Mindfulness at the workplace: an approach to promote employees pro-environmental behaviour

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Abstract

Purpose – This study aims to examine the relationship between employees' mindfulness and pro-environmental behaviour, along with the mediating role of self-transcendent values, at the workplace.

Design/methodology/approach – The study uses online data collected from 381 respondents employed in different industries across India. Confirmatory factor analysis was used to check the construct's validity and reliability and Pearson correlation was used to examine the relationship between the variables. Moreover, the PROCESS macro of Hayes (2017) was used to examine the mediation.

Findings – Employees' mindfulness was found to be positively associated with voluntary pro-environmental behaviour at the workplace, and the mediation analysis specifies that a self-transcendent value partially mediates this relationship.

Research limitations/implications – This study tested and extends the S-ART model and Schwartz value theory in the context of employees' pro-environment behaviours at the workplace.

Practical implications – The results could be encouraging and helpful for top management and organizational change champions in strategizing and effective implementation of mindfulness programmes that would encourage and enhance employees' voluntary participation in environment-friendly activities at their workplace.

Originality/value – Despite the decisive role of employees in organisations' environmental sustainability programmes' success, the availability of scant literature has led researchers to call for more studies. The present study is timely and could be the first to examine the role of employees' mindfulness and self-transcendent values in influencing employees' engagement in environmental-friendly behaviours at the workplace.

Keywords Mindfulness, Organisational citizenship behaviour for the environment, OCBE, Self-transcendent values, Voluntary pro-environmental behaviour, Workplace sustainability

Paper type Research paper

1. Introduction
Organizations are widely recognized as amongst the key players in influencing global environmental problems (Rousseau, 2017; Stern, 2000), and as such are under constant pressure to check on their detrimental environmental impact and also to increase their efforts in meeting the global environmental sustainability goals (Weaver *et al.*, 2015). Recognizing their role and expectations in the area of environment sustainability

management, the majority of the organizations across the globe have put forth their best efforts towards environmental sustainability management efforts. Organizations across the globe have embraced various measures such as adopting green technologies and implementation and certification of environment-friendly efforts, etc., but unfortunately, are not able to meet the environmental sustainability goals (Lu *et al.*, 2017) as expected. The reasons behind the organizations' failure in meeting the environmental sustainability goals could be many. According to the extant scholarly work, the noticeable reasons could be organizations' inability to recognize the complexity and diversity of environmental management practices (Lulfs and Hahn, 2013) and also their failure to acknowledge the role of employees "pro-environmental behaviour" (PEB) in enabling organizations to achieve their environmental sustainability goals (Blok *et al.*, 2015).

In line with the organizations' failure to recognize the role of employees' pro-environmental behaviour in meeting their environmental sustainability goals, the extant research details, the decisive role of employees' informal and discretionary behaviour in the successful attainment of organizational environmental management initiatives (Boiral, 2007; Terrier *et al.*, 2016). Scholars such as Zientara and Zamojska (2018) have argued that for the success of environmental sustainability initiatives, organizations must encourage the voluntary participation of their employees in environment-friendly programmes. Furthermore, such voluntary pro-environment participation and related behaviour at the workplace is "often requested but not demanded from employees" (Chou, 2014, p. 437), and could be labelled as "Organizational Citizenship Behavior for the Environment" (OCBE; Boiral and Paille, 2012; Zientara and Zamojska, 2018).

Although the extant literature has recognized the decisive role of employees' voluntary behaviour in achieving organizations environmental sustainability goals, the existing research has portrayed the organizations' failure to acknowledge the role of employees' "pro-environmental behaviour" in achieving organizations' environmental goals (Blok *et al.*, 2015). According to the scholars, the possible reason behind the failure to recognize the importance of employees in successfully achieving organizations environmental sustainability goals could be because of the absence of suitable behavioural approaches to encourage such environment-friendly behaviours (Temminck *et al.*, 2015). Moreover, recent scholarly work has also argued about exploring the area of pro-environmental behaviour in organizations (Boiral and Paille, 2012).

Thus, in the wake of the decisive role of employees in supporting organizations achieve their environmental sustainability goals (as portrayed in the extant literature) and also the dearth of research exploring the possible suitable approaches in encouraging employees' environment-friendly behaviour, a brief of the views put forth by extant scholars could be interesting and relevant in the present context. According to the extant scholarly literature, pro-environment behaviour among individuals could be promoted through "other-and nature-centeredness", "self-determined" motivations, intrinsic motivations and spiritual and ethical values-based business models (De Groot and Steg, 2007; Dhiman and Marques, 2016; Vago and Silbersweig, 2012; Wamsler, 2018). The existing research details regarding the role of closeness with the natural environment and also the role of motivation especially those which are internal or intrinsic in nature in stimulating behaviours could be oriented to promote environment-friendly behaviours (Dhiman and Marques, 2016; Hedlund-de Witt *et al.*, 2014; Lavergne *et al.*, 2010; Zsolnai, 2015). Additionally, expanding upon these scholarly views, Wamsler (2018) indicated the role of "inner transition", as an "emerging pathway" that could bring about changes in individual's values and behaviours, especially those which are related to sustainability. Going ahead, Wamsler also indicated about the role of mindfulness (spiritual practices) in encouraging pro-environmental behaviour

