The Relationship Between Pro-Environmental Behaviors and Internal/External Workplace Factors

A Meta-Analysis

By

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An Honors thesis submitted in partial fulfillment
of requirements of the
University Honors Program

University *of* Wisconsin-Eau Claire

December 2021

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ABSTRACT

Climate change is becoming an increasingly prevalent topic in business and industrial/organizational psychologists are recently entering the conversation (Campbell & Campbell, 2005). This meta-analysis selected 10 studies that fit the designated criteria to investigate whether internal or external workplace factors would be more effective in encouraging and influencing pro-environmental behaviors at work. Using an effect size calculator, the average effect size for each group was computed in order to make a quantitative comparison. Internal factors such as job satisfaction and daily affect/emotions were found to have a moderate average effect, which was larger than the small effect that external factors like managers and coworkers had. This suggests that employees must be internally satisfied at their job in order to be influenced by managers and coworkers, because they will be less motivated to excel at work if they aren't invested. In future research, investigating the difference in pro-environmental behaviors between those with high and low satisfaction with coworker relationships would broaden the understanding behind what motivates people to be innovative in sustainability at work.

Keywords: pro-environmental behavior, industrial/organizational psychology, workplace factors

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ACKNOWLEDGEMENTS

Writing this thesis was an incredibly rewarding experience; one that could not have been done without the guidance and advice from those around me. I'm grateful for this unique opportunity to expand my knowledge and for the people who endlessly supported me.

I would like to begin by thanking my honors advisor, Heather Fielding. She introduced the honors thesis to me, and I doubt I would've known it was an option without her guidance. Although it seemed daunting to complete this project over the course of one summer and a semester, she continuously encouraged me and instilled a confidence that helped me realize that I was capable. I would also like to thank April Bleske-Rechek for offering guidance that changed my outlook on this project. She suggested combining this thesis with my psychology capstone project, which will hopefully open doors for future psychology honors students who want to take their research a step further. I am grateful to have built relationships with these two women who have empowered many in academia.

To my thesis supervisor Jeffrey Goodman, it is thanks to all of our meetings that I was able to craft such a well-rounded project. He was always attentive to my questions and offered so many helpful resources, which helped me gain a higher understanding of how to conduct a meta-analysis. I was also thankful to be able to speak with Nancy Hanson-Rasmussen, who offered me insight on my results and their implications in the business world.

I would like to extend gratitude towards my family and friends who have offered continuous support and praise in all of my accomplishments. It is thanks to my parents that I have grown into the woman I am today, and it is their foundation that always motivates me to go a step further.

The Relationship Between Pro-Environmental Behaviors and Internal/External Workplace Factors: A Meta-Analysis

Introduction

Over the past decade, sustainability and climate change have become areas of concern across the globe. With temperatures on the rise and humans as the appointed culprit, we are making the effort to slow the process that we seem to have started (Campbell & Campbell, 2005). As a student who cares about the health and future of our planet, I wanted to know the connection between my desired profession in industrial/organizational psychology and sustainability and what sort of impact the field could have within a business. I/O psychologists have all sorts of different areas of expertise in the workplace, such as employee placement, team building, management development, job design, etc., with the overarching goal of working with job-inspired emotions and motivation to benefit both the employee and the company as a whole (Campbell & Campbell, 2005; Kastiro 2014). According to Campbell & Campbell (2005), it is because of these areas that I/O psychologists are in the right place to encourage and even influence pro-environmental behaviors within an organization.

To break things down more specifically, this review seeks to examine the research behind certain workplace factors and what their influence is on pro-environmental behaviors at work. Clayton & Brook (2005) suggest a model for the social psychology of environmental behaviors that has components in the situational context, existing schemas, and personal motives. Using this model, one can gather that influencing the desired behaviors can be done both internally and externally. People's behavior can be influenced by the behaviors of others around them, and in the case of the workplace, these people are either managers/supervisors or peers. Managers have the ability to empower employees, create

incentive programs, and increase communication about sustainability within a company, but supporting the culture among everyone is also just as important (Daily & Huang, 2001). An important factor within the influences from others is implementing extrinsic rewards, which can motivate and increase commitment of employees while also reinforcing the continuation of good environmental practices (Daily & Huang, 2001). Because of this, it is beneficial to ask whether extrinsic rewards are tied to job satisfaction, and if this component is already built into the workplace and is related to increased job satisfaction, how would that existing notion relate to the implementation of green practices, if at all (Kim, Kim, & Han, 2019). To fully understand the influence psychology can have on pro-environmental behaviors, we must also consider the internal factors such as prior job satisfaction and emotions in the workplace.

