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Close or Distant? Psychological Distance and Norms Shape Pro-Environmental Behavior

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This study examines the interplay of psychological distance, personal norms, and social norms in pro-environmental behavior. Data were collected through face-to-face surveys using snowball and convenience sampling methods, yielding a final sample of 955 participants aged 18 to 74 (M = 34.31, SD = 10.37). We hypothesized that lower psychological distance would be associated with stronger personal and social norms, which, in turn, would predict higher pro-environmental behavior. The structural model explained 50.9% of the variance in behavior, suggesting that perceiving climate change as immediate and concrete is associated with stronger pro-environmental actions through heightened moral obligation. Latent class analysis confirmed the model's robustness across groups. Overall, the findings highlight the importance of strengthening norms and reducing psychological distance to enhance public engagement in pro-environmental behavior.

Key words: pro-environmental behavior, psychological distance, personal norms, social norms, climate change

Introduction

Anthropogenic climate change is a pressing global threat with environmental, social, and psychological dimensions (Chu, 2022; Maiella et al., 2020). Although its negative consequences are already evident worldwide (IPCC, 2021), perceptions of severity often diminish when impacts are seen as temporally or geographically distant (Jones et al., 2017). Concern increases when impacts are seen as temporally or geographically close (Spence et al., 2012), yet findings on proximity are mixed: perceived closeness does not always promote mitigation behavior (Brügger, 2020; Spence et

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al., 2012). Still, as climate impacts intensify (Chu, 2022), psychological distance remains central in shaping concern and action.

Research shows that concern strongly motivates mitigation behaviors (Feldman, 2021), with psychological distance predicting concern, which in turn predicts intention or behavior (Loy & Spence, 2020; Spence et al., 2012). While some studies challenge this link (Brügger et al., 2015; Scannell & Gifford, 2017), others confirm it (Allred & Solomon, 2022; Spence & Pidgeon, 2010). Psychological distance fosters abstraction, reducing perceived reality, yet personal norms can transform distant issues into moral imperatives that encourage pro-environmental behavior (Han et al., 2018; Harland et al., 2007; Jansson et al., 2017). Unlike social norms, personal norms reflect internalized moral responsibility (Schwartz, 1997; Thøgersen, 2006) and are consistently linked to pro-environmental behavior (Han et al., 2018; Jansson et al., 2017; Thøgersen & Ölander, 2006; Thøgersen, 2006).

Pro-environmental behavior refers to individual actions that are deliberately aimed at minimizing one's negative impact on the natural environment or contributing positively to it (Steg & Vlek, 2009). In this study, we focus on private-sphere pro-environmental behaviors, such as recycling, saving energy, and sustainable consumption, which reflect everyday choices under personal control (Ojala, 2012). These behaviors are particularly shaped by social and personal norms.

Psychological distance also promotes abstract, principle-based reasoning (Eyal et al., 2008; Trope & Liberman, 2010), enabling climate change to be understood in broader – moral – terms (Milfont, 2010). We argue that when perceiving climate change, psychologically closer individuals are more likely to internalize moral responsibility and act accordingly to pro-environmental norms (Schwartz, 1977; Spence et al., 2012).

We used the Construal Level Theory (CLT; Trope & Liberman, 2010) to conceptualize psychological distance in this study. While CLT has been widely applied to explain how psychological distance influences climate concern and pro-environmental behavior, it also has certain limitations (Brügger, 2020). We acknowledge that "proximizing" climate change may not consistently promote engagement. For individuals who perceive low personal efficacy or harbor strong fatalistic beliefs, making climate change seem more imminent may instead evoke feelings of helplessness and consequently diminish their motivation to act (Brügger et al., 2015; Salomon, 2017; Mayer & Smith, 2019). Given the complex nature of the proximizing effects, the present study aims to clarify how psychological distance, personal norms, and social norms interact to shape pro-environmental behavior. This allows for a more nuanced understanding of how distance influences behavior without assuming a uniformly positive effect. Moreover, while previous research often focused primarily on spatial distance (Brügger et al., 2021), this study considers both spatial and social distance, emphasizing personal norms as a moral compass. Accordingly, we examine how psychological distance predicts pro-environmental behavior and how personal and social norms mediate this relationship.

Construal Level Theory: Psychological Distance and Environmental Risk Perceptions

Construal Level Theory (CLT) posits that individuals represent events at varying levels of abstraction: high construals emphasize abstract, generalized, and context-independent features, while low construals highlight concrete, immediate, and context-specific details (Trope & Liberman, 2010). Applied to climate change, high construal frames it as a "global threat to future generations",

whereas low construal focuses on localized risks such as flooding (Brügger et al., 2016). Psychological distance – spatial, temporal, social or hypothetical (Liberman & Trope, 2008) – shapes these representations. Greater distance reduces perceived urgency, while proximity increases concern and motivation for action (Spence & Pidgeon, 2010; Spence et al., 2012).

Research indicates that climate change is often seen as temporally and spatially distant, affecting "others" due to its gradual and cumulative nature (APA, 2009; Milfont, 2010), which weakens behavioral engagement (Brügger et al., 2016). However, proximity to environmental hazards strengthens risk perception (Balžekienė et al., 2025). Although impacts are often expected to be more severe in distant locations (Spence & Pidgeon, 2010), local experiences of disasters heighten concern and drive mitigation (Reser et al., 2012; Spence et al., 2011). Proximity is particularly salient in developing countries with limited adaptive capacity (Spence et al., 2012; Gifford et al., 2009), though global environmental threats are recognized across both developed and developing contexts (Uzzell, 2000). Media emphasizing socio-spatial proximity has further been shown to reduce psychological distance and enhance climate action (Loy & Spence, 2020).

Overall, psychological distance provides a valuable cognitive framework for understanding climate risk perceptions and behaviors (Liberman & Trope, 2008). Yet, pro-environmental action is also shaped by normative factors. Personal norms reflect internalized moral responsibility, while social norms reflect external expectations (Cialdini et al., 1991; Schwartz, 1977). Investigating how psychological distance interacts with these normative processes offers key insights into the mechanisms linking risk perception and climate action (Spence et al., 2012).

