

When Despair Closes the Path: Emotional Configuration and the Demobilization of Moral Motivation in Civic Participation

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Abstract

Emotions shape whether citizens enter public life, yet research on political emotion has largely treated emotional response as a matter of degree. This approach conflates two distinct properties: how intensely emotions are felt and how they are configured relative to one another within a person. This study separates the two using a nationally quota-stratified Korean survey ($N = 1,970$) that measured sixteen discrete emotions about climate change, a policy domain in which public engagement depends heavily on affect. After each respondent's mean across the sixteen items was removed, latent profile analysis identified four configurations: threat-activated, anticipatory-vigilant, undifferentiated and concerned-optimist. A diagnostic comparison showed that profiles estimated from raw scores largely reproduced a severity gradient, whereas the centred profiles did not. Hierarchical regressions examined two private-sphere behaviours and one public-sphere outcome, participation in local collective initiatives. Moral emotions explained more variance than emotional intensity for all three outcomes, most markedly for civic participation ($\Delta R^2 = .109$ versus $.031$; $.077$ when pride, whose items presuppose enacted practice, is excluded). Emotional configuration added explanatory power chiefly for civic participation, and six of the seven interactions that survived Benjamini–Hochberg correction across 24 tests involved that outcome. The central pattern is demobilisation rather than indifference. In the threat-activated configuration, the most emotionally aroused group and the least participatory, obligation towards the nonhuman world, obligation towards other people and empathy for climate victims no longer predicted participation; the slope for nonhuman obligation fell to $.028$ ($p = .598$), against $.450$ in the concerned-optimist configuration. Because this configuration differs from the anticipatory-vigilant one mainly in despair rather than fear, the findings suggest that other-directed moral motivation depends on perceived remediability. They caution against political communication that heightens distress without offering credible routes to collective action.

Keywords: political emotion; civic participation; demobilisation; moral emotions; despair; latent profile analysis; South Korea

1. Introduction

Climate change has become an increasingly emotionally charged subject of public attention. In the European Social Survey Round 8, administered across 23 countries to 44,387 respondents, worry about climate change was widespread and was associated with both policy support and personal mitigation behavior (Bouman et al., 2020). Household behavior is not a marginal component of the mitigation problem: Dietz, Gardner, Gilligan, Stern and Vandenberg (2009) estimated that full national implementation of seventeen behaviorally plausible household actions in the United States could save approximately 123 million metric tons of carbon per year by year ten, equivalent to about 20 percent of direct household emissions. A substantial body of applied literature therefore treats emotion as a lever for promoting behavior, typically by selecting a single emotion—most often worry, anxiety, or guilt—and examining its association with pro-environmental behavior. When multiple emotions are measured, they are typically combined into an index of negative climate affect. Pihkala (2022) argues that this approach understates the diversity of the emotional field, noting that only a small number of climate emotions, primarily guilt, shame, anger and grief, have been examined as moral emotions.

Both the single-emotion and composite-index approaches rest on an assumption that has received relatively little attention: that the significance of an emotional response lies primarily in its magnitude. Yet two people can report an identical average level of emotional arousal while inhabiting different emotional worlds. For example, an individual may be anxious and fearful but not despairing, oriented toward a threat that has yet to materialize. Another may be equally aroused, but that arousal may consist of hopelessness, depression, and pain—the emotional signature of a loss already experienced. A mean score cannot distinguish between these configurations.

This limitation points to three gaps in the literature. First, person-centered methods have begun to appear in climate-emotion research, but it remains unclear whether the profiles they identify represent typologies of configuration rather than categorizations of overall intensity. The diagnostic evidence needed to address this question is rarely reported. Second, the moral-emotion space remains incomplete. Pride, the positive self-conscious emotion that standard theory predicts should follow and reinforce successful moral action (Tangney et al., 2007), is seldom examined alongside guilt and shame. Third, the literature has not established whether emotional configuration conditions the translation of moral emotion into behavior, despite evidence that efficacy-related appraisals moderate the relationship between worry and behavior (Gregersen et al., 2021).

This study addresses these gaps by decomposing emotional response into two components: intensity, defined as the respondent's mean across sixteen discrete emotion items, and configuration, defined as the within-person centered deviation profile across those items. Its contribution is threefold. First, it offers a

reproducible diagnostic for distinguishing configuration from intensity in person-centered emotion research. Second, it examines a broader moral-emotion space and shows that public climate participation is associated with self-efficacious rather than self-condemning affect. Third, it demonstrates that configuration operates as a boundary condition in the relationship between moral emotion and public action among respondents whose arousal is accompanied by despair. RQ1 asks whether the sixteen emotions form qualitatively distinct configurations once overall emotional level is removed. RQ2 asks whether moral emotions predict action in both the private and public spheres beyond emotional intensity. RQ3 asks whether configuration moderates the relationship between moral emotion and action and, if so, whether it does so differently across behavioral domains.

2. Theoretical Background

2.1 Climate emotion and its role in the climate problem

Climate emotion refers to an affective response directed toward climate change itself or toward the prospect of its consequences, rather than a diffuse mood that merely happens to co-occur with climate awareness. Pihkala (2022) uses the term in this broad sense and argues that the field has accumulated labels faster than it has integrated them into general theories of emotion. The theoretical significance of these states rests on a simple premise: climate change is temporally distant, spatially diffuse, and statistically expressed, making it a poor fit for the ordinary mechanisms of motivation. Emotion is therefore one of the few mechanisms through which such an object can acquire immediate personal significance. An emotion is not merely a reaction; it is also a construal that carries an implicit interpretation of how serious a situation is, who is responsible, and whether any actions remain possible.

The relevance of this point to climate change can be stated briefly. The behavioral margin is substantial: Dietz, Gardner, Gilligan, Stern and Vandenbergh (2009) estimated that full implementation of seventeen types of household actions in the United States could save approximately 123 million metric tons of carbon annually by year ten, roughly one-fifth of direct household emissions. Standard cognitive predictors leave much of this behavioral margin unexplained, which has directed attention toward affect. Climate change is also unusual among policy problems in that the same emotional state can produce opposing behavioral responses: fear can mobilize or paralyze, and guilt can motivate reparative action or permit disengagement. The emotion label alone, therefore, does not determine the behavioral outcome.

Empirical research has begun to map these relationships but remains partial. In the largest study of its kind, worry about climate change was associated primarily with policy support, whereas biospheric values were associated primarily with personal mitigation behavior (Bouman et al., 2020). This distinction is instructive

because affect and values were not interchangeable across outcomes. Gregersen, Doran, Böhm and Poortinga (2021), using the same survey program, showed that outcome expectancies moderated the association between worry and energy-saving behavior for both curtailment and efficiency actions, such that worry translated into behavior primarily among respondents who believed that their actions would be effective. The present design is motivated by three limitations of this work. First, the measurement base is narrow, with most studies relying on one or two emotions; consequently, differences in the relative standing of emotions within an individual cannot be observed. Second, the moral dimension remains truncated, with pride largely absent from the empirical literature despite being the positively valenced counterpart in the standard taxonomy. Third, the appraisal context that conditions the relationship between emotion and behavior has generally been measured separately from emotion through efficacy items, rather than inferred from the emotional response itself.

2.2 Emotional intensity and emotional type

Notably, two properties of an emotional response must be distinguished. Emotional intensity refers to the general elevation of an individual's responses across an emotion inventory and answers the question of how strongly climate change is felt. Emotional type, or configuration, refers to the relative ordering of emotions within an individual and addresses the question of what is felt most strongly. A respondent who scores 6, 6, 2, and 2 on four items and another who scores 4, 4, 1, and 1 differ in intensity but share the same type; a respondent who scores 6, 2, 6, and 2 differs in type while matching the first respondent in overall intensity. The distinction is straightforward, but it is routinely obscured because the standard summary of an emotion inventory is its mean.

Theoretically, the two properties perform different functions. Intensity indexes the motivational charge attached to the object and should, under an expectancy-value framework, be related monotonically to effort. Type, by contrast, indexes the appraisal structure underlying the response, because discrete-emotion theories distinguish emotions partly on the basis of their appraisal profiles. A configuration dominated by despair and helplessness therefore implies a different appraisal of controllability from one dominated by anticipatory worry, even at identical levels of intensity. Type should consequently matter most when the appraisal content of an emotional state is behaviorally relevant.

Empirically, the two properties are entangled in a manner that gives rise to a methodological problem. Person-centered methods are well suited to recovering types; however, when they are applied to raw Likert responses, the largest source of between-person variance is general elevation. Consequently, solutions may be organized primarily along a severity gradient. Classes may then represent levels of intensity rather than distinct emotional types, despite being described in terms of type. Nylund-Gibson and Choi (2018)

emphasize that class enumeration must combine fit indices with substantive interpretability and evidence that the resulting classes are meaningfully distinct. The possibility of recovering a level gradient is one manifestation of this broader caution, yet it is rarely tested directly. Extreme and acquiescent response styles can further compound the problem.

The remedy is arithmetic rather than statistical. Within-person centering subtracts each respondent's mean from every item, leaving only the relative ordering of emotions within that respondent. Fischer and Milfont (2010) identify within-subject standardization as one of the tools available when researchers are concerned about differences in response styles. This transformation entails an unavoidable statistical cost: because the centered scores sum to zero within each respondent, one indicator is linearly dependent on the others, and between-person information about overall level is discarded by design. For the present purpose, however, that loss is precisely the point. A profile estimated from centered data cannot reproduce the intensity gradient, and comparing the incremental validity of the two solutions provides a direct test of whether an apparent typology genuinely captures differences in emotional type.

2.3 Moral emotions within the climate-emotion field

Moral emotions respond to, and motivate action concerning, the welfare of other people or the social order beyond the agent's immediate self-interest. Tangney, Stuewig and Mashek (2007) organize this field around the negatively valenced self-conscious emotions of shame, guilt, and embarrassment; identify moral pride as a positively valenced counterpart; and include other-oriented states such as elevation and gratitude. The distinction that has received the most sustained attention is that between shame and guilt: guilt is directed toward a specific behavior and tends to motivate reparative action, whereas shame is directed toward the global self and tends to motivate concealment and withdrawal.

The relationship between this family of emotions and the climate emotions discussed in Section 2.1 requires careful consideration because the two literatures employ overlapping terms to refer to different constructs. The emotion inventory asks how strongly respondents feel guilt and shame when thinking about climate change, whereas the moral-emotion items ask whether respondents feel guilty about their own conduct and experience shame in relation to themselves and future generations. The former is directed toward an external object, whereas the latter is directed toward the respondent's own behavior. Pihkala (2022) treats guilt and shame as climate emotions with moral content, a formulation compatible with both interpretations. The present study treats them as distinct and tests their empirical separation rather than assuming it, because a failure to discriminate between them would make the moderation analysis circular.

Moral emotions are also not simply more intense forms of climate emotions. Worry requires only that the object be appraised as threatening; guilt requires an attribution of responsibility to oneself, while obligation

toward future generations can be strong even in a respondent with relatively low overall climate arousal. If moral emotions were merely a manifestation of intensity, entering intensity first would absorb their effects. Studies measuring moral emotions rarely measure the broader emotional field alongside them; consequently, the proposition has not been directly tested.