(Wamsler, 2018). The role of mindfulness in promoting pro-environmental behaviour is further supported by Ericson *et al.* (2014). According to them, mindfulness is a prerequisite of pro-social and compassionate behaviour and that mindful individual seems to think and act on the issues related to sustainability and ecological crises and "can contribute to environmental-friendly and sustainable behavior" (p. 78). Moreover, extant literature portraying the mechanism through which mindfulness is thought to bring about positive changes also argues about the role of mindfulness in enhancing self-transcendent values (intrinsic values). Such that, an increased "self-transcendence" is thought to lead to an understanding about the interdependence of self with others and also acknowledging the significance of ethics as well as compassion for others (Vago and Silbersweig, 2012). The concept of self-transcendent values finds its acceptance across the people living in 20 different countries (e.g. the USA, Italy, Brazil, China, Zimbabwe, etc.) with different cultural orientation (Schwartz, 1992), and individuals high on self-transcendent values were found to associate themselves positively with the environment-friendly behaviours (De Groot and Steg, 2007).

Therefore, we could infer that the pro-environmental behaviour of employees play a crucial role in the success of environmental management initiatives in organizations, and could be of much interest to both organizations and scholars working in this domain. We can also derive that it is possible to adopt a behavioural approach towards encouraging employees in embracing pro-environmental behaviour at the workplace. Moreover, looking into the reasons put forth by Temminck *et al.* (2015) about the possibilities of ignorance or the absence of details about the suitable behavioural approaches to encourage environment-friendly behaviour among individuals, especially employees, the role of mindfulness in encouraging employees' environmental-friendly behaviour at the workplace is worth exploring. Additionally, Ericson *et al.* (2014) have also argued about the role of mindfulness in promoting environment-friendly behaviours and had stated the need for exploring mindfulness in a sustainability context. A similar dearth of research investigating the role of mindfulness in encouraging pro-environment behaviour at the workplace has also been expressed by Patel and Holm (2018).

Because the extant literature in this area is mostly available in the conceptual or theoretical forms, the present study is an exploratory effort examining the voluntary pro-environmental behaviour at the workplace through the lens of employees' mindfulness. The present study uses a co-relational study design to explore the effect of employees' mindfulness on environmental friendly behaviours, and the mediating role of self-transcendent values in the relationship between employees' mindfulness and voluntary pro-environment behaviour at the workplace has also been explored. The study has been undertaken amongst employees working in different sectors across different regions of India.

In this study, we have tried to bring together relevant extant literature in the areas of mindfulness, self-transcendent values and pro-environment behaviour, including the PEB at the workplace into a comprehensive model and have aimed to contribute the theoretical as well as the practical aspects of employees' mindfulness, pro-environment behaviour at workplace and self-transcendent values. First and foremost, it explores the effect of employees' mindfulness on employees' participation in voluntary pro-environment behaviour at the workplace. Second, it looks at the possibility of self-transcendent values as a mediating factor in the association between employees' mindfulness and pro-environmental behaviour at the workplace. Moreover, in exploring these aims, particularly the effect of mindfulness on pro-environment behaviour through the mediation of self-transcendent values, the present study could also be the first to test (as stated in S-ART

framework proposed by Vago and Silbersweig, 2012) whether the effect of mindfulness on pro-environmental behaviour at the workplace is indeed mediated through self-transcendent values.

The remaining portion of this study is organized as follows. The literature review and hypotheses development portion in Section 2 details of the three constructs of interest along with the discussion on relevant theories or mechanism models and related scholarly work which forms the basis of the development of hypotheses and conceptual models. Section 3 provides details on research methodology, including discussion about sampling and data collection procedure along with a brief of instrument development and analysis methods. Moreover, Section 4 presents the findings of the present study and details about the scale validation, descriptive analysis, confirmatory factor analysis (CFA) and mediation analysis. Finally, Section 5 discusses the results followed by the study implications, limitations, future research directions and conclusion.

2. Literature review and hypotheses development

2.1 Mindfulness

Mindfulness, rooted in Buddhist philosophy (Brown *et al.*, 2007), is a means of intentionally going through the current happening in a "non-judgmental" and "non-reactive" way (Kabat-Zinn, 2003). As an "art of living", it is a process by which "we go about deepening our attention and awareness, refining them and putting them to greater practical use in our lives" (Kabat-Zinn, 1994, p. xvii). Thus, mindfulness principally leads to the cultivation of self and "others-oriented" intentions and attitudes such as kindness, concern for others, generosity and equanimity (Grossman, 2015). Moreover, in spite of mindfulness being deeply rooted in Buddhist philosophy, it does not require any particular religious or cultural belief system and is stated to be "a universal human ability embodied to foster clear thinking and open-heartedness" (Trousselard *et al.*, 2014, p. 474). Additionally, mindfulness is considered to be a psychological state, trait, cognitive ability or combination of all the three (Brown and Ryan, 2003; Krech, 2006), and individuals show variations in their mindfulness level on account of both environmental and genetic factors (Davidson, 2010).

Furthermore, the extant literature portraying the mechanism through which mindfulness is thought to bring about positive changes argues about the role of mindfulness in enhancing self-transcendent values. According to the S-ART model, as proposed by Vago and Silbersweig (2012), apart from a "change in self-awareness" and a "change in self-regulation", mindfulness is thought to bring positive changes by "increased self-transcendence" i.e. "the development of a positive relationship between self, transcends self-focused needs, and increases prosocial characteristics" (p. 2). Mindfulness is thought to translate into positive effects by causing modifications in self-processing, developed through "self-awareness (meta-awareness), self-regulation (modulation of behaviour), and self-transcendence (prosocial characteristics). These changes reflect modulation in neuro-cognitive networks related to intention and motivation, attention and emotion regulation, extinction and reconsolidation, prosociality, non-attachment, and decentring" (for details, refer Guendelman *et al.*, 2017, p. 3; Vago and Silbersweig, 2012).