Social and Personal Norms

Social norms strongly shape behavior by defining what is acceptable or expected within a given context (Asch, 1951; Cialdini & Trost, 1998; Sherif, 1936). They promote social acceptance, discourage disapproval, and guide appropriate actions (Cialdini et al., 1990). Research shows that norm-based interventions can foster pro-environmental behaviors, such as energy conservation (Schultz et al., 2008) or reducing environmental damage (Cialdini et al., 2006). Yet, normative influence varies by context: conflicting or inconsistent cues may reduce environmentally friendly intentions (Keizer et al., 2011; Smith et al., 2012), while supportive prescriptive norms strengthen conservation behaviors (Rimal & Real, 2003). These mixed findings highlight the complex and context-dependent nature of social norms.

Social norms can also be internalized, forming personal norms when individuals experience moral obligation and intrinsic motivation to act (Schwartz, 1977). The Value-Belief-Norm Theory (Stern et al., 1999) and the Focus Theory of Normative Conduct (Cialdini et al., 1991) explain how environmental values and salient norms activate personal norms, leading to more durable pro-environmental actions. Thus, the transformation of social into personal norms is critical for sustained behavioral change.

Empirical evidence consistently links personal norms with pro-environmental behaviors (Han et al., 2018; Jansson et al., 2017; Thøgersen & Ölander, 2006). While social norms influence recycling, energy use, and sustainable purchasing (Bamberg & Möser, 2007; Bertoldo & Castro, 2016), their predictive power often diminishes when personal norms are considered, suggesting that moral obligations can outweigh external pressures.

Recent research underscores the role of personal norms in explaining behavioral variation and designing effective interventions (Han et al., 2018; Wang & Zhang, 2020). Therefore, understanding the interplay between social and personal norms is crucial for promoting sustainable practice.

Present Study

This study integrates psychological distance, social norms, and personal norms into a comprehensive model of pro-environmental behavior. While prior research has examined their bilateral relations, no study has tested the predictive effect of psychological distance from both social and personal norm perspectives. This study aims to fill this gap. In addition to this, the present study will group individuals based on sociodemographic characteristics (age, gender, education, and income level) related to the variables using latent class analysis, and then will examine whether the model is acceptable across all demographic classes through multigroup SEM analysis.

We propose that psychological distance will be indirectly associated with pro-environmental behavior through its impact on these norms. Specifically, lower psychological distance will be associated with stronger social norms (H1) and stronger personal norms (H2), which in turn will predict higher pro-environmental behavior (H3, H4). Furthermore, psychological distance will indirectly predict higher pro-environmental behavior via social norms (H5) and personal norms (H6).

Method

Participants and Procedure

We obtained ethical approval from Van Yüzüncü Yıl University. Data was collected face-to-face in Turkey between March and May 2024 using snowball and convenience sampling with paper-based surveys written in Turkish. Only participants aged 18 and older were included. Before participating, individuals received information about the study, signed informed consent, and were assured of confidentiality and the right to withdraw. The survey took approximately 15 minutes to complete.

Prior to data collection, a power analysis was conducted with the R-based SemPower package (Moshagen & Bader, 2023) for structural equation modeling. Using an RMSEA-based fit test (α = .05) and a model with 250 degrees of freedom, the required sample size was estimated as 973. Data was collected from 1003 participants; after excluding 48 incomplete responses, the final sample comprised 955. Participants ranged from 18-74 years (M = 34.31, SD = 10.37); 456 (47.7%) identified as women, 489 (51.2%) as men, one (0.1%) as "other," and 9 (0.9%) declined to answer. Regarding income, participants were distributed across five income brackets: below minimum wage (12.3%), 17,003–29,999 TL (26.9%), 30,000–39,999 TL (16.4%), 40,000–49,999 TL (14.7%), and above 50,000 TL (15%); 14.8% did not report their income.

Measures

Before the model testing, we conducted confirmatory factor analyses (CFA) with JASP 0.10.2. According to the established criteria (Browne & Cudeck, 1992; Garson, 2006; Kline, 2015), acceptable fit requires RMSEA < .10, CFI, GFI, and TLI ≈ .85, and normed chi-square (CMIN) < 5.

Social Norms. For social norms, we used van der Linden's (2015) six-item, two-factor scale: three items measured descriptive norms (i.e., perceptions of important others taking climate action) and three measured

prescriptive norms (i.e., perceived social pressure to act). Responses were given on a 7-point Likert scale (1 = *strongly disagree,* 7 = *strongly agree*). Model fit was acceptable (χ^2 = 67.372, *df* = 7, χ^2/df = 9.624, *p* < .001, *RMSEA* = .095, 90% *CI* [.075, .111], *SRMR* = .040, *CFI* = .962, *TLI* = .918), with good reliability (α = .780; descriptive norms α = .751; prescriptive norms α = .733).

The Perception of Psychological Distance. We measured psychological distance through two dimensions: spatial and social (Spence et al., 2012). Spatial distance was assessed with two items "*My local area is likely to be affected by climate change,*" and "*Climate change will mostly affect areas that are far away from here*.", and social distance with two items "*Climate change will mostly affect developing countries,*" and "*Climate change is likely to have a big impact on people like me*.", rated on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). The scale's Cronbach alpha was .581, and CFA indicated good fit (χ^2 = 0.013, *df* = 1, χ^2/df = 0.013, *p* = .040, *RMSEA* = .000, 90% *CI* [.000, .035], *CFI* = 1.000, *TLI* = 1.000). Considering both the content similarity of the scale items and the construct validity analyses, as well as the correlations between the items of these dimensions, we thought that combining spatial and social distance would be appropriate. Additionally, these items will be represented within the structural model. It is also known that latent variables are used to construct related theoretical superstructures, even if they are not sub-units of the same measurement, when the measurement model is appropriate. In this context (Bollen & Lennox, 1991; Borsboom et al., 2003; Cronbach & Meehl, 1995), despite low reliability, we concluded that retaining them in the model was more appropriate for the model's theoretical perspective.

