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From Eco-Anxiety to Climate Activism: The Moderating Role of Collective Efficacy Among Generation Z in Indonesia

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A B S T R A C T

Escalating environmental hazards across Indonesia have transformed the climate crisis into a collective mental-health and sociological concern, yet whether ecological anxiety paralyses or mobilises young people remains contested, and Global South evidence is scarce. Drawing on the Social Identity Model of Collective Action integrated with collective-efficacy theory, this study examined whether collective efficacy moderates the eco-anxiety to climate activism relationship and whether catalytic eco-anger mediates it. A cross-sectional survey was administered to 1,500 Generation Z respondents aged 16 to 24 years recruited through public organizations in Palembang, South Sumatera, Indonesia, using validated multi-item five-point Likert scales. Analyses comprised reliability and confirmatory measurement modelling, a correlation matrix, hierarchical moderated regression with simple-slope decomposition, bootstrapped mediation, and diagnostics for common-method bias, multicollinearity, and clustering. All constructs were reliable (Cronbach's alpha 0.84-0.88; McDonald's omega 0.84-0.87; composite reliability 0.84-0.87; average variance extracted 0.63-0.65) and discriminant validity was supported (heterotrait-monotrait ratios <=0.62). Common-method bias was not a threat (Harman first factor 36.96%). Collective efficacy positively predicted activism (beta = 0.39, 95% CI [0.35, 0.43], $p < 0.001$) and significantly moderated the eco-anxiety to activism path (interaction beta = 0.57, 95% CI [0.53, 0.60], $p < 0.001$; Delta-R2 = 0.32; f2 = 0.55). Simple slopes showed a crossover: eco-anxiety was associated with lower activism at low efficacy (-0.56) but higher activism at high efficacy (0.57). Catalytic eco-anger competitively mediated the association (indirect = 0.33, 95% CI [0.29, 0.38]) against a negative direct effect (-0.24). Collective efficacy conditions whether climate distress becomes organised activism, extending collective-action theory to the Global South and informing Indonesian youth and climate policy.

1. Introduction

The intensification of extreme weather and ecological disaster has reframed the climate crisis as more than a problem of the natural sciences; it is now a collective psychological and sociological phenomenon that shapes how young people feel, relate, and act.[1,2] Across ten countries, a majority of young people report being moderately to extremely worried about climate change, and a substantial minority say these feelings impair daily functioning.[2] Multinational evidence from twenty-five to thirty-two countries links negative climate emotions to both diminished wellbeing and heightened pro-environmental engagement, signalling that climate distress is simultaneously a burden and a potential motivational resource.[3,4] Generation Z, here defined as those born between 1997 and 2012, has come of age

amid this intensifying crisis, and for its members in the Global South, where climate hazards arrive as embodied threats rather than distant abstractions, these emotions are particularly salient.[5-7] Longitudinal evidence further indicates that climate-related worry has risen among adolescents over the past decade.[8]

This study draws on the Social Identity Model of Collective Action (SIMCA), the integrative framework synthesised meta-analytically by van Zomeren, Postmes, and Spears,[9] which proposes that collective action is jointly driven by three convergent antecedents: politicised social identity, group-based emotion such as moral anger, and collective efficacy, the shared belief that a group can achieve change through coordinated effort. Within this framework, collective efficacy is the proximal mechanism that determines whether felt grievance is enacted, while group-based anger supplies its motivational energy.[9,10] The present study foregrounds two of these three pillars, emotion and efficacy, and treats membership in civic organisations as an index of the social-identity context within which efficacy and anger operate; the identity pillar is therefore engaged contextually rather than measured directly, a scope decision we revisit in the limitations. Recent climate-specific research extends this logic, showing that efficacy beliefs and social-identity processes predict participation in youth climate strikes and movements such as Fridays For Future.[10-12]

Empirical work on climate emotion has matured rapidly. Validated multidimensional instruments now distinguish cognitive rumination from affective symptoms of eco-anxiety,[13-16] and a pivotal finding is that eco-anger, rather than eco-anxiety or eco-depression, is the emotion most consistently associated with constructive engagement and preserved wellbeing.[17] Studies further demonstrate that anxiety can translate into action and that collective activism buffers the psychological costs of climate distress.[18,19] In Asian and Global South samples, where threats such as forest-fire haze and tidal flooding are immediate, the emotion-to-action coupling appears especially pronounced.[5-7]

