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High Awareness, Limited Action: Explaining Attitudinal Barriers to Climate Mitigation in Academia

Tamara Ben-Ari[a,*], Julien Troiville[b], Lydiane Agier[c,*]

[a] *UMR Innovation, INRAE, Institut Agro, CIRAD, 2 place Viala, 34000 Montpellier, France*
[b] *Department of Marketing, School of Management Sciences, University of Quebec at Montreal, 315 rue Sainte-Catherine Est, Montreal, H2X 3X2, QC, Canada*
[c] *UMR ESTTE, Université Gustave Eiffel, 25 avenue François Mitterrand, 69675 Bron, France*

Abstract

General support for climate action is widely expressed within academia and public research, with surveys consistently reporting exceptionally high levels of awareness and concern about the climate crisis. Yet, the implementation of mitigation policies in universities and research institutions remains limited.

Drawing on a national survey of 4,688 academics and research personnel in France, we examine this apparent paradox and find that more than half express attitudinal barriers to climate action, including reluctance toward the inclusion of academia in mitigation efforts, opposition to institutional mitigation policies, and inconsistencies between stated support for mitigation and willingness to adopt corresponding changes in individual research practices.

Higher perceived costs of academic mitigation actions—particularly their potential impacts on competitiveness and scientific visibility—are consistently associated with these barriers, along with lower agreement with degrowth as a response to environmental challenges. Such barriers are also more prevalent among senior male scientists with higher levels of mobility, particularly in physics, chemistry, and medical and health sciences.

Academia provides a critical context to examine how climate inaction can persist in the near absence of climate denial. Our findings suggest that moving from stated commitments to effective action requires addressing how

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[*] Corresponding author

Email addresses: `tamara.ben-ari@inrae.fr` (Tamara Ben-Ari), `lydiane.agier@univ-eiffel.fr` (Lydiane Agier)

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climate policies interact with academic hierarchies and dominant models of productivity and recognition—an issue with direct implications for the design of mitigation policies within research institutions.

Keywords: Academic carbon footprint, Global Warming, Ecological transition, Climate delay discourses

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1. Introduction

Calls for academia to align its practices with climate goals—or even to lead by example—have intensified over the past decade (Kreil, 2021b; Kanashiro et al., 2020; Higham and Font, 2020; Le Quéré et al., 2015; Serrano-Plana, 2025). In response to these calls, scientists and academics have started to assess the weight and distribution of the carbon footprint of scientific activities (Ben-Ari, 2023; Dotti et al., 2025; Mariette et al., 2022) and to conduct quantitative and qualitative surveys to understand their determinants (Tseng et al., 2022a; Latter et al., 2024; Whitmarsh et al., 2020; Higham et al., 2019; Blanchard et al., 2022b).

In countries with a relatively decarbonized electricity mix, studies show that routine research emissions are primarily driven by scope 3 GHG sources such as the purchase of equipment, materials, and services required for scientific activity (Ben-Ari, 2023; De Paepe et al., 2024; Lannelongue et al., 2021; Loubet et al.)—followed by air travel for international conferences, collaboration, and fieldwork (Ben-Ari et al., 2024). Large research infrastructures have been shown to generate emissions that can far exceed routine operations (Knödlseder et al., 2024; Odin et al., 2024; Grealey et al., 2022; Lang et al., 2025; Loubet et al.).

Awareness of the gravity of the climate crisis is far more pronounced within academia than in most other sectors. Cross-national surveys consistently show near-universal recognition of climate change among academics (above 95%) and very high levels of concern (80–95%) (Dablander et al., 2024; Latter et al., 2024; Whitmarsh et al., 2020). These findings are corroborated by several smaller-scale surveys focused on specific disciplines or institutions (Kreil, 2021b; Tseng et al., 2023). Qualitative studies further highlight tensions between decarbonization and institutional pressures such as internationalization, competition, and resource allocation (Marginson, 2022; Hopkins et al., 2016; Higham and Font, 2020; Kreil, 2021a; Eriksson et al., 2020; Tseng et al., 2022b; Higham et al., 2019; Glover et al., 2019).

Although the carbon footprint of knowledge production is increasingly acknowledged—and key levers of decarbonization have been identified (Eichhorn et al., 2022; Dotti et al., 2025)—climate action in academia remains limited in scope. Institutions rarely adopt binding mitigation policies (Tseng et al., 2023; Bjørkdahl and Franco Duharte, 2022; Eichhorn et al., 2022; Stöber et al., 2021), and most responses rely on symbolic gestures such as net-zero pledges, charters, or awareness campaigns with limited regulatory

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impact (Boykoff and Oonk, 2020).

In France, similar dynamics are observed. The carbon cost of research has become a national issue across institutions and laboratories (Ben-Ari, 2023; Hardy, 2024; Hardy et al., 2023; Hardy, 2025), and nearly half of research units have assessed their emissions (Mariette et al., 2022). Yet few institutions have implemented ambitious mitigation policies, and most efforts remain largely declarative. This continued reliance on awareness and informational strategies echoes the communicative approaches historically used to counter climate change denial, suggesting that academic climate inaction is addressed through the same tools once mobilized against denial (Boykoff and Oonk, 2020).

Climate change denial—understood as the negation or rejection of the scientific consensus on the existence, causes, or consequences of climate change—has long delayed mitigation efforts (Dunlap et al., 2011). Coordinated campaigns have aimed to erode public trust in climate science by manufacturing uncertainty and controversy (Oreskes and Conway, 2010; Ceccarelli, 2011), and by discrediting scientists and institutions (Boussalis and Coan, 2016). This strategy is often described as “evidence skepticism” and “process skepticism” (Painter et al., 2023), or more broadly as "epistemic denial" (Capstick and Pidgeon, 2014).

However, epistemic denial alone cannot explain the persistence of climate inaction in society. Recent research has turned to more diffuse mechanisms of inaction: "response skepticism" (Bonds, 2016), "discourses of delay" (Lamb et al., 2020), and "tertiary obstruction" (Ekberg and Jylhä, 2023; Forchtner and Jylhä, 2024) describe strategies that downplay the legitimacy or urgency of climate policies, emphasize their perceived side effects, or defend unsustainable infrastructures and practices—even among individuals or institutions that recognize the reality of climate change and the need for mitigation. Arguments for opposing climate action include—but are not limited to—the consideration of economic costs, policy ineffectiveness, and the reduction of personal freedom (Boussalis and Coan, 2016; Coan et al., 2021). These interlinked forms of obstruction often replace action with prolonged debate and hesitation, even as the consequences of climate change become more acute (Jacques, 2012; Brulle, 2023).

In this article, we examine whether these secondary forms of obstruction are also present within academia. To do so, we analyze attitudes and behavioral intentions related to climate action among academic and research personnel. Academia provides a particularly informative context, not only

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because overt climate denial is rare, but also because its members contribute directly to the production of climate knowledge (Cook et al., 2016). The persistence of limited engagement with climate mitigation in such a context is therefore both paradoxical and analytically significant.

We conceptualize attitudinal patterns of climate inaction along four complementary dimensions: (1) climate change denial, capturing the epistemic rejection of climate science; (2) reluctance toward academic climate change mitigation, defined as the expression of general opposition to the inclusion of academia in climate change mitigation efforts; (3) opposition to institutional climate mitigation policies, capturing the refusal of a set of proposed climate change mitigation policies within academia; and (4) institutional–individual inconsistency, reflecting discrepancies between stated support for institutional commitments and the refusal to adopt corresponding individual-level behavioral changes.

