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„Organizational sustainability:
The Role of Green Leadership in promoting Employees'
Pro-Environmental Behavior in Remote Work Settings“

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Abstract

Promoting environmental sustainability in organizations contributes to a larger movement of change and helps to avert disastrous consequences looming in our near future. Over the last decade researchers have dedicated a considerable amount of energy and resources to uncover determinants of employees' green behavior at work. Particularly environmentally specific transformational leadership emerged from this new research trend. However, the context of remote work has thus far been largely neglected. In light of the increasing trend towards flexible work arrangements this study aims to provide some insight in how environmentally specific transformational leaders facilitate employees' green responses in remote work settings. In order to bridge this research gap, it was investigated whether environmentally specific transformational leadership affects employees' pro-environmental behavior and organizational citizenship behavior towards the environment. It was assumed that perceived leaders' pro-environmental behavior and perceived environmental work climate of coworkers mediate this relationship. Remote work and biospheric values as well as environmental attitudes are included in the research model as moderating variables. Data was collected via an online survey across three points in time (N = 85). Overall, the main constructs correlate as expected yet the proposed research model was not supported. More research regarding the role of remote work for organizational green behavior is needed.

Abstract (deutsche Fassung)

Nachhaltigkeit in Organisationen zu fördern, kann zu einer nachhaltigen Wende beitragen und damit helfen, katastrophale Umweltfolgen, die uns in der nahen Zukunft drohen, abzuwenden. Im letzten Jahrzehnt haben Forscher*innen beträchtliche Ressourcen aufgewendet, um ausschlaggebende Faktoren für nachhaltiges Verhalten von Arbeitskräften in der Arbeit aufzudecken. Vor allem umweltspezifische transformationale Führung geht aus diesem Forschungsprogramm als relevant hervor. Bisher wurde allerdings der Kontext von Distanzarbeit vernachlässigt. In Anbetracht des zunehmenden Trends in Richtung flexible Arbeit, versucht die vorliegende Studie zu klären, wie umweltspezifische transformationale Führung umweltfreundliche Reaktionen in Distanzarbeit bei Arbeitskräften fördern kann. Um diese Forschungslücke zu schließen, wurde untersucht, ob umweltspezifische transformationale Führung sich positiv auf das umweltfreundliche Verhalten und das Organisational Citizenship Behavior towards the Environment von Arbeitskräften auswirkt. Es wurde angenommen, dass wahrgenommenes umweltfreundliches Verhalten der Führungskraft sowie das umweltfreundliche Arbeitsklima den Zusammenhang mediiert. Distanzarbeit, biospherische Werte und umweltbezogene Einstellungen wurden in das Forschungsmodell als moderierende Variablen aufgenommen. Daten wurden mittels Online-Befragung über drei Zeitpunkte hinweg gesammelt (N = 85). Insgesamt zeigt sich, dass die Hauptvariablen, wie erwartet, miteinander korreliert sind, das Forschungsmodell in seiner Gesamtheit jedoch nicht von den Daten gestützt ist. Mehr Forschung ist notwendig, um die Rolle von Distanzarbeit für umweltfreundliches Verhalten in der Arbeit zu klären.

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Introduction

Environmental issues are a great cause of concern with water- and air pollution, substantial loss of biodiversity, resource depletion as well as climate change and results thereof affecting millions of lives every year, tendency rising. A report published by the Intergovernmental Panel on Climate Change (IPCC, 2013) states an increase of 0.85°C in global temperatures between 1980 and 2012, resulting in reduced grain yield and a substantial increase in sea level amongst others. According to estimates an increase in global temperature of 1.5°C is to be expected within the century (IPCC, 2021). This predicament poses a large threat, so we are inclined to ask ourselves “what can we do?”. As human behavior is the number one cause fueling environmental problems, managing human behavior is key to a more environmentally sustainable future. Academic debate regarding environmental sustainability as a contemporary topic allows to outline harmful behaviors and point out feasible solutions. A considerable amount of research has already examined environmental behavior in private households (e.g. Steg & Vlek, 2009). However, calls for organizations to take more responsibility in environmental matters are growing louder. Taking into account that the average working adult spends a considerable amount of time at work, organizations encouraging their employees to behave more environmentally friendly in workplace settings allow for the opportunity of saving a significant amount of resources and implementing a wide array of pro-environmental behaviors. In recent years more environmental research started to focus on the workplace in an attempt to isolate determinants of pro-environmental behavior within organizational settings. In their meta analysis Lo et al. (2012) argue that organizational leaders facilitate great potential for promoting pro-environmental behaviors in the workplace (also see Piwovar-Sulej & Iqbal, 2023). Especially leaders adopting an environmentally-specific transformational leadership style can positively impact environmental outcomes within organizations (Robertson & Barling, 2015).

These findings have been established predominantly in regular office settings, neglecting other highly relevant contexts. Remote work, a flexible work arrangement that allows employees to work remotely from their desired location can be primarily characterized by the physical distance to the corporate office. Particularly home-office arrangements enjoy great popularity among employees and organizations alike because it allows for more flexibility and comfort on both ends. The Covid-19 pandemic highlighted the importance of home-office and other remote work concepts once more, allowing many employees to work safely and socially distant from home. However, it is still largely unknown how leadership

behavior is perceived in remote work settings. Especially a reduced face-to-face communication and the inability to perceive specific workplace behaviors of others might impact how transformational leadership affects organizational outcomes (Kelley & Kelloway, 2012). A research gap can be identified since no study has yet been conducted examining environmentally specific transformational leadership and its influence on pro-environmental behaviors in remote work contexts. Of particular interest in this regard are also possible mediating factors. Recent studies have identified that perceived leaders' pro-environmental behaviors (Robertson & Barling, 2012) as well as the perceived environmental work climate (Robertson & Carleton, 2018) affect the relation of environmentally specific transformational leadership and employees' environmental outcomes. It can be assumed that the variables might substantially differ between office and remote work contexts, as they might rely on immediate perception and face-to-face communication. Furthermore, biospheric values (Ruperts et al., 2017) as well as environmental attitudes (Shoaib et al., 2022) offer an individual component that might account for interindividual differences.

Thus, the overarching research questions for this thesis arise: How does remote work affect the relationship between environmentally specific transformational leadership and environmental outcomes? Do perceived leaders' pro-environmental behaviors and perceived environmental climate affect the relationship between environmentally specific transformational leadership and outcomes, and is this affected by remote work? Do biospheric values and environmental attitudes influence the relationship?

Theory and Hypotheses

The Relationship between Environmental Outcomes and Environmentally specific Transformational Leadership

For the purpose of the present study Ramus and Steger's (2000) definition of workplace pro-environmental behaviors as any action taken by an employee to improve the organizational environmental performance is adopted. This can include a multitude of activities e.g., eco-initiatives, workplace pro-environmental behaviors or environmental organizational citizenship behaviors (Robertson & Barling, 2015). Furthermore, it proves helpful to distinguish between voluntary and mandatory behavior, the latter being expected or even required by the organization in form of adhering to organizational policies or changing

methods of work by choosing more sustainable alternatives (Norton et al., 2015). Implementing policies that address required behavior leads to results with varying effectiveness (Ramus & Steger, 2000). Strictly prescribing and controlling numerous pro-environmental behaviors (e.g. energy conservation behavior, waste management) efficiently proves challenging (Yuriev et al., 2020). Meanwhile it is estimated that 70 - 85% (Boiral et al., 2015) of pro-environmental behaviors in the workplace are performed voluntarily and informally, making up the vast majority. Voluntary behavior goes beyond the organizational requirements and involves personal initiative (Norton et al., 2015). While it is important to recognize that required behavior should be addressed in the literature, this paper will focus solely on voluntary behavior that is not formally recognized by organizations. A construct capturing this is organizational citizenship behavior towards the environment, derived from organizational citizenship behavior (Organ, 1988; Gurmani et al., 2021). Organizational citizenship behavior attempts to capture why some individuals voluntarily help others and contribute to the organization without any prospect of reward (Organ, 1988). A recent adaptation to fit environmental behavior results in the construct organizational citizenship behavior towards the environment (Boiral, 2009; Daily et al., 2009) that can be defined as "individual and discretionary social behaviors that are not explicitly recognized by the formal reward system and that contribute to a more effective environmental management by organizations" (Boiral, 2009, p.223).

This behavior can subsequently be divided into three distinct pro-environmental behavior patterns exhibited by employees (Boiral & Paillé, 2012, 2013). Firstly, *eco-initiative* is understood as the employees' effort to challenge the current status quo, and contribute ideas and suggestions to promote new environmental initiatives (Boiral & Paillé, 2012). It is widely assumed that the familiarity with technologies and processes contributing to the pollution constitutes employees to offer efficient and practical environmental solutions. This concept is similar to eco-initiatives first described by Ramus and Steger (2000) as creative ideas proposed and implemented by employees that lead to environmental change within the organizational context. Furthermore, this includes environmental actions in the workplace such as recycling, a reduced water consumption and energy conservation behavior (Boiral & Paillé, 2012). *Eco-civic engagement* involves participation in and support of organizational-driven green initiatives and events as well as partaking in environmental training. This voluntary involvement serves to promote the organization's green image, achieve environmental goals and improve the overall environmental performance. Mutual

support among employees concerning environmental behaviors is considered to be *eco-helping*. The focus lies on assisting others to integrate environmentally responsible behaviors and offering a shared space to express ideas on green issues freely. (Boiral & Paillé, 2012, 2013).

These behaviors individually may appear mundane, if however promoted throughout organizations, aggregated behaviors can substantially impact the environmental performance (Ramus, 2001; Boiral, 2005; Boiral & Paillé, 2012). Altogether organizational citizenship behavior towards the environment has proven to be suitable for capturing pro-environmental behavior in the workplace (Boiral, 2009; Boiral & Paillé, 2013; Robertson & Carlson, 2018), however it has to be noted that the construct reflects rather abstract behaviors, that require interpretation by the participants to fit their unique workplace situation. To further illustrate this, “encouraging coworkers to behave more environmentally sustainable” for example can be considered a vague description as the behavior may take on different forms depending on the individual person and the context. Consider for example two vastly different workplace situations, in the first one this behavior might occur as reminding coworkers to print less in an office setting, while the other workspace does not even require a printer at all. Instead in this second workplace, employees make frequent use of cars or other machines, therefore encouraging coworkers to exhibit a sustainable driving pattern to improve fuel economy of the vehicle will be more relevant in this context. While this allows for a vast variety of situations to be accommodated for, it simultaneously reduces comparability between the participants’ answers. To overcome this possible shortcoming pro-environmental behaviors are additionally measured in a direct way focusing on energy, water and resource conservation behaviors among others, thereby leaving little room for diverging interpretations. Following this line of argumentation, this paper makes use of two mutually complementing outcomes that serve as behavioral indications of employees’ environmental sustainability.

In order to successfully promote workplace pro-environmental behaviors, leadership offers a viable and accessible resource to invoke employees’ environmental responsibility. Leadership has been identified to be an important determinant of environmentally sustainable behaviors among employees in organizations (e.g. Piwowar-Sulej & Iqbal, 2023; Mi et al., 2019; Robertson & Barling, 2015; Robertson & Carleton, 2018). Norton et al. (2015) argue that Bass’ transformational leadership style is exceptionally well suited to promote organizational citizenship behavior (voluntary and non-prescribed) by motivating followers

not only to fulfill but exceed expectations. Transformational leaders aim to motivate and inspire employees to achieve extraordinary performances by responding to individual needs thereby aligning goals of employees and the organization (Bass, 1985; Bass & Riggio, 2006). Within the literature a vast variety of organizational outcomes affected by transformational leadership have been identified (Robertson & Barling, 2015; Barling, 2014). Attempts at affecting specific target outcomes with leadership yield promising results. To further illuminate this, empirical studies indicate that safety-specific transformational leadership influences various organizational safety outcomes positively (Barling, 2014; Barling et al., 2002). With respect to environmental concerns, these advances led to the development of an environmentally specific transformational leadership style in the last decade (Robertson & Barling, 2017). Environmentally specific transformational leadership can be conceived of as “a manifestation of transformational leadership in which the content of the leadership behaviors is all focused on encouraging pro-environmental initiatives” (Robertson & Barling, 2013, p.177).