The measurement of moral emotions presents two further limitations. Pride is measured far less frequently than guilt, even though this distinction may be important if climate participation is driven by a sense of accomplishment rather than by a sense of fault. The other-oriented family is also usually collapsed into a single empathy construct, although research on environmental concern distinguishes among egoistic, altruistic, and biospheric orientations and finds them to be empirically distinct (Schultz, 2001). If concern for other people and for the nonhuman world are separable, the corresponding forms of empathy and obligation may likewise be separable. Felt moral obligation occupies an intermediate position between affect and norm. In norm-activation accounts, it is defined as a sense of moral duty rather than as an affect proper (Schwartz, 1977), and it is therefore retained here as a distinct construct.

2.4 Emotion as an antecedent of climate behavior

Treating emotion as an antecedent of behavior requires specifying the mechanism through which emotion influences action; two mechanisms are available, with different implications. The energizing account holds that emotion supplies motivational charge, such that greater emotional intensity produces more action regardless of which emotion is experienced. The appraisal account holds that each emotion carries an implicit interpretation of the situation, including whether action would be effective, such that the same level of emotional arousal can be routed differently. Witte (1992) formalizes the latter account in the context of threat: a fear-arousing message produces danger-control responses and behavior change when efficacy appraisals are favorable, but fear-control responses, including defensive avoidance, when they are not. Fear, therefore, does not have a uniformly directional effect on behavior.

Empirical findings support the conditional form of the appraisal account. Bouman et al. (2020) found that worry was more strongly associated with policy support than with personal mitigation, which is difficult to explain if worry simply supplies motivational energy. Gregersen et al. (2021) found the association between worry and behavior strengthened with outcome expectancy and differed between curtailment and efficiency behaviors. The role of emotion as an antecedent of behavior is therefore contingent, and this contingency operates through beliefs about efficacy and control.

The contingency also depends on the type of behavior at issue. Stern (2000) classifies environmentally significant individual behavior into four types: environmental activism, non-activist behaviors in the public sphere, private-sphere environmentalism, and other environmentally significant behaviors, such as those

exercised within organizations. The first three are relevant here, and Stern argues that they have partly distinct causal structures rather than serving as interchangeable indicators of a single environmental disposition. Within the private sphere, research on energy behavior distinguishes efficiency behaviors, which typically involve single investment decisions, from curtailment behaviors, which require repeated action. Gregersen, Doran, Böhm and Poortinga (2021) analyze the two as separate outcomes on precisely this basis, and Dietz et al. (2009) similarly group household actions into behaviorally distinct categories rather than treating them as a single class. Emotion should therefore be expected to influence these behaviors through different pathways rather than simply increasing all of them simultaneously.

The three outcomes examined here differ accordingly. Efficiency behavior is a capital decision that leaves daily routines largely unchanged once it has been made. Curtailment behavior, operationalized through dietary restraint, demands repeated self-regulation and engages personal identity. Community participation shifts the unit of action to the collective and renders behavior socially visible, increasing the salience of how one's actions will be perceived by others. This feature matters because visibility is an appraisal dimension on which self-conscious emotions operate (Tangney et al., 2007). If emotion influences behavior through appraisal rather than motivational charge alone, the public sphere is where the content of an emotional state should matter most.

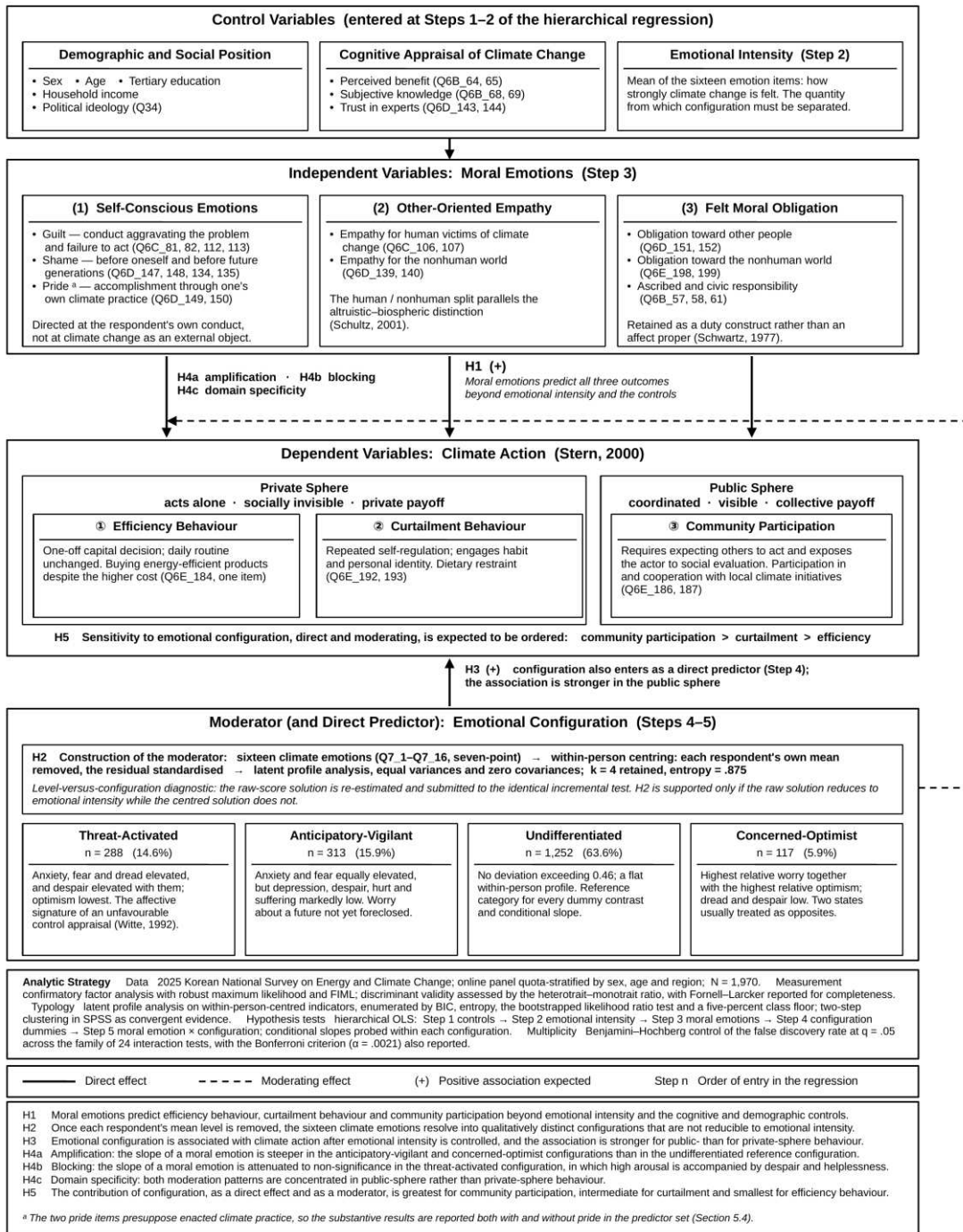
3. Research Model and Hypotheses

3.1 The model

Figure 1 presents the research model. Its central premise is that private- and public-sphere climate behaviors are not simply two indicators of a single underlying disposition, but two outcomes governed by partly distinct determinants. In addition, it posits that emotional configuration is the key variable distinguishing between these behavioral domains.

Figure 1. Research model of moral emotion, emotional configuration and climate behavior. Moral emotions are modeled as direct predictors of efficiency behavior, curtailment behavior and community participation. Emotional configuration enters both as a direct predictor and as a moderator of the moral-emotion paths. Emotional intensity,

cognitive appraisals and demographic characteristics are entered as controls.



Note. Solid arrows denote direct effects and the dashed arrow denotes moderation; step labels give the order of entry in the hierarchical regression. Emotional intensity and emotional configuration are two components of the same sixteen emotion items (Q7_1–Q7_16), namely the respondent's mean and the within-person centred deviations from it. Class labels and sizes are those obtained in Section 5.3.

The differentiation among the outcomes follows Stern (2000). Efficiency and curtailment behaviors both

occur in the private sphere, where individuals act independently and make decisions concerning consumption. They nevertheless differ in their temporal structure: efficiency behavior typically involves a one-time capital decision, whereas curtailment behavior requires a practice to be sustained across multiple occasions. Community participation belongs to a different class of behavior. It requires coordination with others, is observable to others, and produces a collective rather than an individual payoff. Private behaviors can be initiated by a single episode of motivation, remain largely invisible to others, and produce a private benefit. Participation, by contrast, requires individuals to expect others to act as well, exposes them to social evaluation, and yields little benefit unless the collective effort succeeds. These differences concern what individuals must believe and what they must risk, rather than simply reflecting different levels of behavioral cost. Accordingly, the model does not use behavioral cost as its primary organizing principle.

Against this behavioral structure, the model positions two emotional determinants in a specific relationship. Moral emotions provide the motivational content of action: guilt and shame register a discrepancy between conduct and a moral standard, pride reflects the successful resolution of that discrepancy, empathy responds to the suffering of others, and obligation and ascribed responsibility reflect a perceived duty to act. Each provides a reason for action. Emotional configuration, by contrast, provides the context in which such a reason is evaluated in terms of its feasibility. A configuration dominated by anticipatory worry without despair suggests that the situation remains open to influence, whereas one dominated by helplessness and suffering suggests that the situation is effectively closed. Configuration therefore enters the model through two distinct pathways. Its direct path allows for the possibility that an emotional signature is itself associated with the actions an individual takes. Its moderating path represents the substantive claim that configuration shapes the translation of moral emotion into action rather than simply exerting an additional effect. If only the direct path were supported, configuration would function merely as another predictor among many.

Because emotional intensity is the quantity from which configuration must be distinguished, it is included in the control block rather than treated as a substantive predictor. Perceived benefit, subjective knowledge, and trust in experts represent the cognitive appraisal pathway that emotion research is often criticized for overlooking, while five demographic variables complete the control block. The model therefore examines whether emotional configuration contributes to climate behavior after accounting for the overall level of emotional response, cognitive appraisals of the problem, and the respondent's social position.

3.2 Direct effects of moral emotions

The expectation that moral emotions predict climate action follows from their functional definition: an emotion is considered moral insofar as it connects moral standards to moral behavior (Tangney et al., 2007). Guilt, which is directed toward a specific failure, should motivate reparative action; pride, which is directed

toward a specific accomplishment, should reinforce the behavior that produced it; empathy for those who suffer should motivate efforts to alleviate that suffering; and felt obligation should motivate fulfillment of the perceived duty. Shame is the exception identified by the theory itself, because its global attribution to the self tends to motivate concealment. Whether these effects persist after accounting for emotional intensity is a separate question that the existing literature has not addressed. The present analysis therefore uses a hierarchical test, entering emotional intensity before the moral emotions.

H1. Moral emotions predict efficiency behavior, curtailment behavior and community participation beyond emotional intensity and the cognitive and demographic controls.

3.3 Structure of climate emotion and its direct effect

If climate emotions form genuine configurations, removing each respondent's overall level should reveal systematic patterns rather than merely random variation. The hypothesis requires careful formulation because part of what it appears to claim is mathematically guaranteed: centering alters the data, so the centered solution will differ from the raw solution regardless of the underlying structure. The relevant claim is therefore comparative. First, the raw solution should be reducible to intensity, such that class membership accounts for most of the variance in the mean and its incremental contribution largely disappears once the mean is controlled. Second, the centered solution should not be reducible in the same way under the identical test. Only the combination of these findings supports the hypothesis, while the second component is the one that provides evidence that distinct emotional configurations exist.