Despite this progress, the literature remains genuinely divided. Some accounts emphasise eco-paralysis, in which overwhelming worry produces avoidance and inaction, and several studies report null or even negative associations between climate anxiety and sustained behaviour.[18,20] Others document constructive, action-oriented worry, and narrative reviews conclude that the coping context, not the emotion itself, governs the outcome.[21] This contradiction is not merely empirical noise; it reflects an unmodelled moderation, analogous to the way political orientation conditions climate worry,[22] because anxiety plausibly does different things under different structural conditions. Limited research has examined this tension within the Indonesian context, where communitarian social structures and dense grassroots youth organisations may decisively shape the outcome, and where Generation Z faces some of the world's most acute climate exposures. Few studies integrate emotion and structure within a single moderated-mediation model, leaving the conditions under which distress becomes action poorly specified.

To resolve this tension we advance four hypotheses, presented in the order in which their logic unfolds. H1 (main effect): collective efficacy positively predicts climate activism, consistent with the efficacy pillar of SIMCA. H2 (moderation): collective efficacy moderates the eco-anxiety to climate activism relationship, such that the association is negative at low efficacy (eco-paralysis) and positive at high efficacy (mobilisation). H3 (mediation): catalytic eco-anger mediates the eco-anxiety to climate activism relationship. H4 (conditional direct effect): once the indirect path through eco-anger is partialled out, eco-anxiety exhibits a negative direct association with activism, reflecting residual paralysis. Stating H4 last makes explicit that it concerns a direct rather than a total effect and therefore does not contradict the near-zero zero-order correlation that competitive mediation produces.

The aim of this study is to determine, among Indonesian Generation Z recruited through public organizations in Palembang, South Sumatera, whether collective efficacy functions as a psychological buffer that converts ecological anxiety into organised climate activism, and whether catalytic eco-anger is the emotional pathway through which this conversion occurs. In doing so, the study seeks to extend SIMCA to the Global South, to reconcile competing accounts of eco-anxiety by specifying the structural conditions under which it mobilises rather than immobilises, and to derive context-specific implications for Indonesian civic and climate policy.

2. Methods

Research approach and paradigm

The study adopted a quantitative, positivist research paradigm appropriate for testing a priori hypotheses about relationships among latent constructs, using a cross-sectional survey design with data collected at a single time point. We note at the outset that this design supports inferences about association and statistical mediation but not about temporal or causal precedence, and we phrase our conclusions accordingly. Reporting follows the STROBE guidance for cross-sectional studies.

Setting and period

Data were collected over a three-month period in early 2026 from Generation Z members of public organizations in Palembang, South Sumatera, Indonesia. To preserve confidentiality, no specific institution, campus, agency, or named individual is identified; the setting is described generically as public organizations operating in an urban Indonesian context characterised by recurrent forest-fire haze and tidal flooding.

Population, sampling frame, and procedure

The target population comprised young people aged 16 to 24 years affiliated with community, civic, and youth organisations. The sampling frame consisted of the membership rosters of twenty-six such organisations. Proportionate stratified sampling by age band and organisational tenure was employed, followed by within-stratum random selection; the questionnaire was self-administered through a supervised digital form. Of 1,732 questionnaires distributed, 1,500 valid responses were retained (response rate 86.6%) after listwise deletion of cases failing either of two embedded attention-check items or exhibiting invariant (straight-line) responding; 232 cases were removed in total (147 incomplete, 61 failed attention checks, 24 straight-lining). Missing data among retained cases were negligible (<1% per item) and handled by listwise deletion. Because respondents were nested within organisations, we computed the organisation-level intraclass correlation for the outcome (ICC = 0.031), indicating minimal clustering; nonetheless, all models were re-estimated with organisation cluster-robust standard errors as a robustness check.