Environmentally specific transformational leaders are therefore able to encourage employees to take appropriate actions by e.g. conveying environmental visions or talking about their environmental values (Graves & Sarkis, 2018). In order to provide a clear difference between the conceptually similar transformational leadership and environmentally specific transformational leadership, Robertson and Barling (2017) performed a confirmatory factor analysis, yielding the sought after confirmation that the two constructs in question are indeed distinct. Environmentally specific transformational leadership as a derivative of general transformational consist of four core components: idealized influence, inspirational motivation, intellectual stimulation and individualized consideration (Bass, 1985; Bass & Riggio, 2006), that if enacted by leaders, motivates employees to behave more pro-environmentally friendly in the workplace (Robertson & Carleton, 2018). This might furthermore enable employees’ accurate identification of environmental sustainability as a prioritized organizational goal (Robertson & Barling, 2017; Graves et al., 2013). The individual components of transformational leadership contribute to the overall leadership performance as follows:

(1) *Inspirational motivation* invoked by leaders is meant to inspire employees through their passion and optimism to actively engage in pro-environmental behaviors and overcome psychological hurdles as well as external obstacles, thereby contributing to the collective good (Robertson & Barling, 2013; Robertson & Carleton, 2018). Motivation as initiation and

maintaining of a goal-directed behavior has been thoroughly examined in the literature in regard to environmentally sustainable behavior. According to recent studies it has been established that particularly *autonomous motivation* derived from the self-determination theory by Ryan & Deci (2000) is capable of explaining higher amounts of pro-environmental behavior (Aitken et al., 2016; Pelletier & Aitken, 2014). Especially with increasing difficulty of pro-environmental behavior autonomously motivated employees are more likely to show advanced green behaviors (Aitken et al., 2016). Ul Hadi & Rasool (2017) argue that transformational leadership is suited to successfully promote autonomous motivation. Additionally, Graves, Sarkis and Zhu (2013) report that the relationship between environmentally specific transformational leadership and employees' environmental initiatives is significantly mediated by autonomous motivation. Regarding organizational citizenship behavior toward the environment, it can be argued that high goal internalization, as is the case in autonomous motivation, will increase voluntary behaviors in line with the goal.

(2) *Intellectual stimulation* can be understood as leadership behavior aiming to provide stimulation through knowledge and sharing experiences in order to allow employees to think about environmental issues in new ways and finding innovative solutions to environmental problems in the workplace (Robertson & Barling, 2013; Robertson & Carleton, 2018).

(3) *Individual consideration* means building a trusting relationship by tending to employees' needs, showing empathy and compassion towards their well-being as well as promoting development of potentials and skills. By doing so environmental values might be transferred and a safe climate for exchange is established (Robertson & Barling, 2015; Robertson & Carleton, 2018). To further illustrate this, research provides evidence that supervisory support affects employees' environmental initiatives (Ramus, 2001; Ramus & Steger, 2000;). The norm of reciprocity and the social exchange theory may serve as a theoretical foundation to explain the link between a well-established relationship and the amount of pro-environmental behaviors shown within the workspace (Daily, et al., 2009). This draws on the notion that by fulfilling employees' needs, leaders gain their favor and employees will in turn act in a desirable way.

(4) *Idealized influence* can be defined as leaders demonstrating commitment to organizational sustainability goals by acting environmentally friendly in the workplace

(Robertson & Barling, 2017; Graves & Sarkis, 2018). According to Robertson and Carleton (2018) social learning processes such as learning from modeling (Bandura, 1971) lead to this influence. Consistent with this notion, Robertson and Barling (2013) show that leaders' workplace pro-environmental behavior predicts employees' pro-environmental behavior, thereby serving as a role model. This finding is integral to the overall idea of this paper and will be discussed in more detail in the next section.

Overall, the connections between transformational leadership and employees' pro-environmental behavior and organizational citizenship behavior toward the environment have been well established (e.g. Mi et al., 2019). While general transformational leadership is loosely associated with green behavior, it has been shown that environmentally specific transformational leadership is more effective in influencing pro-environmental behavior in the workplace due to the specific focus on the desired outcome variables (Robertson & Barling, 2017). Furthermore, compared to other leadership styles, environmentally specific transformational leadership fosters higher levels of environmental concern as well as environmental values among employees (Su et al., 2020). The rapidly growing body of research regarding environmentally specific transformational leadership emphasizes its importance for environmental outcomes within organizational contexts (Robertson & Barling, 2015; Robertson & Carleton, 2018). A multitude of research models and possible mediating and moderating factors between environmentally specific transformational leadership and employees' green behavior have been proposed in recent years (Kura, 2016; Li et al., 2020; Zhu et al., 2022). Peng et al. (2021) furthermore provide evidence that environmentally specific transformational leaders positively impact the organizational sustainable performance of teams. Therefore it is assumed, as suggested by previous research, that the results showing a positive relationship between environmentally specific transformational leadership and employees' pro-environmental behavior as well as organizational citizenship behavior toward the environment will be replicated.

H1: Perceived environmentally specific transformational leadership is positively related to employees' pro-environmental behaviors and organizational citizenship behavior towards the environment.

The Mediating Role of Perceived Leaders' Pro-Environmental Behavior

According to the social learning theory (Bandura, 1977) individuals learn by observing others and subsequently display similar behavioral patterns. Learning by modeling was first discovered when studying learned aggression, over the years however Bandura (1986) noted that a wide range of behaviors can be learned through observation, imitation, and identification within social contexts. This also finds application in organizational psychology, especially within the leadership literature as leaders might serve as ideal role models due to their position, status, and power (Brown et al., 2005). Bass and Riggio (2006), as well as Kouzes and Posner (2008) both argue that role modeling has to be viewed as essential behavior for leaders. Furthermore, the idealized influence dimension of transformational leadership emphasizes the notion of leaders as role models (Avolio, Bass, & Jung, 1999). Thus, employees are thought to learn behaviors and cognitive strategies by observing others in the workplace, especially leaders.

Following this argument, Brown et al. (2005) find that idealized influence expressed as learning via modeling influences ethical conduct (e.g. consideration behavior, honesty, trust in the leader, interactional fairness) within organizations significantly. In a similar fashion Li Lin and Liu (2019) argue that an ethical leader acts as a prototype of a moral person (i.e. an ethical role model) fostering an ethical climate on individual as well as team level. Robertson and Barling (2013) apply these findings to the context of environmental research and were indeed able to provide first evidence that environmentally specific leaders might serve as environmentally sustainable role models within the workplace. Rather than doing what is expedient, environmental leaders are guided by a moral commitment to a sustainable organization and therefore serve as green role models (Robertson & Barling, 2013). Altogether, this provides a solid base for the hypothesis that leaders are able to influence employees' workplace pro-environmental behaviors via modeling.

H2: The relations between environmentally specific transformational leadership and pro-environmental behaviors and organizational citizenship behavior towards the environment are mediated through perceived leaders' pro-environmental behaviors.

The exact relationship between environmentally specific transformational leadership and perceived leader's pro-environmental behaviors remains unclear. Even though Robertson and Barling (2013) find a positive association between these variables, the nature of correlations makes it impossible to draw further conclusions about their precise relationship. They argue

however that behavioral consistency across different situations within individuals (Sherman et al., 2010, cited after Robertson & Barling, 2013) can be observed, especially in similar situations. Since both environmentally specific transformational leadership behavior and perceived leaders' pro-environmental behavior are enacted within the same context, these behaviors will likely match each other, as they reflect leaders' internalized values. For the purpose of this study however, it is assumed that perceived environmentally specific transformational leadership will influence leaders' pro-environmental behavior and in turn the perception thereof, opposing the predominant notion that both leadership behavior and green behavior stem from underlying values. Rather, a leader's motivation to behave environmentally sustainable, might be born out of the intent to influence subordinates.

H2a: Environmentally specific transformational leadership is positively related to leaders' pro-environmental behavior.

Leaders might be able to serve as green role models within the organizational context. This might be achieved by displaying a consistent pattern of pro-environmental behaviors, signaling to subordinates that these green behaviors are desired and valued within the workplace. By witnessing leaders enact pro-environmental behaviors, employees are likely to draw a conclusion about their leaders' values, and about the desirability of different behaviors (Robertson and Barling, 2013). As is the nature of learning by modeling, employees will recognize that enacting certain behavior will lead to favorable consequences and will therefore more likely engage in these behaviors. This is exactly what Robertson and Barling (2013) find in their study, showing that perceived leaders' pro-environmental workplace behavior successfully influences employees' green behavior

H2b: Perceived leaders' pro-environmental behavior is positively related to employees' pro-environmental behavior and organizational citizenship behavior toward the environment.

The Mediating Role of Perceived Environmental Work Climate of Coworkers

With regard to employees' pro-environmental behaviors, contextual factors have to be taken into account. Specifically, organizational climate is considered to be relevant within the organizational literature concerning environmental sustainability, as it influences employees' attitudes and behaviors (Ashkanasy et al., 2011; Schneider et al., 2013; Kuenzi & Schminke, 2009). Organizational climate refers to "employee perceptions regarding the organizational

attributes and behavioral norms within a company that pertain to environmental sustainability” (Norton et al., 2014, p. 50), specifically focusing on “formal policies, the procedures that translate these policies into tacit guidelines, and practices” (Norton et al., 2012, p.498). Recently the focus of research shifted from a general work climate to aspects of the work climate facilitating specific behaviors such as safety, ethics, or justice behaviors, contributing to a deeper understanding of these specific behavioral outcomes (James et al., 2008; Schneider et al., 2013). Thus, it is proposed that employees' perception of an environmental work climate fosters environmentally sustainable behaviors. (Norton et al., 2012; 2014; Robertson & Carleton, 2017). The construct distinguishes between two facets of perceived environmental work climate, focusing on one hand on the perception of the organization and on the other hand on the coworkers.

Norton et al. (2014) adopt the theory of normative conduct (Cialdini et al., 1990) as a theoretical base, exemplifying how perceived environmental work climate captures behavioral norms within the company. They further argue that work climate perception of the organization gives rise to injunctive norms, reflecting what is morally approved or disapproved of by a society, an organization, or a system, while work climate perception of co-workers is characterized by similarities to descriptive norms, representing typically observed behavior of other group members (Norton et al., 2014; Cialdini et al., 1990). All together social norms serve as behavioral guidelines indicating for example that green behaviors are socially desirable while littering or wasteful use of resources might have negative social consequences (Cialdini et al., 1990; Goldstein et al., 2008; Keizer et al., 2008). Behaving according to the normative influence, allows for a fast decision-making process, saving time and cognitive effort (Goldstein et al., 2008).

In regard to environmental sustainability, environmental norms further provide the information that certain pro-environmental behaviors are effective within the workplace context (Robertson & Barling, 2013). In concordance with this, Norton et al. (2014) find that green work climate perception ultimately leads employees to act more pro-environmentally friendly within the workplace. In a subsequent study they show that green work climate furthermore indirectly influences next day pro-environmental behavior via green behavioral intentions (Norton et al., 2017). Lastly Robertson and Carleton (2017) provide evidence that perceived pro-environmental work climate of coworkers influences the relationship between environmentally specific transformational leadership and employees' voluntary

pro-environmental behavior, thereby highlighting the importance of normative social influence for employees' workplace pro-environmental behavior.

H3: The relations between environmentally specific transformational leadership and pro-environmental behaviors and organizational citizenship behavior towards the environment are mediated through perceived environmental work climate of coworkers.

Leaders enacting the four components of environmentally specific transformational leadership lead employees to draw inferences about leaders' environmental values and recognize sustainability as a prioritized goal within the workplace. Moreover, leaders motivate employees to behave more environmentally friendly through mechanisms and social learning processes described above. Robertson and Carleton (2017) assume that with an increasing number of workgroup members enacting green behavior within the workspace, the work climate will be perceived progressively more and more pro-environmentally friendly. Research therefore suggests that leaders shape employees' pro-environmental climate perceptions through social learning processes, fostering a work environment in which the majority of work group members are concerned about and support organizational environmental sustainability (Robertson & Carleton, 2017). Normative social influence through other organizational members (in this case coworkers) in turn affects individual employees' voluntary pro-environmental behavior.