These dimensions capture distinct forms of limited support for climate action, from general reservations to opposition to policies and individual changes. Using a national survey of 4,688 academics and research personnel in France, we examine how these barriers relate to perceived mitigation costs, environmental attitudes—particularly toward degrowth—and professional characteristics. Although climate awareness is widespread, support declines when mitigation challenges academic norms, highlighting the need to align climate policies with institutional incentives and career structures.

2. Materials and Methods

2.1. Study design and population

We analyze data from the national survey “Academic and Research Personnel in the Face of Climate Change” conducted in France in 2020 (targeting practices in 2019, pre-COVID). The survey was administered to a random sample of 30,000 individuals drawn from the CNRS Labintel directory, covering universities and public research institutions organized in mixed research units (UMR). A total of 6,724 responses were collected (20% response rate). After data cleaning, the final dataset includes 6,468 individuals. Detailed information, including survey bias is provided in the Supplement (see Appendix A, section S2 and S3). The main analysis focuses on 4,688 permanent academic and research staff, as key questions were specifically designed for this group. Respondents include researchers, faculty, engineers, technicians,

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and administrative personnel across disciplines. Missing responses (including "no opinion" and "not concerned") are treated as informative categories.

2.2. Outcome variables: attitudinal barriers

We construct four complementary indicators of attitudinal barriers to climate action. Detailed information is provided in the Supplement. *Climate Change Denial* is a binary variable identifying respondents who reject either the existence of climate change or its anthropogenic origin. *Reluctance toward Academic Climate Mitigation* is a binary variable that captures opposition to the inclusion of academia in mitigation efforts, based on disagreement with the need for changes in research practices or support for exempting research from emission reduction targets. *Opposition to Institutional Mitigation Policies* is a count variable (0-10) measuring the number of proposed institutional actions that respondents refuse. These actions include, among others, limiting flights, subsidizing train travel, reducing conference weight in evaluations, and integrating greenhouse gas (GHG) emissions into funding criteria. *Institutional-Individual Inconsistency* is an ordinal variable (0-2) capturing discrepancies between support for institutional policies and willingness to adopt corresponding individual changes (*e.g.*, reducing flights, IT equipment use, or energy-intensive research practices). Higher values indicate stronger inconsistency. (see construction details in Appendix A, section S4).

2.3. Explanatory variables

We consider socio-demographic and professional characteristics, including age, gender, discipline, and career stage. Academic visibility is proxied by the number of international conferences attended, publication rate, and h-index. We also include two variables capturing perceived trade-offs associated with mitigation: *Perceived Costs of Air Travel Reduction* and *Perceived Costs of Equipment Reduction*, defined as the number of domains in which respondents anticipate negative consequences (e.g., scientific quality, funding access, collaboration, or career progression). Finally, two attitudinal variables are included: *Technological Optimism* (belief that technological progress can solve environmental problems) and *Degrowth* (agreement that reducing economic activity is necessary to address environmental challenges). Detailed information is provided in Appendix A, section S5)

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2.4. Statistical analysis

We adopt a nested analytical framework to examine successive layers of attitudinal barriers. Specifically, we model: (1) denial in the full sample; (2) reluctance among non-deniers; (3) opposition among non-deniers who are not reluctant; and (4) inconsistency among respondents who support all institutional actions. This approach allows us to identify where support for climate action erodes without assuming causal ordering. We use logistic regression for binary outcomes (denial, reluctance), negative binomial regression for opposition (count), and proportional odds models for inconsistency (ordinal). Multivariate models include all explanatory variables, with variance inflation factors used to assess multicollinearity. Missing data are handled using a mixed approach: variables with more than 10% missing values include a dedicated “missing” category, while others are imputed using multiple imputation by chained equations (10 datasets). Outcome variables are not imputed. Sensitivity analyzes (alternative imputations, non-nested models, and alternative specifications) yield consistent results. All analyzes are conducted in R (version 4.4.2). Detailed information is provided in Appendix A, section S6).

3. Results

The vast majority of surveyed permanent academics and research personnel (86%) consider substantial changes in research practices essential to address the climate crisis, and 80% support reducing research-related GHG emissions by at least one third by 2030, in line with national cross-sectoral targets (Table S1). We examine the breadth and internal consistency of this apparent consensus.

3.1. Prevalence and Patterns of Attitudinal Barriers to climate action

Climate change Denial, or epistemic denial, is rare in academia : 0.4% of our study population deny the reality of climate change and 3.2% its anthropogenic causes (*i.e*, a total of 3.5%, Figure 2). Reluctance toward academic climate change mitigation is more prevalent, with 7% favoring an exemption of the research sector from cross-sectoral mitigation efforts and 2% rejecting the idea that substantial changes in research practices are necessary (*i.e*, a total of 8%, Figure 2).

Support for climate action among academics drops sharply when concrete mitigation actions are suggested to be implemented at the institutional level,

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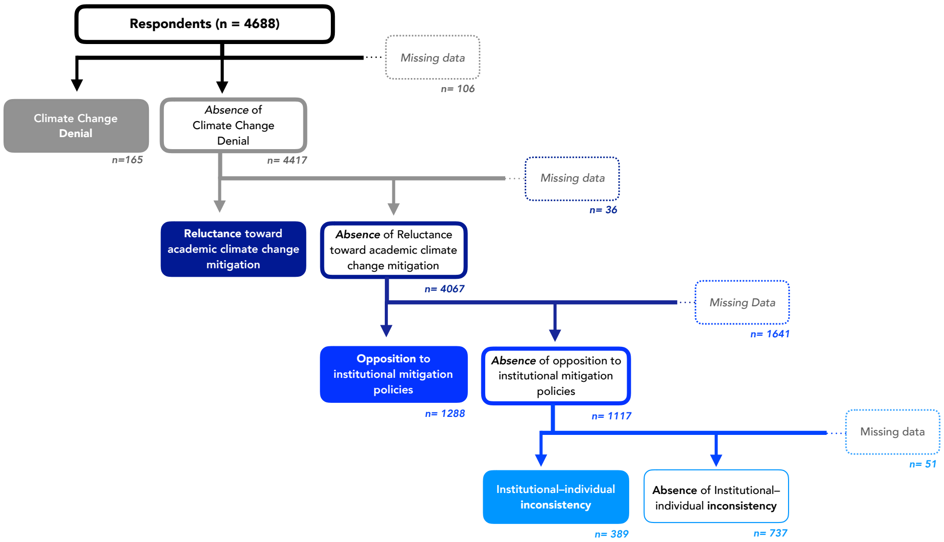

Figure 1: Nested analytical framework used to characterize four dimensions of attitudinal barriers to climate action in academia. The analysis proceeds sequentially from climate change denial to reluctance toward academic climate change mitigation, opposition to institutional mitigation policies, and institutional–individual inconsistency. Each step is estimated among the relevant subset of respondents, without assuming a causal or sequential relationship between the four dimensions.