2.2 Self-transcendent values

Human values are defined as "a desirable trans situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity" (Schwartz, 1992, p. 21). Values are believed to be universal in nature and thought to influence individuals' behaviour (De Groot and Steg, 2008; Rohan, 2000). Extant scholars have stressed about studying the association between values and behaviour towards

environment (Naess, 1989), and a plethora of scholarly work grounded on Schwartz value theory (1992, 1994) existing in this area. In their value theory, Schwartz identified 56 human values and, based on the "circumplex model of values", placed related values together, whereas incompatible values were placed at the opposite. Thus, Schwartz grouped human values into two distinct dimensions: "self-transcendence values" which are associated with concern and welfare of others, and "self-enhancement values" relating to own benefits (Schwartz, 1992,1994). Self-transcendent values have shown an association with the welfare of others, and according to Schwartz (1992), "it arrays values in terms of the extent to which they motivate people to enhance their personal interests (even at the expense of others) versus the extent to which they motivate people to transcend selfish concerns and promote the welfare of others, close and distant, and nature" (p. 43).

Moreover, a large body of existing research depicts the association between self-transcendent values and pro-environmental behaviours (Stern, 2000; Thogersen and Olander, 2002). In their study, Thogersen and Olander (2002) noted the effect of individual values on environmental behaviour, and in longitudinal research including multiple sets of respondents, it was observed that when certain sets of values are encouraged, it appears to influence the environment friendly behaviours (Thogersen and Olander, 2006). Similarly, existing scholarly work shows that individuals who are high on self-transcendent values tend to engage in more environment friendly behaviours (Bardi and Schwartz, 2003; De Groot and Steg, 2007; Stern *et al.*, 1998).

2.3 Pro-environmental behaviour at the workplace

Extant literature portrays pro-environment behaviour at the workplace as an umbrella concept wherein employees' pro-environment activities at the workplace "include all types of voluntary or prescribed activity undertaken by individuals at work that aim to protect the natural environment or improve organizational practices in this area" (Boiral *et al.*, 2015, p. 21). Moreover, such environment friendly behaviours are non-obligatory in nature, and individuals who have a firm belief in the welfare of the planet and future generations tend to promote such behaviours (Paille and Boiral, 2013). In the present study, we adhere to the definition of voluntary pro-environment behaviour as stated by Robertson and Barling (2017), and is delineated as:

> [. . .] individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate, immediately benefits the natural environment, and indirectly through this means, contributes to the organization and benefits specific individuals (p. 58).

2.4 Mindfulness and voluntary pro-environmental behaviour at the workplace

Extant literature supports the role of mindfulness in the organisational setup as well as in promoting pro-environmental behaviour at individual levels. Scholars are of the view that mindfulness promotes pro-environmental behaviour as it helps in enhancing the experience with the natural world (Bishop *et al.*, 2004), and have argued about the positive association between mindfulness and sustainable or environmental friendly behaviours (Amel *et al.*, 2009; Barbaro and Pickett, 2016).

In their empirical research, Geiger *et al.* (2018) have argued that an increase in mindfulness relates to increased ecological behaviour. Similarly, studies have noted the positive association of individuals' mindfulness to various pro-environmental behaviours in the area related to diet, transportation, living habits and housing (Barber and Deale, 2014;

Brown and Kasser, 2005; Studer, 2015). Moreover, in their review article, Ericson *et al.* (2014) also argue about the role of mindfulness in extending pro-environment behaviour.

Extant literature also reveals the role of mindfulness in an organizational setup. According to the scholars, mindfulness practiced by employees in the organizations has led to better decision-making, generating new ideas and more creativity and even coping with stress (Dhiman, 2009). Improvement in employees' wellness (Brown *et al.*, 2007) and even becoming adaptive towards anticipated potential changes in the organization have been also enhanced through mindfulness practices (Fiol and O'Connor, 2003). Similarly, managers practicing mindfulness have been found getting more engaged with environment-friendly behaviours (Patel and Holm, 2018).

Thus, it can be hypothesized that:

H1. Employee mindfulness will be positively related to voluntary pro-environmental behaviour at the workplace.

2.5 Mindfulness and self-transcendent values

The extant literature portraying the mechanisms of mindfulness action have argued about the role of self-transcendent values through which mindfulness is thought to bring positive changes. In this vein, the S-ART mechanism of mindfulness (Vago and Silbersweig, 2012) states that mindfulness leads to "increased self-transcendence" values, i.e. "the development of a positive relationship between self and other that transcends self-focused needs and increases prosocial characteristics" (p. 2). Moreover, in a recent empirical study, Verhaeghen (2019) tested the role of:

> [...] increased self-transcendence" values as a mechanism through which mindfulness is thought to bring positive changes. The results were encouraging and an increase in self-transcendent values has been argued to play a decisive mechanism in "translating the effects of mindfulness into beneficial outcomes (p. 44).