H2. Once each respondent's mean level is removed, the sixteen climate emotions resolve into qualitatively distinct configurations that are not reducible to emotional intensity.

Whether configuration subsequently predicts behavior should depend on the behavioral domain. Private consumption decisions are made independently and are plausibly influenced primarily by general motivation, whereas public participation is socially visible and requires collective coordination. The appraisal content of the emotional state should therefore be more consequential. Stern (2000) provides a theoretical basis for this asymmetry by arguing that private- and public-sphere behaviors have partly distinct causal structures.

H3. Emotional configuration is associated with climate action after emotional intensity is controlled, and this association is stronger for public-sphere than for private-sphere behavior.

3.4 Configuration as a boundary condition

The central hypothesis conceptualizes emotional configuration as the affective context within which a moral appraisal is translated, or fails to be translated, into action. Witte's (1992) extended parallel process model

provides the proposed mechanism. Building on Leventhal's distinction between danger-control and fear-control processes, the model holds that a threatening message produces danger-control responses, and consequently behavior change, when efficacy appraisals are favorable. When efficacy appraisals are unfavorable, the same threat can instead produce fear-control responses, including defensive avoidance and rejection of the message. The relevant appraisal is therefore perceived controllability rather than objective controllability.

Emotional configuration provides an affective marker of this appraisal. Where helplessness, despair and suffering are relatively elevated, the profile carries the emotional signature of an unfavorable appraisal of control. When anxiety and worry are elevated without a corresponding elevation in despair, the profile reflects vigilance directed toward a future that remains open to influence. Gregersen et al. (2021) show that the association between worry and behavior strengthens when outcome expectancy is high. The present argument extends this logic one step further by locating the relevant appraisal in the emotional profile itself rather than in a separate efficacy measure and by applying the logic to moral emotion rather than to worry alone.

This reasoning yields directional predictions. When the emotional configuration supports a favorable appraisal, moral emotion should translate into action more efficiently, resulting in a steeper positive slope. When the configuration does not support such an appraisal, the translation of moral emotion into action should be disrupted, causing the slope to approach zero. These are substantively different predictions rather than alternative descriptions of the same effect. A third possibility is that the slopes differ in magnitude but remain significant across configurations. Such a pattern would indicate quantitative rather than qualitative moderation.

H4a (amplification). The slope of a moral emotion on climate action is steeper in configurations characterized by vigilance or optimism than in the undifferentiated reference configuration.

H4b (blocking). The slope of a moral emotion is attenuated to non-significance in the threat-activated configuration, in which high emotional arousal is accompanied by despair and helplessness.

H4c (domain specificity). Both patterns are concentrated in public-sphere behavior rather than private-sphere behavior.

3.5 Differences among the three outcomes

The model also implies that the determination of climate behavior is not uniform across outcomes. Efficiency behavior involves a single decision and requires neither sustained self-regulation nor social exposure; it should therefore be least sensitive to configuration. Curtailment behavior requires repeated action and should consequently show an intermediate level of sensitivity. Community participation requires

both social visibility and coordination with others and should therefore be most sensitive to configuration. The same ordering should apply to moral emotions whose effects depend on how individuals are perceived by others.

H5. The contribution of emotional configuration, both as a direct effect and as a moderator, is greatest for community participation, intermediate for curtailment behavior and smallest for efficiency behavior.

3.6 Control variables

The analysis includes four substantive controls. Emotional intensity is the quantity from which configuration must be distinguished. Perceived benefit and subjective knowledge represent the cognitive appraisal pathway that emotion research is often criticized for overlooking. Trust in experts is included because institutional and expert trust can shape how individuals receive and evaluate climate-related claims. The demographic controls are sex, age, education, household income and political ideology. Political ideology is included because climate attitudes are politically structured in most industrial democracies (Jung, 2023). Table 1, which appears immediately below, summarizes the hypotheses, the corresponding paths in Figure 1 and the section in which each hypothesis is developed.

Table 1. Summary of hypotheses and corresponding paths in Figure 1.

No.	Hypothesis	Path in Figure 1	Section
H1	Moral emotions predict all three outcomes beyond emotional intensity and controls	Moral emotions → outcomes	3.2
H2	The sixteen emotions form distinct configurations that are not reducible to intensity	Measurement of the moderator	3.3
H3	Configuration predicts action after intensity is controlled, with a stronger association in the public sphere	Configuration → outcomes	3.3
H4a	Slopes are steeper in vigilant or optimist configurations (amplification)	Configuration × moral emotion	3.4
H4b	Slopes become nonsignificant in the threat-activated configuration (blocking)	Configuration × moral emotion	3.4
H4c	Moderation is concentrated in the public sphere	Configuration × moral emotion	3.4
H5	Configuration effects are ordered: community > curtailment > efficiency	Comparison across outcomes	3.5

Note. Each hypothesis corresponds to a path or measurement decision shown in Figure 1. H2 concerns the construction of the moderator and is tested in Section 5.3.

4. Method

4.1 Data and participants

Data were drawn from the 2025 Korean National Survey on Energy and Climate Change, an online panel survey of Korean adults conducted in 2025. The sample was quota-stratified by sex, age and region to match national population parameters. The realized sample comprised 1,970 respondents. Women accounted for 50.6 percent of the sample ($n = 997$), and the mean age was 48.5 years ($SD = 14.8$), with 32.9 percent of respondents aged 60 years or older. Tertiary educational attainment was 77.9 percent, a relatively high proportion that is typical of Korean online panels. The median household income fell within the five-to-seven million Korean won range. On a seven-point ideological self-placement item, 27.5 percent of respondents identified as progressive, 50.1 percent as moderate, and 22.4 percent as conservative. Section 5.1 reports the full distribution of these characteristics.

Accordingly, 63 respondents reported a household income of zero. These responses were recoded as missing, while the corresponding cases were retained in analyses that did not involve income. No respondent exhibited an invariant pattern across the sixteen emotion items.

4.2 Measures

Climate emotions were measured in item block Q7, which asked respondents to indicate how strongly they experienced each of sixteen emotions when thinking about climate change, using a seven-point scale: worry, sadness, helplessness, anxiety, fear, dread, optimism, anger, guilt, shame, hurt, depression, despair, indifference, suffering and confusion. The list was developed specifically for the survey rather than adopted from an existing instrument. Its coverage broadly corresponds to the fear, sadness, anger and positivity families identified by Pihkala (2022), and no published Korean-language inventory encompassing all sixteen emotions was available at the time of data collection. Emotional intensity was operationalized as the mean across all sixteen items. The configuration indicators were the sixteen within-person centered scores, each subsequently standardized across respondents, following the within-subject standardization procedure described by Fischer and Milfont (2010).

Moral emotions were measured in the Q6 blocks using five-point agreement scales. Guilt was assessed with four items adapted to the climate context: two concerning guilt over behaviors that aggravate the problem (Q6C_81, Q6C_82) and two concerning guilt over failure to act (Q6C_112, Q6C_113). The behavior-focused formulation follows the conceptualization of guilt in Tangney et al. (2007). Shame was assessed with four items, two referring to shame in relation to oneself (Q6D_147, Q6D_148) and two referring to shame in relation to future generations (Q6D_134, Q6D_135). Pride was assessed with two achievement-related items (Q6D_149, Q6D_150). Empathy and moral obligation were each measured separately with respect to human targets (Q6C_106, Q6C_107; Q6D_151, Q6D_152) and nonhuman targets (Q6D_139, Q6D_140; Q6E_198, Q6E_199). This distinction was designed to parallel the altruistic-biospheric

distinction established by Schultz (2001), although the items themselves were developed for the present survey. Ascribed responsibility was measured using two responsibility-attribution items (Q6B_57, Q6B_58) and one civic-responsibility item (Q6B_61), following the conceptualization of the ascription of responsibility construct in norm-activation research (Schwartz, 1977).

Particular attention is warranted for one measurement decision because it bears directly on the interpretation of the results. The two pride items ask whether respondents experience a sense of accomplishment through their climate-related practices and whether observed changes are attributable to those efforts. Both items therefore presuppose that respondents engage in climate action, making the construct nonindependent of the behavioral criterion in a way that guilt and obligation are not. This constitutes criterion contamination rather than construct invalidity: pride is measured as intended, but its measurement is entangled with the behavioral outcome. Accordingly, Section 5.4 reports the substantive results both with and without pride included in the predictor set, while Section 5.7 reports the moderation results with pride included as a covariate. This approach allows readers to assess which conclusions depend on the inclusion of pride.

Efficiency behavior was measured with a single item concerning the purchase of energy-efficient products despite their higher cost (Q6E_184). Curtailment behavior was measured with two items concerning dietary restraint (Q6E_192, Q6E_193), and community participation was measured with two items concerning participation in and cooperation with local climate initiatives (Q6E_186, Q6E_187). The distinction between efficiency and curtailment behavior follows the operationalization used by Gregersen et al. (2021), while the private- versus public-sphere distinction follows Stern (2000). Gardner and Stern (2008) provide evidence that household actions differ in their potential for emission reduction, rather than evidence for the efficiency–curtailment distinction itself. The items were developed specifically for the Korean survey. The use of a single item to measure efficiency behavior is a limitation and is addressed in Section 7.2.

The control variables were perceived benefit (Q6B_64, Q6B_65), subjective knowledge (Q6B_68, Q6B_69), and trust in experts (Q6D_143, Q6D_144), each measured with two items on five-point scales, together with sex, age, tertiary educational attainment, household income, and ideological self-placement. An acquiescence index, calculated as the mean across all 21 moral-emotion items, was used for diagnostic purposes rather than included as a covariate. Table 2 reports the item codes, descriptive statistics, and reliability estimates.

4.3 Analytic procedure

All analyses were conducted in R 4.6.1. For scales comprising three or more items, both Cronbach’s alpha and McDonald’s omega were reported. For two-item scales, the inter-item correlation and Spearman–Brown coefficient were reported, as the latter is preferable when alpha is attenuated by item count. The

measurement model was estimated using confirmatory factor analysis with robust maximum likelihood estimation, with full-information maximum likelihood used to address missing data. Discriminant validity was assessed primarily using the heterotrait–monotrait ratio. Henseler, Ringle and Sarstedt (2015) proposed this ratio after demonstrating through simulation that the Fornell–Larcker criterion does not reliably detect insufficient discriminant validity. For completeness, Fornell–Larcker results are also reported.

Latent profile analysis was conducted under an equal-variance, zero-covariance specification. Class enumeration was based on the Bayesian information criterion (BIC), entropy, the bootstrapped likelihood ratio test, and the requirement that no class comprise less than five percent of the sample, following the enumeration guidance of Nylund-Gibson and Choi (2018). The hypotheses were tested using hierarchical ordinary least squares regression. Controls were entered in the first step, emotional intensity in the second, and moral emotions in the third. Predictors were mean-centered before the product terms were constructed. Each interaction term was entered after the covariates, emotional intensity, configuration dummy variables, and the centered predictor. The largest configuration was used as the reference category. Conditional slopes were estimated within each configuration at the mean values of the covariates and were probed at one standard deviation below and above the predictor mean. A fixed random seed was used throughout the analyses.