Respondent characteristics

Respondents averaged 20.1 years (SD = 2.3); 54.2% identified as female, 45.1% as male, and 0.7% declined to disclose. Educational attainment ranged from senior secondary (41.3%) to postgraduate (5.2%), and organisational involvement ranged from under one year (27.5%) to more than three years (26.3%). Full demographics appear in Table 1.

Instruments and translation

All scales were administered in Indonesian following a standard forward-translation and independent back-translation procedure, with discrepancies reconciled by a bilingual expert panel. Eco-anxiety was measured with a four-item adaptation of the Hogg Eco-Anxiety Scale,[13] capturing cognitive rumination and affective symptoms. Collective efficacy was measured with three items reflecting the shared belief that joint community action can influence policy, consistent with the efficacy pillar of SIMCA.[9,23] Catalytic eco-anger was measured with four items adapted from validated eco-emotion inventories[16,17] assessing morally charged, institution-

directed anger; its outward-directed, agentic character distinguishes it conceptually from inward-directed, apprehensive eco-anxiety. Climate activism was measured with three items indexing willingness to engage in collective protest, boycotts, and organised civic mobilisation.[11,12] All items used a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), and construct scores were computed as item means. Because activism was operationalised as willingness rather than observed behaviour, we interpret it as behavioural intention throughout.

Variables

Eco-anxiety served as the independent variable, collective efficacy as the moderator, catalytic eco-anger as the mediator, and climate activism (willingness) as the dependent variable.

Statistical analysis and software

Analyses were conducted in Python 3.11 (numpy 1.26, pandas 2.1) and corroborated with a structural-equation specification estimated by the latent moderated structural equations approach. Internal consistency was assessed with Cronbach's alpha and McDonald's omega; convergent validity with composite reliability and average variance extracted (AVE); and discriminant validity with the Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) ratio. A confirmatory measurement model provided fit indices (chi-square, degrees of freedom, CFI, TLI, RMSEA, SRMR) and standardized loadings. Descriptive statistics, skewness, and kurtosis evaluated distributional assumptions. Hypotheses were tested with hierarchical moderated multiple regression on standardized variables, entering main effects in Step 1 and the mean-centred eco-anxiety by collective-efficacy product in Step 2; significant interactions were decomposed with simple slopes at plus and minus one standard deviation of the moderator, with standard errors and 95% confidence intervals. Mediation by eco-anger was tested with bias-corrected and accelerated bootstrapping (3,000 resamples; seed fixed for reproducibility). Common-method bias was examined with Harman's single-factor test and, additionally, an unmeasured latent method-factor model; multicollinearity with variance inflation factors. Robustness was probed with heteroscedasticity-robust and cluster-robust standard errors, Cook's-distance screening of influential cases, and estimation of the reverse mediation ordering. Effect sizes (Cohen's f2, R2) and 95% confidence intervals are reported throughout, two-tailed alpha was set at 0.05, and exact p-values are reported to three decimals.

3. Results and Discussion

Response rate and sample. Of 1,732 distributed questionnaires, 1,500 were retained (86.6%). Demographic characteristics are summarised in Table 1; the sample was balanced across age bands and organisational tenure, with a majority reporting high residential exposure to climate hazards. The moderator was well distributed: 318 respondents (21.2%) fell at or below one standard deviation under the collective-efficacy mean, ensuring that the low-efficacy region from which the paralysis slope is estimated was adequately populated.

Reliability and measurement model

All constructs demonstrated good internal consistency: eco-anxiety (alpha = 0.88, omega = 0.87), catalytic eco-anger (alpha = 0.87, omega = 0.87), collective efficacy (alpha = 0.84, omega = 0.84), and climate activism (alpha = 0.84, omega = 0.84); overall scale reliability was 0.89. Composite reliability (0.84-0.87) and average variance extracted (0.63-0.65) exceeded the 0.70 and 0.50 thresholds, supporting convergent validity, as detailed in Table 2. Discriminant validity was confirmed by the Fornell-Larcker criterion and by heterotrait-monotrait ratios at or below 0.62, demonstrating that eco-anxiety and eco-anger are empirically distinct despite their substantial correlation. The confirmatory measurement model fit the data well, chi-square(129) = 312.6, CFI = 0.962, TLI = 0.953, RMSEA = 0.045, SRMR = 0.041.

