RESEARCH ARTICLE

Environmental identity and perceived salience of policy issues in coastal communities: a moderated-mediation analysis

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Abstract
Risk perception influences the perceived salience of various policy issues. In this study, we examine the pathways through which environmental identity influences the perceived salience of two kinds of policy issues—climate change (climate mitigation and climate adaptation) and development (economic growth and infrastructure). Based on a dataset of 503 respondents from coastal communities along the east coast of the United States, our findings indicate that environmental identity is associated with a greater perceived salience of climate mitigation, and that this relationship is mediated by hydrometeorological disaster risk perception. While we found no significant total effect of environmental identity on the perceived salience of climate adaptation, perceived salience of infrastructure development, and perceived salience of economic growth, hydrometeorological disaster risk perception was found to fully mediate all three relationships. Also, the mediated relationships were found to be significantly moderated by gender identity, but not by age (except for the perceived salience of infrastructure development). The study highlights the pivotal role of hydrometeorological risk perception in modifying the perceived importance of different policy issues among environmentalists and has implications for policy and planning in coastal regions.

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Introduction

Hydrometeorological disasters such as floods, storms, and cyclones are expected to increase in frequency and intensity due to global warming (IPCC, 2022). Coastal regions are particularly vulnerable because of 'unavoidable sea level rise' that will increase risks for people, infrastructure, and coastal ecosystems beyond 2100. It is estimated that once-in-a-century coastal flooding in North America will affect up to 0.24 million people in the continent (Lee et al., 2023).

Being at the frontlines of climate change impact, coastal communities need to urgently plan for climate resilience. However, whether and how coastal communities plan for climate resilience depends on how important they consider issues of climate action and development to be. Unless a policy issue is considered salient in the community, it is unlikely that resources are mobilized towards that issue. Examining issue salience is particularly important in climate-stressed regions where trade-offs exist between development, mitigation, and adaptation goals.

Our research is motivated by two recent developments in the literature. First, policy sciences have increasingly called for including theories from psychology to understand policy decision-making (Cairney & Weible, 2017; Knill & Tosun, 2020). Second, in recognition of the uncertainties and complexities of climate change, scholars and policymakers advocate for local communities to actively lead and participate in policy and planning (Chaffin et al., 2014; Davoudi, 2019; Glavovic et al., 2022; Hagedoorn et al., 2019; Munaretto et al., 2014; Ziervogel et al., 2022). Therefore, examining how different policy issues are considered salient (referred to as *perceived issue salience* from hereon) by communities affected by climate change, such as coastal communities, enables a better understanding of community-led resilience policy and planning.

To examine perceived issue salience, we turn to two important concepts – social identity and risk perception. Understanding how social identities influence climate action and inaction could support policymaking to promote specific climate mitigation and adaptation behaviour (Hornung, 2022). An environmental identity, i.e., self-categorization as an environmentalist, is a particularly important social identity in the context of climate change (Brick & Lai, 2018; Schmitt et al., 2019; Whitmarsh & O'Neill, 2010). Similarly, perceived risk from natural hazards (especially hydrometeorological hazards) and climate change influences pro-environmental behaviour and issue prioritization (Bradley et al., 2020; Brügger et al., 2020; Cai et al., 2024; Gatersleben et al., 2014; Ratnadiwakara & Venugopal, 2023; Zhang et al., 2021). The literature also informs us of the relevance of demographic identities, such as age and gender, in influencing issue salience, opinions, and preferences (Costa Pinto et al., 2014; Hornung et al., 2019; Kim & Madison, 2020). In our study, we draw from environmental psychology research and a new framework in policy sciences, the Social Identities in the Policy Process (SIPP) framework (Hornung et al., 2019) to develop insights about the environmental identity-perceived issue salience relationship. Specifically, we aim to examine the following three research questions:

1. How does an environmental identity influence perceived issue salience in coastal communities?
2. How does risk perception mediate the relationship between environmental identity and perceived issue salience of different policy issues?
3. To what extent does age and gender moderate the mediation effects of risk perception for the environmental identity-perceived issue salience relationship?

We use secondary data from a survey of 503 respondents from the eastern coast of the United States (Carpenter & Jonas, 2019). First, we utilize the technique of Principal Component Analysis (PCA) to designate policy issues into four categories—climate mitigation, climate adaptation, economic growth, and infrastructure development. Next, using regression-based path analysis (Hayes, 2013) we examine how the perceived risk of hydrometeorological hazards mediates the relationship between environmental identity and perceived issue salience of different policy issues, and whether the mediated relationships are moderated by age and gender.

Theoretical background

Perceived issue salience

Complexity and uncertainty are considered the abiding features of our time (Davoudi, 2019). Despite growing evidence about climate change, there exists critical uncertainties about how the breaching of planetary boundaries would impact our societies (Rockström et al., 2009; Steffen et al., 2015) and how the collective efforts of human climate action (both mitigation and adaptation) might influence climate change and its impacts (Calvin et al., 2023; Glavovic et al., 2022). The growing recognition that climate-resilient development requires multiple forms of knowledges (Davoudi, 2019; Innes & Booher, 2018), has motivated policymakers and scholars to incorporate elements of adaptive governance (Munaretto et al., 2014) in policy and planning. A critical component of adaptive governance and adaptive planning is the need for participation of the public, which brings diversity of perceptions, preferences, values, and interests (Munaretto et al., 2014). Co-production for climate resilience emphasizes citizen's involvement in the production of knowledge and planning decisions (Satorras et al., 2020). Climate resilience-building is thus based on explicitly incorporating the ideas, knowledge, and experiences of communities into policy and planning processes, and warrants paying greater attention to how community members prioritize different policy issues.

Studies on agenda-setting in the policy process highlight how policy problems become important based on the public's perceived seriousness of those problems and the "national mood" (Clark, 2004; Kingdon, 1995). People's perceptions about policy problems can be examined through the lens of issue salience. The concept of issue salience has been widely studied in political science and public policy, defined broadly as the level of importance placed on a given issue (Bromley-Trujillo & Poe, 2020; Wlezien, 2005). Issue salience influences how people vote, support policy decisions, and join interest groups. Perceived salience of policy issues determines how much politicians and policymakers are under pressure to act on them (Crawley et al., 2022). Issue salience is closely tied to the agenda-setting stage of the policy cycle (Dannevig & Hovelsrud, 2016) but is a strong influencing factor across all stages of the policy process (Howlett et al., 2020). Issue salience among the public is considered a likely necessary condition for policy adoption (Bromley-Trujillo & Poe, 2020).

Perceived issue salience is influenced by personal and contextual dimensions (Paul & Fitzgerald, 2021). Personal dimensions include personal traits, experiences, and habits while contextual dimensions involve how much attention the media provides to different issues and contemporary socio-economic conditions. Further, people may consider some issue to be nationally important, but their actions and decisions are made based on whether

the issue is personally important to them (Miller et al., 2016). Personal considerations make a policy issue psychologically salient to individuals, which motivates knowledge accumulation, thought, emotional reactions, and other cognitive and behavioural responses (Miller et al., 2016). Personal importance of an issue is based on three factors: whether a policy affects material self-interest, whether it influences group interest, and how it engages with internal norms and values (Boninger et al., 1995). In our study, we focus on a particular individual-level variable, namely an environmental identity, to examine how it influences perceived issue salience.

Social identities and climate action

Our social or group identities determine how much importance we give to different policy issues (Barnett et al., 2021; Brick & Lai, 2018; Brügger et al., 2020; Costa Pinto et al., 2014; Diamond, 2020; Fielding & Hornsey, 2016; Masson & Fritsche, 2021; Schmitt et al., 2019; Unsworth & Fielding, 2014). Social identities are 'psychological constructs' that define how we see ourselves, serving as heuristics that drive our behaviours and attitudes (Diamond, 2020; Stets & Biga, 2003). According to the Social Identity Approach, self-categorization into different groups influences perceptions and behaviours of individuals (Tajfel, 1974; Turner, 1982). Self-categorization leads to thinking more as group members rather than unique individuals (Masson & Fritsche, 2021). Self-categorization enhances similarities with the ingroup members and differences with outgroup members, leading to attitudes, beliefs and behaviours becoming similar to the norms of the salient social group and distinct from outgroup norms (Fielding & Hornsey, 2016). Social identities include stable groupings based on political, ethnic or demographic identities, but also involve opinion-based group identities, such as whether one is a climate "believer" or a "skeptic" (Fielding & Hornsey, 2016).

