significant (β = - 0.32, p = 0.03). In addition, pro-environmental goal commitment was positively and significantly related to employee extra-role pro-environmental behavior intention (β = 0.20, p < 0.001). The results are generally consistent with Hypothesis 1.

According to Table 5, the bootstrapping results further show that the moderation effect of intrinsic motivation on the indirect effects of moderate and positive feedback on extra-role pro-environmental behavior intention via pro-environmental goal commitment were significant (indexes of moderated mediation = - 0.09 and - 0.07 respectively, with 95% CIs of [- 0.17, - 0.03] and [- 0.15, - 0.01] respectively). Specifically, in the low intrinsic motivation group, compared with employees with negative feedback, the indirect effects of positive and moderate feedback were positive and significant (indirect effect = 0.10 and 0.09 respectively, with 95% CIs of [0.05, 0.17] and [0.04, 0.16]), supporting Hypothesis 1a. However, in the high intrinsic motivation group, the indirect effects of positive and moderate feedback were non-significant (indirect effect = 0.01 and 0.02 respectively, with 95% CIs of [- 0.03, 0.05] and [- 0.01, 0.06]), as compared with participants with negative feedback in in-role pro-environmental behavior. Thus, Hypothesis 1b was not supported.

Insert Table 4 and Table 5 about here

Supplementary Analyses

Our theorizing relied on an implicit assumption that progress feedback led to a perception of goal attainment expectancy. Thus, to check this premise we tested whether intrinsic motivation moderated the effect of feedback on in-role pro-environmental behavior progress on extra-role pro-environmental behavior via employees' goal attainment expectancy perception and subsequent pro-environmental goal commitment (see Figure 4). Consistent with our theorizing, results showed a negative and significant interaction effect of goal attainment expectancy and intrinsic motivation on pro-environmental goal commitment (β = - 0.01, p = 0.02), negative and significant conditional effects of positive (vs. negative) and moderate (vs. negative) progress condition on extra-role pro-environmental behavior via goal attainment expectancy and subsequent pro-environmental goal commitment (β = - 0.09 and – 0.08 respectively, with 95% CIs of [- 0.20, - 0.01] and [- 0.18, -0.01] respectively). Thus, the underpinning premise is supported.

General Discussion

The aim of this research was to explore the conditions under which the feedback that employees' receive from engaging in organizationally-endorsed, in-role pro-environmental tasks affected their engagement in voluntary extra-role pro-environmental behaviors. Given that businesses are increasing their support and requirements for employees to behave in a pro-environmentally friendly way (i.e., in-role pro-environmental behavior), this is an increasingly important question to answer. With two experimental studies among full-time employees in the retail and education industries, we found the expected positive spillover effect for those low in intrinsic motivation: Greater progress in in-role pro-environmental behavior led to greater commitment to the pro-environmental goal and subsequent positive spillover to extra-role pro-environmental behavior. The story was a bit more complicated for employees who were high

in intrinsic motivation, however. We found some indication of the negative spillover effect we expected from a crowding-out effect in Study 1 however this finding did not occur in Study 2 where we manipulated intrinsic motivation. Although we cannot support the crowding-out theorizing, we can nevertheless conclude from our two rigorous studies that the positive spillover from in-role pro-environmental behavior to extra-role pro-environmental behavior via pro-environmental goal commitment weakens as employees' intrinsic motivation increases. As we shall discuss below, both the expected and unexpected findings of our experimental studies provide substantial insights for practitioners and organizations wishing to improve their environmental performance as well as scholars in both organizational and environmental disciplines.

Theoretical Implication and Directions for Future Research

This research broadens our understanding of pro-environmental behavior in three ways. First, we build on and extend research into environmental spillover effects in the workplace. The current knowledge regarding spillover in the private setting is extensive with examinations of positive spillover, negative spillover, and no spillover across different context, temporal, and behavioral types (e.g., Catlin & Wang, 2003; Puntiroli et al., 2022; Rashid & Mohammad, 2011, 2012; Thøgersen & Ölander, 2003; Truelove et al., 2014; Urban et al., 2019; Van der Werff et al., 2014). Yet pro-environmental behavior in the workplace is substantively different to pro-environmental behavior outside work and these differences in scope and context mean that we cannot simply apply findings from the private sphere to the workplace (see Ones & Dilchert, 2012). The limited attention given to pro-environmental spillover at work has tended to focus on the contextual spillover, demonstrating relationships between pro-environmental behavior in the home and work settings (e.g., Lacroix et al., 2022; Littleford et al., 2014; Paillé et al., 2019b; Wells et al., 2016). Our model enriches this stream of research by highlighting an additional form of spillover across two typical forms of workplace behavior: in-role behavior

and extra-role behavior. We have demonstrated that this phenomenon does exist and, in doing so, we open a new area of research for organizational and environmental scholars. Given the importance and prevalence of both in-role and extra-role pro-environmental behaviors, we feel it is vital that more researchers follow our footsteps and understand the interactive effects that may be occurring across these two behaviors.