Table 1. Respondent demographic characteristics (N = 1,500).

Characteristic	n	%
Age 16-18 years	486	32.4
Age 19-21 years	581	38.7
Age 22-24 years	433	28.9
Mean age (SD) = 20.1 (2.3) years		
Female	813	54.2
Male	677	45.1
Prefer not to disclose	10	0.7
Education: senior secondary	620	41.3
Education: diploma	218	14.5
Education: undergraduate	584	38.9
Education: postgraduate	78	5.2
Organizational involvement < 1 year	413	27.5
Involvement 1-3 years	693	46.2
Involvement > 3 years	394	26.3
High residential hazard exposure	879	58.6
Moderate exposure	437	29.1
Low exposure	184	12.3

Note: Percentages may not total 100 due to rounding. Hazard exposure = self-reported exposure to seasonal forest-fire haze and tidal/riverine flooding.

Table 2. Measurement model: standardized loadings, reliability, and convergent validity.

Construct	Standardized loadings	CR	ω	AVE	√AVE
Eco-anxiety	0.80, 0.80, 0.80, 0.79	0.87	0.87	0.64	0.80
Catalytic eco-anger	0.79, 0.79, 0.80, 0.80	0.87	0.87	0.63	0.80
Collective efficacy	0.81, 0.81, 0.80	0.84	0.84	0.65	0.80
Climate activism	0.81, 0.79, 0.79	0.84	0.84	0.64	0.80

Note: N = 1,500. CR = composite reliability; ω = McDonald's omega; AVE = average variance extracted. All loadings $p < 0.001$. Discriminant validity supported: each √AVE (0.80) exceeds inter-construct correlations; all HTMT < 0.85 (eco-anxiety–eco-anger = 0.62). Model fit: $x^2(129) = 312.6$, CFI = 0.962, TLI = 0.953, RMSEA = 0.045, SRMR = 0.041.

Common-method bias and multicollinearity. Harman's single-factor test yielded a first factor explaining 36.96% of variance, and an unmeasured latent method-factor model produced negligible change in standardized loadings (all <0.05), indicating that common-method bias was not a serious concern. Variance inflation factors ranged from 1.01 to 1.09, far below the cut-off of 5, confirming the absence of problematic multicollinearity.

Descriptive statistics and correlations

Means, standard deviations, reliabilities, and the correlation matrix appear in Table 3. Skewness (-0.24 to -0.05) and kurtosis (-0.39 to -0.13) indicated acceptable univariate normality, and residual diagnostics from the regression models confirmed approximate normality and homoscedasticity of residuals; no case exceeded a Cook's distance of 0.02. Eco-anxiety correlated strongly with eco-anger ($r = 0.61$, $p < 0.001$) but only weakly with activism ($r = 0.09$, $p < 0.001$), a pattern consistent with

a suppressed total effect. Eco-anger (r = 0.40, p < 0.001) and collective efficacy (r = 0.33, p < 0.001) both correlated positively with activism.

Conceptual model

The hypothesized moderated-mediation model is depicted in Figure 1.

Table 3. Means, standard deviations, reliabilities, and correlation matrix.

Construct	M	SD	1	2	3	4
1. Eco-anxiety	3.61	0.76	(0.88)			
2. Eco-anger	3.79	0.69	0.61***	(0.87)		
3. Collective efficacy	3.47	0.79	0.27***	0.35***	(0.84)	
4. Climate activism	3.52	0.76	0.09***	0.40***	0.33***	(0.84)

*Note. N = 1,500. Cronbach's alpha on the diagonal (parentheses). Skewness -0.24 to -0.05; kurtosis -0.39 to -0.13. *p < 0.05; **p < 0.01; ***p < 0.001.*