In response to the growing call within policy sciences to incorporate theories from psychology to understand decision-making (Cairney & Weible, 2017), Hornung et al. (2019) recently developed the Social Identities in the Policy Process (SIPP) framework that argues that social group membership influences the views of individuals on policy content. SIPP framework is inspired by the Social Identity approach, comprising Tajfel's Social Identity Theory (1974) and Turner's Self-Categorization Theory (1982) (Hornung et al., 2019).The Framework seeks to apply the social identity approach to policy actors who have a "certain degree of influence, power, or authority in the policy process" (Hornung et al., 2022, p. 228). It has, therefore, been deployed to study parliamentarians and civil servants thus far (Hornung, 2022; Hornung et al., 2022). However, because the framework is based on well-established theories of social identity, we consider the hypotheses of the SIPP to be valuable in exploring the perceived salience of policy issues among citizens for community-driven planning and policy endeavours.

The SIPP framework introduces four hypotheses: identity salience hypothesis, the identity conflict hypothesis, the identity value hypothesis, and the identity behaviour hypothesis. According to the identity salience hypothesis, a social identity influences a policy actor's behaviour when a) the social identity normatively fits with the policy issue at hand (such that normative stances reflect the varied social groups), b) when the actor considers the differences within their social group to be smaller, c) when the social identity is strong, and d) when the policy issue triggers a particular social identity. The identity conflict hypothesis suggests that each policy actor possesses multiple social identities which could be in conflict. The identity value hypothesis supposes that actors are guided by the salient

social identity in their opinions, preferences, and values. The identity behaviour hypothesis contends that actors follow their salient social identity in their behaviour.

In the context of climate change, an environmental identity or 'green identity' has been of interest among scholars of environmental psychology (Lalot et al., 2019; Whitmarsh & O'Neill, 2010). According to Gatersleben et al. (2014), an environmental identity "reflects the extent to which people indicate that environmentalism is a central part of who they are" (p. 377). Self-categorization as an environmentalist has been found to be significantly associated with greater support for pro-environmental policies, since it motivates individuals to act consistently with group norms and goals (Brick & Lai, 2018; Masson & Fritsche, 2021; Whitmarsh & O'Neill, 2010; Whitmarsh et al., 2015). According to the Social Identity Model of Pro-Environmental Action (SIMPEA), pro-environmental action is predicted by self-categorization and ingroup identification (Masson & Fritsche, 2021).

Self-categorization as an environmentalist is likely to influence perceived issue salience consistent with the norms, motivations, and beliefs of the group. Therefore, we can expect environmentalists to consider issues such as preparing for climate change or protecting the environment to be of higher salience to them compared to those who do not consider themselves as environmentalists. Similarly, consistent with previous research, those with an environmental identity are more likely to consider issues of economic development as less important. The negative relationship between pro-environmental attitudes (and values) and support for economic growth has been found consistently in the literature, both among experts (Drews & van den Bergh, 2017) and laypersons (Čábelková et al., 2023).

At the same time, various other identities could conflict with the environmental identity, such as political, ethnic, and socio-demographic identities. Studies have found that left-wing groups are more supportive of climate change-related policies (Unsworth & Fielding, 2014). Ethnic or racial identity influences the perceived salience of climate policy issues (Benegal et al., 2022; Crowder-Meyer, 2022) as do educational qualifications, income-levels (Houser et al., 2022) and residential exposure (place identity) to natural hazards (Bradley et al., 2020).

In the literature, social identities are considered to be predictors of perceived issue salience, and not vice versa, i.e., our perceived salience of issues does not motivate us to self-identify as an environmentalist. Self-categorization into a particular identity is part of our self-image, developed psychologically in order to make information processing cognitively efficient (Van Dick et al., 2005). According to Tajfel, social identity is "that part of an individual's self-concept which derives from his knowledge of his membership of a social group (or groups) together with the value and emotional significance attached to that membership" (1974, p. 69). Hornsey (2008) identifies that behaviour and cognitions are a function of self-categorization. Social identities are 'dispositional', i.e., they are "a stable reflection of who the person is" and get triggered in specific contexts to influence action (Xu, 2020, p. 121). For example, an environmental identity becomes salient when voting to ban single use plastics but may not become salient when voting for abortion rights (in this case, demographic identities such as gender may become salient) (Hornung et al., 2019). Therefore, conceptually, social identities are relatively stable parts of an individual, while perceived issue salience are outcomes of which social identities are 'triggered' in a specific context (such as planning for sea level rise), and how these triggered multiple identities may interact with one another.

Risk perception

Scholars have long identified the importance of studying perceived risk as it is of central importance in policymaking (Sjöberg, 1999). Risk perception influences the acceptance and commitment to policies, along with influencing individual behaviour (Siegrist & Árvai, 2020). Also, threat perception—the perceived inadequacy of resources to deal with what the situation demands—has been argued to play an important role in influencing the national mood towards policy interventions (Zahariadis, 2015).

Environmental identity can enhance perceived risk from natural hazards, particularly the ones causally linked to climate change, and motivate action. Disaster risk perception is a personal judgement about the perceived likelihood, perceived severity, and perceived vulnerability to a disaster (Ng, 2022). Studies thus far have operationalized risk perception for various disasters, such as floods (Miceli et al., 2008), landslides (Ho et al., 2008), and hurricanes or cyclones (Rickard et al., 2017). Higher risk perception has been associated with more individual and household protective actions (Lindell & Perry, 2012; van Valkengoed & Steg, 2019). Cultural world-views, beliefs, and identities influence pro-environmental behaviour, with risk perception mediating the relationship (Cai et al., 2024). Risk perception has been found to mediate support for COVID-19 related mandates (Zhuang et al., 2021), the take-up of flood insurance and other adaptive measures (Kim & Madison, 2020; Ratnadiwakara & Venugopal, 2023).

Risk perception consists of two key dimensions—cognitive and emotional (Oh et al., 2015). The cognitive dimension involves the assessment of probability and severity of consequences based on available information, operationalized as 'knowledge' (how well one knows the hazard), 'familiarity' (how much is one accustomed to a hazard), and 'controllability' (do people perceive they are able to control a hazard) (Oh et al., 2015). The emotional dimension of risk perception involves feelings of dread or worry felt by people about a hazard (Oh et al., 2015). The higher the risk perceived, the more likely individuals are to take protective and preventive actions, and the more likely they are to modify behaviours (Cai et al., 2024).

Adaptation is influenced by whether communities accept climate change as a risk (Barnett et al., 2021). Houser et al. (2022) studied drivers of public support for adaptation policy at the local level and found that risk perception was a significant predictor. The Climate Change Risk Perception Model (CCRPM) developed by van der Linden (2015) describes risk perception of climate change as a function of cognitive factors (climate change knowledge), experiential processing (affective evaluations and personal experience), and sociocultural influences (social norms and broad value orientations) when controlling for sociodemographic characteristics (p. 117). Previous studies on pro-environmental identities have highlighted the role of heightened threat perception as a mediator of the relationship between identity and behaviour, since a pro-environmental identity can increase the perception of environmental threats and increase a sense of moral obligation to protect the environment (Schmitt et al., 2018, 2019).

Risk perception also varies with demographic identities such as age and gender (Gustafson, 1998). The evidence for the influence of age on risk perception is not consistent. Some studies find that older people were likely to perceive higher disaster risks (Cannon et al., 2021; Mızrak et al., 2021; Shapira et al., 2018) while others find non-significant relationships (Kim & Madison, 2020; Saleh Safi et al., 2012). Women typically have higher risk perception than men and show a deeper understanding of hazards, motivated by prevailing social structures that give women the role of the nurturer

(Cvetković et al., 2018; Gustafson, 1998; Kim & Madison, 2020). Though gender-based differences are considered to be significant, Greenberg and Schneider (1995) pointed out that gender differences in risk perception need not be found in stressed environments, i.e., when men and women confront hazards in their place of living rather than on televisions and newspapers. Studies have also shown the prevalence of a "white male effect" in risk perception, i.e., white men have lower risk perception than women and non-white men (Flynn et al., 1994; Kahan et al., 2007; Olofsson & Rashid, 2011).

Based on the literature and categories of policy issues developed using Principal Component Analysis (discussed below), we test the following hypotheses:

H1 Environmental identity is positively associated with the perceived issue salience of climate change issues (a. climate mitigation; b. climate adaptation).

H2 Environmental identity is negatively associated with the perceived issue salience of developmental issues (a. economic growth; b. infrastructure development).

H3 Hydrometeorological disaster risk perception positively mediates (explains) the relationship between environmental identity and perceived issue salience of climate change issues (a. climate mitigation; b. climate adaptation).

H4 Hydrometeorological disaster risk perception negatively mediates (suppresses) the relationship between environmental identity and perceived issue salience of developmental issues (a. economic growth; b. infrastructure development).