The purpose of this meta-analysis is to investigate the question of how i/o psychologists can influence pro-environmental behaviors in the workplace. Pro-environmental behaviors include recycling, energy conservation, waste reduction behaviors, and any other individual behaviors that consistently benefit environmental sustainability (Kim et al., 2014; Robertson & Barling, 2013; Russell et al., 2016). More broadly, pro-environmental behaviors refer to the way employees complete their day-to-day tasks in environmentally friendly ways (Bissing-Olson et al., 2013). The studies examined are broken into two categories: external influences, which includes the impact of both manager's and peers/coworkers' actions as well as general support, and internal influences, including job satisfaction, emotions, and daily affect. By looking at the connection between all of these factors, the end goal is to make a recommendation of the ideal combination of influences to

promote sustainable practices in the workplace and determine the direction where future research could be beneficial.

Method

Search Protocol & Inclusion Criteria

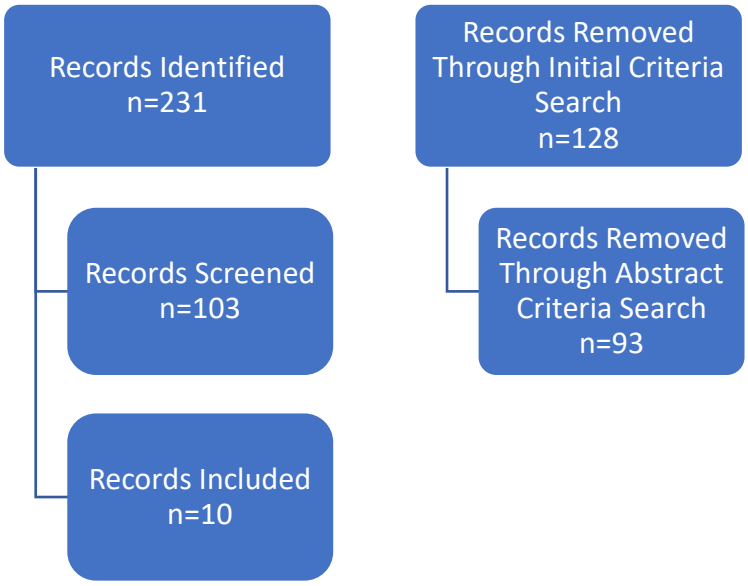

Figure 1. Search protocol for selecting studies.

Studies were selected according to the updated Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021). Articles were identified using the PsycInfo database as well as Google Scholar, with the search terms *leader's influence, workplace, sustainability, job satisfaction, pro-environmental behaviors,* & *emotions.* A total of 231 studies were identified, and these were screened to remove duplicates, reports that were not from a peer reviewed journal, any reports that did not have the full text available, and any studies that were not in English. The titles and abstracts of the remaining 103 articles were then examined to determine which of these included a systematic form of data collection such as a survey or experiment, and they had to examine a potential relationship between workplace factors that were subject to influence and pro-environmental

behaviors. Any studies that did not meet these requirements were excluded from the review. This information is included in Figure 1.

Results indicated that 10 articles met all of these criteria and were divided into two categories: internal (job satisfaction & emotions) and external (manager & peer/coworker influence). Studies were based in the United States, Europe and France, Australia, Mexico, Pakistan, and South Korea, all of which investigated direct workplace behavior. Some studies were conducted in businesses where sustainable practices were already the norm, while others were done with businesses where sustainability was not a main area of concern. All supplemental information is included in Table 1.