H3a: Environmentally specific transformational leadership is positively related to the perceived environmental work climate of coworkers.

Norton et al. (2014) find that perceived environmental work climate mediates the relation of perceived sustainability policy and two different types of pro-environmental behavior (task related and proactive green behavior). They describe task related pro-environmental behavior as occurring in the context of assigned work tasks, therefore roughly corresponding to prescribed pro-environmental behaviors, however these behaviors might also include energy conservation behavior and resource management (e.g. printing). Task related pro-environmental behavior is predominantly predicted by the perceived environmental work climate of the organization. On the other hand, proactive pro-environmental behavior described as exceeding formal expectations, comparable to voluntary organizational citizenship behavior toward the environment, is strongly related to the perceived environmental work climate of coworkers. Similarly, Tian et al. (2019) propose that the

relationship between pro-environmental attitude and employees' pro-environmental behaviors (prescribed and voluntary) is mediated through distinct motivational states, which are in turn moderated by environmental work climate perceptions. While the perceived environmental work climate of the organization can result in controlled motivational states, which are predominantly related to prescribed pro-environmental behaviors, environmental work climate perceptions of coworkers is assumed to result in employees' autonomous motivation, which in turn leads to more voluntary pro-environmental behavior. It appears however that the latter relation shows a negative interaction, indicating that social normative influence reduces autonomous motivation and ultimately weakens the relationship between autonomous motivation and voluntary pro-environmental behavior.

Norton et al. (2017) suggest that corporate environmental strategy is positively related to green psychological climate which, in turn, moderates the relationship between green behavioral intentions and next day green behavior. Indeed, an interaction between green behavioral intentions and perceived environmental psychological climate predicted next day pro-environmental behavior, indicating that an environmental work climate might strengthen effects of antecedents on relevant employee behaviors like pro-environmental behavior. Furthermore, Robertson and Carleton (2017) find that employees perceiving their coworkers as environmentally friendly (i.e. perceived environmental work climate of coworkers) show higher levels of voluntary pro-environmental behavior. In the light of the available research, it can be assumed that the perceived environmental work climate of coworkers is positively related to employees' pro-environmental behavior and organizational citizenship behavior.

H3b: Perceived environmental work climate of coworkers is positively related to employees' pro-environmental behavior and organizational citizenship behavior.

The Moderating role of Remote Work

Remote work, also often referred to as teleworking or home office, is generally characterized by physical distance to the corporate office, allowing employees to work from their desired location. In particular, working from home is valued by many employees and organizations alike due to the resulting flexibility. During the Covid-19 pandemic the already ongoing trend towards flexible work arrangement was further accelerated (Mas & Pallais, 2020), allowing many employees to work safely and socially distant from home. According to a report from the International Labour Organization (2021) it is estimated that 17% of employed workers worldwide and at least 15% of Austrian employees worked from home during the pandemic.

Furthermore Mohr (2022) from the institute Statistica conducted a survey showing that 48% of the interviewed Austrian organizations stated that most of their employees currently work at least part time from home. Note that the latter sample was likely conducted focusing on tertiary sector or lines of work mainly carried out in offices.

Given the rising number of hours employees spend in remote work arrangements, the importance of research dedicated to remote work within the field of organizational psychology becomes increasingly obvious. Thus, it is expedient to consider that a variety of situational and contextual factors differ between remote work and traditional “proximal” office settings. Especially taking into account that an overwhelming majority of studies conducted in conventional office settings are being generalized for remote work contexts, without further recognition of those differences. This holds true for research regarding leadership, as it is still largely unknown how employees perceive leadership behavior in remote work settings in which leaders and employees are separated by a physical distance (Kelloway et al., 2003; Kelly & Kelloway, 2012). It can be reasonably inferred that the perception of transformational leadership might be altered if no proximity to the leader is provided, as transformational leadership excerpts influence via social learning mechanisms (i.e. learning via modeling, see Robertson and Barling, 2013; or normative influence, see Robertson & Carleton, 2017). Kelly and Kelloway (2012) remark for example that reduced face-to-face communication might impact how transformational leadership affects a variety of organizational outcomes. To test this, Kelloway et al. (2003) designed an experimental vignette study, exploring whether participants are able to perceive the dimensions of transformational leadership via electronic communication (email). The authors find that participants were indeed capable of discriminating between different leadership styles by reading the constructed emails. In this fashion participants perceived leaders to be more intellectually stimulating when they read the vignette designed to represent an intellectually stimulating leader (Kelloway et al., 2003).

While these results provide evidence that certain leadership messages can be conveyed via electronic communication channels, several shortcomings of this study have to be pointed out. Firstly, the situation and the constructed messages were highly artificial and specifically designed to evoke the desired perception. As is the nature of experimental laboratory studies, the external validity has to be questioned and the results might not translate to real life situations. Secondly, the authors tested only intellectual stimulation and charisma as leadership characteristics, not examining the other dimensions of

transformational leadership. A meta analysis examined how leadership and management relates to safety and health outcomes in distributed workers (which are similarly to remote workers defined by a physical and temporal distance to the main workspace location). While Nayani et al. (2017) argue for the importance of leadership and managerial practices for safety as well as health outcomes and view established leadership styles (i.e. safety specific transformational leadership) as overlooked resources for distributed workers, they were however not able to draw any solid conclusions due to the fragmented nature of the existing literature. Consequently, they urge for more research tackling the subject matter.

Meanwhile Kelly and Kelloway (2012) argue that perception of established leadership styles depend on the context. In their study they suggest that the remote environment requires consideration of and behavioral adaptation to a remote context on behalf of leaders in order to facilitate employees' perception of transformational leadership. They emphasize the role of communication (electronically vs. face-to-face) in shaping human interactions in the workplace. Specifically the authors find that a model of contextual predictors of leadership perception and in turn related outcomes like job satisfaction and trust looks different depending on the context. Regularly scheduled communication and prior knowledge only significantly predicted perceived transformational leadership in remote contexts, suggesting that context matters more in remote situations than in proximal office settings (Kelly & Kelloway, 2012). Altogether research is still sparse and inconclusive, it can however be assumed that transformational leadership still affects remote workers, only with contextual differences. Presumably, the same logic can be applied to environmentally specific transformational leadership. Varying context factors such as reduced face-to-face communication might affect crucial social learning mechanisms. It can be assumed that employees still perceive leaders to enact an environmentally specific leadership style by conveying the leadership dimensions in corresponding communication. Nonetheless, perception of leaders' pro-environmental behavior and environmental work climate will strongly depend on direct perception not facilitated by remote work contexts and employed electronic communication media. Therefore, it is presumed that social learning mechanisms as described in previous sections will be negatively affected (i.e. learning via modeling, see Robertson and Barling, 2013; or normative influence, see Robertson & Carleton, 2017), weakening with the hours employees spend in those remote settings. Alternatively it is proposed that not only the amount of hours but the absolute state of remote work will affect the relationship.

H4: The relation between environmentally specific transformational leadership and perceived leaders' pro-environmental behavior is moderated through remote work.

(a) The relationship will weaken when employees spend more hours in remote work settings. **(b)** The relationship will be weaker for employees who work in remote work settings as opposed to employees who do not.

H5: The relation between environmentally specific transformational leadership and perceived environmental work climate is moderated through remote work. **(a)** The relationship will weaken when employees spend more hours in remote work settings. **(b)** The relationship will be weaker for employees who work in remote work settings as opposed to employees who do not.

The Moderating Role of Biospheric Values & Environmental Attitudes

Environmental attitudes and values can influence and drive individual behavior towards sustainability (e.g. see Yuriev et al., 2020; Shoaib et al., 2022; Rupert et al. 2016; Groot & Steg, 2008; Steg et al., 2014). This assumption is derived from the Theory of Planned Behavior (Ajzen, 1991) which aims to explain and predict behavior by linking beliefs with behavioral intentions. As literature shows this theory is well adjusted to explain the positive relationship of pro-environmental behavior and environmental attitudes, defined as “a psychological tendency expressed by evaluating the natural environment with some degree of favour or disfavour” (Milfont & Duckitt, 2010, p. 81) or in other words a person's tendency to be concerned about the natural environment (Hawcroft & Milfont, 2010). Recent research shows that individuals who are more concerned about the environment are in turn more inclined to respond in environmentally friendly manner, not only in general terms but also in workplace situations (Bissing-Olson et al., 2013). In line with this observation Tian et al. (2020) find that pro-environmental attitude is not only directly related to employees required but also voluntary green behaviors, similarly Bamberg and Möser (2007) successfully demonstrated that attitudes explain a great portion of variance in their proposed model explaining green behavior at work.

In addition, Bissing-Olson et al. (2013) postulate that pro-environmental attitude moderates the relationships between daily positive affect and daily pro-environmental behavior. Interestingly they find that the proposed relationship is stronger for employees that hold a less positive attitude towards the environment, indicating that daily affect does not

influence green behavior of employees who are generally more concerned about the environment. Yet another study conducted in China revealed that environmental attitudes moderate the relationship between transformational leadership and green dedication (a concept derived from work engagement) is moderated by environmental values and in turn positively influences green organizational citizenship behavior (Khan & Khan, 2021). Shoaib et al. (2022) provide evidence that stronger environmental values further strengthen the relationship of green human resource management practices and employees' green behavior on one hand and environmentally specific transformational leadership and employees' green behavior on the other hand. Taking these results under consideration it is reasonable to conclude that strong environmental attitudes are moderators in the here proposed research model.

Likewise, biospheric values are thought to play an important role in predicting green behaviors (see i.e. Ruepert et al., 2017). As described by Schwartz (1992), values are understood as “desirable goals, varying in importance, that serve as guiding principles in people’s lives” (p. 21). In contrast to attitudes which could be described as evaluations of situations and circumstances, values are considered global and abstract principles. Therefore, values are often viewed as predecessors of attitudes, providing a framework of global principles towards which actions are aligned. Moreover, values are assumed to be stable over time and universally shared across different cultures (Deng et al., 2022). Biospheric values correspondingly refer to values regarding the environment (Stern, et al., 1998). People that hold strong biospheric values are more considerate of consequences of their behavior for the natural environment and therefore feel more obligation to behave environmentally friendly in the workplace (Ruepert et al., 2017). Furthermore, Robertson and Carleton (2017) argue that employees and leaders sharing common environmental values leads to more pro-environmental behavior. That value congruence benefits the perception of transformational leadership and employee performance was already discussed by Jung and Avolio (2000), as employees seek to behave consistent with who they are and therefore prefer following a leader that matches their own values (Graves & Sarkis, 2018; Hameed et al., 2020).

Drawing on the supply value fit theory by Edwards (1996), originally intended to explain stress at work, it can be followed that a congruence between organizational support and an employee’s values positively impacts work related outcomes. Cheema et al. (2019) for example, show that employees' perceptions of the organizational involvement in

environmentally responsible activities impact their organizational citizenship behavior towards the environment. Moreover, Islam et al. (2021) report that when green human resource management policies align with employees' values, they will exhibit more organizational citizenship behavior towards the environment. The concern for the wellbeing of others, aligns with environmental concern, therefore the authors argue that altruistic values strengthen the mediated relationship environmentally-specific transformational leadership and environmental outcomes (Deng et al., 2022). Furthermore Graves & Sarkis (2018) propose a moderating role of biospheric values between environmentally specific transformational leadership perception and motivational states, stronger values positively coinciding with a stronger connection and in turn more green behavior. This moderating effect of biospheric values may be due to the need for consistency between values and action (Stone, 2010). Lastly, several authors have pointed out that high environmental values strengthen the connection between the work climate and employees' environmental outcomes (Khan et al., 2019; Dumont et al., 2017).

As suggested by this extensive body of literature the role of environmental attitudes and biospheric values are taken under consideration in this research model. Because attitudes and values do not always translate directly into pro-environmental actions, it is assumed that these factors will guide behavior in an indirect manner (Deng et al., 2022; Graves & Sarkis, 2018). A moderating effect of both factors is presumed, strengthening the relationship between perceived leaders' pro-environmental behavior as well as perceived environmental work climate and environmental outcomes.