In order to additionally examine the boundaries of the mediation effect, we examine the moderating effects of age and gender. Specifically, we test the following to hypotheses:

H5 Age moderates the direct and indirect effects of environmental identity on the perceived issue salience of community issues (a. climate mitigation; b. climate adaptation; c. economic growth; d. infrastructure development).

H6 Gender moderates the direct and indirect effects of environmental identity on the perceived issue salience of community issues (a. climate mitigation; b. climate adaptation; c. economic growth; d. infrastructure development).

Method

Conceptual model

Our study is based on the identification of two specific gaps in the literature on social identities and the perceived salience of policy issues. First, scholars have largely focused on examining the salience of climate change or mitigation to environmentalists, without examining the salience of other policy issues to environmentalists. Second, few studies have examined the mediating role of risk perception in the relationship between an environmental identity and issue salience, despite theoretical arguments indicating its crucial role. Therefore, we theorize that environmental identity predicts perceived issue salience and that perceived risk to hydrometeorological disasters mediates the relationship. We also theorize that two demographic identities—age and gender—moderate the
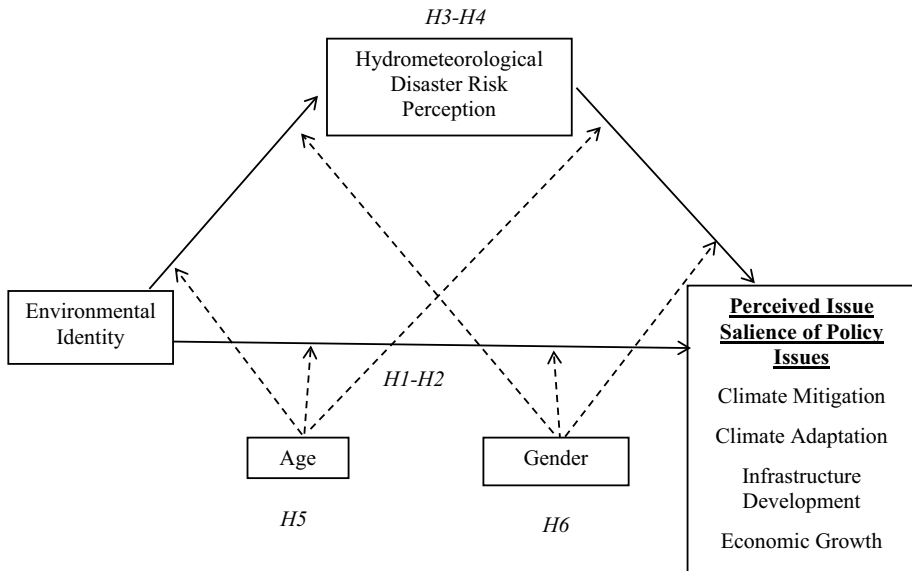
Fig. 1 Conceptual diagram of moderated-mediation model

mediation. We use mediation analysis to study H1-H4 and moderated-mediation analysis to study H5 and H6. Figure 1 provides the conceptual diagram of the study.

Data

The study utilizes secondary data derived from a 2017 public survey undertaken by Carpenter and Jonas (2019) on "the priorities and preferences in developing locally driven sea level rise plans in the eastern coastal states of the United States" (ibid). Because of the stated objective to help identify priorities in local sea level rise planning in coastal communities, the survey makes the environmental identity salient.

The dataset, publicly available on OpenICPSR[1] (OpenICPSR Project 108312), contains responses from 503 persons who are either living in, working in , or frequently visiting the coastal communities on the eastern coast of the United States. The survey was executed by Survata (third-party survey company) in December (2017) (Carpenter, 2020). Survata sent out random survey invitations among their pool of possible participants based on their location and age (above 18 years). Following a consent form and screening questions, only those respondents who self-reported that they worked in, lived in, or frequently visited coastal communities proceeded with the survey (Carpenter, 2020). The data was representative overall, but female respondents outnumbered male respondents (Carpenter, 2020).

Data was collected for fifteen states in the east coast of the United States that have at least one county bordering the Atlantic or a waterbody directly influenced by it (these are Connecticut, the District of Columbia, Delaware, Florida, Massachusetts, Maine, Maryland, North Carolina, New Hampshire, New Jersey, New York, Pennsylvania, Rhode

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[1] OpenICPSR Project 108312: https://doi.org/10.3886/E108312V1

Island, South Carolina, and Virginia). The objective of the survey was to help assess the perspectives of members of eastern coastal communities of the United States about the various dimensions of community-based sea level rise plans, such as the services and structures that should be prioritised for protection, funding mechanisms, and conflict resolution policies regarding sea level rise planning and action. There were 26 questions in the survey involving some general demographic questions (age, gender, education, income, occupation, political affiliation, and ethnicity) and Likert-scale questions (on a scale of 1 to 5), along with some open-ended questions for the respondents to provide additional comments, should they wish to do so. Permission to use the data for our study was taken from the lead author of the OpenICPSR project.

Measures

We operationalized perceived issue salience based on the responses given to a question asking participants to identify the importance of ten policy issues in their communities, on a scale of 1 (very unimportant) to 5 (very important). The policy issues were as follows:

1. Helping people with limited resources
2. Reducing taxes
3. Growing the economy
4. Protecting against future flooding
5. Preparing for climate change
6. Maintaining utilities and related infrastructure
7. Protecting the environment
8. Maintaining roads and other transportation infrastructure
9. Preparing for sea level rise
10. Protecting property from natural disasters

Using PCA, four main categories of policy issues were developed: infrastructure development, economic growth, climate mitigation, and climate adaptation (see Table 1 for PCA results). Each of the four categories was taken as a separate dependent variable for the analysis. We undertook the Principal Component Analysis following significant Kaiser-Meyer-Oikin (KMO) test (KMO value = 0.944) and Bartlett's Test ($p < 0.001$) which indicated the suitability of using PCA on the ten items of issue salience. The decision to extract four components was guided by the objective that the components must explain a reasonably high percentage of total variance (more than 80 percent).

To operationalize risk perception, we used a question asking respondents to rank on a scale of 1 (not at all vulnerable) to 5 (exceptionally vulnerable), how vulnerable they considered their communities to be to damages from four types of hazards:

1. Repeated flooding from high tides
2. Other types of natural disasters
3. Increased flooding if sea level rises in the future
4. Water surge damage from hurricanes and severe storms

We identified two main components among the four categories using PCA (see Table 2 for PCA results). The items 'repeated flooding from high tides', 'increased flooding if sea level rises in the future', and 'water surge damage from hurricanes and severe storms' were

Table 1 Perceived issue salience in coastal communities - pattern matrix

Items	Components			
	Infrastructure development	Climate adaptation	Climate mitigation	Economic growth
Maintaining roads and other transportation infrastructure	**0.997**	-0.048	-0.060	0.011
Maintaining utilities and related infrastructure	**0.804**	0.202	-0.029	-0.068
Helping people with limited resources	**0.730**	-0.006	0.233	-0.012
Protecting the environment	**0.589**	-0.014	**0.452**	0.011
Growing the economy	**0.581**	0.031	-0.107	**0.432**
Preparing for sea level rise	-0.165	**0.923**	0.189	0.015
Protecting against future flooding	0.219	**0.772**	-0.056	0.024
Protecting property from natural disasters	0.405	**0.624**	-0.070	-0.012
Preparing for climate change	-0.036	0.077	**0.939**	0.023
Reducing taxes	-0.037	0.010	0.051	**0.975**

Extraction method: principal component analysis

Rotation method: Promax with Kaiser Normalization

Items depicted with loadings highlighted in bold font in each column were considered to be indicators of the corresponding extracted factor

Table 2 Disaster risk perception in coastal communities—pattern matrix

Items	Component	
	Hydrometeorological Disaster Risk Perception	Other Disaster Risk Perception
Increased flooding if sea level rises in the future	**0.957**	− 0.036
Repeated flooding from high tides	**0.894**	0.025
Water surge damage from hurricanes and severe storms	**0.849**	0.050
Other types of natural disasters	0.010	**0.994**

Extraction Method: Principal Component Analysis

Rotation Method: Promax with Kaiser Normalization

Items depicted with loadings highlighted in bold font in each column were considered to be indicators of the corresponding extracted factor

categorized under 'hydrometeorological disaster risk perception', while the item 'other types of natural disasters' was categorized as 'other disaster risk perception'. We used 'hydrometeorological disaster risk perception' as the mediator in the data analysis.