The analyses were independently replicated in IBM SPSS Statistics. For transparency, one discrepancy is reported: the two-step clustering procedure in SPSS is sensitive to case order, and successive runs produced class sizes ranging from 339/506/178/947 to 390/187/461/932 while consistently recovering the same four qualitative types. By contrast, latent profile analysis in R with a fixed seed reproduced the same solution exactly. All estimates reported below are therefore based on the R analyses. The SPSS clustering results are presented in Section 5.3 only as convergent evidence supporting the typology.

4.4 Multiplicity policy

H4 entails a family of 24 interaction tests, comprising eight moral emotions crossed with three outcomes. The multiplicity-control procedure was specified before inspection of the results. Every interaction term is reported with its exact p value, together with Benjamini–Hochberg control of the false discovery rate at $q = .05$ across the full family and with the Bonferroni criterion of $\alpha = .05/24 = .0021$. Effects that remain significant after Benjamini–Hochberg are treated as established. Effects that reach the uncorrected .05 significance level but do not survive correction are reported as provisional and do not support substantive claims.

5. Analysis and Results

5.1 Sample and descriptive statistics

The sample was approximately evenly divided by sex, comprising 973 men (49.4 percent) and 997 women (50.6 percent). Respondents were distributed across five age groups, ranging from 310 respondents aged 20 or younger (15.7 percent) to 648 aged 60 or older (32.9 percent), with a mean age of 48.5 years ($SD = 14.8$). Educational attainment was skewed upward: 435 respondents (22.1 percent) had a secondary qualification or lower, whereas 1,535 (77.9 percent) had attained tertiary education. This distribution is characteristic of online panels and is relevant to the generalizability of the findings rather than to their internal validity. Household income was distributed fairly evenly across the four income bands, with 346, 531, 478, and 540 respondents (17.6, 27.0, 24.3, and 27.4 percent) reporting monthly household incomes ranging from below three million Korean won per month to seven million or more. A total of 75 respondents (3.8 percent) did not report usable income data. Ideology self-placement was concentrated in the moderate category: 542 respondents (27.5 percent) identified as progressive, 987 (50.1 percent) as moderate, and 441 (22.4 percent) as conservative. Mean emotional intensity was 4.33 ($SD = 0.99$) on the seven-point scale, somewhat above the scale midpoint and broadly consistent with the widespread climate worry reported by Bouman et al. (2020). Among the moral emotions, obligation toward the nonhuman world had the highest mean ($M = 3.51$), whereas guilt had the lowest ($M = 3.08$). This pattern constitutes a notable finding in itself. Korean respondents reported a stronger sense of duty toward the nonhuman world than a sense of personal fault. Among the behavioral outcomes, efficiency behavior had the highest mean ($M = 3.50$), whereas community participation had the lowest ($M = 3.18$). Table 2 reports the item codes, descriptive statistics, and reliability estimates.

Table 2. Measurement of constructs, descriptive statistics, and reliability.

Construct	Item codes	k	M (SD)	α / r	ω / SB
Guilt	Q6C_81, 82, 112, 113	4	3.08 (0.79)	.872	.873
Shame	Q6D_134, 135, 147, 148	4	3.30 (0.75)	.877	.877
Pride	Q6D_149, 150	2	3.33 (0.73)	.573	.728
Empathy – human	Q6C_106, 107	2	3.43 (0.75)	.646	.785
Empathy – nonhuman	Q6D_139, 140	2	3.59 (0.74)	.650	.788
Obligation – human	Q6D_151, 152	2	3.46 (0.72)	.657	.793
Obligation – nonhuman	Q6E_198, 199	2	3.51 (0.75)	.708	.829
Ascribed responsibility	Q6B_57, 58, 61	3	3.27 (0.75)	.763	.777
Efficiency behavior	Q6E_184	1	3.50 (0.82)	—	—
Curtailed behavior	Q6E_192, 193	2	3.39 (0.77)	.596	.747
Community participation	Q6E_186, 187	2	3.18 (0.82)	.689	.816
Perceived benefit	Q6B_64, 65	2	3.65 (0.73)	.635	.777

Construct	Item codes	k	M (SD)	α / r	ω / SB
Knowledge	Q6B_68, 69	2	3.11 (0.83)	.687	.814
Trust in experts	Q6D_143, 144	2	3.49 (0.70)	.588	.740
Emotional intensity	Q7_1 – Q7_16	16	4.33 (0.99)	—	—

Note. N = 1,970. For scales comprising three or more items, the reliability columns report Cronbach's α and McDonald's ω ; for two-item scales, they report the inter-item correlation (r) and the Spearman–Brown coefficient (SB). Emotion items use a seven-point scale; all other items use a five-point scale. Efficiency behavior is measured with a single item, for which no internal-consistency estimate is available.

5.2 Measurement model

Reliability was adequate across the multi-item measures. The four-item guilt and shame scales yielded Cronbach's α values of .87 and .88, respectively, with corresponding omega coefficients, while the three-item ascribed-responsibility scale yielded $\alpha = .76$. The Spearman–Brown coefficients for the ten two-item scales ranged from .73 to .83.

The measurement model warrants particular attention because the two standard approaches to assessing discriminant validity produced different results; this disagreement is instructive rather than substantive. The eight-factor confirmatory model demonstrated acceptable fit, $\chi^2(161) = 1254.0$, CFI = .934, TLI = .914, RMSEA = .072, SRMR = .041. Collapsing factors resulted in substantial deterioration in fit: combining guilt and shame reduced the CFI to .895 and increased the BIC by more than 900 units, while progressively more parsimonious specifications produced further deterioration, with the one-factor model yielding a CFI of .756. The Fornell–Larcker criterion indicated potential discriminant-validity problems for four of the eight factors, because latent correlations reached .80, while the square root of the average variance extracted for a two-item scale cannot substantially exceed this value by construction. By contrast, the heterotrait–monotrait ratio, which Henseler et al. (2015) proposed on the basis of Monte Carlo evidence showing that the Fornell–Larcker criterion does not reliably detect insufficient discriminant validity, reached a maximum of .796. The eight-factor structure was therefore retained. This decision was further supported by the maximum variance inflation factor of 2.85. Table 3 presents the model comparison.

Table 3. Measurement model comparison.

Model	χ^2	df	CFI	TLI	RMSEA	BIC
Eight factors (retained)	1254.0	161	.934	.914	.072	82,133
Seven factors (guilt + shame)	1888.1	168	.895	.869	.089	83,052
Four factors	2563.8	183	.853	.832	.101	83,998
Two factors (self / other)	3148.6	188	.817	.795	.111	84,878
One factor	4111.7	189	.756	.728	.128	86,394

Note. N = 1,970. Robust maximum likelihood with full-information maximum likelihood for missing data; χ^2 , CFI, TLI, and RMSEA are the robust variants. Maximum heterotrait–monotrait ratio in the eight-factor model = .796. SRMR ranges from .041

(eight-factor model) to .076 (one-factor model).

5.3 Structure of climate emotion (H2)

Latent profiles were first estimated using the raw emotion items, following the conventional procedure. A five-class solution emerged, with the classes readily interpretable in terms of overall emotional severity. The diagnostics, however, indicated that the classes were ordered almost perfectly by mean emotion level, ranging from -1.74 to $+1.03$ in standardized units, and that class membership accounted for 86 percent of the variance in emotional intensity ($\eta^2 = .858$); for three of the five classes, the maximum shape deviation was below 0.32. The decisive test was incremental: with emotional intensity entered as a covariate, raw-class membership added between .003 and .005 to R^2 across the three outcomes (Appendix A). In this sample, the conventional procedure therefore recovered a categorization of intensity.

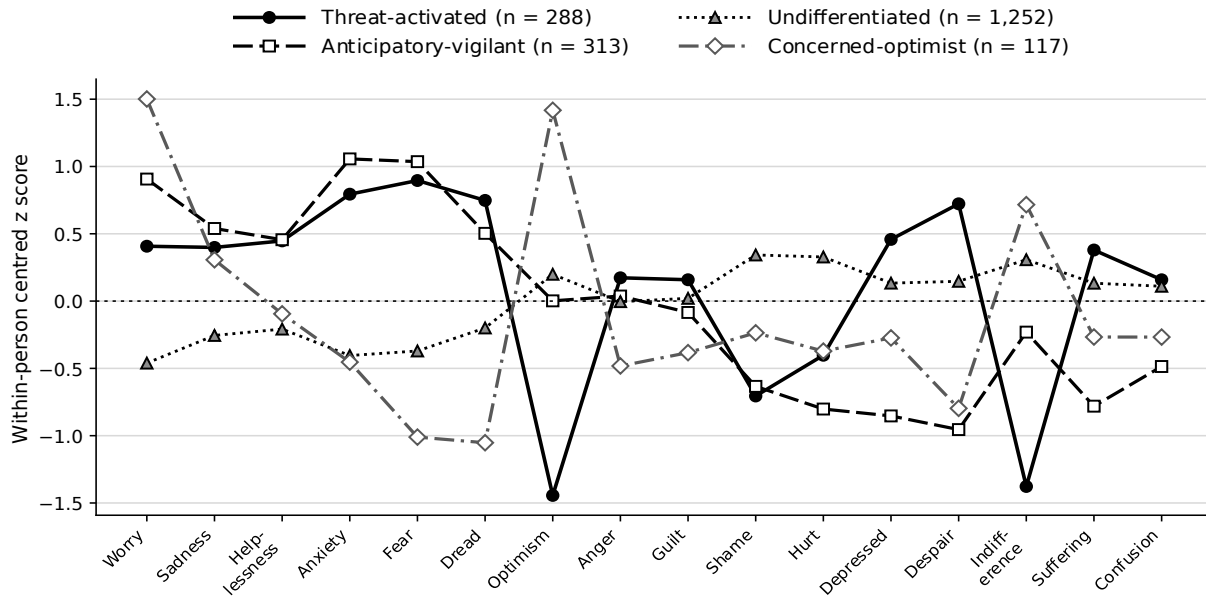
Profiles were subsequently re-estimated using within-person-centered indicators. Enumeration supported four classes: entropy reached .875, the smallest class comprised 5.9 percent of the sample, and the five-class solution reduced the smallest class to 2.7 percent, below the conventional floor applied in this study. Nylund-Gibson and Choi (2018) advise combining statistical fit indices with substantive interpretability and evidence that classes are meaningfully distinct rather than relying on a single criterion; the five-percent rule used here is a convention of the applied literature and is not attributed to them. Table 4 reports the enumeration results, and Figure 2 displays the four configurations.

Table 4. Latent profile enumeration based on within-person centered emotion indicators.

Classes	Smallest class n	Smallest class (%)	Largest class (%)	Entropy
2	610	31.0	69.0	.838
3	290	14.7	68.1	.868
4 (retained)	117	5.9	63.6	.875
5	54	2.7	61.8	.875
6	46	2.3	53.4	.861
7	46	2.3	51.9	.859
8	37	1.9	44.5	.753

Note. $N = 1,970$. Models assume equal variances and zero covariances. Four classes were retained as the largest solution in which no class falls below the five-percent floor while entropy remains at its maximum.