Our findings further underscore why we need to examine these interrelationships across the two types of behaviors: We found that the positive spillover relationship from in-role pro-environmental behavior to extra-role pro-environmental behavior occurred for some people but not others. Thus, in combining knowledge from goals, motivation and spillover perspectives, we have been able to broaden our understanding of why employees' progress in assigned pro-environmental tasks can promote or undermine their extra-role pro-environmental behavior. First, we found that employees' commitment to the pro-environmental goal plays a critical mediating role. Most behavioral spillover research in private settings has either not specified the mediating mechanism (e.g., Höchli et al., 2019; Liu et al., 2021; Puntiroli et al., 2022) or has focused on learning (e.g., Lauren et al., 2016; Thøgersen & Noblet, 2012; Ye et al., 2022) or self-perception (e.g., Lauren et al., 2019; Poortinga et al., 2013; Truelove et al., 2021) mechanisms. Yet these are much less relevant in a work setting where in-role and extra-role pro-environmental behaviors are likely to be based on different knowledge and skills, and employees often take on different identities (e.g., occupational identity, Phelan & Kinsella, 2009; professional identity, Mitchell & Boyle, 2015; and family identity, Houkes et al., 2008). Instead, we were guided by the goals literature and identified a more general motivational construct as the mechanism. Goal commitment has been examined as a moderator in previous spillover research (Liu et al., 2021) but by positioning it as the mediator we are able to pinpoint the critical step between spillover and no spillover. Now that we have identified commitment as the mechanism, we encourage other scholars to identify additional variables and

interventions that might strengthen (or weaken) this relationship.

Interestingly, our results did not fully support our negative spillover hypotheses. We believe that, ultimately, this is good news – it means that, in general, organizations can continue to grow the number of in-role pro-environmental behavior tasks that are assigned to employees without fear of too many negative effects. It has been suggested in the spillover literature that "forced" behaviors may not result in spillover due to the need for intrinsic motivation (e.g., Thomas et al., 2016; Poortinga et al., 2013) and some pro-environmental initiatives have been less successful than expected, presumably due to crowding out (e.g., Davis et al., 2020). Yet, we found it noteworthy that the crowding-out effect only occurred for very high levels of intrinsic motivation and was not replicated in Study 2. Instead, those who are intrinsically motivated appear to be less motivated by the feedback about progress in in-role pro-environmental behavior than those who are not. We believe that an integrative principle proposed by Diefendorff and Lord (2008) can explain this finding – they suggest that feedback on progress is considered only when it is aligned with the individuals' personal goal content. They give the example of a person who has a learning goal but whose feedback is based on performance against others – this is a mismatch and will result in the person being less sensitive to the feedback and not gaining a subsequent increase in goal commitment. It is striking that Diefendorff & Lord (2008) highlighted the vulnerability of more intrinsically motivated goals to this potential mismatch (p.176). We therefore suggest that future research examines the extent to which employees pay attention to the in-role pro-environmental behavior progress feedback to determine whether this may account for the findings of those who are more intrinsically motivated.

Our final contribution is to building a greater understanding of the antecedents of employee voluntary pro-environmental behavior. It is clear from the imbalance of research into in-role and extra-role pro-environmental behavior (see Francoeur et al., 2021; Unsworth &

McNeill, 2017) that these proactive and voluntary behaviors are a vital part of an organization's environmental performance. By identifying the conditional positive and negative impacts of feedback indicating employees' performance in in-role pro-environmental behavior, we add to the knowledge base of employee pro-environmental behavior literature. Indeed, although existing research on the antecedents of employee voluntary pro-environmental behavior focuses on green performance management of green human resource management (e.g., Saeed et al., 2019; Yong et al., 2020), they mainly concentrated on the degree of introducing performance management practices, such as regularly giving feedback, rather than the content of feedback. This research allows us to fill this void in the literature and to suggest directions for future research.