H6: The relation between perceived leaders' pro-environmental behavior and environmental outcomes (pro-environmental behaviors and organizational citizenship behavior towards the environment) is moderated through **(a)** biospheric values **(b)** environmental attitudes. The relationship will be stronger for employees who hold stronger biospheric values and environmental attitudes.

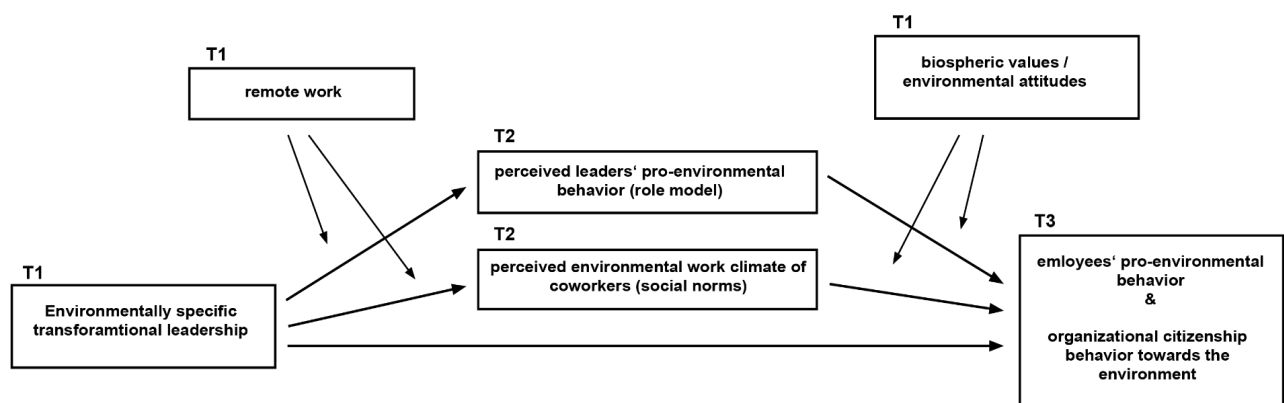
H7: The relation between perceived environmental work climate and environmental outcomes (pro-environmental behaviors and organizational citizenship behavior towards the environment) is moderated through **(a)** biospheric values **(b)** environmental attitudes. The relationship will be stronger for employees who hold stronger biospheric values and environmental attitudes.

Proposed Research Model

To summarize the previous sections, it is proposed that environmentally specific transformational leadership will directly affect employees' pro-environmental behavior as well as citizenship behavior towards the environment. In addition, environmentally specific transformational leadership presumably influences perceived leaders' pro-environmental behavior and perceived environmental work climate of coworkers, both representing a social influence. Both, will in turn be positively related to green behaviors, mediating the relationship. Furthermore, it is expected that remote work will negatively affect the perception of both mediating factors. On the other hand, biospheric values and environmental attitudes are assumed to strengthen the connection of the mediating factors and the environmental outcomes. The proposed research model is depicted in Fig. 1.

Figure 1.

Proposed research model



Methods

Procedure

A pretest was conducted with the aim of testing the comprehensibility of the adapted and translated scales (English to German) as well as to determine the reliability for these scales. The scales were found to be adequate for the present research purpose. The data collection was carried out in June-September of 2022 via the open-source platform soscisurvey.de at three testing stages two weeks apart to avoid the common method bias. While most variables

were measured at all three testing points, Figure 1 shows which variables at what testing stage were used to conduct the calculations. Specifically, data measuring environmentally specific transformational leadership as well as the moderator variables remote work, environmental attitudes and biospheric values from the first testing point, the mediator variables leaders' pro-environmental behavior and perceived environmental climate of coworkers at the second testing point and lastly the outcomes employees' pro-environmental behavior as well as organizational citizenship behavior towards the environment at the third testing point were used.

Sample

A total of 272 employees were randomly sampled and agreed to participate in the online survey observing environmental behaviors within the workplace. After excluding participants who worked less than 20 hours per week, people with top leadership positions as well as incomplete data sets – only including participants that filled out all questionnaires from time point 1 throughout time point 3 – a resulting sample of $n = 85$ employees was used to conduct calculations. The final sample was made up of 68% women, 28% men and 4% chose the diverse gender category. The age ranged from 19 to 72 ($M = 41.3$ years, $SD = 13.6$). On average participants worked 37.8 hours a week ($SD = 10.4$), with 40.0% stating that they are currently working remotely or have been working remotely in the past 6 months and 60.0% reporting that they did not. In regard to education, it has to be pointed out that the conducted sample presented with a rather high education, with 40.0% having completed a Matura/Abitur and 25.9% some higher form of higher education (i.e. university degree). For a full overview of all demographic items included see Appendix 1.

Instruments

Environmentally Specific Transformational Leadership (ETFL) was measured using the 12-item scale by Robertson (2017) that consists of the subscales environmental idealized influence, environmental inspirational motivation, environmental intellectual stimulation as well as environmental individualized consideration. Participants were asked to rate the items in terms of agreement on a five-point Likert scale, ranging from “1 = never” to “5 = always”. Items include for example “My leader motivates me to work in an environmentally friendly manner.” and “My leader shows that they value the environment.” (See Appendix 2 for the exhaustive item list). Organizational Citizenship Behavior towards the Environment (OCBE) was measured using 10 items proposed by Boiral and Paillé (2012) comprising the subscales

eco-initiatives, eco-civic engagement and eco-helping. The measure is based on a five-point Likert scale, asking participants to rate their behavior ranging from "1 = strongly disagree" to "5 = strongly agree". Participants further had the option to check "not able to show this behavior". The items include "I voluntarily carry out environmental actions and initiatives in my daily work activities." (See Appendix 3).

Employees' Pro-Environmental Behavior (E-PEB) was measured using a shortened and adapted 13-item version of the scale developed by Blok et al. (2015) to fit green behavior shown in office jobs. Subscales include light use, computer use, heating, printing, sustainable shopping as well as water use. Items like "I switch off my computer/notebook when I leave my office for a considerable period" were rated on a Likerts scale from "1 = never" to "5 = always". Participants had the option to check "not able to show this behavior" (see Appendix 4). Accordingly, Perceived Leaders' Pro-Environmental Behavior (L-PEB) was measured using the same 13 items with a slight adaptation, as follows "My leader switches off their computer/notebook when they leave their office for a considerable period". Participants also had the option to check "I do not know whether my leader shows this behavior" (see Appendix 5). Perceived Environmental Work Climate of Coworkers (EWC-C) was measured using a subscale developed by Norton et al. (2014). The four items contained for example "In our company, employees pay attention to environmental issues" and were rated on a five-point Likert scale ranging from "1 = strongly disagree" to "5 = strongly agree" (see Appendix 6).

Biospheric Values were measured using a subscale of the short version of Schwartz's personal value scale (1992) revised by Stern et al. (1998). The four items included, expressed statements such as "preventing pollution: protecting natural resources", and "respecting the earth: harmony with other species", rated from "1 = not important at all" to "7 = extremely important" by participants (see Appendix 7). Lastly Environmental Attitudes were measured using the brief version of Milfont and Duckitt's (2010) Environmental Attitude Inventory. The 24 items included "Whenever possible, I try to save natural resources." and were rated from "1 = strongly disagree" to "5 = strongly agree" (see Appendix 8). All scales were translated into German to facilitate comprehensibility of the german-speaking sample. Participants were further asked to indicate whether they currently participate in remote work or have participated in remote work in the last six months. Those who did, were subsequently asked to state how many hours a week they work or have worked remotely on average.

Results

To conduct the statistical analyses IBM SPSS Statistics Version 28 was used, including the PROCESS macro by Hayes (2018) for testing mediation and moderation hypotheses. This tool uses ordinary least square regression to calculate the coefficients. Furthermore 5.000 bootstrapping samples were used to compute confidence intervals for the affected analyses. Although the used bootstrapping approach provided by the PROCESS macro ensures a rather robust procedure, the required preconditions for the analyses were examined. The scatterplots of the relationships between all variables in the model were found to be approximately linear. The distributions of residuals approximately followed a normal distribution and the distribution of the main variables showed no major outliers skewing the results. However, it has to be noted that distributions of item responses for the measures of biospheric values and environmental attitudes were right-skewed, indicating a possible social desirability bias, as further discussed in a later section. Furthermore, homoscedasticity can be assumed for the measures in this data set. For good measure, heteroscedasticity corrections and mean-centering were still used for mediations and moderation analyses.

Even though most of the scales used were already validated in prior literature and a pretest confirmed a decent reliability for adapted and translated scales, internal consistencies of the scales for the final sample were examined. Cronbach's alpha was calculated to assess the internal consistencies for all scales ranging from .81 to .96. While no scale showed low values, very high values might indicate a redundancy in items or reflect a hasty answering pattern. All values as well as descriptive data for the main variables are shown in Table 1.

Table 1.*Cronbachs' alphas and descriptive data*

Dimension	Cronbachs' α	M	SD
1. ETFL (T1)	.96	2.80	.90
2. PEB-E (T3)	.81	3.40	.54
3. OCBE (T3)	.93	2.94	.92
4. PEB-L (T2)	.94	3.70	.89
5. EWC-C (T2)	.94	3.35	.87
6. EA (T1)	.87	6.14	.59
7. BV (T1)	.85	6.30	.79

Note. ETFL = Environmentally specific Transformational Leadership. PEB-E = Employees' Pro-Environmental Behavior. OCBE = Organizational Citizenship Behavior towards the Environment. PEB-L = Perceived Leaders' Pro-Environmental Behavior. EWC-C = Perceived Environmental Work Climate of Coworkers. EA = Environmental Attitudes. BV = Biospheric Values. T1-T3 indicates the point in time at which the variable was measured. $n = 85$.

Pearson product-moment correlations were conducted to determine how the main variables are related to each other. It has to be taken into account that the correlations of the main constructs were conducted using data across three points in time. Due to the longitudinal nature of the research model used, correlations are expected to be accordingly lower than in cross-sectional designs. Most correlations between main constructs present as predicted in the research modes (see Figure 1), with one exception. Environmentally specific transformational leadership (ETFL) was not significantly related to employees' pro-environmental behavior (E-PEB) ($r(83) = .20, p = .62$), it was however significantly related to organizational citizenship behavior towards the environment (OCBE) ($r(83) = .45, p < .001$). Furthermore ETFL was positively related to both perceived leaders' pro-environmental behavior (L-PEB) ($r(83) = .38, p < .001$) and perceived environmental work climate of coworkers (EWC-C) ($r(83) = .52, p < .001$). Moreover both outcomes were significantly related to biospheric values (PEB-E with $r(83) = .35, p < .001$, OCBE with $r(83) = .38, p < .001$) and environmental attitudes (PEB-E with $r(83) = .40, p < .001$, OCBE with $r(83) = .42, p < .001$). All intercorrelations are depicted in Table 2.

Table 2.*Pearson correlations of the main variables*

Dimension	1.	2.	3.	4.	5.	6.	7.
1. ETFL (T1)	-	-	-	-	-	-	-
2. PEB-E (T3)	.20	-	-	-	-	-	-
3. OCBE (T3)	.45**	.44**	-	-	-	-	-
4. PEB-L (T2)	.38**	.28**	.07	-	-	-	-
5. EWC-C (T2)	.52**	.21	.23*	.42**	-	-	-
6. EA (T1)	.08	.40**	.42**	.11	.10	-	-
7. BV (T1)	.17	.35**	.38**	.06	.13	.59**	-

Note. * $\alpha \leq .05$, ** $\alpha \leq .01$. ETFL = Environmentally specific Transformational Leadership. PEB-E = Employees' Pro-Environmental Behavior. OCBE = Organizational Citizenship Behavior towards the Environment. PEB-L = Perceived Leaders' Pro-Environmental Behavior. EWC-C = Perceived Environmental Work Climate of Coworkers. EA = Environmental Attitudes. BV = Biospheric Values. T1-T3 indicated the point in time at which this variable was measured. $n = 85$.