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with *Opposition* accounting for about 31% of attitudes (with 43% missing values). Among these, 24% show mild opposition (refusing 1–2 of 10 proposed institutional policies) and 7% show a stronger opposition (refusing $\geq$3 policies). Low levels of support are also observed when individual-level mitigation actions are suggested to academics who support institutional level actions, with *Institutional–Individual Inconsistency* being detected in 29% of the population (with 24% missing values), 21% showing mild *Inconsistency* (willingness to reduce their GHG emissions by $<1/3$ in a given domain, despite stating that reducing GHG emissions in this domain is a priority at an institutional level) and 8% showing a higher level (refusing to reduce their GHG emissions in a given domain, despite stating that reducing GHG emissions in this domain is a priority at an institutional level). Given their high rate of missing values, the prevalence of *Opposition to Institutional Mitigation Policies* and *Institutional–Individual Inconsistency* is likely underestimated.

Note that these four dimensions of attitudinal barriers to climate action slightly overlap (see Figure S1), with, for example, *Opposition* and *Inconsistency* being found even among those who express *Reluctance*. In total, we find that 54% of our population expresses support for at least one form of inaction, 16% express full support for mitigation actions, and 30% have missing values at any given level of action.

3.2. From Stated Support to Action: The Gap between Consensus and Individual Commitment

To better understand the gap between, on the one hand, awareness of climate change and general support for climate change mitigation in academia and, on the other hand, specific attitudes toward policies and individual commitments, we review the support for the ten suggested institutional actions and willingness to reduce individual professional GHG emissions by 2030. Institutional actions span various policy instruments following (Verkerk et al., 2022; Poortinga, 2025) (*i.e.*, norms, economic incentives, and informational instruments) or push-and-pull policies that either discourage emitting practices through costs and restrictions or promote desired behavior through incentives (see classification in Table 1).

Academics and research personnel generally support institutional climate policies (Figure 2 panel A and Table S2). On average(range), 53% (32%-68%) of the respondents identify the proposed policies as priorities, 21% (14%-30%) as secondary, and 10% (3%-24%) express outright opposition, with about 15% missing data. Four specific actions received lower yet prevailing

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Climate policy	**Policy instruments**	**Push vs. Pull**	**Domain**
Set a limit on the number of flights	Norms	Push	Travel
Ban flights for trips that can be made in less than 6h by train	Norms	Push	Travel
Avoid replacing IT equipment of less than 5 years of age	Norms	Push	Purchases
Include GHG emissions into funding selection criteria	Norms	Push	Evaluation
Reduce the weight of conferences in career evaluations	Norms	Pull	Evaluation
Favor local and vegetarian menu providers	Norms	Pull	Diets
Subsidize train tickets	Economic incentives	Pull	Travel
Finance carbon offset initiatives	Economic incentives	Pull	Travel
Prioritize energy-efficient research equipment during replacements	Economic incentives	Pull	Purchases
Publish GHG inventories	Informational instrument	Pull	Evaluation

Table 1: Typology of climate policies tested in the survey, by domain and policy instrument.

support: integrating GHG emissions into research funding criteria, financing carbon offsets, publishing GHG inventories, and implementing flight limits.

However, when asked about their willingness to reduce their own professional GHG emissions by 2030, support for climate action drops drastically (Figure 2 panel B and Table S2). On average across all actions, only 16%

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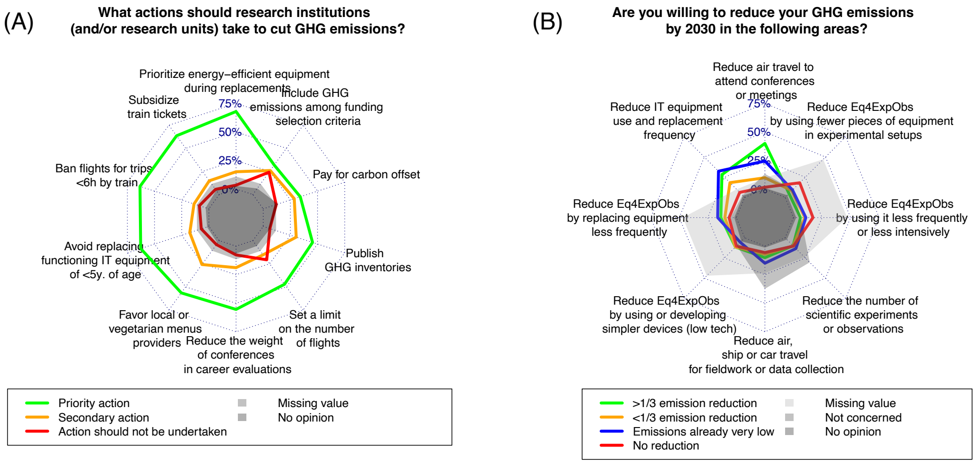

Figure 2: Opinions regarding (A) institutional mitigation options and (B) changes in individual research practices within the study population of permanent academics and research personnel (N = 4688). Missing values—such as "no opinion" or "not concerned"—are incorporated into the variable distribution estimates, and missingness is displayed in grey on the graph. Institutional options (A) include: (a) subsidizing train tickets even if the journey is longer or more expensive than flying; (b) publishing detailed GHG inventories; (c) setting limits on the annual number of flights per person; (d) including GHG emissions among funding selection criteria; (e) reducing the weight of conferences in career evaluations; (f) banning flights for trips under 6 hours by train; (g) avoiding the replacement of functioning IT equipment before 5 years of use; (h) prioritizing energy-efficient equipment even when more expensive; and (i) favoring providers offering local or vegetarian menus. Options at the individual level (B) cover willingness to reduce GHG emissions in eight areas: (a) Reduce air-travel to attend conferences, congresses or meetings, (b) Reduce air, ship or car travel for fieldwork or data collection, (c) Reduce the number of scientific experiments or observations, (d) Reduce IT equipment use and replacement frequency and (e-h) Reduce the production and operation of equipment used for your scientific experiments and observations (e) By using it less frequently or less intensively, (f) By using or developing simpler devices (low tech), (g) By using fewer pieces of equipment in experimental setups, (h) By replacing equipment less frequently.

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(5%-40%) of our population support substantial emissions reductions (*i.e.*, by >1/3), while 11% (7%-18%) opt for limited mitigation (*i.e.*, by <1/3). Additionally, 26% (6%-39%) are opposed to lowering their emissions, predominantly because they consider their GHG emissions to be already low (about 45% missing data). Even those who believe research should lead by example regarding GHG emissions reduction show considerable reluctance when it comes to individual mitigation efforts, with only 22% (8%-53%) on average supporting substantial reductions.

Two actions received comparatively larger support for substantial reductions (*i.e.*, by >1/3): reducing flights to conferences (40%) and reducing IT equipment use and replacement frequency (28%). Conversely, reductions in the use of laboratory, experimental, or observational equipment were considered the least acceptable actions (≤6% opting for substantial reductions in the number of equipment and frequency or intensity of use). Missing values, despite being substantial, had a minimal effect on the comparative acceptability of actions (see Figure S2). Regarding those who considered their GHG emissions to be already low, we cross-validated these self-assessments with independent information collected in the survey about respondents' actual practices (number of flights, use of energy intensive research facilities, IT renewal) and the presence of mitigation incentives in their research units. Results support the hypothesis that this response modality may be interpreted as an opposition to mitigation options (Supplement Appendix D), which would result in a greater prevalence of *Inconsistency* than estimated in this study.