Personal Norms. We measured pro-environmental personal norms with six 7-point Likert items (1 = *strongly disagree*, 7 = *strongly agree*) based on Poortvliet et al. (2018) and De Groot & Steg (2008) (e.g., "I feel obliged to live as environmentally friendly as possible," α = .85). Internal consistency was high (α = .84), and CFA indicated good model fit (χ^2 = 35.902, *df* = 6, χ^2/df = 5.983, *p* < .001, *RMSEA* = .072, 90% *CI* [.051, .096], *SRMR* = .025, *CFI* = .986, *TLI* = .965).

Pro-Environmental Behaviors. To measure pro-environmental behaviors and capture a wide range of sustainable behaviors, we used a relatively short multi-item sustainable consumption index adapted from Ojala (2012). The scale has been utilized in another Turkish study (Karasu et al., 2023) and demonstrated good reliability, and was therefore included in the present research. Participants reported how often they engaged in eight behaviors: biking/walking, avoiding unnecessary clothing purchases, not flying, influencing others, saving energy, using public transport, avoiding food waste, and making climate-friendly food choices. Responses were given on a 5-point Likert scale (1 = *almost never*, 5 = *almost always*; α = .73) (Karasu et al., 2023). In this study, Cronbach's alpha was .71, and model fit indices were acceptable (χ^2 = 80.159, *df* = 18, χ^2/df = 4.453, *p* < .001, *RMSEA* = .060, 90% *CI* [.047, .074], *SRMR* = .039, *CFI* = .947, *TLI* = .918).

***Socio-Demographic Information Form*.** Participants reported their age, gender, and income.

Results

Descriptive statistics and correlations are shown in Table 1. Bivariate analyses revealed significant associations of social norms, psychological distance, and personal norms with pro-environmental behavior. Latent class analysis included socioeconomic status, age, and income to form demographic groups.

Table 1 *Means, standard deviations, and correlations between variables*

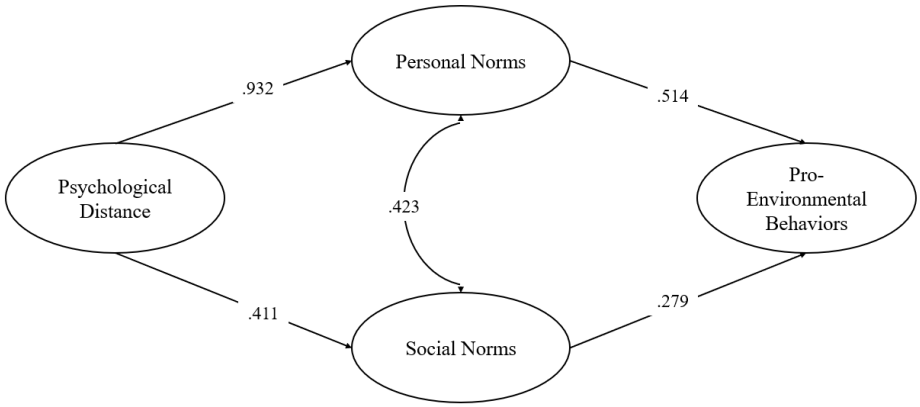
Variables	*M (SD)*	1	2	3	4	5	6	7	8
1. Social Norms	3.66 (1.28)	-	.125***	.360***	.351***	.028	-.109*	.040	-.009
2. Psychological Distance	3.58 (0.92)		-	.338***	.307***	.590***	.020	.150*	.013
3. Personal Norms	5.32 (1.35)			-	.462***	.120**	.029	.009	-.009
4. Pro-environmental behaviors	3.36 (0.73)				-	.139**	-.079*	-.360*	.036
5. Age	34.50 (10.41)					-	.052	-.109***	-.166***
6. Income[a]	-						-	.455***	.158***
7. SES[a]	-							-	.140***
8. Educational Status[a]	-								-

Note. [a] Spearman correlation was calculated for non-continuous variables.
$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

We used JASP 0.10.2 to construct a structural equation model examining the predictive roles of social norms, psychological distance, and personal norms in pro-environmental behavior, the model's sole endogenous variable (Figure 1).

Before testing the main model, we examined a structural regression with psychological distance as the sole predictor of pro-environmental behavior. Throughout all models, we treated all scale items as observed variables and identified all relevant theoretical variables as latent. Psychological distance explained 20.8% of the variance and was significantly associated with behavior (b = .513, $β$ = .456, SE = .069, Z = 7.425, p < .001, 95% CI [.378, .648]). Model fit indices indicated acceptable fit (χ^2 = 162.279, df = 53, χ^2/df = 3.062, p < .001, $RMSEA$ = .046, 90% CI [.038, .055], $SRMR$ = .044, CFI = .936, TLI = .921). We then tested the measurement model, which also showed adequate fit (χ^2 = 1218.843, df = 249, χ^2/df = 4.894, p < .001, $RMSEA$ = .064, 90% CI [.060, .067], $SRMR$ = .095, CFI = .865, TLI = .850). It was determined that the factor loadings of the items represented as observed variables in the structural model varied between .335 and .718. All p-values for covariance and factor loadings are significant at the .001 level. The relationships between the defined latent variables are shown in Figure 2.

According to the findings of the main structural model, which cover the correlation between two theoretically related constructs: social and personal norms (Schwartz, 1977), the fit indices of the model are acceptable, χ^2 = 985.430, df = 249, χ^2/df = 3.958, p < .001, $RMSEA$ = .056, 90% CI [.052, .059], $SRMR$ = .066, CFI = .885, TLI = .873. However, it was found that the direct effect of psychological distance on pro-environmental behavior was insignificant, p = .266. Since it is known that the insignificant effect of the predictor on



Note. The path coefficients are standardized.

Figure 1 Structural equation model for study variables.