Furthermore, individuals with a high level of mindfulness are stated to observe and reflect upon their values with better objectivity and have been argued to consciously be able to choose values and related actions that reflect their true inner sense (Shapiro *et al.*, 2006). In their recent scholarly work in the organizational context, Patel and Holm (2018) stated about the role of mindfulness in managers' conscious decision-making and being able to recognize and choose the pro-environmental values. Similarly, the behaviour of daily meditators (meditation related to mindfulness) was found to be in congruence with their inner values (Franquesa *et al.*, 2017) and the mediating role of "value-congruent actions" between mindfulness and its positive outcome has been discussed in the existing literature (Christie *et al.*, 2017).

Thus, it can be hypothesized that:

H2. Employee mindfulness will be positively related to self-transcendent values.

2.6 Self-transcendent values as a mediator

The association between mindfulness, self-transcendent values and environment-friendly behaviour could be grounded in the extant S-ART mechanism of mindfulness (Vago and Silbersweig, 2012) and Schwartz's value theory (1992, 1994). For details of these two mechanisms, refer to the preceding sections of this study.

Mindfulness brings positive changes by enhancing self-transcendent values (Vago and Silbersweig, 2012), and individuals high on self-transcendent values tend to engage in more environmentally friendly behaviours (Bardi and Schwartz, 2003; De Groot and Steg, 2007; Stern *et al.*, 1998). Similarly, the higher level of employees' mindfulness could be anticipated to be associated with attaining increased self-transcendent values and adopting pro-environment and nature-friendly behaviours at the workplace.

Furthermore, recent literature discussed the positive role of mindfulness in promoting self-transcendent values. In their empirical study, Verhaeghen (2019) stated about the increase in self-transcendent values as an essential mechanism through which mindfulness brings beneficial outcomes. Similarly, Patel and Holm (2018) stated about the role of mindfulness in managers' conscious decision-making and being able to recognize and choose the pro-environmental values.

Moreover, in their cross-cultural study, which includes India, Schultz *et al.* (2005) found a positive and significant association of self-transcendent values (intrinsic values) with that of helpful environmental attitude and behaviours. A similar positive association between self-transcendent values and enhanced positive environmental behaviours, including sustainability related behaviours, has also been noted in several other studies (Bardi and Schwartz, 2003; Gatersleben *et al.*, 2008; Sheldon and McGregor, 2000; Brown and Kasser, 2005). Kasser (2011) too stated about the positive role of self-transcendent values in encouraging ecological behaviour and further argued about the role of self-transcendent values in enhancing pro-social behaviour which would solve the environmental issues. Additionally, de Groot and Steg (2007) supported the view about individuals high on self-transcendence values supporting environmental causes and argued that individuals with strong self-transcendent values are expected to participate in environmentally friendly behaviours.

Thus, it can be hypothesized that:

H3. Self-transcendent values will mediate the relationship between employee mindfulness and voluntary pro-environmental behaviour at the workplace.

3. Research methodology
3.1 Sample and data collection procedure
The survey was conducted at all India level and the questionnaire was designed and administered using SurveyMonkey, a widely used online platform for data collection in research (Arora *et al.*, 2020; Gallicano *et al.*, 2012). The survey instrument consisted of 30 questions, including three related to demographics (gender, age and location), three about the respondents' employment (industry of employment, years of job experience and hierarchy level in the present organization) and one about their educational qualification. Moreover, five items for employees' mindfulness, along with eight items for self-transcendent values and ten items for pro-environment behaviour, were included in the questionnaire. The survey instrument was pilot tested for face validity by 12 participants (two researchers from the human resources domain and ten employees) as a "high face validity of an instrument enhances its use in practical situations by inducing cooperation among respondents via ease of use, proper reading level, clarity, and appropriate response formats" (Netemeyer *et al.*, 2003, p. 73). Based on the feedback received from the 12 participants, some improvements such as making the instructions precise and clearer, along with the adequate font size and page layout, were done. The survey was kept short and subtle, encouraging respondents to willingly undertake the survey with proper attention (Liu and Wronski, 2018).

The finalized survey was sent to around 900 prospective respondents employed in different organizations across various sectors (manufacturing and services) with their facilities located in different regions of India. A similar sampling strategy has been followed in an extant research in the area of organizational environmental sustainability wherein the prospective respondents from different sectors in India were approached to respond to an internet based survey (Gupta and Gupta, 2020). Moreover, we used non-probabilistic sampling techniques in the form of convenient as well as snowball to reach out to the prospective respondents. A similar sampling technique has been followed in recent studies, including studies on organizational environment sustainability (Gupta and Gupta, 2020; Sihag, 2020). The survey for the present study was opened for around two months (March–April 2019), and the prospective respondents were approached directly to avoid the chances of fraudulent respondents (Lefever *et al.*, 2007). A link to the survey along with the request message was shared through the professional social media platform LinkedIn. LinkedIn was chosen to reach out to the prospective respondents because data could be collected in less time at low cost from the respondents of interest spread across larger areas. Also, online social media platforms offer precision in reaching the prospective respondents, offering superior assurance in the homogeneity of samples, reliability of the participants' data (King *et al.*, 2014), along with the assurance of increased anonymity to the prospective respondents (Raat *et al.*, 2007).

Moreover, a few procedural remedies to circumvent common method bias (CMB), as advocated by Podsakoff *et al.* (2003), were also implemented. In the survey, the objective of the study was not made explicit and was mentioned broadly. This was purposefully done so that the respondents could not guess the objective and record biased responses. Additionally, the participants were assured about the anonymity of their responses, and the independent and dependent variables items were placed at the separate sheets of the survey so that the participants could not guess about the cause-effect relationship between the variables. Participants were first asked to answer the questions related to the demographic items namely their sex, age, qualification, location of their present job and also about their industry and experience. A second section of the survey was devoted to the questions on mindfulness, self-transcendent values and pro-environment behaviour at the workplace.