3.3. Factors Associated with Attitudinal Barriers to Climate Action

We sequentially analyze how socio-demographic characteristics, professional status, academic success (h-index), international conference attendance frequency, perceived costs associated with mitigation, and broader attitudes towards the environment are associated with each of the four dimensions of attitudinal patterns of academic climate inaction (*i.e.*, *Denial*, *Reluctance*, *Opposition*, and *Inconsistency*). Descriptive statistics for each of these variables are given in Tables S4 and S5. Due to high VIF values, the explanatory variable, *number of publications* , was excluded from the multivariate models (see details in Table S6).

We rely on a nested analytical approach (see Figure 1) to examine where support for academic climate change mitigation begins to weaken and to identify the factors associated with successive layers of attitudinal barriers

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to climate action. Accordingly, *Reluctance* is assessed among respondents who do not deny climate change; *Opposition* among those who do not deny climate change and are not reluctant toward climate mitigation in academia; and *Inconsistency* among those who do not deny climate change, are not reluctant, and support all institutional mitigation actions. A complete presentation of the prevalence of these attitudes is provided in Supplementary Figure S1.

Results for *Denial*, *Reluctance*, and *Inconsistency* are presented as odds ratios (OR), and results for *Opposition* as incidence rate ratios (IRR). ORs indicate the likelihood of expressing a given attitudinal barrier, while IRRs indicate the expected number of institutional actions refused. In multivariate models, estimates are adjusted for all explanatory variables. Similar patterns are observed across the four nested dimensions of mitigation refusal (Figure 3; Tables S7, S8, S9, and S10).

Perceived mitigation costs and lower support for degrowth emerge as the factors most consistently associated with all four dimensions of attitudinal barriers to climate action in adjusted models. Higher perceived costs and lower agreement with degrowth are systematically associated with greater non-support for mitigation policies. More precisely, compared to considering degrowth as a response to environmental challenges (57% of our population), the strongest opposition to degrowth (7%) is significantly associated with a 10-fold increased likelihood of denying climate change (OR [95% confidence interval] = 10.4 [6.3;16.9]), with a 3-fold increased likelihood of being reluctant toward academic climate change mitigation (OR=3.2 [2.2;4.6]), with a 2-fold increased expected number of institutional actions refused (IRR = 2.1 [1.8;2.5]), and with a 3-fold increased likelihood of a 1-point inflation in *the Inconsistency* score (OR= 2.7[1.2;5.8]). Association estimates of similar magnitude are found for the highest perceived costs of air travel reduction (*i.e.*, a score of 5 to 8, 11%) compared to perceiving zero cost (12%) when modeling *Opposition* (IRR=2.6 [2.2;3.2]) and *Inconsistency* (OR = 2.3 [1.3;4.1]); a higher association was estimated for *Reluctance* (OR=6.8[3.8;11.9]), and a lower association was estimated for *Denial* (OR = 2.6 [1.2;5.3]). The perceived costs of experiment reduction policies is the third main variable associated with attitudinal barriers to climate action, despite a high rate of missing data (51%). Compared to respondents who perceive zero cost (16%), those with the highest perceived cost scores (*i.e.*, 4 to 5, 10%) exhibit a significantly greater likelihood of expressing attitudinal barriers to climate action (OR = 2.7 [1.2;5.9] for *Denial*, OR = 3.2 [1.9;5.2] *for Reluctance*, IRR=1.3

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[1.1;1.5] for *Opposition*), and *Inconsistency*, OR = 1.7 [1.0;2.8].

Socio-demographic characteristics play a significant role in explaining attitudinal barriers to climate action. Higher odds of *Reluctance* (OR= 2.3 [1.7;3.1]) and *Inconsistency* (OR = 1.4 [1.0;1.9]) are found for men (57%) compared to women (43%), and higher odds of *Denial* (OR= 6.2 [2.2;17.6]) are found for respondents over 60 years old (10%) compared to the youngest group (aged 18–34, 10%).

Accounting for interaction terms in the models, men who are against degrowth as a solution to environmental problems and perceive high costs of air travel reduction (score of 3 or above, 9% of our population), have a 6-fold increased likelihood of denying climate change compared to the opposite profile (*i.e.*, women scientists who are not against degrowth - either supporting degrowth or missing value - and express no perceived costs of air travel reduction, 5%); if not (*i.e.*, among those who do not deny climate change), they have a 21-fold increased likelihood of being reluctant to academic mitigation; if not (i.e., among those who do not deny climate change and are not reluctant to academic mitigation), they are expected to refuse a 3-fold higher number of institutional climate policies ; and if not (i.e., among those who do not deny climate change, are not reluctant to academic mitigation, and support all institutional actions), they have a 3-fold increased likelihood of a 1-point inflation in the Inconsistency score.

The effect of career status is largely captured by exposures to age, gender, and h-index in multivariate models. Senior career position (35%) however, remains significantly associated with *Opposition* in adjusted models, with a 2-fold higher expected number of institutional climate policies refused compared to early-career researchers (1%). Broad research domains affect attitudinal barriers to climate action, with medical and health sciences, and physics and chemistry being associated with increased non-support for action compared to humanities, languages, and literature, showing association effects in the 2.1 to 3.1 range over one of the four dimensions of barriers to climate action. Similarly, the h-index, publication rates, and attendance at international conferences—proxies for academic visibility and success—are all significantly associated with refusing academic mitigation actions in univariate models, mostly related *to Reluctance* and *Opposition*. In multivariate models, conference attendance dominates in the *Opposition* model, with association effects of up to an IRR of 1.5 when attending at least 3 conferences per year (9%) compared to none (35%).

In univariate models, firm belief in the ability of new technologies to solve

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most environmental problems (10%) compared to not believing in this (41%) is significantly associated with increased non-support for action at all levels; however, the effect generally fades in multivariate models, mostly because this information is partly redundant with the degrowth attitudinal variable (V-Cramer=0.39).

Missing exposure values were informative, supporting a missing-not-at-random (MNAR) mechanism. In particular, the missing category for perceived costs of equipment reduction was associated with lower *Inconsistency* and mainly included respondents not using energy-intensive facilities (88% vs. 14% among non-missing values). Imputing all missing values reduced the magnitude of associations with perceived mitigation costs and degrowth, while revealing stronger disciplinary variations (Figure S3). Results were robust across alternative specifications. Non-nested models yielded similar estimates while additionally identifying significant age and conference attendance effects (Figure S4). Similar patterns were also observed among non-permanent personnel, despite their younger age and slightly stronger disciplinary effects (Supplement Appendix C, Figure S5).