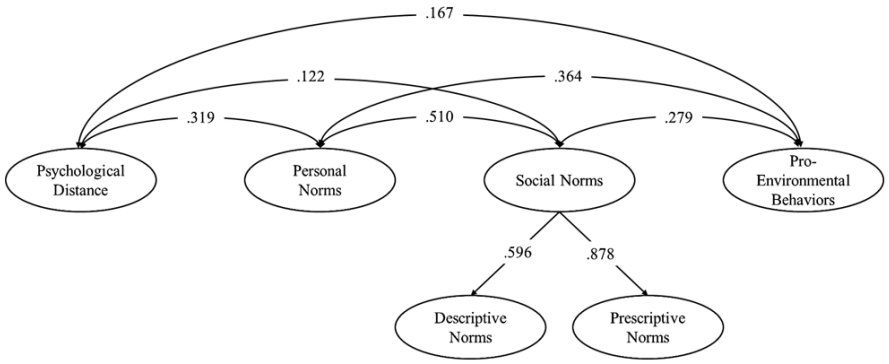


Figure 2 Measurement model.

outcome can suppress (Ludlow & Klein, 2014; MacKinnon et al., 2000) the effects through the mediators, this effect was removed from the model, and only the structural regression with indirect paths was examined. The new model was also acceptable, χ^2 = 990.774, *df* = 250, χ^2/df = 3.963, $p < .001$, *RMSEA* = .056, 90% *CI* [.052, .059], *SRMR* = .066, *CFI* = .885, *TLI* = .873. Chi-square difference statistics were used to see whether the difference between the models was significant, and it was determined that there was a significant difference between the models that included and those that did not include the direct effect of psychological distance on pro-environmental behavior, $\Delta\chi^2$ = .344, p = .020. The new model explained 49.2% of the variance in pro-environmental behavior, 16.9% in social norms,

and 86.9% in personal norms. Results indicated that personal norms were significantly and positively associated with pro-environmental behavior (b = .262, β = .514, SE = .041, Z = 12.697, p < .001, 95% CI [.435, .594]). In other words, individuals who perceived high responsibility in themselves regarding the environment reported more pro-environmental behavior. Social norms were also positively and significantly associated with pro-environmental behavior, though the effect was weaker than that of personal norms (b = .357, β = .279, SE = .046, Z = 6.130, p < .001, 95% CI [.190, .368]). So, valuing the opinions of others in fighting climate change is associated with more pro-environmental behavior. Further, we found that psychological distance was also significantly associated with personal norms (b = 2.570, β = .932, SE = .006, Z = 144.902, p < .001, 95% CI [.919, .945]). In addition, psychological distance was a significant predictor of social norms (b = .450, β = .411, SE = .062, Z = 6.599, p < .001, 95% CI [.289, .533]). In other words, perceiving climate change as a more immediate and concrete problem is associated with placing greater value on others' opinions about climate change and with reporting higher levels of personal responsibility for it. Finally, the correlation between social and personal norms was significant, r = .423, SE = .151, Z = 2.804, p = .005, 95% CI [.127, .718].

When looking at the indirect predictive effect, we found that psychological distance had a significant indirect association with pro-environmental behavior through personal norms (b = .673, β = .479, SE = .039, Z = 12.402, p < .001, 95% CI [.404, .555]). Psychological distance also had a significant indirect predictive effect on pro-environmental behavior through social norms (b = .161, β = .115, SE = .026, Z = 4.381, p < .001, 95% CI [.063, .166]). Overall, the total effect of psychological distance on pro-environmental behavior was found to be positive and significant (b = .254, β = .258, SE = .039, Z = 6.673, p < .001, 95% CI [.182, .334]). In the prior structural regression model conducted after the measurement model, the standardized regression (β) coefficient of the psychological distance variable in pro-environmental behavior increased from .456 to .642 in the presence of the mediator variables. Furthermore, while only 20.8% of the pro-environmental behavior variable was explained without the mediator variables, this variance explanation ratio increased to 50.9% in the final mediating model. This suggests that perceived personal responsibility and valuing others' opinions strengthen the predictive impact of perceiving climate change as imminent on pro-environmental behavior, highlighting the significance of these mediators.

Multigroup Structural Equational Model

Participants from all age and income groups (we did not include variables such as region of residence and education level since the correlation between the model variables was insignificant) across the country participated in the study. To determine whether the proposed grouping was meaningful across various demographic strata of society, we categorized it using the following nominal demographic variables by using latent class analysis. We used LatentGold 4.5 to conduct latent class analysis and identify subgroups based on age, subjective socioeconomic status, where participants were directly asked which class they considered themselves to be in relative to society, and objective income, where participants were asked to indicate which income group they fell into, categorized by minimum wage. Groups were defined by latent class probabilities, and the number of classes was determined using information criteria, selecting the model with the lowest value.

Table 2 *Information criteria used to determine sample subgroups*

Number of Classes	*LL (df)*	*BIC*	*AIC*	*CAIC*
1-Class	-4002.804(95)***	8088.021	8029.681	8100.021
2-Class	-3902.220(91)***	7914.227	7836.440	7930.227
3-Class	-3863.082(87)***	**7863.399**	7766.165	**7883.399**
4-Class	-3852.032(83)***	7868.744	7752.063	7892.744
5-Class	-3840.185(79)***	7872.467	**7736.369**	7900.470

Note. Bold values indicate the number of classes considered optimal based on the information criteria, as the class count is determined at the point where the lowest value is reached.
***$p < .001$

The information criteria indicated that BIC and CAIC supported a 3-class model, while AIC suggested a 5-class model. As BIC and CAIC generally identify more parsimonious models and AIC is more sensitive to complexity (Burnham & Anderson, 2004; Claeskens, 2008; Gelman et al., 2013; Kuha, 2004), the 3-class model was adopted (Table 2). Based on latent class probabilities, 53% (n = 506) of participants were classified as "precarious young adults," 42% (n = 401) as "affluent young adults," and 5% (n = 48) as "hiddenly positioned." Item response probabilities showed that the first class included 83% aged 18-37 and 59% earning below 29,999 liras (41% self-identified as poor/below average); the second class included 76% aged 18-37 and 46% earning 40,000 liras or more (88% self-identified as average/above); while the third class mainly comprised non-respondents who indicated that they did not want to answer for these variables (96%). In our analysis, the third latent class was characterized by participants who selected options such as 'I do not want to answer this item' or 'I do not want to specify.' We treated this pattern as a meaningful response tendency rather than a basis for exclusion.