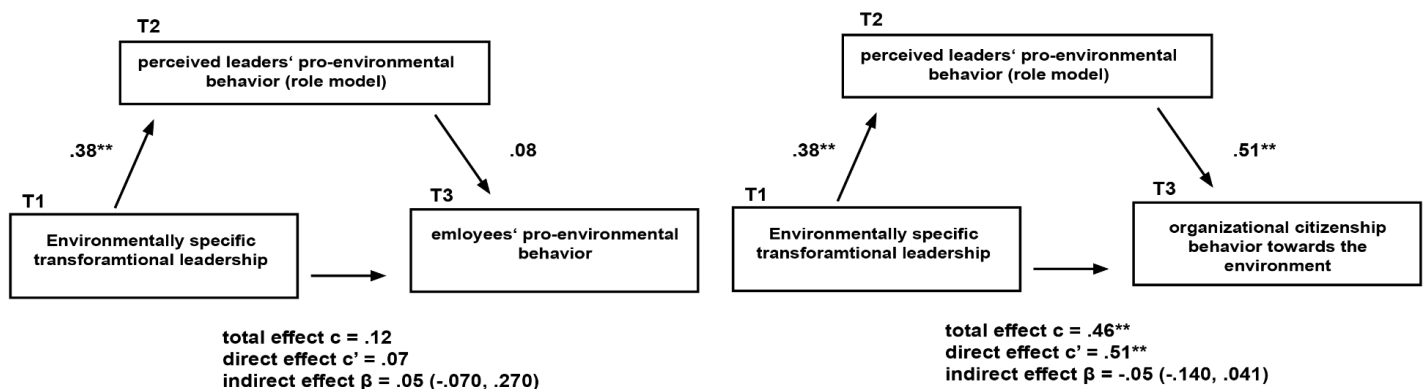
To further test hypothesis 1, two simple linear regressions were conducted to predict environmental outcomes based on ETFL scores. Firstly, the relationship between E-PEB and ETFL was not found to be significant ($F(1, 83) = 3.57, p = .06$), just missing the required significance level of $\alpha = 5\%$, although ETFL explained 20% of the variance of the outcome ($\beta = .20, t(84) = 1.89, p = .06, 95\% \text{ CI } [-.01, .25]$). On the other hand ETFL was significantly related to OCBE ($F(1, 83) = 20.83, p < .001$), explaining 20% of the variance of the outcome ($\beta = .45, t(84) = 4.56, p < .001, 95\% \text{ CI } [.26, .66]$).

As stated prior, all mediation and moderation hypotheses were conducted using the PROCESS macro by Haynes (2018). Effects were considered significant when the confidence interval did not include zero. In order to test hypothesis 2, two mediation analyses were conducted to examine whether L-PEB mediates the relation between ETFL and the environmental outcomes. Results are summarized in Figure 2. For the model regarding the outcome E-PEB, the direct effect ($c' = .07, p = .33$) was not found to be significant. This is in line with the results of the correlation and simple linear regression of E-PEB and ETFL described in the prior section. The effect of ETFL on L-PEB was reported as significant ($a =$

.38, $p < .001$), however L-PEB in turn does not have a significant effect on E-PEB ($b = .08$, $p = .07$). Furthermore the indirect effect ($\beta = .05$, 95% CI $[-.070, .270]$) as well as the total effect ($c = .12$, $p = .06$) were not significant. The same calculations were conducted for the outcome OCBE, showing a significant direct ($c' = .51$, $p < .001$) and total effect ($c = .46$, $p < .001$) on ETFL. In this model, not only path a was reported as significant, but L-PEB does also have a significant effect on OCBE ($b = .51$, $p < .001$). However the indirect effect ($\beta = .05$, 95% CI $[-.140, .041]$) did not reach significance as the confidence interval includes zero, indicating that no mediating effect of L-PEB exists as proposed by the research model. The indirect effect remained not significant after repeated calculations with a larger sample ($n = 125$) granting a larger power using only data from T1 (predictors and mediator) and T2 (outcome).

Figure 2.

Hypothesis 2: Mediation of perceived leaders' pro-environmental behavior



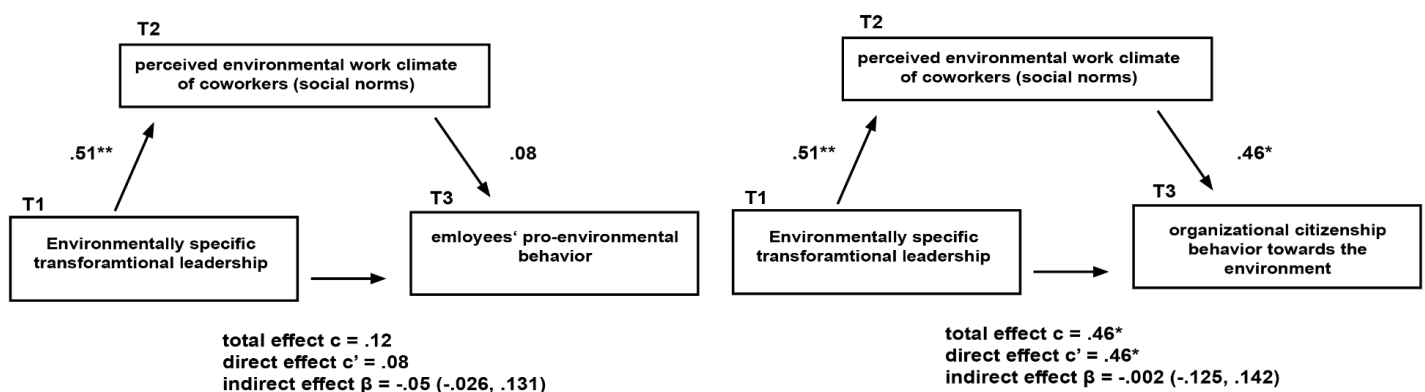
Note. * $p < .05$, ** $p < .01$.

To test hypothesis 3, two more mediation analyses were conducted examining whether EWC-C mediates the relation between ETFL and the environmental outcomes. Results are depicted in Figure 3. Firstly, regarding the outcome E-PEB, the direct effect of ETFL on E-PEB ($c' = .08$, $p = .29$) remained not significant, as already indicated in hypothesis 2, further solidifying the results of the correlation and simple linear regression of E-PEB and ETFL described in a prior section. The effect of ETFL on EWC-C was reported as significant ($a = .51$, $p < .001$), however EWC-C in turn does not have a significant effect on E-PEB ($b = .08$, $p = .23$). Furthermore, the indirect effect ($\beta = -.05$, 95% CI $[-.026, .131]$) as well as the

total effect ($c = .12, p = .06$) were not significant. Calculations for the outcome OCBE yield a significant direct ($c' = .46, p < .01$) and total effect ($c = .46, p < .01$) on ETFL. Additional to path b, the relationship of EWC-C on OCBE ($b = .46, p < .01$) showed a significant effect. Yet the indirect effect ($\beta = -.002, 95\% \text{ CI } [-.125, .142]$) did not reach significance, as the confidence interval includes zero. Therefore, it has to be concluded that EWC-C did not have the proposed mediating effect on the relationship of ETFL and both environmental outcomes. Furthermore, no significant mediation was found after repeated calculations with a larger sample ($n = 125$) granting a larger power using only data from T1 (predictors and mediator) and T2 (outcome).

Figure 3.

Hypothesis 3: Mediation of perceived environmental work climate of coworkers



Note. $*p < .05$, $**p < .01$.

A series of moderation analyses was run to test hypotheses 4 and 5, proposing that remote work moderates the relationship of ETFL and L-PEB as well as EWC-C. First, a moderation analysis was calculated to determine whether the interaction between remote work as a dichotomous variable (participants that did work remotely and those who did not) and ETFL predicted L-PEB. While the overall model showed significant effects ($F(3, 81) = 3.71, p = .02$) with 16.54% explained variance, the analysis reveals no significant interaction effect of remote work between ETFL and L-PEB ($R^2 = 2.15\%, F(1, 81) = 1.39, p = .24, 95\% \text{ CI } [-.200, .785]$). The same calculation was repeated with remote work as a metric variable measured in hours per week, excluding participants that did not work remotely. Similar results were found, with a significant overall model ($F(3, 40) = 6.23, p < .001$) explaining 29.23% in

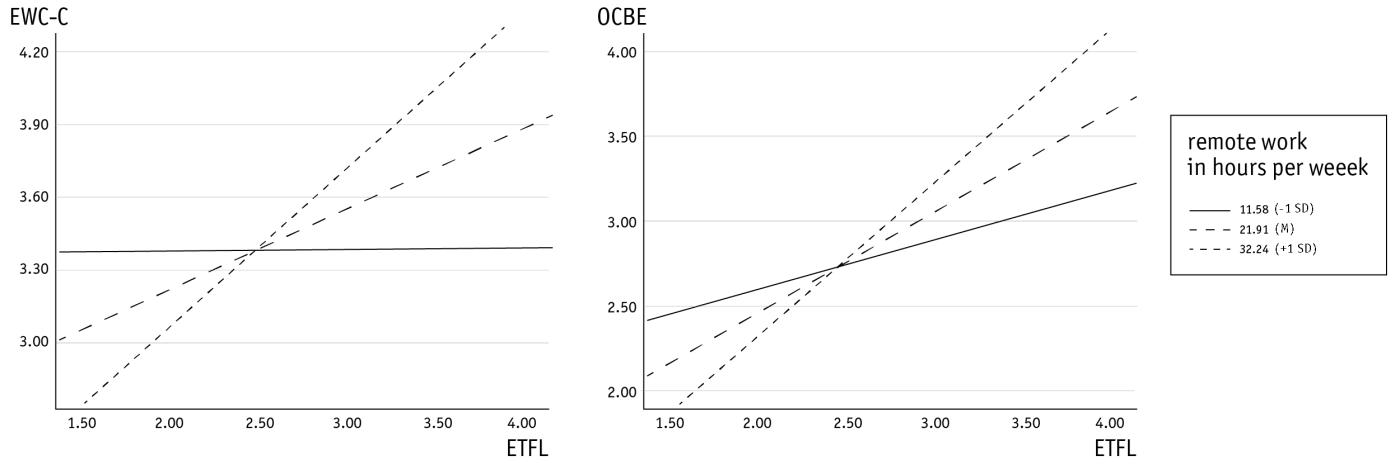
variance, yielding however no significant interaction effect ($R^2 = 0.02\%$, $F(1, 40) = 0.01$, $p = .94$, 95% CI $[-.037, .040]$). This means that remote work did not influence the relationship between ETFL and L-PEB.

Next, another moderation analysis was conducted to determine whether the interaction between remote work (as a dichotomous variable) and ETFL predicted EWC-C. Similar to the prior results, the overall model showed significant effects ($F(3, 81) = 9.02$, $p < .001$) with 29.55% explained variance, yet the analysis reveals no significant interaction effect of remote work between ETFL and EWC-C ($R^2 = 0.18\%$, $F(1, 81) = 1.49$, $p = .23$, 95% CI $[-.165, .690]$). The calculation was repeated with remote work in hours per week and results showed not only a significant overall model ($F(3, 40) = 6.30$, $p = .001$) explaining 31.03% in variance, but also a significant interaction effect ($R^2 = 11.02\%$, $F(1, 40) = 5.68$, $p = .02$, 95% CI $[.005, .058]$). In order to evaluate the direction of the significant interaction effect, a scatterplot with fit lines at the subgroups was generated using the significance regions, as shown in Figure 4. The present data reveals a positive interaction effect, suggesting that more hours spent in remote work situations strengthen the relationship between ETFL and EWC-C.

Additionally, it was tested whether remote work moderated the relation between ETFL and the environmental outcomes. As these calculations were not part of the proposed hypotheses, solely the significant results will be pointed out. Only the interaction of remote work in hours per week and ETFL predicted OCBE. As shown by the data, the overall model ($F(3, 40) = 9.35$, $p < .001$) explaining 41.60% in variance and the interaction effect ($R^2 = 6.31\%$, $F(1, 40) = 10.528$, $p = .002$, 95% CI $[.011, .048]$) were statistically significant. As shown in Figure 4, the present data indicates a positive interaction effect, suggesting that more hours spent in remote work situations strengthen the relationship between ETFL and OCBE.

Figure 4.

Scatterplots: Visualization of the significant interactions for hypothesis 4 and 5.