The survey link was opened and attempted by 445 respondents, and post-data cleaning, 381 responses were found fit to be included in the analysis. The completed response rate fit for the analysis was close to 86%, as 64 responses were not considered for analysis either because of incomplete or unengaged issues.

The demographic details of the respondents are as follows. The majority of the respondents were male (72.2% male and 27.8% female) with around 82% respondents represented the young generation, i.e. millennial cohort (born between 1981 and 1994), close to 17% were from Gen X (born between 1961 and 1980) and remaining 8% represented baby boomers population (born between 1946 and 1960) (Brosdahl and Carpenter, 2011). The majority of the respondents, around 64%, were located in South India, followed by North and West representing around 15% and 11%, respectively. Employees located in the eastern part of India were close to 8.5% and the remaining were from central and northeast. Moreover, most of them, around 66%, were having post-graduation degrees, around 29% were graduates and less than 5% were with research degrees such as MPhil/PhD.

Respondents represented varieties of sectors, including around 70% from services including IT/ITES, BFSI, higher education and consulting, 11% in manufacturing and remaining around 19% in others such as pharmaceuticals, e-commerce, marketing, FMCG, etc. Around 54% of the respondents were comparatively new entrants with around 5 years of industry experience, 35% were with 6–15 years of experience and close to 11.8 of the

respondents had more than 16 years of work experience. Amongst the respondents, around 49% were either employed as executives or as entry-level managers, around 41% as middle-level managers and the remaining around 10% were positioned at top management/C-suite levels.

3.2 Measures and instrument

The survey instrument for the present study was designed using established and valid variables from the extant literature. Employee's mindfulness at the workplace was measured by a self-rating short scale of "Mindfulness Attention and Awareness Scale" (MAAS; Brown and Ryan, 2003; Van Dam *et al.*, 2010). The MASS scale has been chosen in the present study because of its established validity and reliability across a wide range of studies including research in the organizational domain (Dane and Brummel, 2014; Reb *et al.*, 2017). Sample items include "I do jobs or tasks automatically, without being aware of what I'm doing" and "I find myself doing things without paying attention", and the prospective respondents were asked to self-rate themselves on the five items on a five-point response scale (1 = *never*; 5 = *always*). Before analysis, responses were reversed such that a person high on mindfulness scores reflects greater mindfulness.

Similarly, self-transcendent values were measured using a validated measure of biospheric values (BV) and altruistic values (AVs) orientations sub-scales (de Groot and Steg, 2008), which is a modified measure of the Schwartz's value scale (Schwartz, 1992). Extant literature argues about the inclusion of both BVs and AVs in constituting self-transcendent value (Schwartz, 1994; Schwartz and Bardi, 2001; Stern, 2000; Stern and Dietz, 1994). The measure consists of four items each of BV and AV orientations (e.g. "protecting the environment: preserving nature", "helpful: working for the welfare of others"), and similar to the Schwartz's value scale, respondents were asked to rate the importance of the eight items "as a guiding principle in their lives". Responses were recorded on a seven-point Likert scale (–1 = opposed to my values, 0 = not important at all, to 5 = extremely important), and the participants were requested to distinguish their choice as much as possible.

Moreover, to measure the voluntary pro-environmental behaviour at the workplace, prospective respondents were asked to rate their behaviour at the workplace by using a self-rated, trn-items scale of "organizational environmental citizenship behaviour/organizational citizenship behaviour for the environment" (OCBE; Robertson and Barling, 2017). The OCBE scale is deliberately chosen in the present study to measure employees' pro-environment behaviour at the workplace because it has been designed and includes items that access workplace pro-environmental behaviours across various types of industries and organizations in different contexts among the variety of job types (Robertson and Barling, 2017). The sample items of this measure include "I help my co-workers be environmentally friendly at work" and "At work, I reduce the amount of energy I use", and the respondents were asked to record their responses on a five-point response scale (1 = never; 5 = always).

3.3 Analysis methods

First and foremost, all three measures of this study were refined by conducting exploratory factor analysis (EFA). Then, CFA was undertaken to evaluate the fitness of the measurement model, and also to estimate the construct validity (convergent and discriminant validity) and reliability. Moreover, a test for CMB was done using both Harman's single-factor score and using common latent factor method. SPSS and AMOS 23 statistical software were used to conduct the analysis. The multiple indices of model fit, namely, "Chi-square/df", "goodness-of-fit index" (GFI), "comparative fit index" (CFI),

"Tucker–Lewis index" (TLI), "incremental fit index" (IFI) and "root mean square error of approximation" (RMSEA) along with their appropriate values (Chi-square/df < 3; GFI, CFI, TLI, IFI > 0.90 and RMSEA < 0.08) suggesting good fit for the model have been considered in the present study (Hair *et al.*, 1998). Moreover, the relationship between the variables of interest in the present study was estimated using the Pearson correlation values. Additionally, PROCESS macro of Hayes (2017) was used to test the hypothesised relationship along with the mediation effect.

4. Results

This section details the findings (results of the data analysis) of the present study. Initially, details on EFA used to refine all the three measures are provided. This is followed by results of the descriptive statistics to check the relationship between the variables of interest. Moreover, values of the model fit indices along with the findings of the constructs validity and reliability are detailed in the CFA portion. Finally, mediation analysis along with its results is discussed.