Figure 2. Climate-emotion configurations (within-person-centered solution, $k = 4$).



Note. $N = 1,970$. Values are within-person centered item scores standardized across respondents; positive values indicate that the emotion is relatively elevated within the respondent's own repertoire. Emotion labels follow item block Q7.

The threat-activated configuration ($n = 288$, 14.6 percent) is characterized by elevated anxiety, fear, and dread, as well as substantially lower optimism and indifference. Despair is also elevated, such that the profile carries the affective marker of an unfavorable control appraisal, consistent with Witte's (1992) conceptualization of control appraisal. The anticipatory-vigilant configuration ($n = 313$, 15.9 percent) similarly exhibits elevated anxiety and fear but markedly low depression, despair, hurt, and suffering, reflecting worry directed toward a future that has not yet been foreclosed. The undifferentiated configuration ($n = 1,252$, 63.6 percent) shows no deviation exceeding 0.46 and serves as the reference category in all that follows. The concerned-optimist configuration ($n = 117$, 5.9 percent) combines the highest relative level of worry in the sample with the highest relative optimism and low levels of dread and despair. Worry and optimism are usually treated as opposite ends of one dimension; in 117 respondents, however, both were among the most elevated emotions within the same profile.

The solution is supported by two robustness checks. Re-estimating the raw-data profiles after excluding the guilt and shame items, which also appear as predictors, produced a solution that agreed with the full solution for 75.8 percent of cases ($\kappa = .66$), indicating that the typology is not an artifact of predictor-indicator overlap. An independent two-step clustering analysis of the same centered data in SPSS recovered the same four qualitative types.

Both components of the test specified in Section 3.3 are therefore satisfied. The raw solution is reducible to intensity: it explains 85.8 percent of the variance in the mean and contributes between .003 and .005 once the mean is controlled. The centered solution is not reducible in the same way: on the identical test, it

adds .0038, .0023, and .0147, and for community participation, the increment is roughly five times that of the raw solution and is estimated with a p value below 10^{-8} (Section 5.5). The difference between the two solutions is not an arithmetic consequence of centering but reflects differences in their predictive contribution. H2 is therefore supported on this comparative basis rather than on the existence of four classes, which centering alone would not establish.

5.4 Direct effects of moral emotions (H1)

Hierarchical regressions entered the controls at Step 1, emotional intensity at Step 2, and the eight moral emotions at Step 3. Emotional intensity increased R^2 by .011, .023 and .031 for efficiency behavior, curtailment behavior, and community participation, respectively; the moral-emotion block increased R^2 by .049, .039, and .109, respectively, all $p < .001$. For community participation, the full model explained 44.7 percent of the variance, and the moral-emotion block accounted for more than three times the variance attributable to intensity. H1 is supported for all three outcomes.

The composition of the effect is more informative than its overall magnitude. Community had the largest coefficient for pride ($\beta = .267, p < .001$), although, for the reason discussed below, this coefficient represents an upper bound rather than a directly comparable estimate. This was followed by obligation toward nonhuman nature (.182) and ascribed responsibility (.149). Guilt was marginally significant (.054, $p = .047$), whereas shame was not significant (.046, $p = .116$). Community participation was therefore more strongly associated with the self-efficacious and duty-anchored components of the moral-emotion family than with the self-condemning components. This ordering is consistent with the function of pride described by Tangney et al. (2007), in which pride follows successful moral action and reinforces the behavior that produced it. It contrasts with the practical emphasis on guilt in climate communication.

Because the pride items presuppose climate practice (Section 4.2), the block was re-estimated without pride. Without this factor, the moral emotions still increased R^2 by .046, .038, and .077 for efficiency, curtailment and community outcomes, respectively, all $p < .001$, compared with .049, .039, and .109 when pride was included. Pride therefore accounts for roughly three-tenths of the community increment and almost none of the private increments. The claim that moral emotions outweigh emotional intensity remains supported after its removal, since .077 is more than twice the value contributed by intensity (.031). The narrower claim that pride is the single strongest predictor does not remain robust, because a predictor whose items presuppose the criterion cannot be compared on equal terms with predictors whose items do not. Pride is retained in the reported models for continuity with the moderation analysis, its coefficient is treated as an upper bound, and the arguments in Sections 6 and 7 do not rely on this coefficient.

The analysis produced two results that did not conform to expectations. Guilt had a negative, marginally

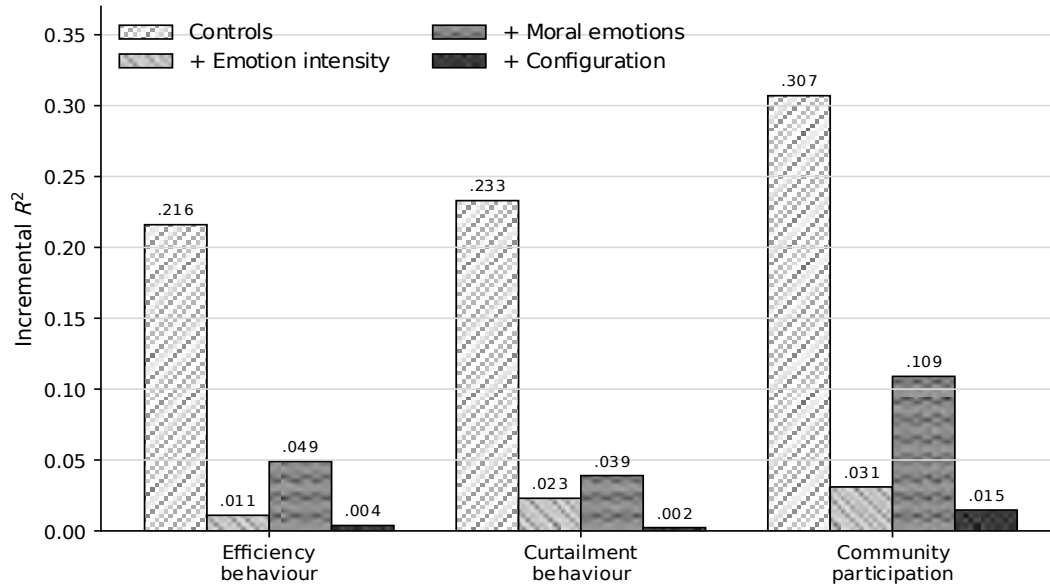
significant coefficient for efficiency behavior ($\beta = -.060$, $p = .054$), contrary to the predicted reparative relationship. Moral licensing is one possible interpretation, insofar as respondents who have already purchased efficient appliances may report less guilt, but the cross-sectional design does not allow this possibility to be distinguished from alternative explanations. Empathy toward nonhuman nature was negatively associated with community participation ($\beta = -.068$, $p = .006$), although its zero-order association was positive. The sign reversed after pride, obligation, and responsibility entered, indicating classical suppression. Shame was not significantly associated with any of the three outcomes, consistent with the concealment account. Table 5 and Figure 3 summarize the results.

Table 5. Hierarchical regression of climate action on emotional intensity and moral emotions (standardized coefficients at step 3).

Predictor	Efficiency	Curtailment	Community
Emotional intensity	.037	.095***	.066**
Guilt	-.060†	-.039	.054*
Shame	.051	.058†	.046
Pride	.083**	.050†	.267***
Empathy – human	.067*	.042	.012
Empathy – nonhuman	.081**	.027	-.068**
Obligation – human	.011	-.036	-.041
Obligation – nonhuman	.152***	.153***	.182***
Ascribed responsibility	.067*	.131***	.149***
R ² step 1 (controls)	.216	.233	.307
R ² step 2 (+ intensity)	.227	.256	.338
R ² step 3 (+ moral emotions)	.277	.295	.447
ΔR^2 intensity	.011***	.023***	.031***
ΔR^2 moral emotions	.049***	.039***	.109***

Note. N = 1,895 (listwise). Step 1 controls are sex, age, tertiary education, household income, ideology, perceived benefit, knowledge, and trust in experts. Maximum variance inflation factor = 2.85. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 3. Incremental variance explained by each block across the three outcomes.



Note. $N = 1,895$. The bars represent the increment in R^2 contributed by each block over the preceding block. Configuration increments are taken from the model in which emotional intensity is already controlled.

5.5 Direct effect of configuration (H3, H5)

After emotional intensity was controlled, configuration increased R^2 by .0038 for efficiency behavior, $F(3, 1882) = 3.12$, $p = .025$; .0023 for curtailment behavior, $F = 1.97$, $p = .117$; and .0147 for community participation, $F = 14.26$, $p < .001$. The increment for community participation was approximately four times that for efficiency behavior and six times that for curtailment behavior, and only the community-participation increment had a p value below 10^{-8} . H3 is supported. H5 is only partly supported: community participation showed the largest configuration effect, as predicted, but curtailment behavior did not fall between efficiency behavior and community participation. The prediction was based on behavioral cost, so the result suggests that the sphere of action contributes more than the effort an action requires.

The descriptive pattern in Table 6 further clarifies what the increment represents. The threat-activated configuration reported the highest level of efficiency behavior among the four groups ($M = 3.68$) and the lowest level of community participation ($M = 3.09$). Its emotional intensity was the highest in the sample ($M = 4.91$). The undifferentiated majority, whose emotional profile was flat, reported the highest community participation ($M = 3.26$). High arousal accompanied by despair was thus associated with private action and lower public participation. This juxtaposition cannot be accounted for by emotional magnitude alone. The interaction between intensity and configuration was significant only for community participation ($\Delta R^2 = .0036$, $F = 3.49$, $p = .015$) and was nonsignificant for both private behaviors, providing further evidence of the same asymmetry.

Table 6. Emotional configurations: composition and outcome means.

Configuration	n	%	Intensity	Efficiency	Curtailment	Community
Threat-activated	288	14.6	4.91 (0.65)	3.68 (0.88)	3.44 (0.82)	3.09 (0.84)
Anticipatory-vigilant	313	15.9	3.96 (0.77)	3.53 (0.82)	3.39 (0.81)	2.99 (0.90)
Undifferentiated (ref.)	1,252	63.6	4.42 (0.97)	3.45 (0.78)	3.39 (0.73)	3.26 (0.76)
Concerned-optimist	117	5.9	3.01 (0.89)	3.50 (0.98)	3.20 (0.86)	3.16 (0.97)
ΔR^2 over intensity	—	—	—	.0038*	.0023	.0147***

Note. N = 1,970 for descriptive statistics; N = 1,895 for the incremental test. Cells report M (SD). The final row reports the increment in R^2 contributed by configuration in a model that already includes all controls and emotional intensity: efficiency $F(3, 1882) = 3.12$, $p = .025$; curtailment $F = 1.97$, $p = .117$; community $F = 14.26$, $p < .001$. * $p < .05$, *** $p < .001$.

5.6 Moderated regression: the interaction terms (H4)

The interaction tests provide the direct examination of H4, and Section 3.4 specified in advance the patterns that should emerge. Because configuration is theorized to establish the context in which a moral appraisal is translated into action, amplification is the expected pattern; the theoretically important departure is blocking, in which the slope becomes nonsignificant in the configuration characterized by despair. Table 7 is therefore evaluated according to whether the significant effects occur where the theory predicts, rather than simply according to their number.