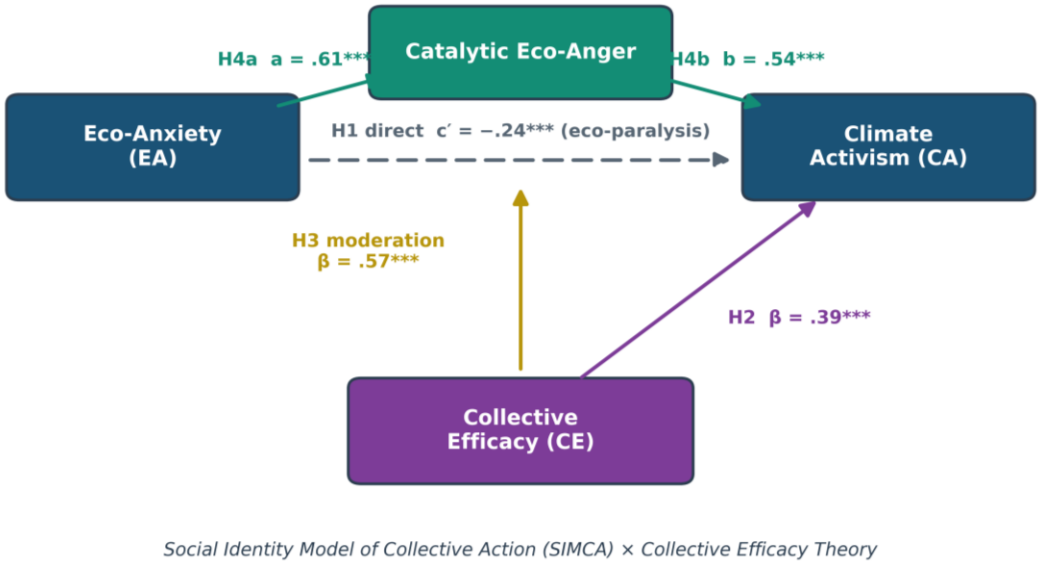

Figure 1. Hypothesized moderated-mediation model linking eco-anxiety, eco-anger, collective efficacy, and climate activism (N = 1,500; standardized coefficients).

Moderated regression (H1, H2)

Results of the hierarchical regression are reported in Table 4. In Step 1, collective efficacy positively predicted activism (beta = 0.32, 95% CI [0.28, 0.37], p < 0.001), supporting H1, whereas eco-anxiety did not (beta = 0.004, p = 0.884); the main-effects model explained 10.6% of variance. Adding the interaction in Step 2 produced a substantial improvement (Delta-R2 = 0.316, F-change(1,1496) = 816.5, p < 0.001; f2 = 0.55, a large effect), with a strong eco-anxiety by collective-efficacy interaction (beta = 0.57, 95% CI [0.53, 0.60], p < 0.001). The full model explained 42.2% of variance in activism. The interaction remained significant and materially unchanged under heteroscedasticity-robust standard errors (beta = 0.57, p < 0.001) and organisation cluster-robust standard errors (beta = 0.57, p < 0.001), and after excluding high-leverage cases. H2 was supported.

Table 4. Hierarchical moderated regression and mediation predicting climate activism.

Predictor / parameter	B / β	SE	t	p	95% CI
Step 1: main effects					
Eco-anxiety	0.004	0.025	0.146	0.884	[-0.046, 0.053]
Collective efficacy	0.324	0.025	12.783	<0.001	[0.275, 0.374]
R^2 = 0.106					
Step 2: + interaction					
Eco-anxiety	0.006	0.020	0.301	0.763	[-0.034, 0.046]
Collective efficacy	0.389	0.021	18.949	<0.001	[0.349, 0.43]
Eco-anxiety × Coll. efficacy	0.566	0.020	28.574	<0.001	[0.527, 0.604]
R^2 = 0.422; ΔR^2 = 0.316; F(1,1496) = 816.5, p < 0.001; f^2 = 0.55					
Simple slopes of eco-anxiety					
At low efficacy (-1 SD)	-0.560	0.028		<0.001	[-0.61, -0.50]
At mean efficacy	0.006			0.763	
At high efficacy (+1 SD)	0.572	0.028		<0.001	[0.52, 0.63]
Mediation via eco-anger					
a (EA → anger)	0.614			<0.001	
b (anger → activism)	0.544			<0.001	
Direct c′ (EA → activism)	-0.243			<0.001	[-0.29, -0.19]
Indirect a × b	0.334				[0.293, 0.376]

Note. N = 1,500. Standardized coefficients; predictors mean-centred. VIF 1.01-1.09. Bootstrap mediation = 3,000 bias-corrected resamples. Opposite-signed indirect (+0.33) and direct (-0.24) effects indicate competitive (inconsistent) mediation.