4.1 Scale validation analysis

To validate the measures of interest in the present study, EFA was undertaken for all three scales. The factors for the respective measures were extracted based on the standard estimates of "Kaiser–Meyer–Olkin" (KMO) that details about sample adequacy (Kaiser, 1974), and "Barlett's test of sphericity" significant level of ($p < 0.001$) (Barlett, 1954). Moreover, eigenvalues of greater than 1 and the standard factor loadings of greater than 0.5 were considered in the present study (Field, 2009). For the mindfulness MAAS scale, all the five items loaded on a single factor. The cumulative variance explained was 59.55%, and the KMO estimate for the sample adequacy was 0.827 (Chi-square = 659.33, df = 10), along with the Barlett's test of sphericity significant results ($p < 0.001$). The self-transcendent values scale also kept its original structure, and all eight items loaded significantly to a single factor. The cumulative variance explained was 57.17%, and the estimate from the KMO was 0.882 (Chi-square = 1493.812, df = 28), along with the Barlett's test of sphericity significant results ($p < 0.001$). For the voluntary pro-environmental behaviour at the workplace which is being measured using ten-items OCBE scale, three items were dropped because of factor loading less than 0.50 (Bagozzi and Yi, 2012; Field, 2009), and the remaining seven items loaded significantly to a single factor. The cumulative variance explained was 66.02%, and the KMO for the sample adequacy was 0.868 (Chi-square = 881.21, df = 10), along with the Barlett's test of sphericity significant results ($p < 0.001$).

4.2 Descriptive analysis

Employees' mindfulness indicated significant correlations with both self-transcendent values and voluntary pro-environment behaviour and further showed the highest correlation with pro-environment behaviour at the workplace ($r = 0.351$, $p < 0.01$), and vice versa. Moreover, self-transcendent values also indicated significant correlations with the other two variables of the study and further showed highest correlation with employee's mindfulness ($r = 0.292$, $p < 0.01$). Additionally, all the three measures of the study indicated adequate internal reliability and consistency and showed Cronbach's alpha in the range of 0.83–0.88 (meeting the Cronbach's alpha threshold criteria of >0.7; Nunnally and Bernstein, 1994; Yuksel, 2008). For the details on the descriptive statistics along with the variables correlations values and Cronbach's alpha, refer to Table 1.

4.3 Confirmatory factor analysis

CFA was conducted for all the three variables of interest, which formed the hypothesized model. The CFA results of the initial measurement model could not support the model fit and three items (OCBE-4, OCBE-9 and AV-4 showing high standardised residual covariance and large modification indices) were dropped. Furthermore, a few error terms were also co-varied to circumvent large modification indices (Byrne, 2010). The CFA results of the final measurement model supported the model fit. The model fit indices results were Chi square/df = 2.123, GFI = 0.934, TLI = 0.948, IFI = 0.956, CFI = 0.956 and RMSEA = 0.054, and was considered as a good fit (Hair *et al.*, 1998).

Convergent as well as discriminant validity tests were conducted to check constructs validity (Campbell and Fiske, 1959). Factor loadings of the items along with the average variance extracted (AVE) estimates were considered to verify the convergent validity. Employee's mindfulness factor loading was between 0.588 and 0.772. For self-transcendent values, the range was between 0.639 and 0.844, and for voluntary pro-environment behaviour at the workplace, it ranged from 0.647 to 0.838. As for all the scales, the factor loadings and the AVE were above 0.50, and also the Cronbach's alpha and the composite reliability (CR) were above the threshold value of 0.7 (see Table 1), convergent validity was supported (Fornell and Larcker, 1981; Petljak *et al.*, 2018). Moreover, a discriminant validity check was conducted by equating the square root estimate of the AVE with the correlations of the subsequent variables in the same rows and columns (see Table 1). All the square root values of the AVE were found to be larger than the variable correlations, supporting the discriminant validity (Figueiro and Raufflet, 2015; Petljak *et al.*, 2018).

Furthermore, Harman's single-factor score was checked for CMB in the responses (Du *et al.*, 2007; Podsakoff *et al.*, 2003). The total variance explained by the single factor was found to be 27.87% (approx.), and this being much below the standard threshold limit of less than 50%, CMB does not seem to affect the data (Akdogan and Cimsir, 2019). Moreover, CMB was also confirmed using the latest common factor through AMOS (Podsakoff *et al.*, 2003), and the findings suggest no issues of CMB in the present data.

4.4 Mediation analysis

The relationship between employees' mindfulness (EM) and voluntary pro-environmental behaviour (VPEB) at the workplace (*H1*) and employees' mindfulness and self-transcendent values (*H2*) was examined for a direct relationship. Moreover, the mediating effect of employees' self-transcendent values on the association between employees' mindfulness and the voluntary pro-environment behaviour at the workplace was also investigated (*H3*).

Model 4 of the PROCESS macro, associated with the mediation analysis, using bootstrapping (5,000 samples) was used to examine the mediation (Hayes, 2017). Demographic variables such as age and job experience were controlled in all of the analysis. The resulting output shows that the EM is significantly and positively related to employees'

	Mean	SD	Cronbach's alpha	CR	AVE	1	2	3
Employee mindfulness (EM)	3.90	0.75	0.88	0.83	0.50	*0.707*		
Self-transcendent values (STV)	4.33	0.67	0.83	0.88	0.52	0.292*	*0.721*	
Voluntary pro-environmental behaviour (VPEB)	3.05	1.08	0.87	0.87	0.58	0.351*	0.212*	*0.761*

Notes: *$p < 0.01$ level (two-tailed); the italics numbers at the end of each row are square roots of AVE

Table 1.
Descriptive analysis, correlations and discriminant validity

VPEB at the workplace (B = 0.41, t = 5.76, p < 0.001; Table 2); EM significantly and positively influenced self-transcendent values (STV) (B = 0.21, t = 4.73, p < 0.001; Table 2). Thus, *H1* and *H2* are supported from the analysis findings.