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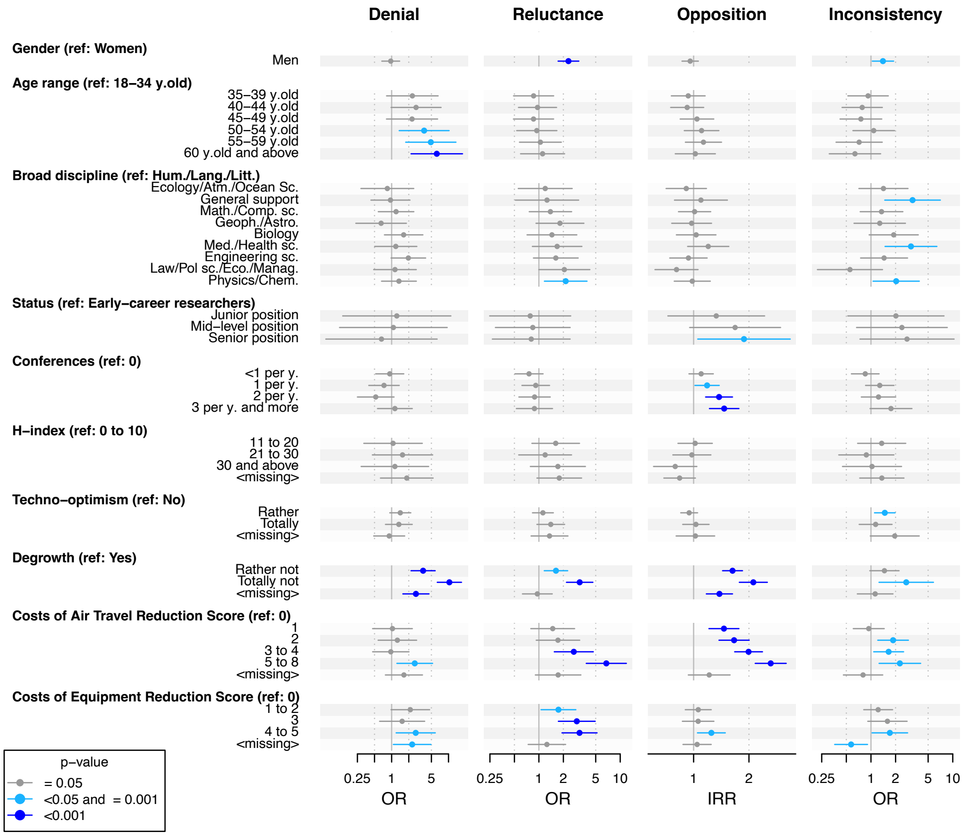

Figure 3: Multivariate regression modeling of of (from left to right) *Climate Change Denial*, *Reluctance toward academic climate change mitigation*, *Opposition to Institutional Mitigation Policies*, and *Institutional-Personal Inconsistency*, fitted in a nested approach. *Climate-Mitigation Denial* is fitted by logistic regression (N=4,582), *Reluctance toward academic climate change mitigation* is fitted by logistic regression among those who do not deny climate change (N=4,381), *Opposition to Institutional Mitigation Policies* is fitted by negative binomial regression among those who do not deny climate change and are not reluctant toward academic mitigation (2,462), and *Institutional-Personal Inconsistency* by proportional odds-regression among those who do not deny climate change, are not reluctant toward academic mitigation and who support all institutional efforts only(N=1,126). IRR = Incidence rate ratio; OR = Odds ratio.

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4. Discussion

Our results reveal a marked gap between broad support for climate action and support for concrete mitigation measures within academia. While 86% of respondents recognize the need for substantial changes in research practices and 80% support ambitious emission reduction targets, support declines when mitigation involves specific institutional policies or individual behavioral changes. Climate change denial remains marginal (3.5%), but reluctance toward academic mitigation, opposition to institutional policies, and institutional–individual inconsistency are substantially more prevalent (8%, 31%, and 28%, respectively), together affecting more than half of the study population.

Across all dimensions, perceived mitigation costs—particularly those related to air travel and equipment use—and lower support for degrowth emerge as the main factors associated with attitudinal barriers to climate action. Consistent with previous research, support for climate policies appears shaped less by knowledge than by value orientations and perceived trade-offs (Dechezleprêtre et al., 2025; Hornsey et al., 2016), declining as mitigation is perceived to entail greater personal or professional costs (Poortinga, 2025). These patterns are further structured by socio-demographic and professional characteristics, including gender, age, disciplinary background, seniority, and academic visibility.

Taken together, these results reveal a tension between widespread recognition of climate change and limited support for transformative action when mitigation challenges established professional practices or institutional norms. Rather than reflecting an academic exception, this pattern mirrors broader social dynamics. We examine three cross-cutting dynamics shaping these attitudes: sustainability pathways (technology vs. degrowth), perceived mitigation costs, and professional norms and hierarchies, before discussing their implications for sustainability in academia.

4.1. Degrowth vs. Technological solutions

Our analysis shows that opposition to degrowth as a response to environmental challenges is consistently associated with all four dimensions of attitudinal barriers to climate action. Rejection of degrowth (21% of the population and 44% among those who deny climate change or are reluctant toward academic mitigation) appears as one of the most structuring attitudinal divides, thereby delineating a clear boundary between support for

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and resistance to climate action. This central role of degrowth suggests that disagreements over mitigation are not only about specific policies but also about broader visions of how environmental challenges should be addressed.

Optimism about technological solutions to environmental challenges (endorsed by 43% of the total population and 56% among those who deny climate change or are reluctant toward academic mitigation) also contributes to this divide, but its association loses statistical significance once degrowth is accounted for (*i.e.*, in multivariate models; Tables S7, S8, S9 and S10), suggesting that these two dimensions partly capture overlapping value orientations. Taken together, these results point to a divide between alternative pathways to sustainability, often characterized as technology-driven versus sufficiency-oriented approaches.

Degrowth is grounded in the premise that decoupling economic (or knowledge) production from its biophysical impacts is insufficient to address the scale of the environmental crisis (Hickel et al., 2022; Krpan et al., 2025). Core degrowth policies typically include reducing working hours and GHG emissions or guaranteeing a basic income (Kallis et al., 2025). As such, support for degrowth can be interpreted as a proxy for progressive orientations or, conversely, opposition to it as an indicator of more conservative views, in line with studies indicating the highest support for climate policies among individuals with positive normative views on state regulation, independently of education levels (Kongshøj and Hedegaard, 2025).

Consistent with this interpretation, we find that 83% of respondents favorable to degrowth reported giving decisive weight to ecological issues in their vote, confirming mechanisms observed in the general population (Dechezleprêtre et al., 2025; Hornsey et al., 2016). Among those who strongly reject degrowth, the divide is more balanced: 35% prioritized ecology in their voting behavior, while 54% did not.

These value-based differences are further reflected in the types of policies respondents are willing to support. Among opponents of degrowth, the strongest opposition is found for the most binding policies (regulations and norms, described in Table 1, results not shown). Similarly, strongest support among techno-optimists is found for the least constraining policies (economic incentives and informational instruments). This is consistent with (King et al., 2023), showing that degrowth proponents tend to favor direct regulation, while supporters of green growth are more likely to accept incentive-based policies such as subsidies.

Finally, support for degrowth is socially structured, reinforcing its role as

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a central axis of differentiation within academia. The share of respondents endorsing degrowth as a response to environmental challenges is highest in ecology and environmental sciences (68%), closely followed by the humanities (67%), while other fields range between 47% and 60%. Strong opposition to degrowth is also associated with gender and age: among those who are totally opposed, 70% are men and 48% are aged 50 or older, compared to 57% of men and 38% aged 50 or older among respondents who consider degrowth necessary.

4.2. Costs of transition and climate delay narratives

A second key result concerns the role of perceived mitigation costs, which are consistently associated with all four dimensions of attitudinal barriers to climate action. These findings suggest that perceived trade-offs strongly shape support for climate mitigation, consistent with dynamics described as “policy perfectionism” (Lamb et al., 2020) and previously documented in academic contexts in France (Carbou and Sébastien, 2023).