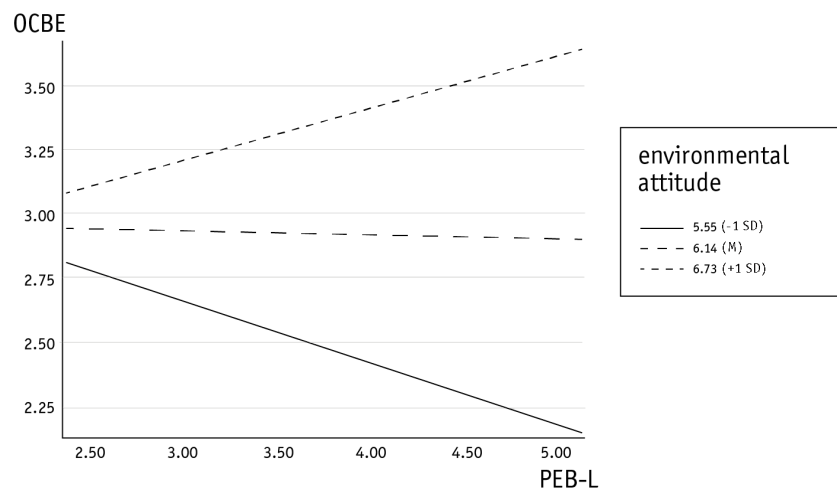
Note. The scatterplots were generated using the significance regions, to maximize readability fit lines at the subgroups were used. ETFL = Environmentally specific Transformational Leadership. OCBE = Organizational Citizenship Behavior towards the Environment. EWC-C = Perceived Environmental Work Climate of Coworkers.

To test hypotheses 6 and 7 more moderation analyses were run. Firstly, as proposed by hypothesis 6a, it was tested whether biospheric values (BV) moderate the relation between PEB-L and the environmental outcomes. While the overall model for the dependent variable PEB was significant ($F(3, 81) = 8.30, p < .001$) with 21.04% explained variance, the interaction effect did not yield significant results ($R^2 = 0.25\%$, $F(1, 81) = 2.06, p = .16$, 95% CI $[-.061, .378]$). Similarly the overall model for the dependent variable OCBE was significant ($F(3, 81) = 3.98, p = .01$) with 14.46% explained variance, the interaction effect did not reach significance ($R^2 < 0.01\%$, $F(1, 81) = 0.01, p = .91$, 95% CI $[-.338, .378]$). Secondly, it was tested whether environmental attitudes (EA) moderate the relation between PEB-L and the environmental outcomes, as stated by hypothesis 6b. While the overall model for the dependent variable PEB was significant ($F(3, 81) = 6.54, p < .001$) with 21.52% explained variance, the interaction effect did not yield significant results ($R^2 < 0.01\%$, $F(1, 81) = 0.08, p = .78$, 95% CI $[-.252, .190]$). The calculation was repeated for the dependent variable OCBE, yielding significant effects for the overall model ($F(3, 81) = 7.12, p < .001$) with 22.70% explained variance, as well as the interaction effect ($R^2 = 0.05\%$, $F(1, 81) =$

5.86, $p = .02$, 95% CI [.067, .691]). As depicted in Figure 5, the present data suggests a negative interaction effect for low EAs, while strong EAs strengthen the relationship between OCBE and PEB-L.

Figure 5.

Scatterplot: Visualization of the significant interaction for hypothesis 7.



Note. The scatterplot was generated using the significance regions, to maximize readability fit lines at the subgroups were used. OCBE = Organizational Citizenship Behavior towards the Environment. PEB-L = Perceived Leaders' Pro-Environmental Behavior.

Furthermore, it was tested whether BVs moderate the relation between EWC-C and the environmental outcomes, as proposed in hypothesis 7a. While the overall model for the dependent variable PEB was significant ($F(3, 81) = 4.40$, $p = .006$) with 15.61% explained variance, the interaction effect did not yield significant results ($R^2 < 0.01\%$, $F(1, 81) = 0.62$, $p = .43$, 95% CI [-0.130, .301]). Similarly the overall model for the dependent variable OCBE was significant ($F(3, 81) = 9.04$, $p < .001$) with 18.95% explained variance, the interaction effect did not reach significance ($R^2 = 0.01\%$, $F(1, 81) = 1.12$, $p = .29$, 95% CI [-0.516, .157]). Then it was tested whether EAs moderate the relation between EWC-C and the environmental outcomes, as stated by hypothesis 7b. While the overall model for the dependent variable PEB was significant ($F(3, 81) = 6.36$, $p < .001$) with 19.80% explained variance, the interaction effect did not yield significant results ($R^2 = 0.01\%$, $F(1, 81) = 0.90$, $p = .35$, 95% CI [-0.137, .388]). The calculation was repeated for the dependent variable OCBE,

yielding no significant effects for the overall model ($F(3, 81) = 7.03, p < .001$) with 21.20% explained variance, as well as no significant interaction effect ($R^2 < 0.01\%$, $F(1, 81) < 0.01, p = .94$, 95% CI [-.558, .600]).

Discussion

Environmental sustainability is a more pressing matter than ever, with ramifications of environmental pollution, climate change and loss of biodiversity negatively impacting the whole world (see IPCC, 2018). Consequently, managing and promoting green behavior becomes a central agent of change. While green behavior in households has a long research tradition, interest in organizational settings has only recently gained more impact (Steg & Vlek, 2009; Mi et al., 2019; Lo et al., 2012). The opportunity to contribute to a reduction of environmental issues on part of organizations by promoting their employees' green behaviors within the workplace becomes apparent when considering the ample amount of time employees spend at work. The present paper aims to shed light on the relationship of environmentally specific transformational leadership and environmental outcomes within remote work settings. Thereby the results of this thesis contribute to a deeper understanding of how organizations can successfully implement environmental sustainability with regard to an ongoing trend of the labor market. With the recent increase of remote work and home office arrangements, further accelerated by the COVID-19 pandemic, it becomes imperative to consider the effectiveness of established leadership styles in contexts characterized by physical distance to the workspace (Kelly & Kelloway, 2012).

It is generally assumed that leaders, especially those adopting a transformational leadership style, facilitate great potential for change (Bass & Riggio, 2006). Regarding environmental sustainability within the workplace, environmentally specific transformational leadership has been established as a reliable predictor of employees' green behavior (Robertson & Barling, 2015). Leaders enacting idealized influence, inspirational motivation, intellectual stimulation and individualized consideration towards the environment directly and indirectly foster green responses of their employees. The study further investigates this relationship of environmentally specific transformational leadership and environmental outcomes in the workplace as well as possible mechanisms of action.

Overall, the present study yields mixed results and does not support the proposed research model, as discussed in the following. The first hypothesis explores the direct influence of environmentally specific transformational leadership on environmental outcomes. Firstly, the results regarding organizational citizenship behavior towards the environment are consistent with the predictions, revealing a positive relationship of environmentally specific transformational leadership and organizational citizenship behavior towards the environment. This implies that leaders enacting the four main components of environmentally specific transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, individualized consideration) successfully encourage employees to voluntarily contribute ideas and suggestions to promote new environmental initiatives, partake in trainings and organizational-driven green events as well as mutually support others to behave in an environmentally friendly manner in the workplace. This is well in line with previous research (e.g. Robertson & Carleton, 2018; Robertson & Barling, 2013; Boiral, 2009; Mi et al., 2019).

Similarly, the results regarding pro-environmental behavior point towards a positive relationship of environmentally specific transformational leadership and pro-environmental behavior, however the results do not yield a significant effect. Due to the small sample size ($n = 85$), low power might be responsible for not finding a significant relationship in this instance. Especially in the light of the numerous studies successfully showing a positive relationship of leadership and pro-environmental behaviors (e.g. Graves et al., 2013; Graves & Sarkis, 2018; Kura, 2016; Li et al., 2020) it has to be remarked that the results will be interpreted in favor of the hypothesis. Considering the results within the context of the literature, the findings further consolidate the overall notion that leadership can successfully encourage pro-environmental outcomes in organizational contexts, thereby improving organization's environmental sustainability.

Contrary to the predictions proposed in hypothesis 2, perceived leaders' pro-environmental behaviors did not mediate the relation between environmentally specific transformational leadership and the environmental outcomes: organizational citizenship behavior towards the environment on one hand and pro-environmental behavior on the other hand. While the indirect effects, indicating a mediating relationship, did not reach significance for both outcomes some individual paths showed a positive connection, as discussed in the following. First of all, path a was reported as significant, indicating that environmentally specific transformational leadership predicts perceived leaders'

pro-environmental behavior. This can be attributed to behavioral consistency across similar situations within individuals (Robertson & Barling, 2013). Both environmentally specific transformational leadership behavior and perceived leaders' pro-environmental behavior occur in the workplace, therefore these behaviors will likely be similar to each other, as they reflect leaders' internalized values. Furthermore, the results show that perceived leaders' pro-environmental behavior in turn influences employees' organizational citizenship behavior towards the environment in path b, revealing that leaders might indeed influence their employees by being a role model (Brown et al., 2005; Robertson & Barling, 2013; Li Lin & Liu, 2019). Despite the significant direct and total effect, no mediating effect was found. Moreover, perceived leaders' pro-environmental behavior did not predict employees' pro-environmental behavior, and neither direct nor total effect in this model reached the significance level. This is in line with the results of the first hypothesis regarding pro-environmental behavior described in the prior section.

To potentially overcome the drawbacks of the small sample size, the calculations were repeated using only data from the first two testing points (T1 for the predictor and mediator, T2 for the outcomes). Even though the larger sample ($n = 125$) grants more power, the indirect effects remained not significant. While it can be concluded that perceived leaders' pro-environmental behavior plays a relevant role in promoting green behavior at work, as demonstrated by the positive correlations as well as significant paths in the mediation model, the available data suggests that it cannot be considered as a mechanism of action. As proposed by Robertson and Barling (2013) leaders' pro-environmental behavior might rather serve as a predictor in models explaining environmentally sustainable behavior at work. Due to the ambiguous nature of the results more research is needed to clarify the exact role perceived leaders' pro-environmental behavior plays for pro-environmental behaviors.

As opposed to the predictions of hypothesis 3, relations between environmentally specific transformational leadership and both environmental outcomes were not mediated through perceived environmental work climate of coworkers. Analogous to the results of hypothesis 2 no significant indirect effects were found, but some paths showed positive connections. Again, the significant effect of path a suggests that environmentally specific transformational leadership predicts the environmental work climate of coworkers. An environmentally specific leadership style might convey environmental values and establish sustainability as a prioritized goal within the workplace, thereby fostering a work environment in which employees are concerned about environmental sustainability and

behave more environmentally friendly (Robertson & Carleton, 2017). In turn, the environmental work climate of coworkers predicts organizational citizenship behavior towards the environment. This is in accord with literature suggesting that green work climate perception leads employees to act more pro-environmentally friendly within the workplace (Norton et al., 2014; Norton et al., 2017). While the paths a and b, as well as the direct and total effect of the mediation analysis yield significant effects, the indirect effect remains not significant. Likewise, perceived environmental work climate of coworkers did not predict employees' pro-environmental behavior, and further revealed no significant indirect effect. The calculations were repeated using only data from the first two testing points (T1 for the predictor and mediator, T2 for the outcomes). Even though the larger sample ($n = 125$) grants more power, the indirect effects remained not significant.

Therefore, it has to be concluded that the perceived environmental work climate of coworkers did not have the proposed mediating effect on the relationship of environmentally specific transformational leadership and both environmental outcomes. This stands in stark contrast to Robertson and Carleton's (2017) contribution, highlighting the importance of normative social influence of perceived pro-environmental work climate of coworkers. Altogether it can be presumed that the perceived environmental work climate of coworkers does play a relevant role in promoting green behavior at work, more research is however advised to determine the exact role perceived environmental work climate of coworkers plays for workplace pro-environmental behaviors.