Practical Implications

Our research provides clear guidance for practice. Overall, it is worth noting that our research provides good news to organizations. Previous research had suggested that organizational initiatives designed to increase in-role pro-environmental behavior may have led to detrimental effects. By conducting this research, we have found that this is not the case. However, it is clear from our findings that organizations may not see the spillover benefits they envisage if their workforce tends to be intrinsically motivated. Thus, our first recommendation is to remind organizations to pay attention to employee variation in pre-existing intrinsic motivation when making interventions to raise their pro-environmental involvement. In addition, we suggest that organizations avoid simultaneous interventions aimed at increasing employees' intrinsic motivation to protect the environment (e.g., environmental workshops, nature camps, and field studies; Duerden & Witt, 2010) and interventions that monitor employees' pro-environmental performance (e.g., pro-environmental performance league tables; Caritte et al., 2015) as the effectiveness of the latter intervention may be compromised if the former is too successful.

Second, by disclosing that perceived progress in pro-environmental tasks can indirectly increase employees' extra-role pro-environmental behavior when employees have low intrinsic motivation, we suggest that when departments or organizations find themselves with a workforce largely disinterested in the environment, they can improve their overall environmental performance by highlighting each employee's progress in their pro-environmental tasks in a positive manner. Research has shown several ways to increase individuals' perception of task progress, including directing their attention to accumulated achievement rather than the remaining uncompleted tasks (Fitzsimons & Fishbach, 2010; Koo & Fishbach, 2012), making them perceive relative progress in competition (e.g., conduct downward comparison; Fishbach et al., 2006; Huang et al., 2019), and recall the recently attained achievement (Conway & Peetz, 2012). Accordingly, we suggest that similar initiatives are implemented which indicate how close an employee is to achieving the next goal.

Limitations

Although our research had many strengths to its internal validity through the experimental designs, it also has some limitations that must be noted. First, our experiments were conducted in the UK and may have limited generalizability to other cultures that may view pro-environmental behavior differently. We invited working adults in the retail and education industries to enhance the external validity, but again this limits the potential generalizability across industries. We call for future research investigating the spillover effect from employee in-role pro-environmental behavior to extra-role pro-environmental behavior across diverse cultural contexts and industries. Second, to ensure standardization across conditions, we needed to use scenarios and hypothetical behaviors rather than real behavior. Now that the first step has been taken with experimental research, future research can test the model in the field and measure actual extra-role pro-environmental behavior. Finally, our research only focuses on pro-environmental goal pursuit. In the workplace, employees are always confronted with

more than one goal, for example, the performance goal, family goal, and development goal (Unsworth et al., 2013). It would be important and interesting to explore the spillover effect of in-role to extra-role pro-environmental behavior in this multi-goal context.

Conclusion

In conclusion, we demonstrated that, for most employees, a perception that they are progressing well on their in-role pro-environmental tasks will lead to greater engagement in extra-role pro-environmental behavior, but this positive spillover effect only occurs when the employees are not highly intrinsically motivated. In doing so, our research provides significant theoretical and practical implications and clear guidance for future research. Given that employees play a vital role in helping the organization achieve its environmental goal, understanding this self-regulation process sheds light on a new stream of research in workplace environmental management. We also extend knowledge of the spillover effect by showing that the crowding-out effect appears to be weaker in the workplace than studies conducted on pro-environmental behavior in private settings. Our research aids strategic guidance to HR professors and managers by demonstrating the effectiveness of feedback interventions particularly among employees low in intrinsic motivation. We therefore encourage future researchers to confirm and explore how and when these spillover effects between in-role and extra-role pro-environmental behaviors operate in the field, across different cultural and industry contexts, and in contexts where multiple goals are present.

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Table 1

Descriptive Statistics, Correlations, and Scale Reliability

	1	2	3	4	5	6	7	8	9	10
1. Age	na[a]									
2. Gender	-0.13*	na								
3. Education	-0.02	0.05	na							
4. In-role pro-environmental score	0.05	-0.01	0.04	na						
5. Green human resource management	0.02	-0.05	0.00	0.37***	(0.93)					
6. Organizational environmental support	0.04	-0.03	0.02	0.29***	0.56***	(0.87)				
7. Progress in in-role pro-environmental behaviors	-0.01	-0.002	0.05	0.23***	0.08	0.09†	na			
8. Intrinsic motivation	-0.05	0.16**	0.03	0.28***	0.30***	0.21***	0.06	(0.85)		
9. Pro-environmental goal commitment	0.02	0.10†	0.03	0.33***	0.13*	0.21***	0.08	0.50***	(0.93)	
10. Extra-role pro-environmental behavior intention	-0.01	0.11†	0.06	0.29***	0.08	0.23***	0.004	0.30***	0.45***	(0.60)
Mean	2.09	1.72	3.71	4.39	2.43	2.95	0.46	3.11	3.43	4.07
SD	1.12	0.47	1.36	1.71	1.03	0.95	0.50	0.83	0.8	0.59