Table 1

Summary and Effect Sizes of Included Studies

First Author, year	Participant Characteristics, n	Design	Hypothesis	Results & Effect Size
Afsar et al., 2019	n=560, 10 companies	Survey	Coworker pro-environmental advocacy has a positive relationship with environmental commitment and PEB	Both hypotheses were supported Environmental commitment is a mediator for coworker advocacy and PEB Commitment, d=0.05 PEB, d=0.56 Mediator, d=0.37

First Author, year	Participant Characteristics, n	Design	Hypothesis	Results & Effect Size
Bissing-Olson et al., 2013	n=56	Survey: baseline and 2 surveys a day for 10 days	Daily positive affect and previous attitudes will be positively related to proactive and task related daily PEB	Daily unactivated positive affect and previous attitudes are positively related to daily proactive and task related PEB Affect(proactive), d=0.60 Affect(task), d=0.44 Attitude(proactive), d=1.53 Attitude(task), d=0.37
Delmas et al., 2018	n=4640, 1764 firms	Employee and firm level survey data from four different data sets	Hyp 1: Social interactions are positively associated with sustainable innovation Hyp 2: Pay level satisfaction is positively associated with sustainable innovation	Hyp 1: supported, d=0.31 Hyp 2: not supported, d=0.06
Kim et al., 2014	n=325 group members n=80 group leaders	Survey	Hyp 3: leader VWGB is positively associated with VWGB of leaders' work group Hyp 4: work group green advocacy mediates relationship between leader and individual group members' VWGB	Hyp 3 & 4 positively correlated Group VWGB, d=0.10 Green advocacy, d=0.45 Individual VWGB, d=0.51

First Author, year	Participant Characteristics, n	Design	Hypothesis	Results & Effect Size
Kim et al., 2018	n=151, South Korean Financial Firm	Survey	Hyp 1: Prior job satisfaction positively influences VWGB Hyp 2: VWGB positively influences subsequent job satisfaction	Hyp 1 was supported, Hyp 2 was not statistically significant Prior, d=0.42 Subsequent, d=0.42
Lamm et al., 2014	n=362	Online survey, snowball sampling	For employees who highly value sustainability, perceived organizational support of the environment will positively relate to job satisfaction and negatively relate to turnover intention	Both hypotheses were statistically significant in the predicted direction Job satisfaction, d=0.52 Turnover, d=0.84
Paille et al., 2016	n=449, executive business program students	Survey	Hyp 6: Job satisfaction and eco-helping are positively related Hyp 7: Commitment to colleagues and eco-helping are positively related Hyp 8: Helping behavior and eco-helping are positively related	Hyp 6: negative assoc., d=0.83 Hyp 7: supported, d=0.78 Hyp 8: supported, d=0.95

First Author, year	Participant Characteristics, n	Design	Hypothesis	Results & Effect Size
Ramus et al., 2000	n=353, 6 companies with employees based in 12 countries	Survey	Hyp 2a-f: supervisory support of environmental management promotes employee willingness to promote eco-initiatives	Hyp 2a-f positively correlated Innovation, d=0.21 Competence, d=0.08 Communication, d=0.01 Dissemination, d=0.06 Rewards, d=0.03 Manage Goals, d=0.14
Robertson et al., 2012	n=139 leader-follower dyads US & Canada	Survey: Multifactor leadership questionnaire	Hyp 4a: leaders' workplace PEB will influence subordinates' PEB Hyp 4b: leaders' workplace PEB will influence subordinates' environmental passion	Hyp 4a-b positively correlated Employee behavior, d=0.05 Employee passion, d=0.30
Russell et al., 2016	n=115, Australian hospital	Longitudinal field-based intervention, 3 energy audits, & pre/post intervention survey	Enhancing visibility of top management commitment to intervention will increase PEB in the workplace	Statistically significant decrease in energy use behaviors Lights, d=0.14 Computers, d=0.27 Monitors, d=0.02 Air Conditioners, d=0.53

Note. VWGB stands for voluntary workplace green behaviors and PEB stands for pro-environmental behaviors.