The results of hypotheses 4 and 5 regarding the moderating role of remote work yields rather unexpected results. As for hypothesis 4, the moderation model showed a significant overall model, yet no interaction effect. The relationship between environmentally specific transformational leadership and perceived leaders' pro-environmental behavior was not influenced by working in remote work settings. Furthermore, the hours spent in remote work settings did not moderate the relationship. Ultimately only the relationship between environmentally specific transformational leadership and perceived environmental work climate of coworkers, proposed in hypothesis 5, was moderated by the hours spent in remote work settings. The significant interaction term reveals an exceedingly small effect, however. Contrary to predictions, more hours spent in remote work settings strengthened the relationship of the predictor and green work climate, while it was originally assumed that reduced perception will inhibit the effects of environmentally specific leadership. Overall, these results and the interpretation thereof have to be considered with caution, as the sample

used to conduct the analyses was noticeably small ($n = 44$), therefore not presenting with a high power. Considering that the interaction effect only explains a negligible portion of variance and the other analyses did not reach significance, it has to be remarked that the present findings might rather reflect statistical coincidence.

Additionally, some exploratory analyses were conducted, examining the influence of remote work on the relationship of environmentally specific transformational leadership and the environmental outcomes, to account for the fact that the mediating variables did not have the expected effect in the first place. These supplementary calculations revealed that remote work in hours did moderate the relationship of environmentally specific transformational leadership and organizational citizenship behavior towards the environment. The significant interaction effect explained a small amount of variance. Nonetheless, the direction of the interaction effect contradicts the predictions. Hence, more hours spent in remote work settings strengthened the relationship of the predictor and environmental outcome, and did not weaken it as proposed. Again, these results have to be critically reviewed and can be easily attributed to a low statistical power. It should however also be considered that the results regarding the role of remote work might indicate that the environmentally specific transformational leadership style is well suited to promote environmentally sustainable behavior even in remote work situations, although this was not explicitly tested. This conclusion would promise auspicious prospects for organizational sustainability. In order to confirm this suspicion more deliberate research regarding environmentally specific transformational leadership in remote work settings is advised.

Lastly, the results of hypotheses 6 and 7 did not support the predictions concerning the moderating role of environmental attitudes or biospheric values. The analyses regarding biospheric values as a moderating factor did reveal significant overall models, yet no interaction effects. This means that biospheric values did neither moderate the relationship between perceived leaders' pro-environmental behavior and the organizational outcomes (organizational citizenship behavior towards the environment and pro-environmental behavior, respectfully) nor the relationship between perceived environmental work climate of coworkers and the environmental outcomes. The results lead to the conclusion that even though biospheric values positively correlate with the environmental outcomes there is no significant interaction effect as assumed in the research model. And yet it cannot be ruled out that values influence pro-environmental outcomes in organizations in a different relation.

The same calculations were repeated for environmental attitudes, showing similar results. Solely one analysis did show a significant interaction effect. The relationship between perceived leaders' pro-environmental behavior and organizational citizenship behavior towards the environment was significantly moderated by environmental attitudes. The data suggests a negative interaction effect for low environmental attitudes, while strong environmental attitudes strengthen the relationship. This is partially in line with the predictions that environmental attitudes will strengthen the relationship. Taking a closer look at the scatterplot in Fig. 5, it becomes apparent that the values lie close to each other. Note that the distributions of biospheric values ($M = 6.30$, $SD = .79$) as well as environmental attitudes ($M = 6.14$, $SD = 5.9$) are right skewed, possibly leading to a ceiling effect, leaving little room to measure the true values. This slightly impedes the interpretation of the found interaction, as it has to be critically questioned whether the used measuring scales are able to discriminate between the high manifestations of the values and underlying construct adequately.

To sum up, the results of the present paper do not support the research model. Several noteworthy findings have to be pointed out however. First, this study replicates the well-established findings that environmentally specific transformational leadership promotes green behavior of employees successfully within the workplace (e.g. Robertson & Barling, 2013; Boiral, 2009; Mi et al., 2019; Graves et al., 2013; Kura, 2016; Li et al., 2020). Moreover, the data suggest that the constructs perceived leaders' pro-environmental behavior and perceived environmental work climate of coworkers are of relevance for environmental outcomes, if not in the form of a mediating relationship. A preliminary conclusion regarding remote work might be reached, suggesting that environmentally specific transformational leadership effectively promotes green behavior within remote work settings, though this was not explicitly tested and the results therefore remain inconclusive. As for environmental attitudes as well as biospheric values no clear resolution can be reached.

Interestingly, the impact of the predictor as well as moderator and mediator variables on organizational citizenship behavior towards the environment seems to be greater than on employees' pro-environmental behavior. This could be explained by taking a closer look at the used constructs. On one hand, the items of organizational citizenship behavior towards the environment allows for a greater variety of behavior to be registered and is therefore not dependent on the line of work. On the other hand, this openness for interpretation also makes the measure more susceptible for a social desirability bias. Meanwhile the items of

pro-environmental behavior offer narrow defined descriptions leaving little room for interpretation, while at the same time limiting the range of registered behaviors. Taken together it becomes apparent how the high values of organizational citizenship behavior towards the environment came about.

Limitations

Several aspects of the present work have to be taken under consideration when discussing the results. Most noticeable, the small sample size impacts the statistical power, lowering the chance of detecting the true effect while simultaneously being vulnerable to distortions and systematic biases. While it was a major concern of this study to use longitudinal data to be able to derive causal interpretation, it has to be factored in that this increases the amount of required participants. At the same time data was collected at three time points two weeks apart, resulting in a reduction in sample size due to participants dropping out. Altogether it becomes apparent that the overall sample was insufficient to draw final conclusions about the proposed research model. It must be added that the model included multiple mediating and moderating factors but only three measuring points, while ideally each variable would have been obtained individually. Especially for the calculations using only two measuring points a common method bias cannot be ruled out. A common method bias reduces the variance of the results and typically occurs whenever the variables are measured within the same context, within the same person and when the items or scales are similar.

This being said, the similarity of the used constructs is undeniably high. This becomes evident when juxtaposing selected items of employees' pro-environmental behavior ("When I leave my office for a considerable period of time, and there is no one else, I switch off the lights.", Blok et al., 2015) and environmental attitudes ("I always switch the light off when I don't need it on any more.", Milfont & Duckitt, 2010). While the theoretical constructs are evidently distinct, when applied this distinction becomes vague at best. In the case of biospheric values and environmental attitudes even the theoretical distinction becomes less clear, as the concepts are related. Another example to bear in mind is the measure of perceived leaders' pro-environmental behavior trying to capture whether leaders behave as green role models compared to an item of the environmentally specific transformational leadership scale ("My leader acts as an environmental role model", Robertson, 2018).

Yet another difficulty when measuring the constructs is using self-report measures that might not always reflect the true underlying behavior. Responses to an item need to identically translate to the behavior of interest. That is rarely the case as participants are not trained observers, they have to interpret the items and are biased by a multitude of factors (Lange & Dewitte, 2019). When it comes to environmental sustainability one has to be mindful of a social desirability bias, that is participants, consciously or unconsciously, answering in a way that they believe others will favor. Results of a meta-analysis give reason to believe that a link between social desirability and pro-environmental behaviors, intentions and attitudes is indeed to be expected (Vesely & Klöckner, 2020). In regard to the present study the right skewed distributions of biospheric values and environmental attitudes indicate an underlying social desirability bias. It must be suspected that other constructs might also be affected in a less severe way.

Another challenge is provided by including remote work in the research model. While the definition of remote work is clearly characterized by a physical distance to the workplace and therefore generally to the leader, the individual's context might differ substantially. Additionally, the borders of the work environment and the private household blurr whenever employees work from home, complicating the interpretation of data. Assuming remote work as a mediation factor might not be the ideal way to answer the research question of how leadership affects green behavior in remote work settings in the first place. Some suggestions for future research will be explored in the next section.

Although the research reviewed in the first section of this paper was conducted primarily in western countries, some studies were carried out in other parts of the world e.g. in Asian countries such as China. While that does not necessarily affect the significance of the reported findings, one has to bear in mind that cultural differences might occur regarding the effects of leadership and other constructs. To illustrate this, the effectiveness of transformational leadership varies between countries (see Poturak et al., 2020). It also must be noted that the study was conducted amidst an energy crisis due to international tension with Russia arising from the ongoing Ukraine conflict. An intense surge in energy prices might serve as an alternative explanation for high values of pro-environmental behavior. Especially employees working from home might have a different underlying motive to preserve energy. They might be motivated to save money rather than preserve the environment.

Implications & Future Research

Even though this study did not yield the results promised, it is advised to further investigate the relationship between leadership behavior and green behaviors within remote work contexts. To fill the current research gap regarding environmental sustainability in remote work situations and find a satisfying answer to the overarching question whether leadership (particularly environmentally specific transformational leadership) promotes environmentally friendly behavior in remotely working employees, more research will be needed. With the increasing trend of remote work and other flexible work arrangements such questions gain importance.

It might prove fruitful to explore whether some leaders are able to adapt better to remote work conditions than others. Future research should be tasked with unveiling determining factors to explain these possible differences. A factor to be considered is communication, in terms of communication channels (email, calls or video conferences) and frequency. Furthermore, it might serve the purpose to design a quasi-experimental study comparing naturally occurring remote work groups to an office control group, or even more promising to use an experimental design assigning members of the same company or team to each condition. This undertaking demands a considerable amount of resources however. Additionally, the nexus of the work and home environment in home office situations should be investigated. Exploring spillover effects might explain how these two contexts overlap and interact and how leaders can successfully promote environmentally sustainable behavior in this rather unique situation.

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Appendix 1

demographic variables

Ihr Geschlecht:	1 = weiblich 2 = männlich 3 = divers
Ihr Alter:	___ Jahre
Ihre höchste abgeschlossene Ausbildung:	1 = Pflichtschule 2 = Lehrabschluss 3 = Fachschule 4 = Matura / Abitur 5 = Universität / Fachhochschule
Ihre Staatsbürgerschaft:	1 = Österreich 2 = Deutschland 3 = andere, und zwar ___
Wie viele Stunden arbeiten Sie normalerweise in Ihrer Haupttätigkeit durchschnittlich pro Woche (inkl. Überstunden)?	___ Stunden
Seit wie vielen Jahren arbeiten Sie in dem derzeitigen Unternehmen?	___ Jahre ___ Monate
Haben Sie Führungsverantwortung?	1 = Ich bin Mitarbeiter*in ohne Führungsaufgaben. 2 = Ich selbst habe Führungsaufgaben, die Mitarbeiter*innen unter mir haben keine Führungsaufgaben. 3 = Über und unter mir befinden sich weitere Führungskräfte. 4 = Ich ordne mich dem Top-Management zu (z.B. Geschäftsführer*in, CEO).
Wie viele Mitarbeiter*innen hat das Unternehmen, für das Sie aktuell arbeiten?	1 = 1 bis 10 Mitarbeiter*innen 2 = 11 bis 50 Mitarbeiter*innen 3 = 51 bis 250 Mitarbeiter*innen 4 = mehr als 250 Mitarbeiter*innen
Welcher Berufsgruppe fühlen Sie sich (am ehesten) zugehörig?	1 = Manager*innen, Geschäftsführer*innen, Führungskräfte 2 = Akademische Berufe (z.B.