Note: N = 338 employees. Reliabilities of the scales are noted in the parentheses. [a]na = not applicable. † p<0.1 * p< .05 ** p< .01 *** p<0.001.

Table 2
Unstandardized Path Modeling Results

Variable	Pro-environmental Goal Commitment				Extra-role pro-environmental behavior Intention			
Intercept	1.15	(	0.24	)***	2.59	(	0.17	)***
Gender	0.06	(	0.08	)	0.09	(	0.06	)
In-role pro-environmental score	0.11	(	0.02	)***	0.06	(	0.02	)**
Green human resource management	- 0.13	(	0.04	)**	- 0.07	(	0.03	) *
Organizational environmental support	0.13	(	0.05	)**	0.11	(	0.04	) **
Progress in in-role pro-environmental behaviors	0.72	(	0.28	)*	- 0.09	(	0.06	)
Intrinsic motivation	0.53	(	0.06	)***				
Progress in in-role pro-environmental behaviors*Intrinsic motivation	- 0.23	(	0.09	)**				
Pro-environmental goal commitment					0.27	(	0.04	)***

Note: N = 338 employees. Table entries represent unstandardized coefficients with standard errors in parentheses. † p<0.1 * p< .05 ** p< .01 *** p<0.001.

Table 3
Descriptive Statistics, Correlations, and Scale Reliability (Study 2)

	1	2	3	4	5	6	7	8	9
1. Age	na[a]								
2. Gender	0.02	na[a]							
3. Education	- 0.06	- 0.09†	na[a]						
4. Positive affect	0.14**	0.07	- 0.05	(0.94)					
5. Moderate progress in pro-environmental tasks	0.01	0.07	0.02	0.05	na[a]				
6. High progress in pro-environmental tasks	- 0.05	- 0.01	0.02	0.19***	- 0.50***	na[a]			
7. Intrinsic motivation	0.07	- 0.002	0.05	0.47***	- 0.02	0.01	na[a]		
8. Pro-environmental goal commitment	0.12*	0.09†	- 0.08	0.71***	0.08†	0.15**	0.63***	(0.94)	
9. Extra-role pro-environmental behavior intention	0.07	0.02	- 0.02	0.35***	- 0.02	0.08	0.18***	0.41***	(0.82)
Mean	3.05	1.75	5.41	3.26	0.28	0.34	0.50	3.64	4.30
SD	1.04	0.45	1.14	0.90	0.45	0.47	0.50	1.06	0.66

Note: N = 448 employees. Reliabilities of the scales are noted in the parentheses. [a]na = not applicable. † p<0.1 * p< .05 ** p< .01 *** p<0.001.

Table 4
Unstandardized Path Modeling Results (Study 2)

Variable	Pro-environmental Goal Commitment			Extra-role pro-environmental behavior Intention		
Intercept	1.01	(0.14	)***	3.23	(0.13	)***
Age	0.00	(0.03	)	0.03	(0.03	)
Positive affect	0.58	(0.04	)***	0.08	(0.05	)†
High progress	0.49	(0.11	)***	- 0.04	(0.07	)
Moderate progress	0.44	(0.11	)***	- 0.09	(0.07	)
Intrinsic motivation	1.12	(0.11	)***			
High progress*Intrinsic motivation	- 0.44	(0.15	)**			
Moderate progress*Intrinsic motivation	- 0.32	(0.15	)*			
Pro-environmental goal commitment				0.20	(0.04	)***

Note: N = 448 employees. Table entries represent unstandardized coefficients with standard errors in parentheses. † p<0.1 * p< .05 ** p< .01 *** p<0.001.