Effect Sizes & Outcomes

Effect sizes were calculated for each of the studies using an online effect size calculator and plugging in the means and standard deviations for each variable regarded in the hypotheses (Social Science Statistics, n.d.). According to Von der Embse, Barterian, &

Segool, (2012), effect sizes are measured using Cohen's d and are meant to show the effectiveness of a study, or how closely two variables are related to each other. The effect sizes are organized into three sizes: small ($d \leq 0.20$), medium ($d = 0.50$), and large ($d \geq 0.80$). A higher number indicates a stronger relationship between the variables within the study.

The average effect size was calculated for both internal and external workplace factors by finding the mean of the individual effect sizes after categorizing them as impacting either internal or external factors. The individual effect sizes that were used in calculating each average are highlighted in Table 1, and the results are shown in Table 2. For an effect size to be selected to calculate the average, the two variables had to relate directly to the link between workplace factors and pro-environmental outcomes. For example, Lamm et al. (2014) investigated the relationship between organizational support of the environment and job turnover for employees who highly valued the environment. An effect size was calculated for these two variables in order to understand the study better, but it does not relate directly to the question at hand. When comparing the average effect sizes for each category, internal workplace factors have a medium effect size ($d = 0.56$) while external workplace factors have a small effect size ($d = 0.25$).

Table 2

Average Effect Size Outcomes

Internal Average	External Average
Effect Sizes Included: n=8 Average: d=0.56	Effect Sizes Included: n=17 Average: d=0.25

Discussion

The purpose of this analysis was to examine the effectiveness of each study and compare the average effect sizes to determine whether internal or external workplace factors are more effective in encouraging pro-environmental behaviors at work. Robertson & Barling (2012) surveyed 139 leader-employee dyads in order to examine the relationship between the leaders' workplace pro-environmental behaviors and the behaviors of their subordinates, which is considered an external factor as it discusses the impact managers or group leaders can have. They found a negligible effect size (d=0.05) between environmental behaviors of leaders and their subordinates. This goes along with the findings that supervisor commitment of a sustainable intervention has only a small effect on increasing employee behaviors such as turning off lights (d=0.14), shutting down computers (d=0.27), and unplugging monitors (d=0.02). A moderate effect was found for shutting off air conditioners, but because the air conditioners have an automatic shutdown setting, this finding may not be reliable (Russell et al., 2016). However, Ramus & Steger (2000) examined how supervisor support of the environment impacted employees' willingness to promote eco-initiatives at work, as opposed to actual behaviors. Supervisor behaviors that were defined as supporting employee innovation at work had a small effect on their willingness to promote eco-initiatives (d=0.21), which supports the other hypothesis of Robertson & Barling (2012) that leaders' pro-environmental behaviors at work support employees' environmental passion (d=0.30). Additionally, Kim et al. (2014) found that leaders' voluntary workplace green behaviors had a negligible effect on work-group voluntary green behaviors (d=0.10), but if the group advocated more for sustainability, voluntary workplace green behavior on an individual level was moderately affected by leaders' green behaviors (d=0.51). Additionally, environmental

commitment was found to be a mediator for coworker advocacy and pro-environmental behavior (Afsar & Umrani, 2019). This suggests that relationships with coworkers might play a part in how employees might be influenced towards more sustainable behaviors.

A few other studies investigated the influence of peers and coworkers on environmental support at work. Delmas & Pekovic (2018) wanted to investigate how social interactions between coworkers impacted sustainably innovated practices. Social interactions would be any exchange between two individuals, and companies that support these interactions on a daily basis has been shown to increase creativity in employees in that they are more likely to propose new ideas (Cohen & Prusak, 2001; West, 1990). Social interactions had a small effect on sustainably innovative practices (d=0.31), which is the smallest of the effect sizes that compares coworker interactions and sustainability. Delmas & Pekovic (2018) pulled data from mainly French and surrounding European countries, which are typically thought of as more individualistic countries compared to the findings of Kim et al. (2014), who found higher effect sizes with data used from a more collectivist society in South Korea. Mexico is another country that could be considered as more collectivist, meaning they place more importance or emphasis on the wants and needs of the group rather than themselves (Hofstede Insights, 2021). In this country, commitment to colleagues has a larger effect on eco-helping (d=0.78), suggesting that collectivist countries might benefit more from influencing coworker and group support of the environment to encourage pro-environmental behaviors rather than individualistic nations (Paille et al., 2016).