	Wissenschaftler*innen, Ingenieur*innen, Ärzt*innen, Lehrkräfte, Betriebswirt*innen, Jurist*innen, Fachkräfte in der Informations- und Kommunikationstechnologie 3 = Fachkräfte und Techniker*innen 4 = Bürokräfte 5 = Dienstleistungsberufe und Verkäufer*innen 6 = Fachkräfte in der Landwirtschaft und Fischerei 7 = Handwerks- und verwandte Berufe 8 = Anlagen- und Maschinenbediener*innen und Montageberufe 9 = Hilfsarbeitskräfte 10 = Angehörige der regulären Streitkräfte, Soldat*innen
In welchem Wirtschaftssektor arbeiten Sie?	1 = Agrarsektor, Urproduktion 2 = Industrieller Sektor, produzierendes Gewerbe 3 = Dienstleistungssektor 4 = Informationssektor (Beratung, IT-Dienstleistungen, High Tech, Kommunikationstechnik)
Arbeiten Sie derzeit in Heimarbeit bzw. Homeoffice oder Fernarbeit? (Heimarbeit oder Homeoffice bedeutet, dass von zuhause gearbeitet wird. Mit Fernarbeit ist gemeint, dass von unterwegs, zuhause oder an einem anderen Ort, der nicht der Arbeitsplatz / das Büro ist, gearbeitet wird.)	1 = ja 2 = nein
Haben Sie in den letzten 6 Monaten in Heimarbeit bzw. Homeoffice oder Fernarbeit gearbeitet?	1 = ja 2 = nein
Wie viele Stunden pro Woche arbeiten Sie derzeit oder haben Sie in den letzten 6 Monaten durchschnittlich in Heimarbeit / Home-Office (von zuhause) gearbeitet?	___ Stunden
Und wie viele Stunden pro Woche arbeiten	___ Stunden

Sie derzeit oder haben Sie in den letzten 6 Monaten ungefähr in Fernarbeit (z.B. von unterwegs, unabhängig von einem Firmenarbeitsplatz / Büro) gearbeitet OHNE Homeoffice dazuzuzählen?	
An wie vielen Tagen die Woche arbeiten Sie derzeit oder haben Sie in den letzten 6 Monaten in Heimarbeit bzw. Homeoffice oder in Fernarbeit gearbeitet?	an ____ Tagen
Wie häufig kommunizieren Sie in Heimarbeit bzw. Homeoffice oder in Fernarbeit mit Ihrer Führungskraft über die folgenden Kommunikationsmedien? • Telefon • Email • SMS • Messenger-Programme / Chats (z.B. WhatsApp, Microsoft Live Messenger) • Video-Tools (z.B. Skype, Zoom, Microsoft Teams) • Sonstige: ____	1 = nie 2 = selten 3 = manchmal 4 = oft 5 = sehr oft

Appendix 2

Environmentally Specific Transformational Leadership (ETFL) (Robertson and Barling, 2017)

Meine Führungskraft ist ein Rollenvorbild bezüglich umweltbewussten Verhaltens.	1 = nie 2 = selten 3 = manchmal 4 = oft 5 = immer
Meine Führungskraft motiviert mich dazu, meine Arbeit möglichst umweltfreundlich zu verrichten.	

Meine Führungskraft zeigt Engagement, um die Umweltleistung unserer Organisation zu verbessern.	
Meine Führungskraft ermutigt mich, auf verschiedene Arten über Umweltthemen nachzudenken.	
Meine Führungskraft zeigt, dass ihr / ihm die Umwelt wichtig ist. Meine Führungskraft ist offen für Ideen, wie man die Umweltleistung unserer Organisation verbessern könnte.	
Meine Führungskraft erkennt meine Fähigkeiten, um die ökologische Leistung unserer Organisation zu verbessern.	
Meine Führungskraft bemerkt meine Beiträge zur Umweltleistung unserer Organisation.	
Meine Führungskraft nimmt sich Zeit, meine Fähigkeiten zu fördern, um zur organisationalen Umweltleistung beizutragen.	
Meine Führungskraft ist leidenschaftlich, was die Zukunft der Umwelt betrifft.	
Meine Führungskraft fordert mich auf, kreativ über Möglichkeiten zur Verbesserung der organisationalen Umweltleistung nachzudenken.	

Meine Führungskraft ist optimistisch, was die Zukunft unserer Umweltleistung betrifft.	
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Appendix 3

Organizational Citizenship Behavior towards the Environment (OCB-E) (Boiral & Paillé, 2012)

Bei meiner Arbeit wäge ich die Konsequenzen meines Handelns ab, bevor ich etwas tue, was die Umwelt beeinträchtigen könnte.	1 = stimme überhaupt nicht zu 2 = stimme nicht zu 3 = neutral 4 = stimme zu 5 = stimme voll und ganz zu 99 = keine Möglichkeit, das Verhalten zu zeigen
Ich führe in meiner täglichen Arbeitstätigkeit freiwillig Umweltmaßnahmen und -initiativen durch.	
Ich mache meinen Kolleg*innen Vorschläge, wie sie die Umwelt effektiver schützen können, auch wenn das nicht in meiner Verantwortung liegt.	
Ich nehme aktiv an Umwelt-Veranstaltungen teil, die in unserer Organisation stattfinden, oder von ihr organisiert werden.	
Ich informiere mich regelmäßig über Umweltinitiativen unserer Organisation.	
Ich ergreife Umweltmaßnahmen, die positiv zum Image meiner Organisation beitragen.	
Ich engagiere mich ehrenamtlich für Projekte, Unternehmungen oder	

Veranstaltungen, die sich mit Umweltfragen innerhalb meiner Organisation befassen.	
Ich biete spontan meine Zeit an, um meinen Kolleg*innen dabei zu helfen, die Umwelt bei ihrer Arbeit zu berücksichtigen.	
Ich ermutige meine Kolleg*innen zu einem umweltbewussteren Verhalten.	
Ich ermutige meine Kolleg*innen, ihre Ideen und Meinungen zu Umweltthemen zu äußern.	

Appendix 4

Employees' Pro-Environmental behavior (E-PEB) (Blok et al., 2015)

Ich schalte meinen Computer/Notebook aus, wenn ich nach Hause gehe oder mein Büro für einen längeren Zeitraum verlasse.	1 = nie 2 = selten 3 = manchmal 4 = oft 5 = immer 99 = keine Möglichkeit, das Verhalten zu zeigen
Ich stelle sicher, dass die Heizung außerhalb der Arbeitszeiten ausgeschaltet oder reduziert wird.	
Ich versuche, so viel wie möglich auf ein Blatt zu schreiben/drucken (z. B. indem ich schmale Ränder verwende oder zwei Seiten auf ein A4-Blatt drucke).	
Wenn ich mein Büro für eine längere Zeit verlasse und niemand sonst da ist, schalte ich das Licht aus.	
Ich kopiere und drucke doppelseitig.	

Ich schalte das Licht ein, wenn ich morgens ins Büro komme und schalte es aus, wenn ich das Büro verlasse.	
Ich regle die Heizung in ungenutzten Räumen herunter.	
Ich prüfe, ob die Thermostate in meinem Büro richtig eingestellt sind. (Hinweis: Die optimale Einstellung ist minimal 16°, maximal 19°).	
Ich kaufe umweltfreundliche und faire Produkte (z.B. Bio-Produkte).	
Ich kaufe saisonale und regionale Lebensmittel (z.B. Äpfel im Winter und Herbst, Beeren im Sommer bei Bauern im Umland).	
Ich achte auf meinen Wasserverbrauch (z.B. Regen- und Spülwasser zum Gießen verwenden; drehe das Wasser unter der Dusche, beim Händewaschen und Zähneputzen ab und dusche anstatt zu baden).	
Ich verzichte auf Palmölprodukte.	
Ich achte beim Planen meiner Urlaube auf die Umweltbelastung (z.B. keine Fernreisen und/oder Bahn statt Flugzeug).	

Appendix 5

Perceived Leaders' Pro-Environmental behavior (L-PEB) (adapted from Blok et al., 2015)

Meine Führungskraft schaltet ihren/seinen Computer/Notebook aus, wenn sie/er nach Hause geht oder das Büro für einen längeren Zeitraum verlässt.	1 = nie 2 = selten 3 = manchmal 4 = oft 5 = immer 98 = weiß ich nicht 99= keine Möglichkeit, das Verhalten zu zeigen
Meine Führungskraft stellt sicher, dass die Heizung außerhalb der Arbeitszeiten ausgeschaltet oder reduziert wird.	
Meine Führungskraft versucht, so viel wie möglich auf ein Blatt zu schreiben/drucken (z. B. indem schmale Ränder verwendet oder zwei Seiten auf ein A4-Blatt gedruckt werden).	
Wenn meine Führungskraft ihr/sein Büro für eine längere Zeit verlässt und niemand sonst da ist, schaltet meine Führungskraft das Licht aus.	
Meine Führungskraft kopiert und druckt doppelseitig.	
Meine Führungskraft schaltet das Licht ein, wenn sie/er morgens ins Büro kommt und schaltet es aus, wenn sie/er das Büro verlässt.	
Meine Führungskraft regelt die Heizung in ungenutzten Räumen herunter.	
Meine Führungskraft prüft, ob die Thermostate in ihrem/seinem Büro richtig	

eingestellt sind. (Hinweis: Die optimale Einstellung ist minimal 16°, maximal 19°).	
Meine Führungskraft kauft umweltfreundliche und faire Produkte (z.B. Bio-Produkte).	
Meine Führungskraft kauft saisonale und regionale Lebensmittel (z.B. Äpfel im Winter und Herbst, Beeren im Sommer bei Bauern im Umland).	
Meine Führungskraft achtet auf ihren/seinen Wasserverbrauch (z.B. Regen- und Spülwasser zum Gießen verwenden; abdrehen vom Wasser beim Händewaschen).	
Meine Führungskraft verzichtet auf Palmölprodukte.	
Meine Führungskraft achtet beim Planen ihrer/seiner Firmenreise/Urlaube auf die Umweltbelastung (z.B. keine Fernreisen und/oder Bahn statt Flugzeug).	

Appendix 6

Perceived Environmental Work Climate of Coworkers (EWC-C), Subscale of the Environmental Work Climate Scale (Norton et al., 2014)

Meine Mitarbeiter*innen widmen sich Umweltproblemen.	1 = stimme überhaupt nicht zu 2 = stimme nicht zu 3 = neutral 4 = stimme zu
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Meinen Mitarbeiter*innen ist es wichtig, umweltfreundlich zu handeln.	5 = stimme voll und ganz zu
Meine Mitarbeiter*innen versuchen, den Schaden an der Umwelt zu minimieren.	
Meine Mitarbeiter*innen sorgen sich um die Umwelt.	

Appendix 7

Biospheric Values, Subscale of the Personal Value Scale, Shortversion (Stern et al., 1999)

Umweltverschmutzung vermeiden: natürliche Ressourcen schützen	1 = not important at all 4 = neutral 7 = extremely important
Respekt vor der Erde: Harmonie mit anderen Arten	
Einheit mit der Natur: sich in die Natur einfügen	
Umweltschutz: die Natur bewahren	

Appendix 8

Short version of the Environmental Attitude Inventory (Milfont & Duckitt, 2010)

Ich bemühe mich NICHT Wasser oder andere natürliche Ressourcen zu bewahren.	1 = stimme überhaupt nicht zu 2 = stimme nicht zu 3 = stimme eher nicht zu 4 = neutral 5 = stimme eher zu 6 = stimme zu 7 = stimme voll und ganz zu
Ich stelle sicher, dass die Heizung im Winter in meinen Räumen nicht zu hoch aufgedreht ist.	

In meinem alltäglichen Leben bin ich NICHT daran interessiert, zu versuchen, Wasser oder Energie zu sparen.	
Wenn möglich, dusche ich kurz, um Wasser zu sparen.	
Ich drehe das Licht immer ab, wenn ich es nicht mehr benötige.	
Ich fahre mit dem Auto, wann immer es mir passt, auch wenn das die Atmosphäre verschmutzt.	
In meinem alltäglichen Leben versuche ich Wege zu finden, Wasser und Energie zu sparen.	
Ich bin NICHT die Art Person, die sich Mühe gibt, natürliche Ressourcen zu schützen.	
Wenn möglich, versuche ich natürliche Ressourcen zu schützen.	
Auch wenn öffentliche Verkehrsmittel effizienter wären, würde ich bevorzugen, mit dem Auto zu fahren.	
Die Idee, dass die Natur wertvoll wäre, ist naiv und falsch.	
Es macht mich traurig zu sehen, wie natürliche Lebensräume zerstört werden.	
Die Natur ist wertvoll.	

Eines der schlimmsten Dinge an Überpopulation ist, dass viele natürliche Gebiete zerstört werden.	
Ich glaube NICHT, dass die Umwelt zu schützen ein wichtiges Thema ist.	
Trotz unserer speziellen Fähigkeiten sind Menschen noch immer Naturgesetzen unterworfen.	
Es macht mich traurig zu sehen, dass Wälder für Agrarkultur abgeholzt werden.	
Es macht mich NICHT traurig zu sehen, wie natürliche Gebiete zerstört werden.	
Ich glaube NICHT, dass die Natur wertvoll ist.	
Ich ärgere mich NICHT, wenn Wälder für Agrarkultur abgeholzt werden.	