Hydrometeorological hazards are hydrological, atmospheric, or oceanographic hazards (UNISDR, 2009) such as hurricanes (also called typhoons and cyclones), coastal storm surges, floods, and sea-level rise (a relatively slow-moving hazard which can directly determine the impact of the other fast-moving hazards [NOAA, n. d]). We use the term 'hydrometeorological disaster risk perception' to capture the perceived disaster risk from hydrometeorological hazards (hurricanes, storm surges, floods, and sea level rise). We isolated hydrometeorological disaster risk perception from the other disaster risk perception because the scientific evidence most consistently identifies hydrometeorological disasters to become more frequent and intense causally due to anthropogenic climate change (IPCC, 2022), thereby holding more salience when considering environmental identities and coastal communities.

To operationalize environmental identity, we used responses to the question 'how much would you consider yourself to be an environmentalist?' where respondents were asked to rank themselves on a scale from 1 (not at all) to 5 (exceptionally). While we acknowledge that self-reporting of environmentalism is inadequate to fully capture environmentalist traits, our focus in this analysis was on self-identification to a social group—environmentalists—rather than whether respondents show pro-environmental behaviour or possess climate knowledge.

Control variables

Democrat

This variable controlled for political affiliation, a critical factor influencing perceived issue salience, particularly in the United States (Ballew et al., 2019; Bieniek-Tobasco et al., 2020; Hart & Nisbet, 2012). The survey question was 'What political party would you consider yourself most aligned with?' and the respondents chose from four options: not affiliated (independent), Republican, Democratic, or another party. For this study, we constructed

the variable 'Democrat' as a binary variable with responses of 'Democratic' coded as 1 and all others coded as 0.

Ethnicity

This variable controlled for ethnicity. The survey question was 'Please specify your ethnicity' and the respondents chose from the following options: White or Caucasian, Asian/Pacific Islander, Native American or American Indian, Black or African American, Hispanic or Latino, Multi-racial, and Decline to Answer. As guided by the literature on racial differences in disaster risk perception and climate change issues (Benegal, 2018; Benegal et al., 2022; Crowder-Meyer, 2022), the variable was constructed as a binary variable with responses of 'White or Caucasian' coded as 1 and all others coded as 0.

Education

This variable controlled for the education level of respondents, another significant factor influencing issue salience and risk perception (Crawley et al., 2020; van der Linden, 2015). The survey question was 'Please indicate your highest level of education completed' and respondents chose from 10 options, ranging from 'no formal education' to 'doctoral or professional degree' and including 'decline to answer'. The responses were ranked from 1 to 8, with 1 corresponding to '8th grade or less' (the lowest education level in the responses) and 8 corresponding to 'doctoral or professional degree'.

Income

This variable controlled for the annual household income level of respondents (Houser et al., 2022). The responses ranged from 'less than $25,000' to '$200,000 or more', along with the 'decline to answer' option in Carpenter and Jonas (2019). For the study, each category was coded from 1 to 8, such that 'Less than $25,000' was coded as 1 and '$200,000 or more' was coded as 8.

Student

In Carpenter and Jonas (2019), job titles provided by the respondents comprised eleven categories (student, entry-level, analyst/associated, manager, senior manager, vice president, senior vice president, C-level executive, director, president/owner, and retired). To simplify the analysis, 'student' was coded as a binary variable, where 1 implied the respondent was a student and 0 otherwise. There were 68 students in the dataset, and the remaining were either working or retired. The variable is useful in controlling effects on issue salience and risk perception arising from larger opportunities for climate activism and other forms of collective action in universities and colleges (Neas et al., 2022).

Living

The survey question was "Do you live in, work in, or regularly visit a coastal community in the east coast of the United States?" and the options were: "I work in a coastal community", "I live in a coastal community", "I regularly visit a coastal community", and "None of the above". The data publicly available excludes those respondents that chose "none of the above". Therefore, the variable *Living* in this paper is coded as 1 if respondents chose "I live in a coastal community" and 0 otherwise, i.e., if they responded that they work or frequently visit a coastal community. We incorporate this variable based on previous studies that have highlighted the importance of residential exposure, place attachment, and personal experiences on risk perception and issue salience (Bradley et al., 2020; De Dominicis et al., 2015; van der Linden, 2015).

Age

In line with the literature on the moderating effects of age on risk perception and issue salience (Cannon et al., 2021; Kim & Madison, 2020; Mızrak et al., 2021; Ross et al., 2019; Saleh Safi et al., 2012; Shapira et al., 2018), we have controlled for age. The age of respondents was categorized in Carpenter and Jonas (2019) into six groups, from '18 to 24' to '65 and over'. Therefore, the groups were coded from 1 to 6 to correspond to each age group.

Gender

Male was coded as 1 and female as 0, following studies which highlighted the likely moderating role of gender (Cvetković et al., 2018; Flynn et al., 1994; Gustafson, 1998; Kahan et al., 2007; Kim & Madison, 2020).

In our mediation models, age and gender served as control variables. For the two moderated-mediation models, we took age and gender as moderators separately (keeping the other as a control). To control for the state-fixed effects (i.e., to capture the differences between states), we included fourteen state dummy variables in the models.

Of the 503 responses to the survey, there were 484 valid data points that were used in this analysis. To ensure our analysis was robust, we followed the recommendations of previous researchers (Gupta et al., 2024; Kuvaas et al., 2020; Mohseni et al., 2018) and used the 'a-priori sample size calculator for multiple regression' (Soper, 2015) and G*Power (Faul et al., 2007, 2009) to determine the minimum sample size. Our mediation models have ten predictors and fourteen dummy variables (for states), and the moderated-mediation models have twelve predictors and fourteen dummy variables (for states). Given the anticipated effect size (0.05), the level of significance (0.05), and the statistical power (0.8), the minimum required sample size recommended by G*Power was 218 data points, and the minimum required by the 'A-priori sample size calculator for multiple regression' varied from 333 (ten predictors excluding dummies) to 483 (12 predictors and fourteen dummies). Considering the above, we believe that our sample size of 484 was adequate for the analysis.

Data analysis: path analysis using PROCESS

Drawing methodologically from Hayes (2013), we constructed a conditional process model to test the moderated-mediation. Because the analysis uses observed variables, instead of latent variables, the method is also known as path analysis. Path analysis models are based on multivariate regression. A conditional process model is used when the research interest is in "describing the conditional nature of the mechanism or mechanisms by which a variable transmits its effect on another and testing hypotheses about such contingent effects" (Hayes, 2013, p. 10). While a mediator is a variable which attempts to explain *how* two variables are related, a moderator tells *when* the relationship is stronger or weaker. A moderated-mediation analysis hypothesizes that the mediation effect itself is being moderated by a variable.

We used the PROCESS macro developed for SPSS by Hayes (2013) to test the study hypotheses. PROCESS is a widely used free computational tool developed by Andrew Hayes (2013) that has in-built model templates for estimating mediation, moderation, moderated-mediation models, and their variations. PROCESS utilizes Ordinary Least Squares (OLS) regression for parameter estimation, carried out independently for each equation (Hayes, 2022; Hayes et al., 2017). Hayes (2013) observed that the regression coefficients estimated from PROCESS (OLS regression) and path analysis performed using Structural Equation Modelling (SEM) program are the same, and that unless we are estimating latent variable models, it is neither necessary nor better to use a SEM program for estimating regression coefficients. In this study, all the variables have been modelled as observed variables, and therefore, PROCESS macro (Hayes, 2013) has been used to estimate the relationships between them.

We used specifically the Model 4 template (for mediation modelling) and Model 59 template (for moderated-mediation modelling) of the PROCESS macro on SPSS. The conceptual diagrams for Model 4 and Model 59 are given in Appendix E (see Fig. 3a and b) for reference. For each model, we used the bootstrapping method to check for robustness at 5000 bootstrap samples (Hayes, 2013, 2022). Because we utilized path analysis, and because the variables were not latent constructs, the model was saturated and of perfect fit (Hayes, 2013). It is for this reason that commonly produced fit indices such as SRMR, RMSEA, CFI and TLI are not discussed in our analysis. To assess the significance of mediation, Sobel's test (Hayes, 2022) was performed.

Results

Table 3 presents the descriptive statistics for the variables. A total of 484 valid data points were available for the analysis. Table 7 in Appendix A presents the correlation matrix and Table 8 in Appendix A provides the covariance matrix. We tested for multicollinearity using the Variance Inflation Factor (VIF) for each modelled path, and VIF values were below 2 for all variables, indicating that multicollinearity was not a problem in our analysis.