We tested the model using multigroup SEM across sub-groups by constraining factor loadings, path coefficients, intercepts, and errors to equality, ensuring identical operation across samples. The restricted model showed acceptable fit (χ^2 = 1822.732, df = 856, χ^2/df = 2.138, $p < .001$, *RMSEA* = .060, 90% *CI* = [.056, .063], *SRMR* = .079, *CFI* = .856, *TLI* = .860), and the relationships in the main SEM model remained consistent across groups.

Discussion and Conclusion

This study examined how psychological distance, social norms, and personal norms predict pro-environmental behavior. The findings provide clear, empirical validation for the proposed theoretical model. Specifically, all six hypotheses were supported by the data. The structural model confirmed that psychological distance is significantly associated with both social norms and personal norms. In turn, both social norms and personal norms demonstrated significant, direct associations with pro-environmental behavior. Crucially, the mediation analysis confirmed that psychological distance exerts a significant indirect association with behavior through both social norms and personal norms. The fact that the direct path from psychological distance to behavior became non-significant when the mediators were introduced, coupled with the

substantial increase in explained variance, offers compelling evidence for a fully mediated model. This pattern supports the interpretation that the role of psychological distance is not direct but is fundamentally channeled through the activation of normative processes, with personal norms serving as the more potent pathway.

The findings indicate that perceiving climate change as immediate and concrete, both spatially and socially, is associated with higher engagement in pro-environmental actions. Individuals who recognize strong personal responsibility toward environmental issues report more frequent pro-environmental behaviors. Personal norms mediate the relationship between psychological distance and behavior by transforming abstract, distant concerns into concrete, morally compelling actions (Han et al., 2018; Jansson et al., 2017; Schwartz, 1977). Social norms are also significantly associated with pro-environmental behavior, reinforcing the role of psychological distance. Individuals' sensitivity to social expectations promotes compliance with collective environmental standards, even when the issue is abstract or perceived as distant. Norm-based interventions, such as hotel energy conservation campaigns (Schultz et al., 2008) and national park protection messaging (Cialdini et al., 2006), illustrate the potential of social norms to mobilize behavior. However, inconsistencies or conflicts in normative cues can reduce behavioral intentions, highlighting the context-dependent nature of normative influence (Keizer et al., 2011; Smith et al., 2012). Strengthening social norms can help individuals overcome perceived psychological distance, particularly for collective issues like climate change, and social reinforcement mechanisms are effective in promoting sustainable behaviors.

The model tested in this study showed a substantial increase in explanatory power when mediating variables were included, with variance explained rising from 20.8% to 50.9%. This suggests that psychological distance is primarily associated with pro-environmental behavior through its impact on social and personal norms rather than directly (Bai & Bai, 2020; Doran & Larsen, 2016). Latent class analysis, incorporating age and income, revealed three socio-economic groups: young low-income, young high-income, and participants who did not disclose income. The reluctance of some participants to report demographic data may reflect deeper socio-psychological dynamics, such as distrust or insecurity, indicating that social position influences both behavior and participation in research. Multi-group structural analyses confirmed that the model's mechanisms operate consistently across these groups, demonstrating robustness and generalizability across diverse socio-economic contexts.

These findings imply that psychological distance, personal norms, and social norms interact to predict pro-environmental behavior. When climate change is perceived as temporally and spatially close, individuals are more likely to internalize moral responsibility and conform to social expectations. Personal norms provide a moral framework that is related to sustained action, whereas social norms are associated with these behaviors within a collective context. The stronger effect of personal norms suggests that interventions fostering individual moral responsibility may be more important than those targeting only social conformity, though both are complementary. This aligns with prior research emphasizing the critical role of internalized norms in translating environmental concern into tangible action (Han et al., 2018; Poortvliet et al., 2018; Thøgersen, 2006).

Policy implications of this study are substantial. Campaigns should emphasize the immediacy and relevance of climate change, fram-

ing it as a concrete, locally experienced issue to reduce perceived psychological distance (van der Linden et al., 2015). Highlighting local climate events, community initiatives, and personal stories can foster both emotional and cognitive engagement. Sustainability education in schools and community programs can strengthen personal norms from an early age, while recognition programs for pro-environmental behaviors can reinforce these norms across the population. Socially reinforced behaviors, such as recycling, energy conservation, and sustainable consumption, can be further promoted through institutional policies that integrate and normalize pro-environmental practices.

Tailored interventions should consider socio-economic differences. For low- and middle-income groups, economic incentives, neighborhood recycling initiatives, community volunteering, and affordable sustainable agriculture schemes can enhance engagement. High-income individuals may respond more to prestige-oriented social norms and campaigns promoting sustainable consumption practices. Messaging should be inclusive, addressing individuals reluctant to disclose demographic information by framing environmental issues in ways that resonate with personal values rather than political or institutional affiliations.

Limitations of this study include the cross-sectional design, which precludes causal inference despite mediation analyses. Longitudinal or experimental studies are needed to establish causality. Reliance on self-report measures may introduce response bias and measurement error (Podsakoff et al., 2003). The study's sample encompassed a wide age range, from 18 to 70 years. While this was a consequence of the snowball and convenience sampling strategies, it provided an opportunity to examine the climate crisis perceptions of different generational cohorts within a single framework. We conducted further multi-group analyses to probe the potential influence of this broad demographic range on our model. These analyses revealed no statistically significant differences in the model's core structural paths across the different age and income groups, indicating that the proposed variable relationships demonstrate a degree of robustness across the demographic spectrum studied. However, this consistency should not be interpreted as an absolute guarantee of demographic homogeneity. The sampling methods may not adequately capture the distribution of other confounding variables, such as geographic location, cultural background, or direct exposure to extreme weather events. For instance, individuals of the same age living in different regions may have vastly different levels of vulnerability to climate impacts, which could, in turn, shape their behavioral responses. Consequently, the generalizability of our findings must be approached with caution. Future research would benefit from employing more representative sampling frames and incorporating mixed-methods designs. Such approaches could explore deeper the qualitative dimensions, such as underlying motivations, values, and perceptions that our quantitative model could not fully capture, thereby providing a richer, more contextualized understanding of the drivers of pro-environmental behavior (Ratcliffe et al., 2023). Furthermore, comparative studies specifically designed to contrast generational cohorts could more sharply delineate intergenerational differences and similarities in environmental engagement.