Of the 24 tests, nine reached the uncorrected .05 criterion, seven survived Benjamini–Hochberg correction at $q = .05$, and four survived Bonferroni correction. Among the seven surviving effects, six predicted community participation: obligation toward nonhuman nature ($\Delta R^2 = .0092$), pride (.0056), ascribed responsibility (.0056), empathy toward humans (.0052), obligation toward humans (.0044), and shame (.0043). The seventh was the interaction between obligation toward nonhuman nature and efficiency behavior (.0046). The two interactions involving curtailment behavior—guilt and shame—reached the uncorrected criterion but did not survive correction (both $p_{FDR} = .120$) and are treated as provisional. Exact values appear in Table 7.

The distribution of these effects is informative even before examining the conditional slopes. Moderation is concentrated in the public sphere, as predicted by H4c, and within that domain it involves other-oriented and self-efficacious emotions rather than guilt. The guilt interaction for community participation is the weakest term in the family ($\Delta R^2 = .0009$, $p = .445$). The increments themselves are small, ranging from .004 to .009.

The magnitude of these increments warrants direct consideration. Incremental variance is not the most informative metric for a categorical moderator because it aggregates across four groups and is diluted by the 63.6 percent of the sample in the undifferentiated class, which contributes little to the interaction by construction. The quantity carrying the substantive claim is the difference between conditional slopes, and .281 against .028 represents a difference of approximately one order of magnitude. Nor is the pattern

driven by a single significant term: seven effects survive correction, six in the same outcome, and three showing the same qualitative form.

Table 7. Moral emotion $\times$ configuration interactions: all 24 tests with corrected inferential status.

Outcome	Moral emotion	ΔR^2	F(3, 1878)	p	FDR	Bonf.
Community	Obligation – nonhuman	.0092	9.55	< .001	Yes	Yes
Community	Pride	.0056	6.06	< .001	Yes	Yes
Community	Ascribed responsibility	.0056	5.73	< .001	Yes	Yes
Community	Empathy – human	.0052	5.19	.001	Yes	Yes
Community	Obligation – human	.0044	4.33	.005	Yes	No
Community	Shame	.0043	4.33	.005	Yes	No
Efficiency	Obligation – nonhuman	.0046	3.87	.009	Yes	No
Curtailment	Guilt	.0033	2.77	.040	No	No
Curtailment	Shame	.0031	2.69	.045	No	No
Community	Empathy – nonhuman	.0025	2.45	.062	No	No
Curtailment	Obligation – nonhuman	.0028	2.43	.064	No	No
Efficiency	Pride	.0023	1.92	.125	No	No
Efficiency	Shame	.0022	1.86	.134	No	No
Efficiency	Empathy – human	.0018	1.49	.215	No	No
Efficiency	Guilt	.0018	1.48	.218	No	No
Efficiency	Ascribed responsibility	.0018	1.46	.224	No	No
Curtailment	Ascribed responsibility	.0016	1.36	.255	No	No
Curtailment	Pride	.0016	1.34	.259	No	No
Curtailment	Empathy – human	.0015	1.26	.285	No	No
Efficiency	Empathy – nonhuman	.0013	1.11	.343	No	No
Curtailment	Obligation – human	.0011	0.97	.408	No	No
Community	Guilt	.0009	0.89	.445	No	No
Curtailment	Empathy – nonhuman	.0006	0.54	.652	No	No
Efficiency	Obligation – human	.0004	0.33	.805	No	No

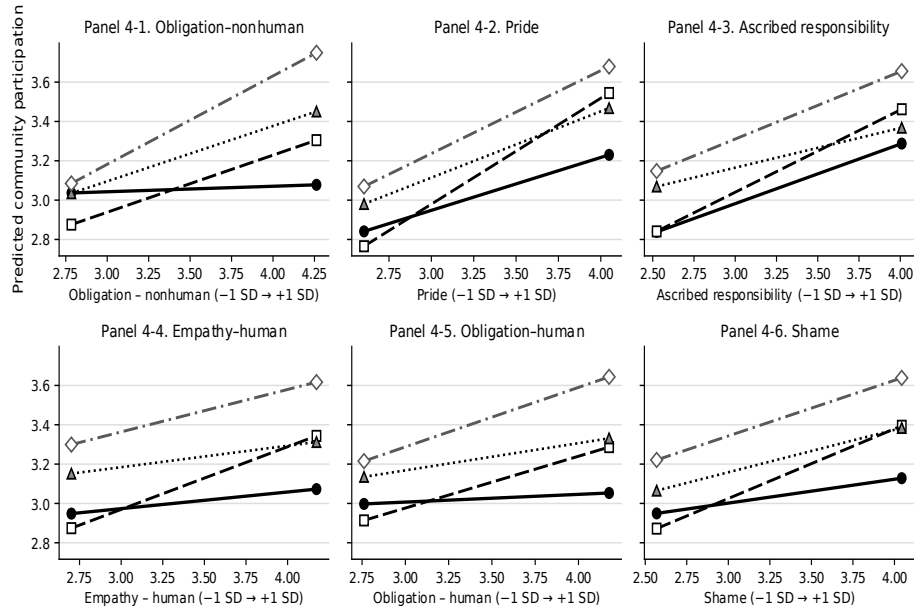
Note. N = 1,895. Terms are ordered by exact p. FDR = survives Benjamini–Hochberg correction at $q = .05$ across all 24 tests; Bonf. = survives the familywise criterion $\alpha = .05/24 = .0021$. A total of seven effects survive FDR correction, and four survive Bonferroni correction. All models control for the eight covariates, emotional intensity, the configuration dummies, and the centered moral emotion; the undifferentiated configuration is the reference.

5.7 Simple slopes

Figures 4 and 5 plot the conditional effect of each moral emotion at low (-1 SD) and high ($+1$ SD) values of the predictor within each configuration; full estimates with standard errors, t values, and exact p values are reported in Appendix B. Across the analyses, two patterns recur, corresponding to H4a and H4b.

Figure 4. Simple-slope plots of the six configuration $\times$ moral-emotion interactions on community participation (panels 4-1 to 4-6).

—●— Threat-activated (n = 288) —□— Anticipatory-vigilant (n = 313) ▲..... Undifferentiated (n = 1,252) —◇— Concerned-optimist (n = 117)



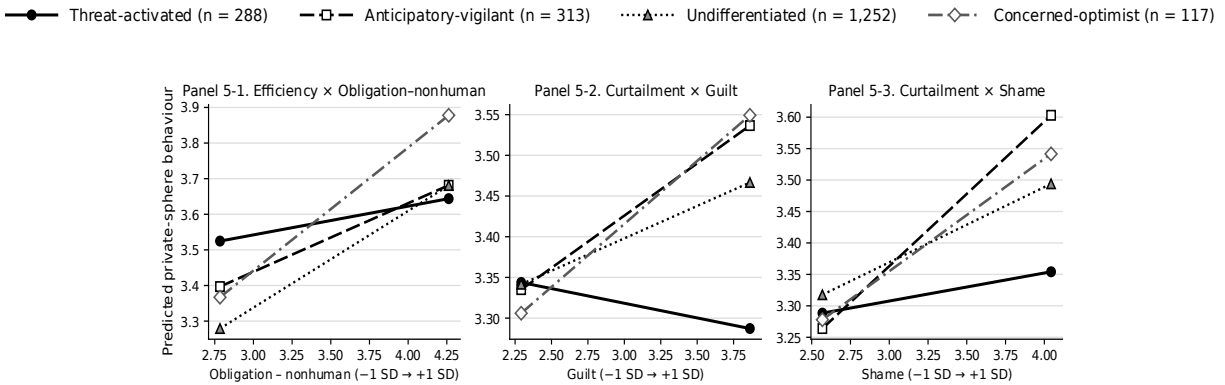
Note. N = 1,895. In each panel the moral emotion (independent variable) appears on the horizontal axis at -1 SD and $+1$ SD, and the emotional configuration (moderating variable) defines the four lines. All predictors were mean-centered, and each product term was entered after the eight covariates, emotional intensity, the configuration dummies, and the centered predictor. Predicted values are computed at covariate means. Conditional estimates appear in Appendix Table B1.

Blocking (H4b). The clearest instances involve obligation toward nonhuman nature (Panel 4-1), empathy toward humans (Panel 4-4), and obligation toward humans (Panel 4-5). For obligation toward nonhuman nature, the conditional slope is .450 ($SE = .069$, $p < .001$) in the concerned-optimist configuration, .290 ($p < .001$) in the anticipatory-vigilant configuration, and .281 ($p < .001$) in the undifferentiated reference configuration, but only .028 ($SE = .053$, $p = .598$) in the threat-activated configuration. Empathy toward humans and obligation toward humans exhibit the same pattern, with nonsignificant slopes of .085 ($p = .132$) and .039 ($p = .475$) against .319 and .263 (both $p < .001$). A moral emotion that reliably predicts public participation in three configurations has no detectable effect in the fourth. The moderation does not redirect the relationship; it removes it.

Amplification (H4a). Pride (Panel 4-2), ascribed responsibility (Panel 4-3), and shame (Panel 4-6) retain significant positive slopes in all four configurations while differing in steepness, indicating that the moderation alters strength rather than direction. Pride doubles from .269 in the threat-activated configuration to .539 in the anticipatory-vigilant configuration, while responsibility rises from .201 in the reference configuration to .418. Shame is the most notable of the three: .121 ($p = .017$) in the threat-activated configuration, .216 ($p < .001$) in the reference configuration, and .354 ($p < .001$) in the anticipatory-vigilant configuration. Thus, shame predicts public participation most strongly where despair is absent. For an

emotion whose canonical function is concealment (Tangney et al., 2007), this pattern suggests that shame mobilizes action only when the context leaves room for repair. The anticipatory-vigilant configuration has the steepest slope in four of the six panels.

Figure 5. Simple-slope plots for private-sphere outcomes (panels 5-1 to 5-3).



Note. $N = 1,895$. Panel 5-1 survives Benjamini–Hochberg correction; Panels 5-2 and 5-3 are provisional ($p_{FDR} = .120$) and are shown for completeness. Plotting conventions follow Figure 4.

In the private sphere, the single surviving interaction—obligation toward nonhuman nature on efficiency behavior (Panel 5-1)—exhibits the same blocking pattern: $b = .272$ ($p < .001$) in the reference configuration versus $.081$ ($p = .167$) in the threat-activated configuration. The two provisional curtailment effects point in the same direction, with guilt ranging from $-.036$ ($p = .444$) in the threat-activated configuration to $.128$ ($p = .009$) in the anticipatory-vigilant configuration, and shame ranging from $.045$ ($p = .387$) to $.230$ ($p < .001$). Under the multiplicity policy specified in Section 4.4, they do not support a substantive claim.

The analysis examined two alternative explanations for blocking, and neither was supported. Restriction of range does not appear to account for the finding: the within-group standard deviation of obligation toward nonhuman nature was $.721$ in the threat-activated configuration versus $.706$ in the reference configuration; the corresponding values were $.720$ versus $.719$ for empathy toward humans and $.719$ versus $.697$ for obligation toward humans. Dispersion in the outcome was also comparable ($.839$ against $.763$). Nor was the pattern attributable to contamination by pride: adding pride as a covariate strengthened the interaction to $\Delta R^2 = .0098$, $F(3, 1877) = 11.05$, $p < .001$, and changed the threat-activated slope from $.028$ ($p = .598$) to $-.034$ ($p = .508$).