The results from the mediation models given in Table 4 indicated that hydrometeorological disaster risk perception was a significant mediator of the perceived salience of both climate-related policy issues and development-related policy issues. Table 4 shows that environmental identity was positively related to hydrometeorological disaster risk perception ($\beta = 0.180$, $p < 0.01$) and the perceived issue salience of climate

Table 3 Descriptive statistics

Variable	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Environmental Identity	503	4	1	5	3.06	1.016	1.032
Democrat	503	1	0	1	0.43	0.495	0.245
Education	500	7	1	8	4.77	1.383	1.914
Age	503	5	1	6	3.17	1.619	2.621
Gender	503	1	0	1	0.33	0.472	0.223
Income	487	7	1	8	3.94	1.885	3.552
Student	503	1	0	1	0.14	0.342	0.117
Ethnicity	503	1	0	1	0.77	0.419	0.176
Living	503	1	0	1	0.47	0.499	0.249
N = 484							

Table 4 Mediation results (H1 to H4)

Variable	Mediator	Climate change-related perceived issue salience		Development-related perceived issue salience	
	HDRP	Climate mitigation	Climate adaptation	Infrastructure development	Economic growth
	β	β	β	β	β
Constant	− 0.007	− 0.338	0.057	− 0.165	0.313
Environmental Identity	0.180***	0.135***	− 0.036	− 0.001	− 0.110**
Education	0.018	− 0.056*	− 0.004	− 0.017	− 0.042
Democrat	0.070	0.201**	0.071	− 0.018	− 0.083
Ethnicity	− 0.133	0.197*	0.186*	0.373***	0.190*
Student	− 0.204	0.014	0.118	− 0.045	− 0.086
Income	− 0.009	0.022	− 0.001	0.014	0.046*
Gender	− 0.199**	− 0.214**	− 0.221**	− 0.143	− 0.070
Age	− 0.106***	0.019	0.036	0.019	0.024
Living	0.385***	− 0.060	− 0.027	− 0.082	0.024
HDRP		0.216***	0.382***	0.208***	0.164***
R^2	0.163	0.145	0.173	0.085	0.084
F	3.891***	3.241***	3.994***	1.781**	1.743**

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; N = 484

HDRP—hydrometeorological disaster risk perception; β—Unstandardized regression coefficient

All models include state− wise dummy variables

mitigation (β = 0.135, $p < 0.01$). On the other hand, environmental identity was negatively related to perceived issue salience of economic growth (β = − 0.110, $p < 0.05$). The relationship between environmental identity and the perceived salience of climate adaptation and infrastructure development were not significant. Hydrometeorological disaster risk perception was positively related to all the policy issues.

Our control variables also showed interesting results. Those who live in coastal communities (as opposed to working or frequently visiting them) had higher hydrometeorological disaster risk perception ($\beta = 0.385$, $p < 0.01$). However, living in a coastal community did not significantly affect the perceived issue salience of policy issues. Gender and age, which are modelled as controls in our mediation models, were significant and negatively related to hydrometeorological disaster risk perception. This showed that, on average, men perceived lower risk from hydrometeorological disasters compared to women, as do older people compared to the young. Gender was also significant and negative for both climate mitigation and adaptation issue salience, indicating that men perceived lower salience for both. Those respondents having a White or Caucasian ethnic identity were likely to consider infrastructure development to be highly salient in their communities ($\beta = 0.373$, $p < 0.01$). We also found those who have an affiliation to the Democratic Party perceived higher salience of climate mitigation ($\beta = 0.201$, $p < 0.05$).

Table 9 in Appendix B provides the total direct and indirect effects of the mediation model. The indirect effect (mediation) was positive and significant ($p < 0.01$) for all the dependent variables. The total effect of environmental identity on the perceived issue salience of climate mitigation policy issues was significant and positive ($\beta = 0.174$, $p < 0.01$), as were the direct effect ($\beta = 0.135$, $p < 0.01$) and the indirect effect ($\beta = 0.039$, $p < 0.01$). On the other hand, the total effect and the direct effect of environmental identity on the perceived issue salience of economic growth were negative, with the direct effect being significant ($\beta = -0.110$, $p < 0.01$) and total effect being nonsignificant, at 5 percent ($\beta = -0.081$, $p > 0.05$). This implied that those who considered themselves to be environmentalists regarded economic growth to be of less salience in their community. However, the indirect effect via hydrometeorological disaster risk perception was positive and significant ($\beta = 0.029$, $p < 0.05$), indicating that the mediating variable suppressed the strong negative relationship that otherwise existed between environmental identity and perceived issue salience of economic growth.

The total effect ($\beta = 0.036$, $p > 0.1$) and direct effect ($\beta = -0.001$, $p > 0.1$) of environmental identity on the perceived issue salience of infrastructure development were not significant, with the indirect effect via hydrometeorological disaster risk perception fully explaining the relationship ($\beta = 0.037$, $p < 0.01$). Similarly, the total effect ($\beta = 0.032$, $p > 0.1$) and the direct effect ($\beta = -0.036$, $p > 0.1$) of climate adaptation were not significant, but the indirect effect via hydrometeorological disaster risk perception was significant ($\beta = 0.069$, $p < 0.01$).

The result of the moderation by age is given in Table 10 in Appendix C. At 5 percent level of significance, age positively moderated the effect of hydrometeorological disaster risk perception on the perceived issue salience of infrastructure development ($\beta = 0.059$, $p < 0.05$) and negatively moderated the effect of environmental identity on the perceive issue salience of infrastructure development ($\beta = -0.061$, $p < 0.05$). This implied that older respondents show a stronger relationship between hydrometeorological disaster risk perception and infrastructure development, compared to younger respondents, while the reverse holds for the relationship between environmental identity and infrastructure development. Age did not significantly moderate other relationships.

As shown in Table 5, gender moderated the relationship between environmental identity and the perceived issue salience of climate mitigation, such that male environmentalists had a weaker relationship than female environmentalists ($\beta = -0.195$, $p < 0.05$). Gender also moderated the relationship between hydrometeorological disaster risk perception and perceived issue salience for policy issues such that men had a stronger relationship between hydrometeorological disaster risk perception and the perceived issue salience of climate

Table 5 Results of moderation by gender (H6)

Variable	HDRP	Climate change-related perceived issue salience		Development-related perceived issue salience	
		Climate mitigation	Climate adaptation	Infrastructure development	Economic growth
	β	β	β	β	β
Constant	0.151	−0.520	0.008	−0.296	0.172
Environmental Identity	0.127**	0.199***	−0.016	0.049	−0.057
Gender	−0.625**	0.399	0.014	0.379	0.488
Environmental Identity X Gender	0.138	−0.195**	−0.073	−0.163*	−0.175*
Education	0.021	−0.060*	−0.006	−0.020	−0.046
Democrat	0.062	0.200**	0.065	−0.024	−0.090
Ethnicity	−0.143	0.230**	0.206*	0.409***	0.228**
Student	−0.192	−0.002	0.112	−0.059	−0.100
Income	−0.010	0.022	−0.002	0.012	0.044*
Age	−0.102***	0.014	0.034	0.015	0.019
Living	0.378***	−0.048	−0.019	−0.068	0.039
HDRP		0.160***	0.332***	0.128**	0.080
HDRP X Gender		0.195**	0.162*	0.264***	0.278***
R^2	0.167	0.157	0.178	0.101	0.101
F	3.843***	3.276***	3.810***	1.969***	1.976***

$***p<0.01, **p<0.05, *p<0.1$; N=484

HDRP – hydrometeorological disaster risk perception; β – Unstandardized regression coefficient

All models include state–wise dummy variables

Table 6 Conditional indirect effects of environmental identity on outcomes

Moderator (Gender)	Conditional indirect effect	Bootstrap SE	Bootstrap LLCI	Bootstrap ULCI
Outcome variable—climate mitigation				
Female	0.020	0.013	0.003	0.056
Male	0.094	0.031	0.044	0.171
Outcome variable—climate adaptation				
Female	0.042	0.021	0.005	0.089
Male	0.131	0.041	0.058	0.221
Outcome variable—infrastructure development				
Female	0.016	0.11	0.002	0.048
Male	0.104	0.037	0.046	0.197
Outcome variable—economic growth				
Female	0.010	0.009	− 0.002	0.039
Male	0.095	0.037	0.036	0.183

Dependent variables: climate change-related policy issues (climate mitigation and climate adaptation) and development-related policy issues (infrastructure development and economic growth); independent variable: environmental identity

Mediator: hydrometeorological disaster risk perception; Moderator = gender

LLCI: lower level of 95% bootstrap confidence interval; ULCI: upper level of 95% bootstrap confidence interval

Number of bootstrap samples: 5000

mitigation ($\beta = 0.195$, $p < 0.05$), infrastructure development ($\beta = 0.264$, $p < 0.01$), and economic growth ($\beta = 0.278$, $p < 0.01$) compared to women. Interestingly gender did not moderate the perceived issue salience of climate adaptation as a policy issue at 5 percent significance ($\beta = 0.162$, $p > 0.05$), indicating the absence of significant differences between men and women on the perceived salience of climate adaptation.