Moreover, for testing *H3*, the association between EM and employees' self-transcendent values (STV) (B = 0.21, t = 4.73, p < 0.001; Table 2) along with that of employees' STV and employees' VPEB at the workplace (B = 0.23, t = 2.71, p < 0.01; Table 2) confirms positive results. Also, a positive result was noted for the direct effect of EM on employees' VPEB at the workplace (B = 0.41, t = 5.76, p < 0.001; Table 2). Furthermore, the bias-corrected estimate of the indirect effect of EM on employees' VPEB at the workplace was found to be significant (B = 0.05, 95% CI [0.01, 0.09]). Also, Sobel's statistics (Sobel Z = 2.52, p < 0.05) confirmed significant indirect effects (Sobel, 1982). Thus, the above findings support the mediation of *H3*. The tested model, along with the findings, is shown in Figure 1.
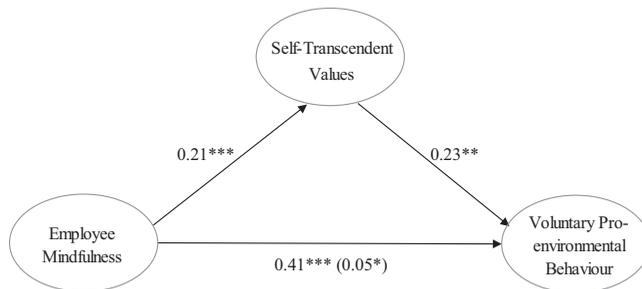
5. Discussion

Environmental sustainability has become the buzzword, and organizations across the globe have put forth their best efforts towards environmental sustainability management efforts. Various measures in the form of adopting green technologies, implementation and certification of environment-friendly efforts and alike have been embraced. But

Total effect				
Predictor	Outcome	B (SE)	95% CI	*t*-Value
Employee mindfulness (X)	Employee VPEB (Y)	0.46 (0.07)	[0.32,0.60]	6.58***
Direct effect				
Predictor	Outcome	B (SE)	95% CI	*t*-Value
Employee mindfulness (X)	Employee STV (M)	0.21 (0.04)	[0.12,0.30]	4.73***
Employee STV (M)	Employee VPEB (Y)	0.23 (0.08)	[0.08,0.39]	2.71**
Employee mindfulness (X)	Employee VPEB (Y)	0.41 (0.07)	[0.27,0.55]	5.76***
Indirect effect				
Predictor	Mediator	Outcome	B (SE)	95% CI
Employee mindfulness (X)	Employee STV (M)	Employee VPEB (Y)	0.05 (0.02)	[0.01,0.09]
Indirect effect (Sobel test)				
Predictor	Mediator	Outcome	B (SE)	Z
Employee Mindfulness (X)	Employee STV (M)	Employee VPEB (Y)	0.05 (0.02)	2.52*

Notes: B = coefficient; SE = standard error; CI = confidence interval; *p < 0.05, **p < 0.01, ***p < 0.001; bootstrap sample size = 5,000

Table 2.
Mediation analysis for employee's voluntary pro-environment behaviour (VPEB) at the workplace as a dependent variable

Figure 1.
Conceptual model along with the results (result in parentheses shows indirect effect)

unfortunately, the different steps undertaken by the organizations in the area of environmental sustainability are not able to meet the expected environmental sustainability goals. The noticeable reason behind such failures could be the failure of organizations in recognizing the role of employees in environmental management efforts at the organization level. The motivations to engage employees in environmentally friendly behaviours, especially the voluntary PEBs at their workplace, are becoming critical for organizations efforts in the area of environmental sustainability, and that employees' mindfulness and "self-transcendent values" seem to play a larger and decisive role in encouraging employees' to act in an environmental-friendly manner.

The objective of the present study was to determine the association between employees' mindfulness and voluntary pro-environmental behaviour at the workplace and also the mediating effect of self-transcendent values on the association between employees' mindfulness and voluntary pro-environment behaviour. The survey method was used to collect the data, and individuals employed in different organizations across India were reached through an online social networking platform for filling the survey questions.

The findings support a direct association between employees' mindfulness with that of the employees' voluntary pro-environmental behaviour at the workplace, i.e. increase in employees' mindfulness was found positively influencing the employees' voluntary pro-environment behaviour at the workplace. The findings are in agreement with the extant models and theories explaining mindfulness mechanism (S-ART model and Schwartz's value theory), and also support that employees' self-transcendent values mediate and have an indirect effect on the relationship between employees' mindfulness and voluntary pro-environmental behaviour at the workplace. The findings of this study further stress the need of meeting the employees' spiritual needs, such as those of mindfulness, which could help in bringing about changes in values and behaviours of employees, wherein employees exhibit greater voluntary environment-friendly behaviour. The findings are aligned with extant literature stating about the role of mindfulness in encouraging environment-friendly behaviours (Barbaro and Pickett, 2016; Ericson *et al.*, 2014; Patel and Holm, 2018; Reb *et al.*, 2014; Rezapouraghdam *et al.*, 2018; Wamsler, 2018).