Table 5
Conditional Indirect Effect of Progress in Pro-environmental Tasks on Extra-role Pro-environmental Behavioral Intention (Study 2)

Intrinsic motivation	Independent variable	Effect size	95% Confidence Interval
Low	High progress	0.10	[0.05, 0.17]
High		0.01	[- 0.03, 0.05]
Index of moderated mediation effect		- 0.09	[- 0.17, - 0.03]
Low	Moderate progress	0.09	[0.04, 0.16]
High		0.02	[- 0.01, 0.06]
Index of moderated mediation effect		- 0.07	[- 0.15, - 0.01]

Note: N = 448 employees.

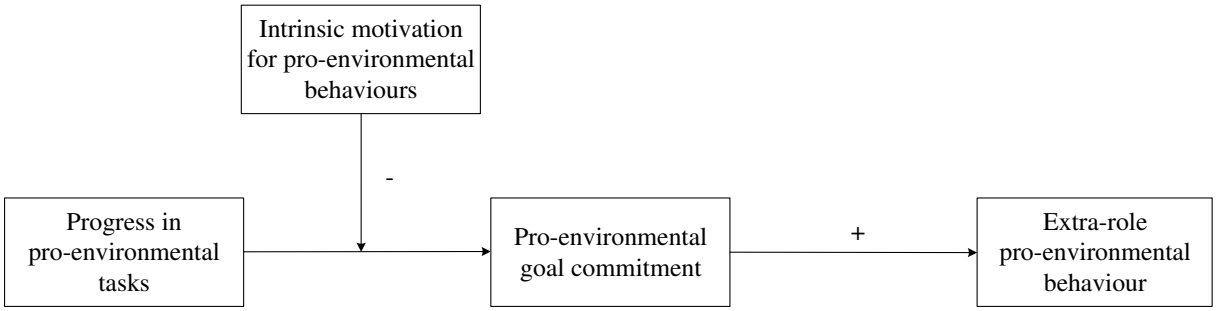

Figure 1. Theoretical Model

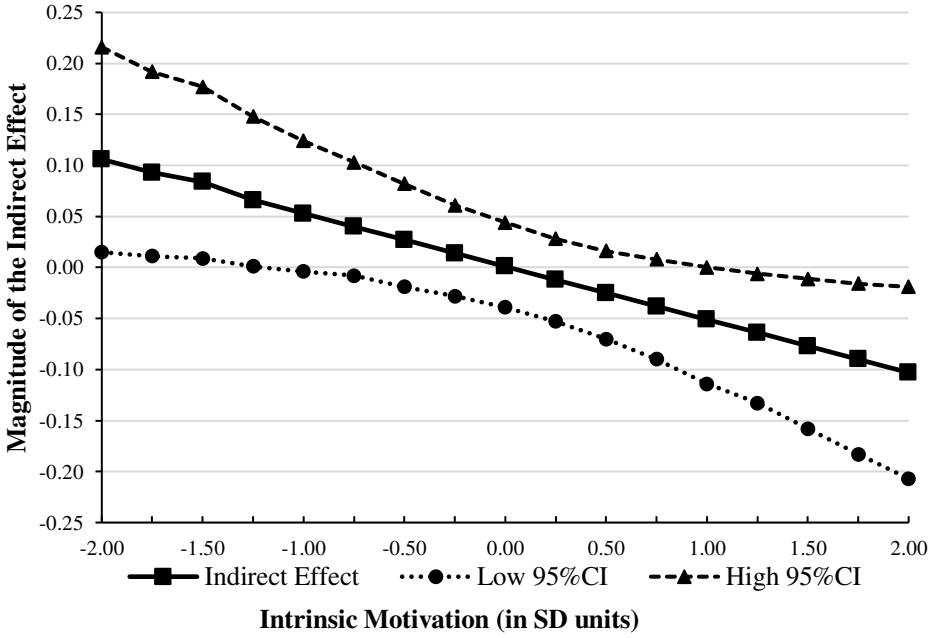

Figure 2. Regions of Significance for the Moderated Mediation Model

The environmental team at State High School believes that **you have made little progress** in helping meet the two requirements for the National Green Schools Certification, and **you are far from finishing your task**. First, you have integrated environmental education into 2% of your classes and need to integrate environmental education into another 8% of your class in the next 5 months. In addition, a mock test for students in your classes shows that 20% of them passed the environmental literacy examination. Thus, in the next 5 months, you still need to help another 60% of students to pass the environmental literacy examination. **Your progress is also shown in the following figure.**