Table 6 presents the conditional indirect effects. Table 11 in Appendix D provides the conditional direct effects of environmental identity on the various policy issues.

Following Aiken et al. (1991) and Agarwal and Gupta (2018), we plotted the significant interaction effects ($p < 0.05$) of gender on the perceived salience of climate mitigation (Fig. 2, Panel A), infrastructure development (Fig. 2, Panel B), and economic growth (Fig. 2, Panel C). The plots show that for male respondents, the relationship between hydrometeorological disaster risk perception and the perceived issue salience of all three policy issues is stronger and more positive than for women. The plots also show that among those having high hydrometeorological disaster risk perception, men and women perceive similar salience of climate mitigation (women perceiving slightly higher salience), but men perceive higher salience for infrastructure development and economic growth than women.
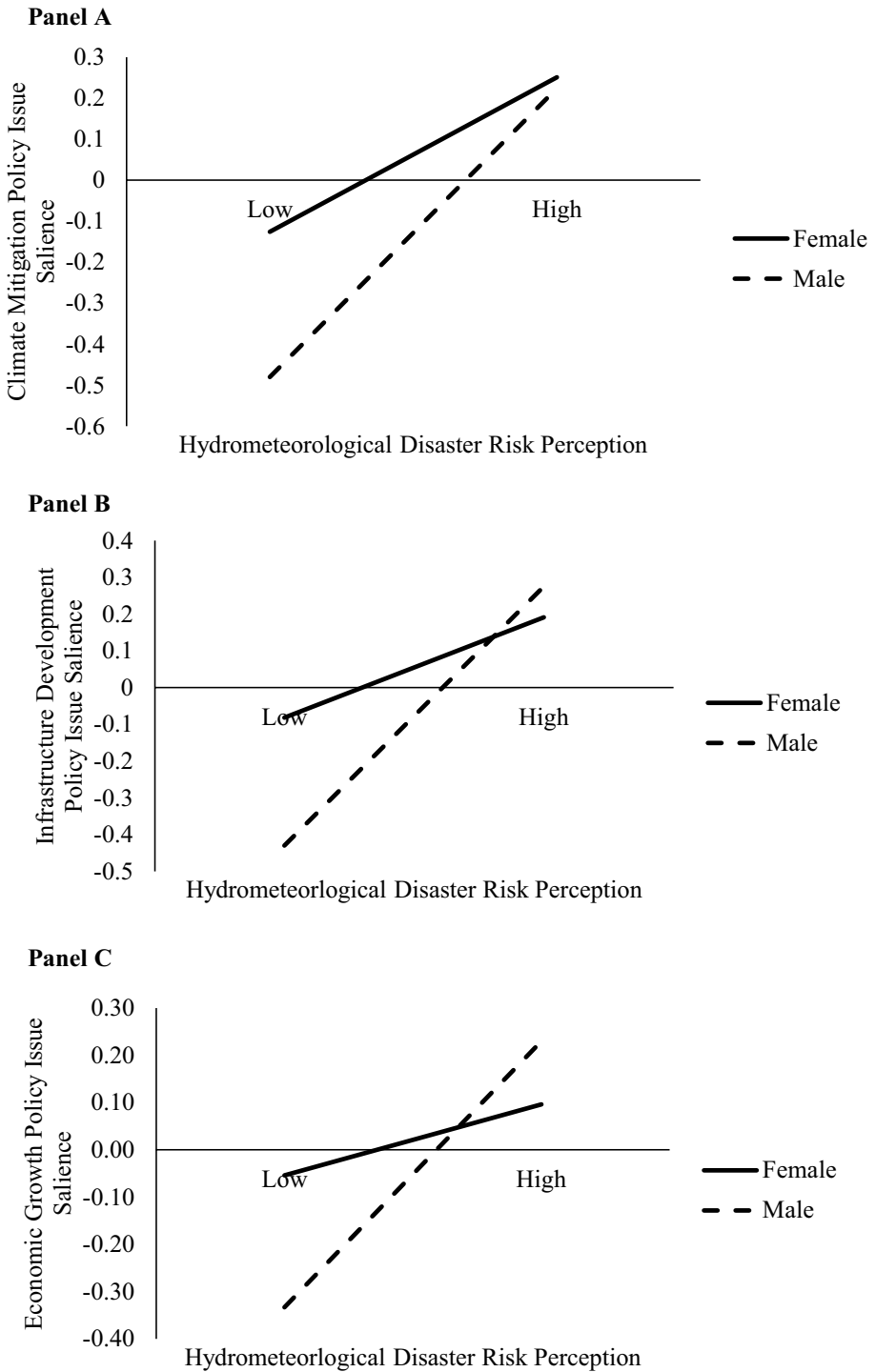
Panel A

Panel B

Panel C

Fig. 2 Moderating effect of gender identity on the hydrometeorological disaster risk perception—perceived issue salience relationship

Discussion

Climate-resilience policy and planning puts a premium on community involvement in planning (Satorras et al., 2020). The level of importance placed on various policy issues by community members determines which policies ultimately get formulated and implemented (Dannevig & Hovelsrud, 2016; Howlett et al., 2020). Social identities have been identified as important determinants of climate and developmental issue salience, serving as windows through which we process incoming information (Hornung et al., 2019; Masson & Fritsche, 2021). At the same time, various studies have highlighted the critical role of risk perception in influencing the salience policy issues. In particular, studies have shown that disaster risk perception mediates relationships between an environmental identity and pro-environmental attitudes, preferences, and perceived issue salience (Cai et al., 2024; Lindell & Perry, 2012; van Valkengoed & Steg, 2019). Our study contributes to the literature by examining the mediating role of disaster risk perception in the relationship between environmental identity and the perceived salience of climate change-related and development-related policy issues.

Our results indicate that environmental identity is positively and significantly associated with the salience of climate mitigation policies but does not have significant relationships with the perceived issue salience of climate adaptation, infrastructure development, and economic growth. However, we find a strong mediating role for hydrometeorological disaster risk perception for all four policy categories.

In the case of climate mitigation policies, we find that self-categorizing as an environmentalist increases the perceived issue salience of climate mitigation directly and indirectly through increased risk perception. An environmentalist perceives higher risks from hydrometeorological disasters, which in turn motivates support for climate mitigation policies, consistent with the literature on how threat perception motivates protective and preventive actions (Cai et al., 2024). But this is only a partial mediation since possessing an environmental identity motivates support for climate mitigation even outside of the higher risk perception. The sustaining direct effect can come from various factors, such as perceived moral obligation (Schmitt et al., 2018, 2019), causal or action-related knowledge (Shi et al., 2015) or perceived efficacy (Kellstedt et al., 2008; Wolters & Steel, 2021). It is also consistent with the Social Identity Model of Pro-Environmental Action (SIMPEA) which states that self-categorization as an environmentalist cues acting consistently with group goals and norms (Masson & Fritsche, 2021).

The results for climate adaptation policies indicates that risk perception to hydrometeorological disasters fully mediates the relationship between environmental identity and perceived issue salience of adaptation. The total effect and direct effect of environmental identity on the perceived salience of adaptation is nonsignificant. However, the indirect effect through hydrometeorological disaster risk perception is significant and positive. In other words, it does not matter whether one is an environmentalist to consider adaptation to be significant. Having an environmental identity does increase the perceived risk to hydrometeorological disasters, and that motivates support for adaptation, but there is no other effect of the identity on adaptation salience.

Our findings support previous studies on climate beliefs and adaptation actions. For example, Javeline et al. (2019) found climate knowledge and pro-environmental attitudes do not have an effect on adaptation actions undertaken by coastal homeowners. Similarly flood victims viewed flooding and climate change to be distinct issues, where flooding was associated with local concerns such as stormwater management and infrastructure, rather

than climate change (Whitmarsh, 2008). According to the author, the "experience of flooding does not 'prove' human-induced climate change is real or threatening in a way that it proves the risk from flooding is real" (p. 368). Therefore, in climate-stressed regions, such as coastal areas, there appears to be less need to increase awareness about climate change in order to motivate people to take action (Javeline et al., 2019; Lindell & Perry, 2012; van Valkengoed & Steg, 2019). Emphasizing the risks associated with climate change accurately (such as through community meetings to discuss hazard impacts or preparation of accessible and up-to-date flooding/sea level rise maps) might be sufficient to get people to place adaptation as a high priority issue.