The results highlight two notable features. The threat-activated configuration is the location of every blocking effect, and it differs from the anticipatory-vigilant configuration primarily in the presence of despair, hopelessness, and suffering rather than in anxiety and fear, which the two configurations share. Blocking is therefore consistent with a controllability appraisal rather than with arousal alone, which is the interpretation supplied by Witte (1992). The concerned-optimist configuration, the smallest group, has the

steepest slope in three of the six community panels, suggesting that high relative worry combined with high relative optimism constitutes the most action-conducive context in this sample rather than the most complacent one.

5.8 Synthesis of the moderation effects

Table 8 brings together the nine effects, their conditional slopes, and their classification by pattern. All of the observed effects are accounted for by two patterns. Blocking occurs when a slope that is significant in the reference configuration becomes nonsignificant in the threat-activated configuration; amplification occurs when all slopes remain significant but differ systematically in magnitude. No crossover pattern was observed. Configuration therefore governs whether and how efficiently moral motivation is translated into public action, rather than the direction of that motivation.

The moderation is also asymmetric in a way anticipated by the direct effects. Every blocking effect involves an other-directed construct—obligation or empathy—whereas every amplification effect involves a self-referential construct—pride, responsibility, or shame. A tentative interpretation is that other-directed motivation requires a belief that the other can still be helped, which despair removes, whereas self-referential motivation survives in attenuated form because its referent is the self. This interpretation goes beyond what the design can establish and is offered as a hypothesis for replication.

Table 8. Synthesis of the nine moderation effects: conditional slopes, pattern and corrected status.

Outcome	Moral emotion	ΔR^2	Slope: threat-activated	Slope: anticipatory-vigilant	Pattern	FDR
Community	Obligation – nonhuman	.0092	.028 n.s.	.290***	Blocking	Yes
Community	Empathy – human	.0052	.085 n.s.	.319***	Blocking	Yes
Community	Obligation – human	.0044	.039 n.s.	.263***	Blocking	Yes
Community	Pride	.0056	.269***	.539***	Amplification	Yes
Community	Ascribed responsibility	.0056	.303***	.418***	Amplification	Yes
Community	Shame	.0043	.121*	.354***	Amplification	Yes
Efficiency	Obligation – nonhuman	.0046	.081 n.s.	.192***	Blocking	Yes
Curtailment	Guilt	.0033	–.036 n.s.	.128**	Blocking (prov.)	No
Curtailment	Shame	.0031	.045 n.s.	.230***	Blocking (prov.)	No

Note. N = 1,895. Conditional slopes are unstandardized effects of the moral emotion within each configuration, computed from the interaction model at covariate means; reference and concerned-optimist slopes are reported in Appendix Table B1. Blocking = a slope that is significant in the reference configuration becomes nonsignificant in the threat-activated configuration; amplification = all slopes significant but differ in magnitude. prov. = provisional, does not survive Benjamini–Hochberg correction. *** $p < .001$, ** $p < .01$, * $p < .05$, n.s. = not significant.

6. Summary and Discussion

6.1 Hypothesis testing outcomes

Table 9 aligns each hypothesis with its corresponding result. The results support four hypotheses, partially support two, and do not support one in the form stated.

Table 9. Summary of hypothesis testing.

No.	Hypothesis	Verdict	Key evidence
H1	Moral emotions predict all three outcomes beyond intensity	Supported	$\Delta R^2 = .049 / .039 / .109$, all $p < .001$ (Table 5)
H2	Emotions form configurations irreducible to intensity	Supported	$k = 4$, entropy .875; raw solution $\eta^2 = .858$ on intensity (Table 4, Appendix A)
H3	Configuration predicts action, more strongly in the public sphere	Supported	$\Delta R^2 = .0147$, $p < .001$ for community; .0038 and .0023 for private (Table 6)
H4a	Amplification in vigilant or optimist configurations	Supported	Pride, responsibility and shame steepen (Table 8)
H4b	Blocking in the threat-activated configuration	Supported	Obligation and empathy fall to non-significance (Table 8)
H4c	Moderation concentrated in the public sphere	Supported	Six of seven surviving effects on community participation (Table 7)
H5	Ordering: community > curtailment > efficiency	Partially supported	Community highest, but curtailment below efficiency (Table 6)

Note. Verdicts follow the multiplicity policy stated in Section 4.4: only effects surviving Benjamini–Hochberg correction contribute to a verdict of support.

The verdict column understates the importance of three results. First, H2 is a negative finding about the measurement strategy, and it conditions everything that follows. Had the raw solution been accepted, the study would have reported five emotional types ranging from mild to severe, and the diagnostic showed that apparent typology to be a severity gradient. Second, the composition of the H1 result is important. That moral emotions predict climate action is unsurprising; what is less expected is the magnitude of their contribution relative to emotional intensity, and this pattern holds under the conservative estimate that excludes pride (.077 versus .031). A study measuring only self-condemning emotions, as much of the literature does, might have concluded that moral emotion contributes little in this context. Third, the asymmetry evident across H3, H4c, and H5 is consistent throughout the analyses: configuration contributes .0147 to community participation versus .0038 and .0023 to the private behaviors, six of the seven surviving interactions predict community participation, and the intensity-by-configuration interaction is significant only there. Together, three tests using different statistical forms converge on the same boundary, providing stronger evidence than any of them alone.

The discussion warrants two qualifications here rather than among the limitations because they concern

what the hypotheses established. H5 failed in its middle term: curtailment behavior, which was predicted to fall between efficiency behavior and community participation, fell below both on every configuration-related test. The prediction was based on behavioral cost, and its failure indicates that cost is not the appropriate ordering principle. H4, meanwhile, was supported through two distinct patterns rather than one. Amplification leaves a relationship intact while altering its strength; blocking removes the relationship. Treating the two as a single hypothesis would have obscured a distinction that became visible in the simple-slope decomposition.

6.2 Comparison with prior findings

The present results converge with the existing literature in three respects, whereas two findings depart from it. The finding that emotional appraisal conditions the emotion–behavior relationship replicates, in substance, what Gregersen et al. (2021) reported for outcome expectancies, although the present study infers the appraisal from the configuration of emotional response rather than from a separate efficacy measure. The finding that the private and public spheres have partly different determinants accords with Stern (2000), while the finding that the sphere of action, rather than behavioral cost, orders sensitivity to configuration adds a further specification. Finally, the finding that the sixteen emotions do not collapse onto a single dimension is consistent with Pihkala (2022).

The departures are more consequential. Bouman et al. (2020) found that worry was associated primarily with policy support, whereas biospheric values were associated primarily with personal mitigation, suggesting a division between affect and value. In the present data, the analogous division occurs within the affective domain. Emotional intensity predicts the private behaviors somewhat more strongly than it predicts public participation, whereas moral emotions predict public participation much more strongly than they predict private behaviors. Treating climate affect as a single construct, regardless of how it is labeled, therefore conceals a structure that becomes visible only when moral emotions are measured separately.

The second departure concerns guilt. The shame–guilt asymmetry established by Tangney et al. (2007) predicts that guilt should motivate reparative action whereas shame should not. Here, neither emotion had an appreciable main effect on public participation once pride and obligation were included in the model; guilt was also the only moral emotion that configuration did not moderate, and its only notable coefficient, for efficiency behavior, was in the opposite direction from that predicted. Shame, by contrast, moderated the public-sphere pathway in the direction implied by the concealment account, with its slope flattest where distress was greatest. The relevant contrast in this domain may therefore be less between guilt and shame than between self-condemning and self-efficacious moral affect. Because the guilt items refer to climate-relevant behavior rather than interpersonal transgression, the divergence may reflect the domain in which

the emotions are elicited rather than a difference between the underlying constructs.

6.3 Theoretical implications

For appraisal-based accounts of emotion, the results provide a population-level demonstration that configuration carries information beyond arousal and delimit where that information is behaviorally consequential. The threat-activated and anticipatory-vigilant configurations are nearly identical in anxiety and fear. They differ primarily in whether despair accompanies those emotions, and it is the configuration characterized by despair in which other-directed moral emotion ceases to translate into action. Witte (1992) predicts precisely this outcome when efficacy appraisals are unfavorable. What is new is the route through which the distinction becomes visible: the fear-control and danger-control branches can be differentiated using emotion-report data alone. This matters because efficacy items are often absent from secondary datasets, whereas emotion inventories are increasingly available.

For research on moral emotion, the results argue for broadening the range of emotions measured. A design including only guilt and shame would have concluded that moral emotion plays a minor role in Korean climate participation; adding pride, obligation, and responsibility shows that the moral-emotion family explains more than a tenth of the variance beyond controls and intensity. The human–nonhuman distinction also merits retention, since obligation toward nonhuman nature produced the largest and most consistently moderated effect among the eight moral-emotion predictors, echoing the separability of altruistic and biospheric orientations demonstrated by Schultz (2001). For person-centered methodology, the study offers both a caution and a remedy: within-person centering was not merely a robustness check but the step that changed the substantive conclusion, and the diagnostic required only one additional model.

6.4 Theoretical contribution

A central question concerns the extent to which this study advances existing knowledge beyond validating, within a new domain, a model developed three decades ago. Witte (1992) predicts that threat produces action under favorable efficacy appraisals and avoidance under unfavorable ones, and the blocking pattern is recognizably consistent with that prediction. This framework is advanced through three contributions that are articulated here as testable propositions for future research.

Proposition 1. The control appraisal that governs whether threat is translated to action can be recovered from the configuration of self-reported emotion without a separate efficacy measure. In Witte (1992) and subsequent applications of the framework, perceived efficacy is treated as an independent construct measured with its own items, while the emotional response is the variable being directed toward action or avoidance. The present results reverse that architecture: two groups matched on anxiety and fear but

differing in despair exhibit the patterns predicted for favorable and unfavorable appraisals, despite the absence of an efficacy item in the analysis. If the appraisal leaves a discernible signature in that emotional profile, the model becomes testable in the large body of survey data that measures emotions but not efficacy. The proposition is falsifiable: it predicts that a directly measured efficacy item would be substantially redundant with configuration.

Proposition 2. Other-directed moral motivation is conditional on perceived remediability, whereas self-referential moral motivation is not. This is the principal novel claim, and it was not anticipated by the framework from which the design originated. Every blocking effect involves a construct whose object lies outside the self—obligation toward nature, obligation toward other people, or empathy for climate victims—whereas every amplification effect involves a construct whose object is the self—pride, ascribed responsibility, or shame. An obligation toward a sufferer presupposes a possibility of assisting the sufferer, so a belief that no actions can be taken removes not the felt force of the obligation but its behavioral point; a self-referential emotion has no such presupposition because its referent is the actor's own position. Neither appraisal theory nor the moral-emotion literature has drawn this distinction, which implies that hopelessness should selectively disable altruistic but not reputational motivation in domains where collective remediation is uncertain.

Proposition 3. Person-centered emotion typologies are uninterpretable without a level-versus-configuration diagnostic. Research on climate emotion is producing person-centered emotion typologies rapidly, and these data show that the conventional procedure, applied to a general population sample, returns a severity gradient expressed in the vocabulary of type. The remedy is arithmetic, and the diagnostic requires only one additional model, but the two solutions estimated here support different accounts of what climate emotion represents and different conclusions about how it should be analyzed. Published typologies that have not undergone this test should therefore be treated as claims about intensity until shown otherwise.