Importantly, these perceived costs should not be interpreted solely as rhetorical strategies used to justify inaction. In the present context, they span several domains, including scientific outcomes, access to resources, collaboration opportunities, and career progression. As such, they likely reflect real or anticipated tensions between mitigation objectives and existing academic practices and incentive structures.

We estimate the perceived costs of climate change mitigation in academic research through a score that increases as respondents acknowledge a greater number of effects as both actual and problematic. The same weight is given to all answers. Answers can be grouped into four functional domains: (i) scientific impact, (ii) resource and funding, (iii) visibility and collaboration, and (iv) institutional and structural risks. This operationalization allows us to capture the breadth of concerns associated with mitigation policies (Mildenberger et al., 2023).

Empirically, these perceived costs are strongly associated with indicators of academic visibility. Crossing perceived costs and visibility indicators, we find that more visible researchers tend to report higher perceived costs of air travel reduction, suggesting a greater reluctance toward policies that may challenge existing academic performance models. Specifically, 35% of frequent publishers (*i.e.*, those with ≥ 4 publications per year) report high perceived costs (score ≥ 4), compared to only 18% among low-frequency publishers (<1 per year). Similarly, 42% of regular conference attendees (≥ 3 in-

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ternational conferences per year) report high costs, versus 20% among those who attend rarely (<1 per year).

These results suggest that perceived costs are not merely anticipatory or speculative but are rooted in structural dependencies between academic recognition and emission-intensive practices. Since high visibility—whether through publications or international conference participation—may be partly sustained by such practices (Berné et al., 2022), mitigation efforts may be perceived as directly challenging established pathways to academic success.

4.3. Professional norms and power asymmetries

Consistent with previous research indicating that academic visibility—through publications, citations, or mobility—is associated with greater carbon footprints (Berné et al., 2022; Jack and Glover, 2021; Chalvatzis and Ormosi, 2020) and that high competitiveness tends to induce intensive flying practices (Herschberg et al., 2018), our findings suggest that entrenched norms of academic success constitute a central barrier to support for climate change mitigation, particularly those targeting air travel. This is especially evident for regulatory policies (Table S2).

Empirically, indicators of academic visibility and productivity are strongly associated with higher levels of attitudinal barriers. In univariate analyzes, the strongest predictors among visibility indicators are a high publication rate for opposition and inconsistency, and the h-index for denial and reluctance. High aeromobility (three or more round trips per year) is also associated with both greater opposition to institutional mitigation policies and higher levels of institutional–individual inconsistency. Taken together, these results suggest that academic success—understood in terms of productivity, visibility, and mobility—is closely tied to practices that are difficult to reconcile with ambitious mitigation strategies. In this context, the accumulation of “network capital” (Elliott and Urry, 2010) through mobility and productivity may divert academics from supporting climate action, particularly when it directly affects their own research practices.

These dynamics are further reinforced by social hierarchies within academia. Men in senior positions are significantly more likely to express attitudinal barriers to climate action. This gender gap echoes findings that men are generally more skeptical and opposed to climate policies (McCright and Dunlap, 2011, 2010) and tend to perceive higher costs associated with

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mitigation, especially in wealthier countries (Bechtel and Scheve, 2022). Beyond gender, seniority—understood as career advancement—is associated with greater opposition. These results are consistent with studies suggesting that individuals who have benefited the most from academic hierarchies tend to resist changes that might disrupt their professional practices or challenge their privileged position (Nicolas et al., 2023).

Even mitigation policies that minimally interfere with existing practices can face limited support. Carbon offsetting is among the least supported institutional options (34% support, compared to 66% for the most widely favored options), along with the integration of GHG assessments into funding decisions (32%). However, these patterns may also reflect broader concerns about the effectiveness or design of such instruments. Offsetting, for instance, has been widely criticized for its limited effectiveness (Hyams and Fawcett, 2013). Similarly, the relatively recent shift in France toward a competitive, project-based funding system—where grant acquisition is increasingly central to career advancement—has drawn criticism for its systemic side effects (Gross and Bergstrom, 2019).

More broadly, these findings point to a tension between support for climate action in principle and resistance to concrete climate policies perceived as disruptive, ineffective, or misaligned with academic values. While many researchers endorse mitigation goals, they tend to favor strategies that preserve existing norms while rejecting options they perceive as symbolic or poorly designed (Dechezleprêtre et al., 2025).

Finally, these patterns are also structured along disciplinary lines. Taking into account gender, seniority, visibility, and climate delay narratives, we find that engineering is associated with higher odds of denial, physics and chemistry are associated with higher odds of both reluctance and inconsistency, and medicine and health sciences are associated with higher probabilities of inconsistency. While physics tends to be associated with the highest levels of aeromobility and publication rates (results not shown; (Berné et al., 2022)), and ecology and environmental sciences also exhibit high levels of both, this suggests a potential modulating role of disciplinary contexts in shaping the relationship between academic success and support for climate policies (Whitmarsh et al., 2020).

4.4. Implications for climate action in academia

Our findings provide insight into the attitudinal and behavioral patterns associated with climate inaction in academia. However, these patterns can-

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not be fully understood without considering the institutional structures that shape academic practices, including entrenched norms, carbon-intensive incentives, and professional hierarchies (Chater and Loewenstein, 2022). In this perspective, focusing solely on individual responsibility and engagement (Dupont et al., 2025), without systemic transformation Krpan et al. (2025), is unlikely to produce substantial change and may instead reinforce the status quo.

In response to growing climate imperatives, academic institutions have predominantly relied on traditional tools: disseminating knowledge, raising awareness, and improving climate literacy (Mendy et al., 2024). These strategies mirror those historically used to combat denialism. Yet, our results suggest that climate inaction in academia stems less from a lack of knowledge than from divergences in sustainability pathways and from the real or perceived costs associated with mitigation policies. In a research system driven by competition, resource use intensification, and productivity metrics (*e.g.*, publication counts, citations) (Lim et al., 2025), merely increasing awareness is unlikely to foster change (Lewandowsky, 2021).

This implies that informational approaches, while necessary, are insufficient on their own. If they remain a central component of institutional sustainability strategies, their scope should shift toward a more explicit engagement with climate policy instruments, including their trade-offs, potential co-benefits (Skiles et al., 2022), and institutional implications.

4.5. Strengths and limitations

The main strength of this study lies in its combined conceptual and statistical approach, which distinguishes between denial, reluctance, opposition, and inconsistency within a nested analytical framework. This approach allows us to identify where support for climate action begins to weaken and to examine the factors associated with each layer of attitudinal barriers. The large sample size (nearly 5,000 individuals) further enables robust estimation of these associations with substantial statistical power.

This study also has limitations. First, the representativeness of the study population may be affected by selection bias, as individuals with stronger positions regarding climate mitigation in academia may be more likely to participate. This may influence the estimated prevalence of attitudinal barriers. However, such bias is less likely to affect the structure of associations identified in the analysis, provided that these relationships remain stable across subgroups.

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Second, the construction of the opposition score assigns equal weight to heterogeneous mitigation policies, ranging from relatively low-cost actions (e.g., subsidizing train travel) to more structurally constraining policies (e.g., integrating GHG emissions into funding criteria). While this choice was made in the absence of a clear theoretical or empirical basis for differential weighting, it may limit the ability to capture variation in the perceived stringency or impact of different policy instruments. These limitations should be taken into account when interpreting the results, but do not undermine the consistency of the observed patterns.