In the case of infrastructure development, once again the total effect and the direct effect were not significant, but the indirect effect via hydrometeorological disaster risk perception was significant. This implies that having an environmental identity does not directly impact the perceived salience of infrastructure development policies. However, having an environmental identity does increase the perceived risk to hydrometeorological disasters, which does heighten the perceived issue salience of infrastructure development. One possible explanation for this is that risk perception reorients the priorities of environmentalists towards local issues, away from the global perspective of climate change, aligning concerns about infrastructure (such as transportation and utilities) with that of non-environmentalists. Environmentalists, guided by the higher disaster risk perception recognize the importance of infrastructure development, such as better communication lines, improved utilities and stormwater management for mitigating disaster risk. This implies that when it comes to community-level sea level rise planning, environmentalists and non-environmentalists seem to perceive the salience of infrastructure and adaptation in a similar manner, guided by their heightened risk perception.

Consistent with literature, environmental identity is negatively and significantly associated with the perceived issue salience of economic growth. Environmentalists understand that growing the economy involves unsustainable practices, while reducing taxes boosts the economy at the expense of possible government investments for climate action (Drews & van den Bergh, 2017). However, the heightened risk perception of environmentalists reduces the magnitude and significance of this relationship. Risk perception induces environmentalists to perceive higher salience of economic growth than they otherwise would have. Previous surveys have also found that even when people consider climate change and sea level rise to be important in coastal regions, they consider economy and jobs as more important (Akerlof et al., 2019).

There are a few possible explanations for this flip. First, it is possible that risk perception shifts the long-term orientation of environmentalists to the short-term. Temporality is considered key in climate change decision-making, since the longer horizon of climate change clashes with the shorter time frames of planning, both by governments and by people (people think about fifteen years into the future, on average) (Pahl et al., 2014). Second, risk perception can shift our cognitive processes from thinking about the world to thinking about ourselves. As discussed in the literature section, issue salience is also based on whether the issue influences material self-interest (Boninger et al., 1995; Miller et al., 2016). Heightened risk perception could motivate environmentalists to think about the present, and think about their own personal priorities, which involves reducing taxes and growing the economy, to be able to pay for growing insurance premiums, carry out repairs and other kinds of adaptive actions. Third, as discussed in the literature review, the cognitive dimension of risk perception comprises of 'knowledge', 'familiarity', and 'controllability' (Oh et al., 2015). If individuals perceive hydrometeorological disasters to be largely

out of the control of governments, they might prefer to undertake autonomous adaptation (Mycoo, 2014) rather than provide more taxes to the government.

The moderation effects of gender on climate mitigation, infrastructure development, and economic growth were significant, but we found no gender differences regarding the perceived salience of climate adaptation (at 5 percent significance). The moderation effect essentially examines whether there are identity conflicts (as theorized through SIPP's identity conflict hypothesis). Our results (Table 5) shows that environmental identity and the gender identity (male) are in conflict for hydrometeorological disaster risk perception and climate mitigation, which influences the combined effect of the two identities (i.e., a male environmentalist). It is for this reason that male environmentalists perceive lower salience of climate mitigation than female environmentalists. However, we did not find significant results (at five percent significance) of identity conflict for climate adaptation, infrastructure development and economic growth.

Our study has three implications for the fields of environmental policy and politics. First, the current policy focus on building awareness about climate change among coastal communities or addressing climate 'skepticism', which may be crucial for climate mitigation action, does not appear to be relevant for climate adaptation action. Adaptation is powerfully local and personal, driven by risk perception to disasters, rather than any belief in climate change. The mediation results point to the need to separate our approaches to climate mitigation and climate adaptation, both in future studies and in policy praxis. Our findings caution against excessive attempts at Climate Policy Integration (CPI) (Adelle & Russel, 2013; Trein et al., 2023), not just because conflicting interests and beliefs have contributed to the limited success of policy integration attempts (Biesbroek & Candel, 2020; Rietig, 2019; Solorio et al., 2023), but also because the co-benefits narrative of CPI may not be sufficient to build community support as mitigation and adaptation are cognitively processed differently, even among environmentalists in coastal regions.

Second, our study points to the likely prevalence of cognitive inconsistency (Harmon-Jones & Mills, 2019) regarding the perceived salience of difference policy issues among environmentalists. While previous studies have focused only on the relationship between environmental identity and the salience of mitigation policies or pro-environmental actions, our study highlights how environmentalists behave in identity-inconsistent ways by perceiving higher salience of infrastructure development and economic growth because of heightened risk perception. This implies that identity-inconsistent preferences, opinions, and values occur not just because of identity conflict (as theorized by SIPP's identity conflict hypothesis and seen in the moderated-mediation results of the gender identity in our findings), but also due to risk perception.

Third, our findings suggest that risk perception overcomes some of the gender-based differences in the salience of policy issues, particularly climate mitigation, further supporting our argument for the need to pay attention to risk perception, rather than just climate awareness.

Limitations and directions for future research

Our study is not without limitations. First, this study is based on secondary data from a survey comprising 503 respondents from the eastern coast of the United States. Because of the focus on coastal communities, our sample comprises of individuals who are familiar with life at the coast, and this could imply higher risk perceptions on average in the sample.

However, previous studies have shown that living in at-risk areas could lower perceived risk perception, compared to people who do not live in at-risk areas but witness events over the television (Greenberg & Schneider, 1995; Haney, 2021). Also, studies on risk perception have consistently found that even when exposed to the same external stimuli, risk perceptions vary (Siegrist & Árvai, 2020). Therefore, ex-ante there is no reason to believe that coastal communities would perceive higher risk perception.

Further, various studies have focused on coastal geographies and communities for their analysis in the past, such as coastal homeowners of New Hanover County in North Carolina (Javeline et al., 2019) and surveys in Maryland and Delaware regarding sea level rise certainty and issue prioritization (Akerlof et al., 2019), among others. Our study encompasses responses from fifteen states of the United States, which enables us to control for state-level differences in our analysis. We also control for individuals who live in coastal communities, rather than only working or frequently visiting coastal regions, which enables us to control for residential exposure (Bradley et al., 2020). Even though our sample is relatively small, they are found to be statistically sufficient for the analysis. However, larger samples are required to improve the generalizability of the results.

Second, hydrometeorological disaster risk perception has been constructed in this paper based on perceived vulnerability, which is only one dimension of disaster risk perception (Ng, 2022). Future studies can explore the mediation effects of risk perception on policy issues through a richer operationalization of the construct. Third, the R-squares were generally low in our models. Although previous studies have indicated that this is common when studying data related to public opinion, preferences, and issue salience (Lewis-Beck & Skalaban, 1990; Wolters & Steel, 2021), future studies may also retest these relationships using other datasets.

Fourth, environmental identity was self-reported in the survey. While this is valuable in determining the effect of such self-categorization on perceived issue salience, further studies can explore the role of actual pro-environmental behaviour on perceived issue salience. Studies can also incorporate what kinds of climate knowledge an environmental identity is associated with and examine their links to perceived issue salience. For example, Shi et al. (2015) divided climate knowledge into four types: result-related, causal, action-related, and physical knowledge. Future research can examine how these different knowledge types relate to the perceived salience of different policy issues. Studies can also compare coastal and non-coastal communities in future research.

Last, we have theorized the causal pathway from identities to risk perception, but we acknowledge the possibility of reverse causality, i.e., heightened risk perception influences our environmental identity. However, we find that the literature supports theorizing from identities to risk perception. This is because even with the same external stimuli, such as living in high-risk environments, our identities influence our perception of risk (Siegrist & Árvai, 2020). Scholars also find that our identities are quite stable (Fielding & Hornsey, 2016). The literature on social identities, as well as on risk perception, largely models the pathway as we have done in our paper, i.e., environmental identity predicts risk perception.

Conclusion

Much of the focus of climate action has been on coastal regions and locally-led strategies. Our study contributes to the growing practical and academic interest in community-led climate resilience planning by examining how an environmental identity influences the perceived issue salience of different policy issues.

Our research shows that having an environmental identity makes climate mitigation issues more salient, with perceived risk towards hydrometeorological disasters mediating the relationship. The perceived issue salience of climate adaptation, infrastructure development and economic growth are enhanced by the heightened hydrometeorological disaster risk perception of environmentalists. We also find that gender moderates these relationships significantly, while age does not (except for the perceived salience of infrastructure development).