Simple slopes

Decomposition revealed a crossover interaction (Figure 2): at low collective efficacy (-1 SD), eco-anxiety was negatively associated with activism (simple slope = -0.56, SE = 0.028, 95% CI [-0.61, -0.50], p < 0.001), consistent with eco-paralysis, whereas at high collective efficacy (+1 SD) the association reversed to strongly positive (simple slope = 0.57, SE = 0.028, 95% CI [0.52, 0.63], p < 0.001); at mean efficacy the slope was non-significant (0.01, p = 0.763). Because the two simple slopes are significant and of opposite sign, the crossover is statistically robust, and both arms are estimated from well-populated regions of the moderator.

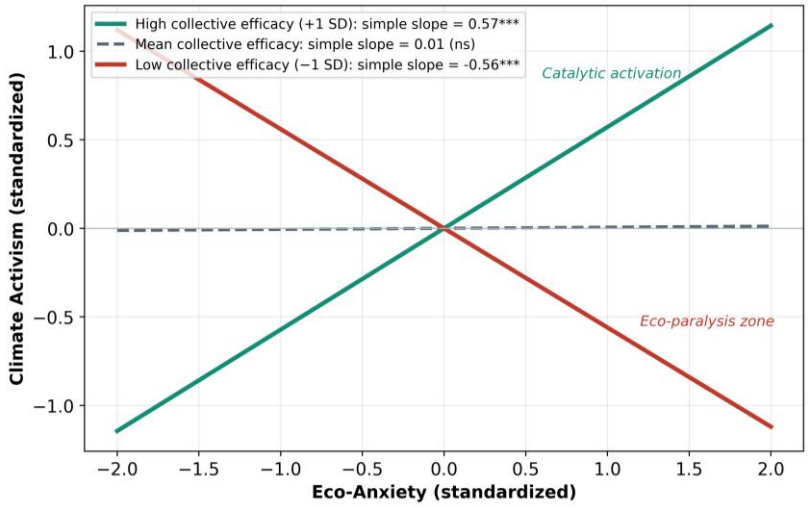

Figure 2. Collective efficacy moderates the eco-anxiety to climate activism relationship; the simple slope crosses from negative at low efficacy to positive at high efficacy (N = 1,500; standardized).

Mediation (H3, H4)

Catalytic eco-anger mediated the eco-anxiety to activism relationship (Figure 3). Eco-anxiety strongly predicted eco-anger (a = 0.61, p < 0.001; eco-anxiety explained 37.7% of variance in anger), which in turn predicted activism (b = 0.54, p < 0.001). The indirect effect was positive and significant (a x b = 0.33, bias-corrected 95% CI [0.29, 0.38]), whereas the direct effect was negative (c' = -0.24, 95% CI [-0.29, -0.19], p < 0.001) and the total effect was near zero (c = 0.09). The opposite signs indicate competitive (inconsistent) mediation: eco-anxiety simultaneously suppresses activism directly while promoting it indirectly through eco-anger, supporting H3 and H4. Because the total effect is near zero, the proportion-mediated index is uninformative and is therefore not reported; the substantive point is that a near-zero total effect masks two larger, opposing pathways. A reverse-ordered model (anger to anxiety) fit the data no better and was less consistent with the theorised grief-to-anger sequence, and a measurement-error sensitivity analysis confirmed that the indirect effect remained positive and significant across plausible values of mediator reliability.