5. Conclusion

This study shows that academia is not immune to the gap between climate awareness and climate action. Although climate denial is marginal, support for mitigation weakens when policies are perceived to conflict with established norms of academic evaluation, productivity, and mobility. Addressing attitudinal barriers, therefore, requires engaging with incentive systems, power relations, and organizational constraints rather than relying primarily on individual-level change. Without such structural adjustments, efforts to promote climate action risk remaining largely symbolic rather than translating into sustained and effective transformation.

By distinguishing denial, reluctance, opposition, and institutional–individual inconsistency, we show that climate inaction in academia is structured by perceived costs, competing visions of sustainability, professional hierarchies, and dominant norms of productivity and recognition. These findings suggest that awareness-raising alone is unlikely to produce substantial change in a community where awareness is already high.

If research institutions are to contribute credibly to climate mitigation, they will need policies that address the institutional incentives and professional norms sustaining high-carbon academic practices. In this sense, the challenge for academia is not only to produce knowledge about climate change, but also to transform the conditions under which knowledge itself is produced.

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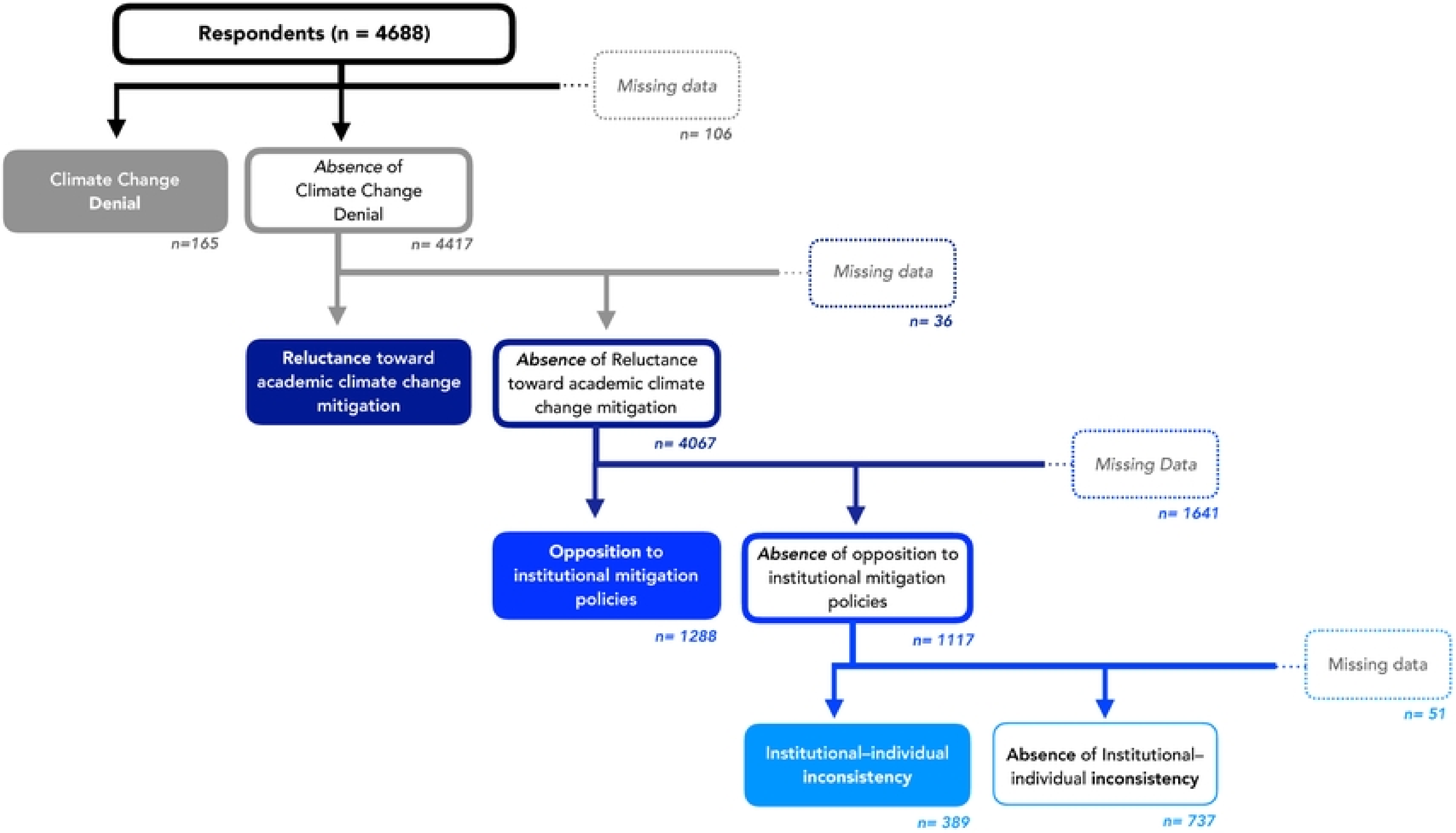
Respondents (n = 4688)
Missing data
n= 106
Climate Change Denial
n=165
Absence of Climate Change Denial
n= 4417
Missing data
n= 36
Reluctance toward academic climate change mitigation
Absence of Reluctance toward academic climate change mitigation
n= 4067
Missing Data
n= 1641
Opposition to institutional mitigation policies
n= 1288
Absence of opposition to institutional mitigation policies
n= 1117
Missing data
n= 51
Institutional–individual inconsistency
n= 389
Absence of Institutional–individual inconsistency
n= 737