What connects the three propositions is a common reorientation. The field has treated emotion as a quantity to be increased and has debated which emotion should be increased. These results instead locate the operative variable in the relation among emotions within a person—a relation that carries appraisal information the respondent is never directly asked to report and that determines whether moral reasons for action can be translated into behavior.

7. Implications and Conclusions

7.1 Practical implications

When the objective is to promote private behavior, increasing general emotional engagement remains

defensible: emotional intensity had positive coefficients for both efficiency and curtailment behavior, and the threat-activated group reported the highest level of efficiency behavior among the four configurations. When the objective is to promote public participation, however, the implication is different. Communication that intensifies distress without addressing controllability risks producing the threat-activated configuration, which is simultaneously the most highly aroused group in this sample and the group in which obligation toward nature and empathy for climate victims have no detectable behavioral effect. The relevant lever, therefore, appears to be not the intensity of feeling but its configuration.

The findings suggest three implications for message content. Messages that foster a sense of accomplishment may engage pride, which retained a significant slope in every configuration; the caveat discussed in Section 5.4 applies, so this recommendation follows the observed pattern without being established by the pride coefficient itself. Messages that frame climate action as a duty toward the nonhuman world may engage obligation, which produced the largest effects among the eight moral emotions and was also the most frequently moderated; its behavioral effect therefore appears to depend on the audience's affective state. Messages that pair a serious threat with a credible account of possible courses of action may, in turn, move audiences toward the anticipatory-vigilant configuration, in which moral appraisal is translated into action most efficiently. The effect sizes are small in absolute terms; what supports these implications is the consistency of direction across three outcomes, 24 interaction tests, and two analytic platforms.

Audience segmentation follows from these findings, but in a form that differs from conventional practice. Segmentation schemes typically sort audiences by levels of belief or concern, which in the present study would amount to sorting primarily by emotional intensity. The threat-activated group, comprising roughly one in seven respondents, is the segment that such targeting would identify as most promising because it reports the highest emotional intensity in the sample; it is also the segment in which obligation and empathy have no behavioral effect. By contrast, the concerned-optimist group, which concern-based targeting would likely place lower, exhibited the steepest slope in half of the public-sphere panels. Although small and easy to overlook, this group showed the strongest responsiveness in the present sample. For program design, the private-public distinction has budgetary implications: instruments aimed at efficiency and curtailment, such as subsidies, labeling, and defaults, need not be tailored to emotional segments and can be deployed at scale, whereas recruitment into local climate initiatives is where tailoring may justify its cost. The two domains should not be evaluated using the same metrics, since a campaign that increases reported concern may increase private behavior while leaving participation unchanged.

The findings warrant two cautions. Communication that escalates severity without addressing controllability risks producing the threat-activated configuration, the one affective state in which the moral

appeals that follow will not work, since that configuration is distinguished from the anticipatory-vigilant one by hopelessness rather than by the amount of fear. Moreover, guilt was the weakest of the eight moral emotions for public participation, the only one that configuration did not moderate, and it carried a negative coefficient for efficiency behavior open to a moral-licensing reading. Whatever its interpersonal efficacy, the case for guilt as a climate lever is not supported here.

Finally, policy may be able to act on configuration rather than merely accommodate it. Configuration is treated here as a person-level characteristic, although its central component, namely, the presence or absence of despair alongside threat perception, may be influenced by the visible availability of collective action. Local initiatives that are known to exist and have demonstrated effectiveness can provide precisely the evidence required for an appraisal of controllability.

7.2 Limitations

The design is cross-sectional, and every measure is self-reported on a single occasion, so the causal ordering assumed throughout is not established by the data. The concern is sharpest for pride, which is defined by reference to one's own accomplishments. The pride-participation association may be partly a consequence of participation rather than a cause of it, and the negative guilt coefficient for efficiency behavior is open to the same reading in reverse. Common method variance is a further concern, since predictors and outcomes were measured in the same instrument with similar response formats (Podsakoff et al., 2003). The gap between reported and actual behavior, a standing limitation of self-reported pro-environmental measures, applies here in full.

Measurement imposes further limits. Efficiency behavior rests on a single item, which precludes reliability estimation and attenuates its associations, so its weaker results may understate the true effects. Curtailment behavior is operationalized through dietary items, and respondents may restrict meat consumption for health rather than climate reasons. Emotional intensity correlates with a general acquiescence index, so part of what is called intensity may be a response tendency. The concerned-optimist configuration contains 117 respondents, which clears the five-percent floor but yields wide standard errors for its conditional slopes. In addition, the sample is Korean and drawn from an online panel with unusually high tertiary attainment, so the configuration typology should be re-estimated before its generalizability is assumed.

A particularly important limitation warrants separate consideration. The pride items presuppose that the respondent practices climate action, so pride overlaps the behavioral criterion. Consequently, its coefficient cannot be compared with the others on equal terms, and any reading that treats pride as the leading cause of public participation is unwarranted on these data. Section 5.4 shows that the substantive conclusions do not rest on it and Section 5.7 that the blocking pattern strengthens when pride is controlled. A design

measuring pride with items independent of enacted behavior, for instance anticipated pride in a hypothetical action, would settle what the present data cannot.

7.3 Directions for future research

The findings suggest five extensions for future research. The first is a measurement repair: pride must be measured independently of enacted behavior before its standing among the moral emotions can be assessed. A longitudinal design would separate the reciprocal paths between pride and participation. An experiment manipulating threat and efficacy content while measuring the resulting configuration would test whether the threat-activated profile can be induced and avoided, which is the practical question raised by the present findings. Replication in a second cultural setting would establish whether the four configurations are features of climate emotion or of Korean climate emotion. Finally, because blocking involved only other-directed constructs and amplification involved only self-referential ones, a design crossing target direction with self-reference would test the interpretation offered in Section 5.8.

7.4 Conclusion

Emotional responses to climate change have both a magnitude and a configuration. The two are not interchangeable, and the difference is not merely a refinement; it changes what can be inferred from the emotional response. When configuration is extracted by removing each person's overall level before identifying types, it emerges as a predictor of public action while contributing substantially less to private action. Its effect is specific. Among respondents whose high arousal is accompanied by despair, obligation toward the nonhuman world, obligation toward other people, and empathy for climate victims cease to predict public participation. Among respondents who are similarly anxious but not despairing, the same emotions strongly predict participation. The motivation remains present; what is disrupted is the pathway from motivation to action. Korean adults in the threat-activated configuration are both the most emotionally engaged individuals in this sample and the least likely to be present at a neighborhood climate meeting.

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Appendix A. The raw-data profile solution

The raw-data solution is reported in full because it grounds the methodological claim in Section 5.3. A five-class solution was obtained on untransformed emotion items. Decomposing each class mean into a level component, the class mean across all sixteen standardised items, and a shape component, the deviations from that level, yields Table A1.

Table A1. Level and shape components of the raw-data profile solution.

Class	n	Level (mean z)	Max. shape deviation	Interpretation
1	919	−0.02	0.25	Level only
2	118	−1.74	1.19	Level and shape
3	307	−0.70	0.50	Level mainly
4	309	0.37	1.11	Level and shape
5	317	1.03	0.32	Level only

Note. N = 1,970. Classes are ordered by level component. Three of five show maximum shape deviations below 0.5, indicating near-parallel profiles that differ in elevation rather than configuration. Class membership explains 85.8 per cent of the variance in emotional intensity. With controls and emotional intensity in the model, raw-class membership added .0035 ($p = .072$), .0050 ($p = .013$) and .0032 ($p = .055$) to the explanation of efficiency, curtailment and community outcomes respectively, against .0038, .0023 and .0147 for the within-person centred solution.

Appendix B. Conditional slopes for every moderation panel

Table B1. Conditional (simple-slope) estimates of each moral emotion within each emotional configuration.

Outcome	Moral emotion	Configuration	b	SE	β	t	p
Community	Obligation – nonhuman	Threat-activated	.028	.053	.026	0.53	.598
		Anticipatory-vigilant	.290	.047	.265	6.17	< .001
		Undifferentiated (ref.)	.281	.032	.256	8.70	< .001
		Concerned-optimist	.450	.069	.409	6.56	< .001
Community	Pride	Threat-activated	.269	.052	.240	5.17	< .001
		Anticipatory-vigilant	.539	.050	.480	10.69	< .001
		Undifferentiated (ref.)	.337	.033	.300	10.31	< .001
		Concerned-optimist	.422	.071	.376	5.94	< .001
Community	Ascribed responsibility	Threat-activated	.303	.055	.277	5.52	< .001
		Anticipatory-vigilant	.418	.051	.383	8.25	< .001
		Undifferentiated (ref.)	.201	.034	.184	5.90	< .001
		Concerned-optimist	.342	.072	.313	4.77	< .001
Community	Empathy – human	Threat-activated	.085	.056	.077	1.51	.132
		Anticipatory-vigilant	.319	.052	.289	6.13	< .001
		Undifferentiated (ref.)	.109	.035	.099	3.16	.002
		Concerned-optimist	.216	.070	.196	3.09	.002
Community	Obligation – human	Threat-activated	.039	.055	.034	0.72	.475
		Anticipatory-vigilant	.263	.054	.230	4.90	< .001
		Undifferentiated (ref.)	.138	.035	.121	3.99	< .001
		Concerned-optimist	.303	.079	.264	3.81	< .001
Community	Shame	Threat-activated	.121	.051	.110	2.39	.017
		Anticipatory-vigilant	.354	.047	.322	7.49	< .001
		Undifferentiated (ref.)	.216	.037	.196	5.90	< .001
		Concerned-optimist	.283	.064	.257	4.39	< .001
Efficiency	Obligation – nonhuman	Threat-activated	.081	.058	.074	1.38	.167
		Anticipatory-vigilant	.192	.052	.176	3.73	< .001
		Undifferentiated (ref.)	.272	.035	.249	7.66	< .001
		Concerned-optimist	.346	.075	.317	4.59	< .001
Curtailement	Guilt (provisional)	Threat-activated	–.036	.047	–.037	–0.77	.444
		Anticipatory-vigilant	.128	.049	.133	2.63	.009
		Undifferentiated (ref.)	.080	.034	.082	2.34	.019
		Concerned-optimist	.155	.069	.160	2.26	.024

Outcome	Moral emotion	Configuration	b	SE	β	t	p
Curtailement	Shame (provisional)	Threat-activated	.045	.052	.043	0.86	.387
		Anticipatory-vigilant	.230	.048	.223	4.78	< .001
		Undifferentiated (ref.)	.120	.037	.116	3.21	.001
		Concerned-optimist	.179	.065	.174	2.73	.006

Note. N = 1,895. b = unstandardised conditional effect of the moral emotion within the configuration, estimated from the interaction model at covariate means; β = the same effect standardised on the pooled standard deviations of predictor and outcome. All models control for sex, age, tertiary education, household income, ideology, perceived benefit, knowledge, trust in experts and emotional intensity. The final two blocks correspond to interaction terms that do not survive Benjamini–Hochberg correction.

Supplementary Files

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