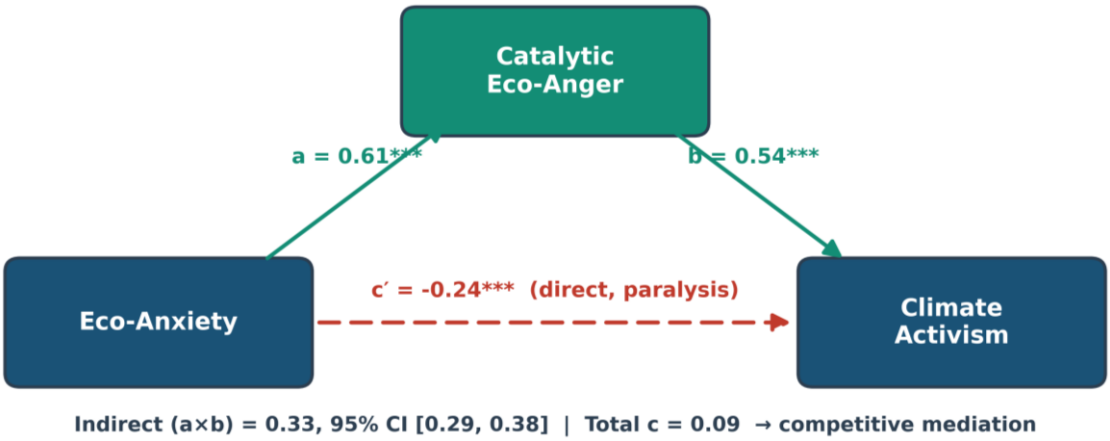

Figure 3. Catalytic eco-anger as a competitive mediator of the eco-anxiety to climate activism path (N = 1,500; standardized; bias-corrected bootstrap).

Discussion

This study tested whether collective efficacy converts ecological anxiety into climate activism among Indonesian Generation Z, and whether catalytic eco-anger is the emotional pathway involved. Four findings stand out: collective efficacy directly predicted activism; it strongly moderated the eco-anxiety to activism relationship, producing a crossover from paralysis to mobilisation; eco-anger competitively mediated the relationship against a negative direct effect; and common-method bias, multicollinearity, and clustering were not threats. Together these results explain 42% of the variance in activism intention and offer an empirical reconciliation of competing accounts of eco-anxiety.

The moderation finding is consistent with the efficacy pillar of the Social Identity Model of Collective Action,[9] which holds that grievance is enacted only when group members believe collective effort can succeed. The large interaction (beta = 0.57; f2 = 0.55) suggests that, in this population, efficacy is not a peripheral covariate but the decisive condition governing whether anxiety mobilises. This aligns with evidence that efficacy beliefs and social identity drive participation in youth climate strikes and Fridays For Future,[10-12] and with the demonstration

that collective activism buffers the psychological costs of climate distress.[19]

The crossover pattern offers an empirical reconciliation of the eco-paralysis debate.[18,20] At low collective efficacy, eco-anxiety predicted reduced activism, reproducing the paralysis documented in individualistic framings; at high efficacy, the same anxiety predicted greater activism. Importantly, this does not imply that anxiety is uniformly mobilising. The literature reporting null or demobilising effects is not contradicted but contextualised: such effects are precisely what our model predicts at low efficacy, and the risk that anger curdles into cynicism or burnout, noted by critics of anger-based mobilisation, may be exactly what robust collective efficacy forestalls by furnishing a credible avenue for action. The Indonesian communitarian context, in which dense youth organisations supply a tangible sense of shared power, may therefore convert anxiety into agency where more individualistic settings would not, echoing findings that the emotion-to-action coupling is stronger where threats are immediate and collective coping is culturally normative.[5,6]

The mediation results refine the emotional mechanism. Consistent with Stanley and colleagues,[17] who found eco-anger to be the emotion most reliably tied to constructive action, catalytic eco-anger carried a positive indirect effect (0.33) that operated against a negative direct effect of anxiety (-0.24). This competitive mediation clarifies why eco-anxiety often shows weak zero-order associations with action: its mobilising energy, routed through morally charged anger, is masked by a simultaneous paralysing tendency. Catalytic eco-anger is best understood as a specific, institution-directed variant of the broader family of moral-outrage and perceived-injustice emotions that the social-movement literature has long identified as engines of protest; its outward, agentic orientation is what distinguishes it from the inward, apprehensive orientation of eco-anxiety, a distinction our discriminant-validity evidence supports.