In addition to this, although our sample of 955 participants provides a strong foundation for generalizing the results, the use of a snowball sampling method may have introduced selection bias. The exact extent of this bias is challenging to quantify, but it may have led to the overrepresentation of certain demographic groups, particularly younger participants. This

could limit the generalizability of the findings, especially concerning older demographics.

There are also several psychometric-measurement limitations. The fit values we used in this study as reference points fall within flexible limits. This situation can disadvantage the validity of the measurement model. It is advisable to reexamine these models, especially through comparative analysis, and to repeat cross-sample validation (Browne & Cudeck, 1992; Cronbach & Meehl, 1955; Kline, 2015). As mentioned in the section about constructing the psychological distance scale, while construct validity is an important indicator, the observed low reliability combined with a good fit may result from an insufficient number of items in the measurement tool. Therefore, a more structured scale specifically designed for this variable is clearly needed.

Lastly, as a theoretical perspective, in this study, social and personal norms are viewed as interconnected constructs. As mentioned in the introduction, the Focus Theory of Normative Conduct (Cialdini et al., 1991) and the Value–Belief–Norm Theory (Stern et al., 1999) suggest that social norms can influence personal norms. Future research could explore sequential models that directly examine how this transformation occurs, shifting from social norms to personal norms. Additionally, the level of psychological distance may play a facilitating or reinforcing role in this process. This approach could enhance our understanding of how external social pressures translate into internalized moral responsibilities and sustainable behaviors.

In conclusion, this study provides an understanding of the motivational dynamics underlying pro-environmental behavior. The findings demonstrate that psychological distance operates not as a direct determinant but primarily through its mediating effect on social and, more potently, personal norms. Practically, the results offer a kind of roadmap for intervention strategies: reducing psychological distance by highlighting the local and immediate consequences of climate change, promoting educational programs that strengthen individual responsibility from an early age, and reinforcing social norms through consistent institutional policies and community-based practices. However, these implications must be considered given the study's limitations, including sample heterogeneity and the psychometric constraints of the measurement model. Future research should employ longitudinal and comparative designs to solidify causal inferences and refine scale development. Ultimately, the transition to a sustainable future hinges on understanding and leveraging this critical interplay between an individual's moral compass and the collective normative climate that surrounds them.

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References

Allred, S. B., & Solomon, B. D. (2022). Climate change proximity and its influence on concern and behavior. *Environmental Management, 69*(4), 789–802. https://doi.org/10.1007/s00267-021-01579-w

American Psychological Association. (2009). *Task force on the interface between psychology and global climate change: Addressing a multi-faceted phenomenon and set of challenges*. https://www.apa.org/news/press/releases/2009/03/climate-change.pdf

Asch, S. E. (1951). Effects of group pressure upon the modification and distortion of judgments. In H. Guetzkow (Ed.), *Groups, leadership and men* (pp. 177–190). Carnegie Press.

Bai, G., & Bai, Y. (2020). Voluntary or forced: Different effects of personal and social norms on urban residents' environmental protection behavior. *International Journal of Environmental Research and Public Health, 17*(10), 3525. https://doi.org/10.3390/ijerph17103525

Balžekienė, A., Echavarren, J. M., & Telešienė, A. (2025). The effect of proximity on risk perception: A systematic literature review. *Current Sociology, 73*(6), 975–994. https://doi.org/10.1177/00113921241250047

Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology, 27*(1), 14–25. https://doi.org/10.1016/j.jenvp.2006.12.002

Bertoldo, R., & Castro, P. (2016). The outer influence inside us: Exploring the relation between social and personal norms. *Resources, Conservation and Recycling, 112*, 45–53. https://doi.org/10.1016/j.resconrec.2016.04.014

Bollen, K. A., & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin, 110*(2), 305–314. http://doi.org/10.1037/0033-2909.110.2.305

Borsboom, D., Mellenbergh, G. J., & van Heerden, J. (2003). The theoretical status of latent variables. *Psychological Review, 110*(2), 203–219. http://doi.org/10.1037/0033-295X.110.2.203

Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research, 21*(2), 230–258. https://doi.org/10.1177/0049124192021002005

Brügger, A. (2020). Understanding the psychological distance of climate change: The limitations of construal level theory and suggestions for alternative theoretical perspectives. *Global Environmental Change, 60*, 102023. https://doi.org/10.1016/j.gloenvcha.2019.102023

Brügger, A., Dessai, S., Devine-Wright, P., Morton, T. A., & Pidgeon, N. F. (2015). Psychological responses to climate change: Insights from constructive conflict theory. *Wiley Interdisciplinary Reviews: Climate Change, 6*(2), 169–181. https://doi.org/10.1002/wcc.339

Brügger, A., Morton, T. A., & Dessai, S. (2016). "Proximizing" climate change reconsidered: A construal level perspective on psychological distance and climate change. *Journal of Environmental Psychology, 46*, 125–142. https://doi.org/10.1016/j.jenvp.2016.04.008

Brügger, A., Morton, T. A., & Dessai, S. (2021). Spatial and social distance in climate change communication. *Nature Climate Change, 11*, 1026–1033. https://doi.org/10.1038/s41558-021-01190-3

Burnham, K. P., & Anderson, D. R. (2004). Multimodel inference: Understanding AIC and BIC in model selection. *Sociological Methods & Research*, *33*(2), 261–304. https://doi.org/10.1177/0049124104268644

Chu, H. (2022). Construing climate change: Psychological distance, individual difference, and construal level of climate change. *Environmental Communication, 16*(7), 883–899.

Cialdini, R. B. (1988). *Influence: Science and practice* (2nd ed.). Scott, Foresman.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity, and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 151–192). McGraw-Hill.

Cialdini, R. B., Demaine, L. J., Sagarin, B. J., Barrett, D. W., Rhoads, K., & Winter, P. L. (2006). Managing social norms for persuasive impact. *Social Influence, 1*(1), 3–15. https://doi.org/10.1080/15534510500181459

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 201–234). Academic Press.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*(6), 1015–1026. https://doi.org/10.1037/0022-3514.58.6.1015

Claeskens, G., & Hjort, N. L. (2008). *Model selection and model averaging*. Cambridge University Press.