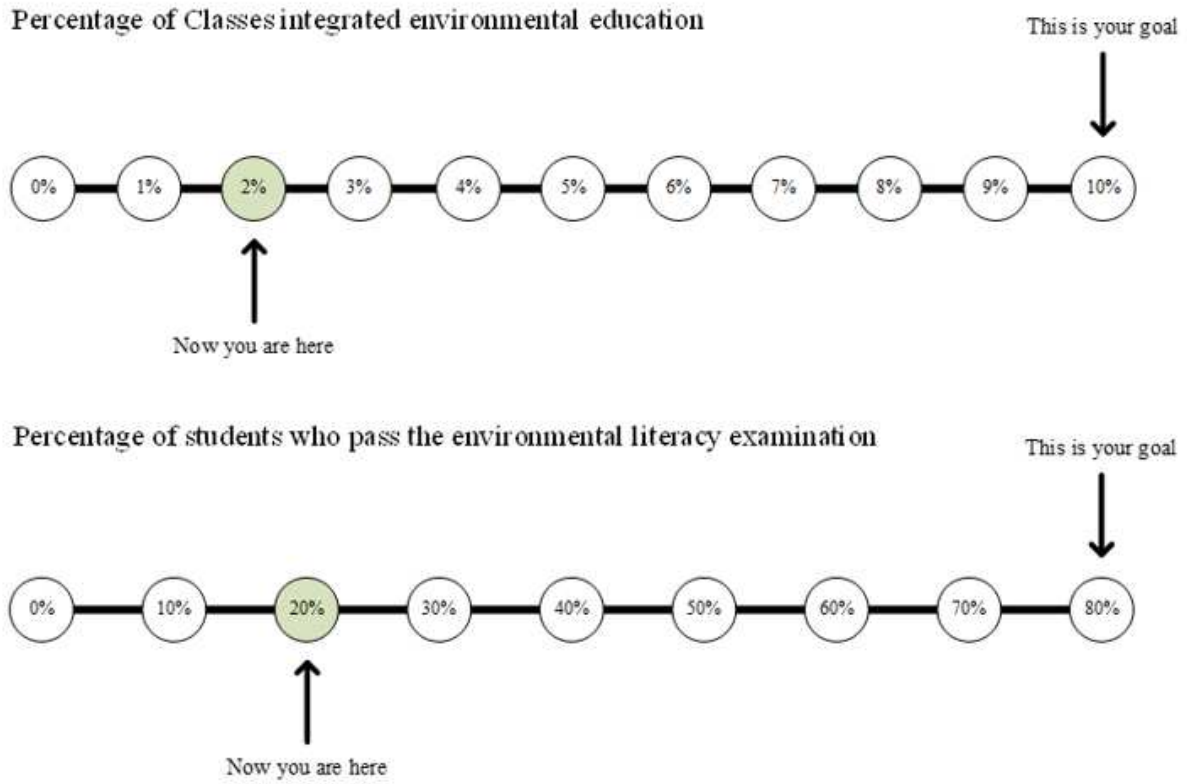

Figure 3. Feedback about Progress in Progress in Pro-environmental Tasks in the Low Progress Condition

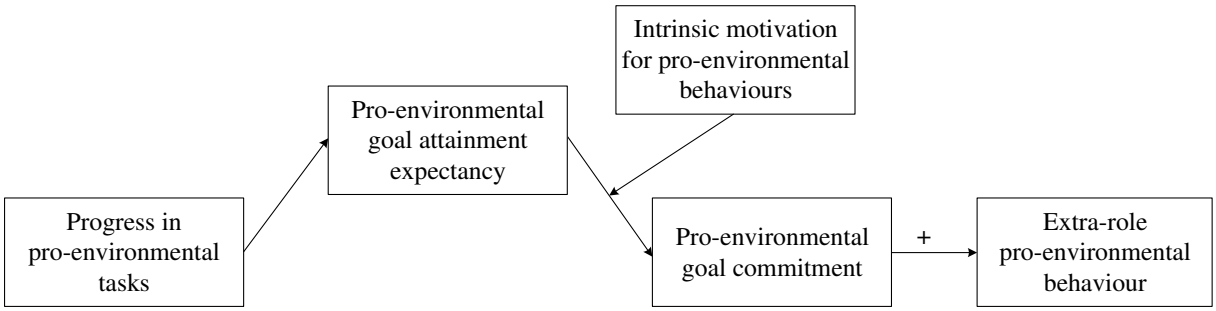

Figure 4. Theoretical Model in the Supplemental Analysis