Furthermore, by being well supported by the S-ART model (Vago and Silbersweig, 2012) and Schwartz's value theory (1992, 1994), the findings of this study also advocate the role of self-transcendent values in encouraging employees' involvement in pro-environmental behaviours at the workplace. The findings confirm the positive influence of self-transcendent values on individuals' environment-friendly behaviours, particularly employees' voluntary pro-environmental behaviours at the workplace (Bardi and Schwartz, 2003; de Groot and Steg, 2007; Gatersleben *et al.*, 2008; Schultz *et al.*, 2005).

The present study details the cultural aspects at the workplace that could encourage employees to participate in environmentally friendly tasks and thus contributes to the existing literature in the domain of environmental sustainability research at the organisations. This study is well-timed and responds to the research call of scholars engaged in studying environmental sustainability at the organisations. We have tried addressing Patel and Holm's (2018) call to develop the understanding of mindfulness and self-transcendent values in pro-environment behaviours at the workplace. Scholars such as Blok *et al.* (2015) and Ruepert *et al.* (2016) call for studying the role of employees in environment-friendly behaviour at the workplace. Moreover, this study responds to the call of scholars such as Ericson *et al.* (2014) and Wamsler (2018) about studying the role of mindfulness as a prerequisite for acting on the issues related to sustainability and ecological crises.

6. Implications

This study examines the relationship between employees' mindfulness, self-transcendent values and workplace-related voluntary pro-environmental behaviours, and the findings could have interesting implications for both the academicians and practitioners in the organisations.

6.1 Theoretical implications

The conceptualization and results extend extant models or theories, and add to the existing literature in the area of environmental sustainability in the organizations. To the best of the authors' knowledge, this study is the first to empirically examine the S-ART model or mechanism of mindfulness in explicating employees' voluntary participation in environment-friendly behaviours at their workplace. In doing so, the present study could be the first to test and extend Vago and Silbersweig's S-ART model (2012) of mindfulness in the context of employees' pro-environment behaviour in the organization. Additionally, the findings of the present study also extend Schwartz's value theory (1992, 1994) in the context of employee's pro-environment behaviour. Moreover, the findings complement the emerging area of research related to mindfulness and pro-environment behaviour, especially at the workplace (Patel and Holm, 2018; Reb *et al.*, 2014; Rezapouraghdam *et al.*, 2018). Similarly, the results also add to the existing literature discussing the positive influence of self-transcendent values on individuals' environment-friendly behaviours, particularly employees' voluntary pro-environmental behaviours at the workplace (Bardi and Schwartz, 2003; de Groot and Steg, 2007; Gatersleben *et al.*, 2008; Schultz *et al.*, 2005).

6.2 Practical and managerial implications

The present findings could be of interest to the top management, human resources teams and organizational change champions who could be looking for tools and techniques to motivate employees to voluntarily participate in environment-friendly behaviours at the workplace. Pro-environmental behaviours exhibited by the employees at the workplace are mostly discretionary, and moreover, the findings in the present study indicated the positive influence of employees' mindfulness on the pro-environmental behaviours. Organisations should look forward to nurture such type of culture among the employees which could help in influencing environment-friendly behaviours.

Mindfulness being a universal and secular phenomenon could be enhanced through various mindfulness programmes (for details on mindfulness programmes, refer Birnie *et al.*, 2010); the adoption and dissemination of such mindfulness programmes among the employees could prove critical in the success of organizations' environmental sustainability programmes. Organizational change champions could look forward to engaging mindful trainers or encourage employees to get in activities such as yoga and meditations, which could help in enhancing mindfulness and thereby promoting pro-environmental behaviours at the workplace. A similar suggestion for adopting mindfulness-based programmes for employees to support their pro-environmental behaviours has also been made in a recent review study (Patel and Holm, 2018).

Additionally, apart from benefiting organizations, the findings could also be encouraging for the mindfulness practitioners and trainers who might look for consulting assignments and be the change agents in environmental sustainability programmes at the organizations. They could help individual employees as well as the organization in adopting mindfulness programmes, which in turn could positively influence and help in achieving their environmental sustainability goals.

7. Limitations and future research directions

This study design being cross-sectional, the findings precludes strong causality. Future studies should undertake a longitudinal research design using the same variables which would further help in establishing a conclusive causal relationship. Moreover, non-probability sampling (convenience and snowball) and self-reported questionnaires with their limitations such as selection bias and social desirability could have led to the response biases. Despite the interesting and sensible findings, for the generalizability of the results, more studies using different research designs, especially in diverse countries and cultures, are warranted. Future studies should also consider random sampling leading to an extended generalisation of the results. Additionally, as the respondents in the present study were from diversified sectors (services, manufacturing etc.), future research could look for responses from a particular sector garnering in-depth sectorial insights. Furthermore, mindfulness being a multidimensional concept, future studies could consider including a multidimensional scale of mindfulness (e.g. "Comprehensive Inventory of Mindfulness Experiences", CHIME scale) (Bergomi *et al.*, 2013) to examine the effect related to each of the dimensions. Even more mediators and possible moderators could be included in future studies.

Despite these caveats, the findings from the present study exploring the role of employees' mindfulness on voluntary pro-environmental behaviour at the workplace and the mediating role of self-transcendent values are interesting and encouraging for both academia and practitioners.

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