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52*(4), 281–302. https://doi.org/10.1037/h0040957

De Groot, J. I., & Steg, L. (2008). Value orientations to explain beliefs related to environmental significant behavior: How to measure egoistic, altruistic, and biospheric value orientations. *Environment and Behavior*, *40*(3), 330–354. https://doi.org/10.1177/0013916506297831

De Groot, J. I., Bondy, K., & Schuitema, G. (2021). Listen to others or yourself? The role of personal norms on the effectiveness of social norm interventions to change pro-environmental behavior. *Journal of Environmental Psychology, 78,* 101688. https://doi.org/10.1016/j.jenvp.2021.101688

Doran, R., & Larsen, S. (2016). The relative importance of social and personal norms in explaining intentions to choose eco-friendly travel options. *International Journal of Tourism Research, 18*(2), 159–166. https://doi.org/10.1002/jtr.2042

Eyal, T., Liberman, N., & Trope, Y. (2008). Judging near and distant virtue and vice. *Journal of Experimental Social Psychology, 44*(4), 1204–1209. https://doi.org/10.1016/j.jesp.2008.03.012

Feldman, L. (2021). Climate change as a moral issue. *Current Opinion in Psychology, 42*, 36–40. https://doi.org/10.1016/j.copsyc.2021.03.007

Furman, A. (1998). Environmental concerns in developing countries: The case of Turkey. *International Journal of Sociology and Social Policy, 18*(5/6), 54–72. https://doi.org/10.1108/eb013312

Garson, G. D. (2006). *Structural equation modelling*. Statistical Associates Publishing.

Gelman, A., Carlin, J. B., Stern, H. S., Dunson, D. B., Vehtari, A., & Rubin, D. B. (2013). *Bayesian Data Analysis* (3rd ed.). CRC Press.

Gifford, R., Scannell, L., Lormos, C., Smolova, L., & Uzzell, D. (2009). Temporal pessimism and spatial optimism in environmental assessments: An 18-nation study. *Journal of Environmental Psychology, 29*(1), 1–12. https://doi.org/10.1016/j.jenvp.2008.06.001

Han, H., Hwang, J., & Lee, M. J. (2018). Personal norms as the key mediator between moral obligation and pro-environmental behavior: The case of ecotourism. *Journal of Sustainable Tourism, 26*(8), 1417–1433. https://doi.org/10.1080/09669582.2018.1456546

Han, H., Yu, J., Kim, H. C., & Kim, W. (2018). Impact of social/personal norms and willingness to sacrifice on young vacationers' pro-environmental intentions for waste reduction and recycling. *Journal of Sustainable Tourism, 26*(12), 2117–2133. https://doi.org/10.1080/09669582.2018.1538229

Harland, P., Staats, H., & Wilke, H. A. M. (2007). Situational and person-related factors as direct or personal norm mediated predictors of pro-environmental behavior: Questions derived from norm-activation theory. *Basic and Applied Social Psychology, 29*(4), 323–334. https://doi.org/10.1080/01973530701665058

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

IPCC. (2021). *Summary for policymakers*. In V. Masson-Delmotte, P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis et al. (Eds.), *Climate change 2021: The physical science basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 3–32). Cambridge University Press. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf

Jansson, J., Marell, A., & Nordlund, A. (2017). Exploring consumer adoption of a high involvement eco-innovation using value-belief-norm theory. *Journal of Consumer Behaviour, 16*(6), 453–463. https://doi.org/10.1002/cb.1640

Jansson, J., Nordlund, A., & Westin, K. (2017). Examining drivers of sustainable consumption: The influence of norms and opinion leadership on electric vehicle adoption in Sweden. *Journal of Cleaner Production, 154,* 176–187. https://doi.org/10.1016/j.jclepro.2017.03.186

Jones, C., Hine, D. W., & Marks, A. D. (2017). The future is now: Reducing psychological distance to increase public engagement with climate change. *Risk Analysis, 37*, 331–341. https://doi.org/10.1111/risa.12601

Karasu, M., Ogunbode, C., & Bayad, A. (2023, July). *The mediating roles of climate change worry, self-efficacy and collective efficacy in the relationship between pro-environmental behaviors*

and social norms. Herkari International Science Art Literature Congress, Yüksekova, Hakkari.

Keizer, K., Lindenberg, S., & Steg, L. (2011). The reversal effect of prohibition signs. *Group Processes & Intergroup Relations, 14*(5), 681–688. https://doi.org/10.1177/1368430210398004

Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford Publications.

Kuha, J. (2004). AIC and BIC: Comparisons of assumptions and performance. *Sociological Methods & Research, 33*(2), 188–229. https://doi.org/10.1177/0049124103262065

Liberman, N., & Trope, Y. (2008). The psychology of transcending the here and now. *Science, 322*(5905), 1201–1205. https://doi.org/10.1126/science.1161958

Lima, P. A. B., Luiz, O. R., Falguera, F. P. S., Furlan, M., Mariano, E. B., & De Groot, J. I. M. (2023). More than moral motivations: The moderating role of human capabilities on the relationship between personal norms and pro-environmental behavior. *Journal of Cleaner Production, 425,* 139034. https://doi.org/10.1016/j.jclepro.2023.139034

Loy, L. S., & Spence, A. (2020). Reducing psychological distance to increase public engagement with climate change. *Environmental Psychology, 70*, 101455. https://doi.org/10.1016/j.jenvp.2020.101455

Ludlow, L. H., & Klein, K. (2014). Suppressor variables: The difference between 'is' versus 'acting as'. *Journal of Statistics Education, 22*(2), 1–28. https://doi.org/10.1080/10691898.2014.11889703

MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding, and suppression effect. *Prevention Science, 1*(4), 173–181. https://doi.org/10.1023/A:1026595011371

Maiella, R., La Malva, P., Marchetti, D., Pomarico, E., Di Crosta, A., Palumbo, R., Cetara, L., Di Domenico, A., & Verrocchio, M. C. (2020). The psychological distance and climate change: A systematic review on the mitigation and adaptation behaviors. *Frontiers in Psychology, 11,* 568899. https://doi.org/10.3389/fpsyg.2020.568899

Marsh, H. W., Hau, K. T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling*, *11*(3), 320–341. https://doi.org/10.1207/s15328007sem1103_2

Mayer, A., & Smith, E. K. (2018). Unstoppable climate change? The influence of fatalistic beliefs about climate change on behavioural change and willingness to pay cross-nationally. *Climate Policy, 19*(4), 511–523. https://doi.org/10.1080/14693062.2018.1532872

Milfont, T. L. (2010). Global warming, climate change and human psychology. In V. Corral-Verdugo, C. H. Garcia-Cadena, & M. Frías-Armenta (Eds.), *Psychological approaches to sustainability: Current trends in theory, research and applications* (pp. 19–42). Nova Science Publishers.