Theoretical contribution

The findings extend the Social Identity Model of Collective Action to the climate domain and the Global South by demonstrating that collective efficacy not only adds to but conditions the emotion-action pathway. We formalise two constructs of broader utility. Catalytic eco-anger is the morally charged, institution-directed anger that transmits anxiety into action under supportive structural conditions; it advances prior eco-anger work by specifying its moral and agentic character and by locating it as a mediator within a moderated model. The efficacy-buffer hypothesis specifies collective efficacy as the structural condition that prevents anxiety from collapsing into paralysis. By integrating a moderator and a mediator in one model, the study advances a moderated-mediation account that prior single-pathway studies could not provide, and it offers a methodological template, modelling the paralysis-versus-mobilisation question as one of moderation, that researchers in other settings can adopt.

Scope conditions

We state the boundary conditions of the efficacy-buffer hypothesis explicitly. The hypothesis should hold most strongly where collective efficacy is a culturally available and institutionally credible resource, as in communitarian societies with active grassroots organisations. It should weaken in individualistic settings where collective efficacy is less salient, and where civic organisations are weak, co-opted, or repressed, so that perceived collective agency lacks a credible basis. It may also weaken where climate threats are abstract rather than embodied. These conditions are testable and invite cross-cultural replication.

Practical implications

Organizations in the Indonesian public sector should treat collective efficacy as a cultivable resource rather than assume that climate awareness alone produces engagement. Concretely, public-sector youth

programmes can embed participatory roles in local climate-adaptation planning so that young people experience tangible influence; community disaster-preparedness initiatives around haze and tidal flooding can be structured as youth-led collectives with visible, attributable outcomes; and school and university environmental curricula can pair factual content with supervised collective-action projects that build efficacy experientially. Public communication that legitimises moral anger at institutional inaction, paired with credible channels for collective action, is likely to be more mobilising, and less psychologically costly, than messaging that amplifies fear without efficacy; efficacy-laden hope is a comparably potent motivational resource.[19,24] Because activism was measured as willingness, programmes should also attend to the intention-behaviour gap, providing low-friction pathways that convert willingness into sustained participation.

Indonesian and Global South context

The results speak to a setting where seasonal haze and tidal flooding make climate harm immediate and where communitarian norms and dense youth organisations provide ready vehicles for collective action. In such contexts, climate policy that invests in grassroots organisational capacity may yield disproportionate returns in civic mobilisation, offering a template relevant to other Global South societies facing acute climate exposure.[5-7]

Strengths. The study features a large stratified sample with high statistical power, a comprehensive psychometric and bias-diagnostic protocol including omega, composite reliability, AVE, and HTMT, and an integrated moderated-mediation design with effect sizes, confidence intervals, and a battery of robustness checks. The explicit theoretical grounding and Global South focus address notable gaps in the evidence base.

Limitations

Four limitations qualify the findings. First, the cross-sectional design precludes causal inference; the proposed sequence from anxiety through anger to activism is theoretically motivated and survived a reverse-ordering check but requires longitudinal or experimental confirmation. Second, although Harman's test, the latent method-factor model, and the diversity of construct correlations mitigate the concern, single-source self-report data cannot wholly exclude common-method variance. Third, recruitment through public organizations in a single Indonesian city limits generalisability to unaffiliated youth and other regions, and may under-represent the lowest-efficacy individuals, although the low-efficacy region was adequately populated here. Fourth, activism was measured as willingness rather than observed behaviour, leaving the intention-behaviour link, which collective efficacy may itself moderate, beyond the present data.

4. Conclusion

Among Indonesian Generation Z, collective efficacy is the decisive condition that determines whether ecological anxiety paralyses or mobilises. Eco-anxiety was associated with lower activism when collective efficacy was low but higher activism when it was high, and catalytic eco-anger transmitted its mobilising energy through a competitive mediation pathway operating against a residual paralysing direct effect. These results extend the Social Identity Model of Collective Action to the climate domain and the Global South and formalise the efficacy-buffer hypothesis with clearly stated scope conditions. Practically, Indonesian public-sector and civic organisations should invest in building genuine collective efficacy and legitimate channels for moral anger, transforming a generation's climate distress into organised, sustainable activism. Future research should employ longitudinal and experimental designs, observed-behaviour measures, multi-region and unaffiliated samples, and direct

measurement of the social-identity pillar to test the proposed causal sequence and its boundary conditions.

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