This paper also aims to explain how internal factors such as job satisfaction, emotions, and daily affect, might play a role in increasing pro-environmental behaviors at work. Lamm et al. (2014) conducted an interesting study looking at the values of employees

and their organizations. For those employees who highly valued sustainability, perceiving their organization as a sustainable company and their job satisfaction were moderately related (d=0.52), which suggests employees enjoy working at companies whose values align more closely with their own encourages pro-environmental behaviors (Lamm et al., 2014). Another study found that prior job satisfaction had an effect on voluntary workplace green behaviors (d=0.42), which helps to answer if employees are more satisfied because they are able to engage in environmental behaviors at work or if they voluntarily complete green tasks because they are more satisfied at work (Kim et al., 2018). Pay level as a component of job satisfaction was also considered as a possible impact on encouraging sustainable practices at work, but the two variables had a negligible effect on each other (d=0.06) (Delmas & Pekovic, 2018). Daily affect and emotions can also be thought of as a dimension of job satisfaction, and Bissing et al. (2013) used a baseline survey and two surveys per day for ten days to examine the effect employees' emotions had on their daily behaviors. The two main independent variables were daily affect and previous attitudes, while their effect was on both proactive and task related pro-environmental behaviors. Proactive behaviors were defined as how much employees took initiative in being environmentally friendly at work and task related is how often employees complete their everyday tasks in an environmentally friendly way. Daily affect had a moderate effect on proactive behaviors (d=0.60) and a small effect on task related behaviors (0.44). Previous attitudes had a large effect on proactive behavior (d=1.53) and a small effect on task related behaviors (d=0.37) (Bissing-Olson et al., 2013).

Implications of the Findings

Based on the results of this study, managers and coworkers only have a small effect (d=0.25) on pro-environmental behavior. When looking at the individual effect sizes within

each study, it seems that employee passion or support for the environment is influenced by supervisors and managers to a higher degree than actual behaviors. The individual effect sizes for the studies investigating coworker influence were a bit higher than the other external factors, which might be due to relationships with those you work with. Employees often spend more time on a day-to-day basis with their coworkers and group members, giving them more time to build closer relationships. It might make sense that coworker relationships tie into job satisfaction, as this might explain in part why internal factors were found to be more effective. If employees are more internally satisfied and have better working relationships with the people surrounding them, they might be more likely to follow along with policies being modeled by these same individuals. Employees tend to enjoy work at a higher level when the values of the company match their own and might be more innovative because of this (Hanson-Rasmussen, personal communication, November 3, 2021). If an employee isn't satisfied at work, it is plausible to think that they might not be as invested with their work or boss and therefor will have minimal motivation. A direction for future research would be to directly investigate how job satisfaction is impacted by employees' relationships with their coworkers and measure the differences in pro-environmental behaviors between those with high and low job satisfaction when their coworkers and leaders are modeling or encouraging the behaviors.

This project has a few limitations. Only studies published in English were considered, which hinders the ability to examine cultural differences that may appear. An attempt was made to look at studies cross-culturally but lacks in the fact that valuable research could have been overlooked. For future research, it would be beneficial to directly investigate the cultural differences with the effect of internal and external workplace factors, including

studies published across the globe in a range of languages. The effect sizes in this analysis suggest that employees working in typically collectivist societies might be more susceptible to external influences as they tend to value the group more than those working in individualistic cultures. It would be interesting to see if external factors were overall more effective in these contexts. Additionally, this research only covered larger corporations, whereas results might differ in smaller or locally owned businesses since these tend to be more sustainable than bigger companies (Hanson-Rasmussen, personal communication, November 3, 2021).

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