Moshagen, M., & Bader, M. (2023). semPower: General power analysis for structural equation models. *Behavior Research Methods, 56*, 2901–2922. https://doi.org/10.3758/s13428-023-02254-7

Ojala, M. (2012). Hope and climate change: The importance of hope for environmental engagement among young people. *Environmental Education Research*, *18*(5), 625–642. https://doi.org/10.1080/13504622.2011.637157

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Poortvliet, P. M., Kanse, L., Sijtsema, S. J., & de Vet, E. (2018). The psychological distance of food scandals: Risk perceptions and behavior change. *Appetite, 130*, 134–142. https://doi.org/10.1016/j.appet.2018.07.031

Poortvliet, P. M., Sanders, L., Weijma, J., & De Vries, J. R. (2018). Acceptance of new sanitation: The role of end-users' pro-environmental personal norms and risk and benefit perceptions. *Water Research*, *131*, 90–99. https://doi.org/10.1016/j.watres.2017.12.032

Ratcliffe, E., Ogunbode, C., Wilkie, S., Jones, C. R., Devine-Wright, P., Uzzell, D., Canter, D., Korpela, K., Pinto de Carvalho, L., & Staats, H. (2023). On the importance of qualitative research in environmental psychology. *Journal of Environmental Psychology, 93,* 102199. https://doi.org/10.1016/j.jenvp.2023.102199

Reser, J. P., Bradley, G. L., Glendon, A. I., Ellul, M. C., & Callaghan, R. (2012). *Public risk perceptions, understandings, and responses to climate change and natural disasters in Australia and*

Great Britain. National Climate Change Adaptation Research Facility.

Rimal, R. N., & Real, K. (2003). Understanding the influence of perceived norms on behaviors. *Communication Theory, 13*(2), 184–203. https://doi.org/10.1111/j.1468-2885.2003.tb00288.x

Salomon, E., Preston, J. L., & Tannenbaum, M. B. (2017). Climate change helplessness and the (de) moralization of individual energy behavior. *Journal of Experimental Psychology. Applied, 2*3(1), 15–28. https://doi.org/10.1037/xap0000105

Scannell, L., & Gifford, R. (2017). The experienced psychological distance of climate change. *Environment and Behavior, 49*(3), 301–329. https://doi.org/10.1177/0013916514553165

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). The constructive, destructive, and reconstructive power of social norms. *Psychological Science, 18*(5), 429–434. https://doi.org/10.1111/j.1467-9280.2007.01917.x

Schwartz, S. H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 221–279). Academic Press. https://doi.org/10.1016/S0065-2601(08)60358-5

Sherif, M. (1936). *The psychology of social norms*. Harper.

Smith, J. R., & Louis, W. R. (2008). Do as we say and as we do: The interplay of descriptive and injunctive group norms in the attitude–behaviour relationship. *British Journal of Social Psychology, 47*(4), 647–666. https://doi.org/10.1348/014466607X269748

Smith, J. R., Terry, D. J., Manstead, A. S. R., Louis, W. R., Kotterman, D., & Wolfs, J. (2012). The attitude–behavior relationship in consumer conduct: The role of norms, past behavior, and self-identity. *Journal of Social Psychology, 152*(3), 303–319. https://doi.org/10.1080/00224545.2011.614648

Spence, A., & Pidgeon, N. F. (2010). Framing and communicating climate change: The effects of distance and outcome frame manipulations. *Global Environmental Change, 20*(4), 656–667. https://doi.org/10.1016/j.gloenvcha.2010.07.002

Spence, A., Poortinga, W., & Pidgeon, N. (2012). The psychological distance of climate change. *Risk Analysis: An International Journal, 32*(6), 957–972. https://doi.org/10.1111/j.1539-6924.2011.01695.x

Spence, A., Poortinga, W., Butler, C., & Pidgeon, N. (2011). Perceptions of climate change and willingness to save energy related to flood experience. *Nature Climate Change, 1*(1), 46–49. https://doi.org/10.1038/nclimate1059

Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology, 29*(3), 309-317. https://doi.org/10.1016/j.jenvp.2008.10.004

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review, 6*(2), 81–97.

Thøgersen, J. (2006). Norms for environmentally responsible behaviour: An extended taxonomy. *Journal of Environmental Psychology, 26*(4), 247–261. https://doi.org/10.1016/j.jenvp.2006.09.004

Thøgersen, J., & Ölander, F. (2006). The dynamic interaction of personal norms and environment-friendly buying behavior: A panel study. *Journal of Applied Social Psychology, 36*(7), 1758–1780. https://doi.org/10.1111/j.0021-9029.2006.00080.x

Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review, 117*(2), 440–463. https://doi.org/10.1037/a0018963

Uzzell, D. (2000). The psycho-spatial dimension to global environmental problems. *Journal of Environmental Psychology, 20*(4), 307–318. https://doi.org/10.1006/jevp.2000.0175

van der Linden, S. (2015). The social-psychological determinants of climate change risk perceptions: Towards a comprehensive model. *Journal of Environmental Psychology, 41,* 112–124. https://doi.org/10.1016/j.jenvp.2014.11.012

Wang, X., & Zhang, C. (2020). Contingent effects of social norms on tourists' pro-environmental behaviours: The role of Chinese traditionality. *Journal of Sustainable Tourism, 28*(10), 1646–1664. https://doi.org/10.1080/09669582.2020.1746795