Figure 1

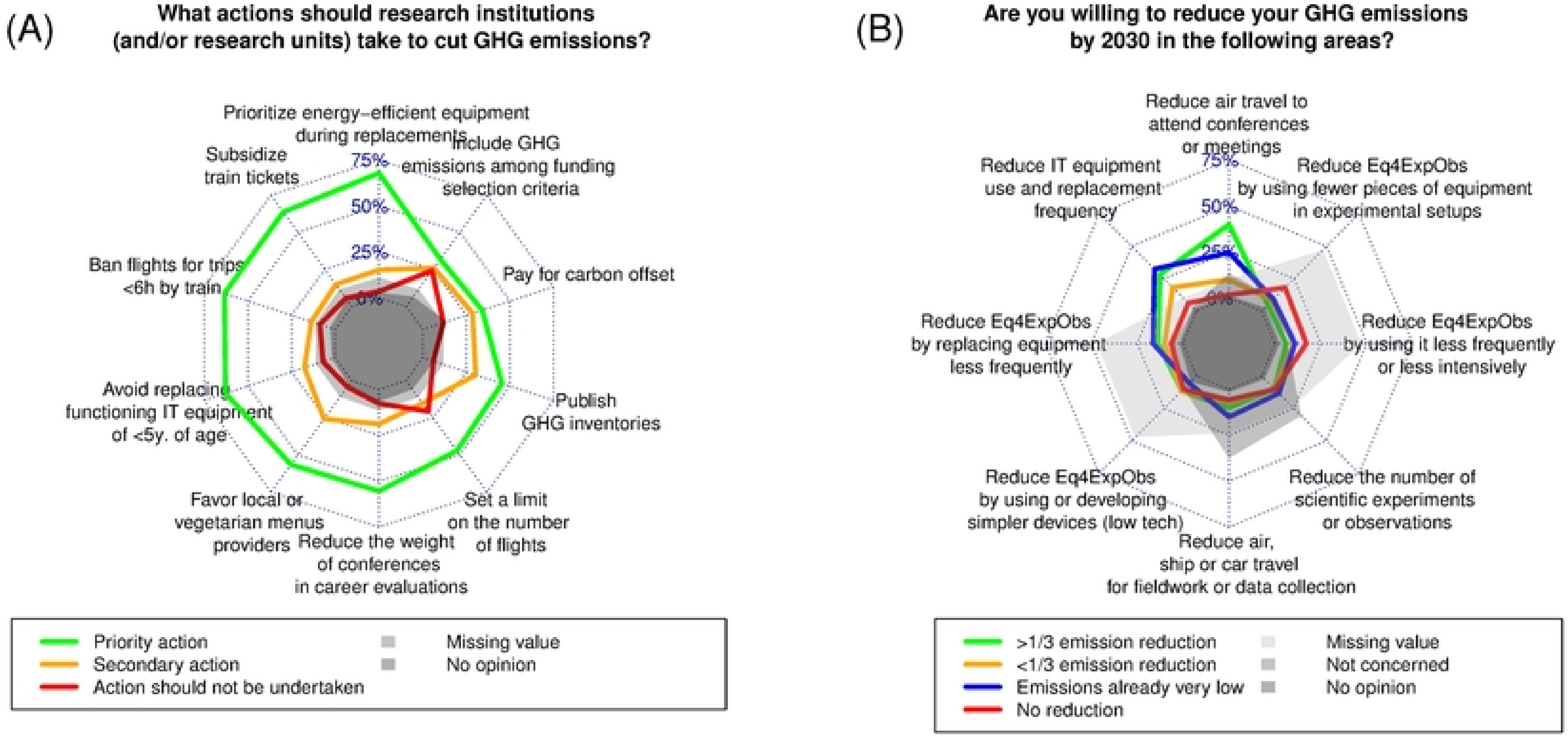
(A)
What actions should research institutions (and/or research units) take to cut GHG emissions?
Prioritize energy−efficient equipment during replacements
Include GHG emissions among funding selection criteria
Pay for carbon offset
Publish GHG inventories
Set a limit on the number of flights
Reduce the weight of conferences in career evaluations
Favor local or vegetarian menus providers
Avoid replacing functioning IT equipment of <5y. of age
Ban flights for trips <6h by train
Subsidize train tickets
75%
50%
25%
0%
Priority action
Secondary action
Action should not be undertaken
Missing value
No opinion
(B)
Are you willing to reduce your GHG emissions by 2030 in the following areas?
Reduce air travel to attend conferences or meetings
Reduce Eq4ExpObs by using fewer pieces of equipment in experimental setups
Reduce Eq4ExpObs by using it less frequently or less intensively
Reduce the number of scientific experiments or observations
Reduce air, ship or car travel for fieldwork or data collection
Reduce Eq4ExpObs by using or developing simpler devices (low tech)
Reduce Eq4ExpObs by replacing equipment less frequently
Reduce IT equipment use and replacement frequency
75%
50%
25%
0%
>1/3 emission reduction
<1/3 emission reduction
Emissions already very low
No reduction
Missing value
Not concerned
No opinion

Figure 2

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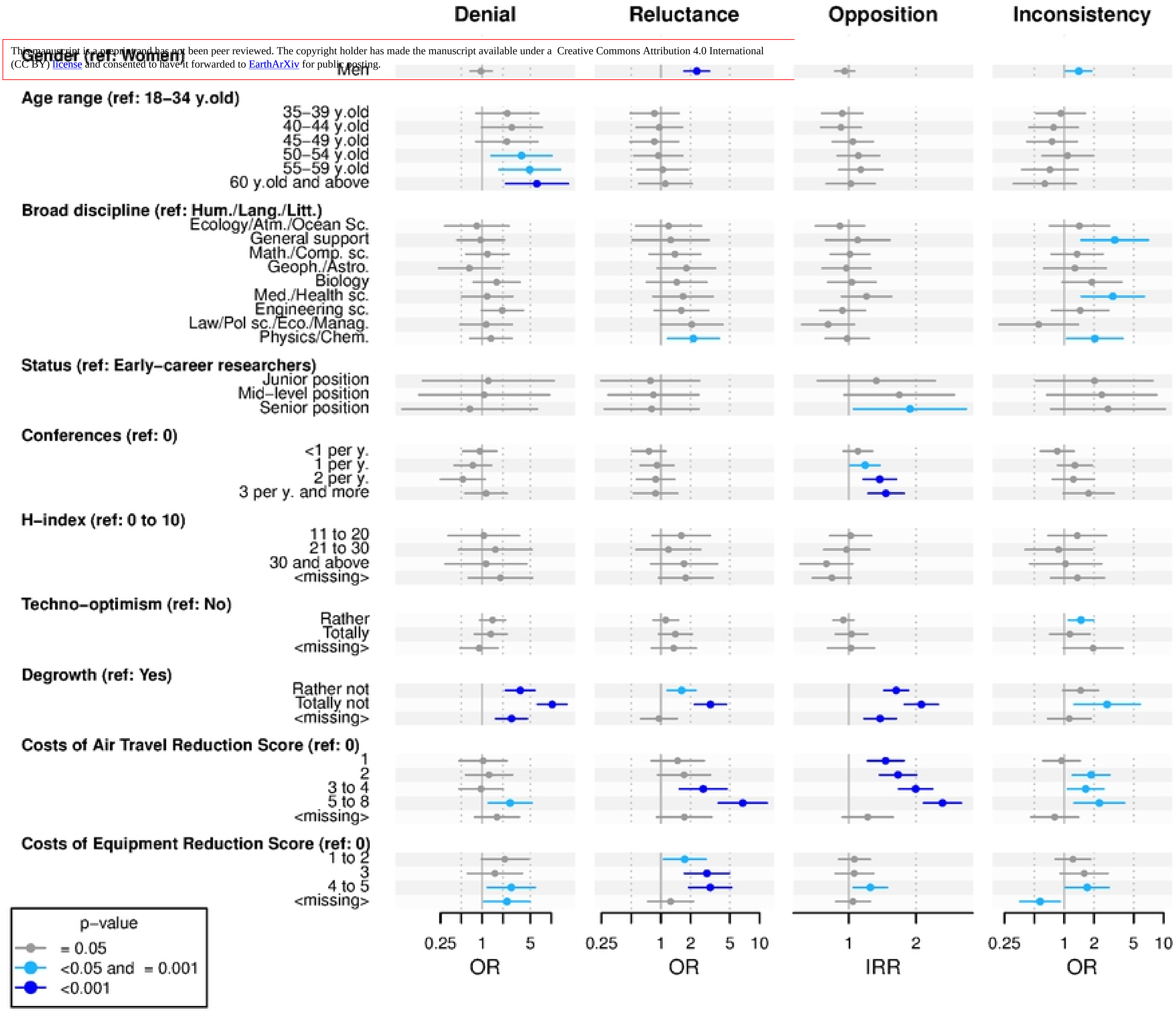

Figure 3