Our findings indicate that risk perception plays a significant role in mediating the effects of an environmental identity on the perceived issue salience of different policy issues. Crucially, we find that risk perception matters more for climate adaptation than possessing an environmental identity. Risk perception also boosts the perceived salience of policy issues (such as economic growth) that environmentalists typically consider less salient by shifting the temporal orientation (from the future to the present) and spatial orientation (from global to local) of environmentalists.

As theories and concepts from psychology are introduced into policy sciences, social identities and its connection to policy issue salience is an important field of research. Our study identifies the mediating role of risk perception in the relationship between social identities and perceived issue salience, which may be incorporated in future studies.

Appendix A

Correlation and covariance matrices. See Tables 7 and 8.

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Table 7 Correlation matrix

	HDRP	EI	Gender	Age	Living	EDUC	DEM	ETH	STD	INC	INF	ADAPT	MIT	ECO
HDRP	–													
EI	0.189**	–												
Gender	-0.082	-0.008	–											
Age	-0.183**	-0.185**	0.138**	–										
Living	0.176**	-0.083	0.131**	0.036	–									
EDUC	0.012	0.073	0.085	0.120**	-0.027	–								
DEM	0.065	0.195**	-0.064	-0.069	-0.024	0.016	–							
ETH	-0.120**	-0.071	-0.050	0.214**	-0.074	0.016	-0.110*	–						
STD	0.035	0.097*	-0.058	-0.429**	0.073	-0.187**	0.071	-0.147**	–					
INC	-0.010	0.080	-0.015	0.025	-0.072	0.245**	0.035	0.104*	-.128**	–				
INF	0.177**	0.005	-0.077	0.030	-0.013	-0.011	-0.028	0.146**	-0.043	0.018	–			
ADP	0.371**	0.023	-0.115**	-0.012	0.051	-0.003	0.034	0.045	0.011	-0.005	0.749**	–		
MIT	0.207**	0.183**	-0.133**	-0.059	-0.031	-0.032	0.137**	0.062	0.016	0.049	0.614**	0.628**	–	
ECO	0.119**	-0.114*	-0.045	0.054	0.033	-0.031	-0.077	0.100*	-0.051	0.046	0.676**	0.542**	0.413**	–

$**p < 0.01$; $*p < 0.05$

HDRP—hydrometeorological disaster risk perception; EI—environmental identity; Living—Living in a Coastal Community; EDUC—educational qualification; DEM—political affiliation as a democrat; ETH—ethnicity; STD—student; INC—income levels; INF—infrastructure development; ADP—climate adaptation; MIT—climate mitigation; ECO—economic growth

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Table 8 Covariance matrix

	HDRP	EI	Gender	Age	Living	EDUC	DEM	ETH	STD	INC	INF	ADAPT	MIT	ECO
HDRP	1.000													
EI	0.192	1.032												
Gender	−0.039	−0.004	0.223											
Age	−0.296	−0.305	0.105	2.621										
Living	0.088	−0.042	0.031	0.029	0.249									
EDUC	0.016	0.102	0.055	0.269	−0.018	1.914								
DEM	0.032	0.098	−0.015	−0.055	−0.006	0.011	0.245							
ETH	−0.050	−0.030	−0.010	0.145	−0.015	0.009	−0.023	0.176						
STD	0.012	0.034	−0.009	−0.238	0.012	−0.089	0.012	−0.021	0.117					
INC	−0.019	0.154	−0.013	0.075	−0.068	0.638	0.033	0.082	−0.079	3.552				
INF	0.177	0.005	−0.036	0.049	−0.006	−0.016	−0.014	0.061	−0.015	0.035	1.000			
ADP	0.371	0.023	−0.054	−0.019	0.026	−0.005	0.017	0.019	0.004	−0.009	0.749	1.000		
MIT	0.207	0.186	−0.063	−0.095	−0.016	−0.045	0.068	0.026	0.005	0.093	0.614	0.628	1.000	
ECO	0.119	−0.116	−0.021	0.087	0.016	−0.043	−0.038	0.042	−0.018	0.088	0.676	0.542	0.413	1.000

HDRP—Hydrometeorological disaster risk perception; EI—environmental identity; Living—Living in a coastal community; EDUC—educational qualification; DEM—political affiliation as a democrat; ETH—ethnicity; STD—student; INC—income levels; INF—infrastructure development; ADP—climate adaptation; MIT—climate mitigation; ECO—economic growth

Appendix B

Direct, indirect, and total effects of environmental identity on outcomes. See Table 9.

Table 9 Direct, indirect and total effects of environmental identity on outcomes

Dependent variables	Environmental identity (independent variable)		
	Direct effect	Indirect effect (via HDRP)	Total Effect
Climate mitigation	0.135***	0.039***	0.174***
Climate adaptation	− 0.036	0.069***	0.032
Infrastructure development	− 0.001	0.037***	0.036
Economic growth	− 0.110**	0.029**	− 0.081*

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; N = 484; HDRP—hydrometeorological disaster risk perception

Appendix C

Moderation by age. See Table 10.

Table 10 Results of moderation by age (H5)

Variable	HDRP	Climate change-related perceived issue salience		Development-related perceived issue salience	
		Climate mitigation	Climate adaptation	Infrastructure development	Economic growth
	β	β	β	β	β
Constant	0.253	− 0.346	− 0.318	− 0.706*	0.226
Environmental Identity	0.089	0.135	0.092	0.184*	− 0.082
Age	− 0.194**	0.029	0.167*	0.209**	0.058
Environmental Identity X Age	0.030	− 0.001	− 0.042	− 0.061**	− 0.010
Education	0.018	− 0.058*	− 0.006	− 0.020	− 0.043
Democrat	0.070	0.199**	0.070	− 0.019	− 0.084
Ethnicity	− 0.130	0.210*	0.190*	0.381***	0.198*
Student	− 0.186	0.021	0.098	− 0.074	− 0.086
Income	− 0.009	0.019	− 0.003	0.010	0.043*
Gender	− 0.192**	− 0.207**	− 0.226**	− 0.148	− 0.067
Living	0.386***	− 0.071	− 0.037	− 0.098	0.016
HDRP		0.041	0.267***	0.022	0.037
HDRP X Age		0.055*	0.037	0.059**	0.040
R^2	0.165	0.152	0.179	0.098	0.087
F	3.781***	3.154***	3.820***	1.916***	1.677**

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; N = 484

HDRP—hydrometeorological disaster risk perception; β—Unstandardized regression coefficient

All models include state-wise dummy variables

Appendix D

Conditional direct effects of environmental identity on outcomes. See Table 11.

Table 11 Conditional direct effects of environmental identity on outcome variables

Moderator (gender)	Conditional direct effect	Boot-strap SE	Boot-strap LLCI	Boot-strap ULCI
Outcome variable—climate mitigation				
Female	0.199	0.057	0.088	0.311
Male	0.004	0.075	− 0.143	0.151
Outcome variable—climate adaptation				
Female	− 0.016	0.056	− 0.126	0.094
Male	− 0.089	0.074	− 0.234	0.056
Outcome variable—infrastructure development				
Female	0.049	0.059	− 0.067	0.164
Male	− 0.115	0.077	− 0.267	0.037
Outcome variable—economic growth				
Female	− 0.057	0.059	− 0.172	0.058
Male	− 0.232	0.077	− 0.384	− 0.080

Dependent variables: climate change-related policy issues (climate mitigation and climate adaptation) and development-related policy issues (infrastructure development and economic growth); Independent Variable: Environmental Identity

Mediator: hydrometeorological disaster risk perception; Moderator = gender

LLCI: lower level of 95% bootstrap confidence interval; ULCI: upper level of 95% bootstrap confidence interval

Number of bootstrap samples: 5000

Appendix E

Conceptual diagrams of models 4 and 59 used in the PROCESS macro given by Hayes (2013). See Fig. 3a and b.

a Model 4 used in the PROCESS Macro given by Hayes (2013)
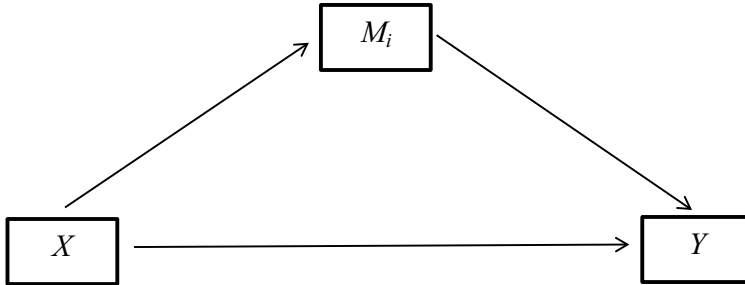
b Model 59 used in the PROCESS Macro given by Hayes (2013)
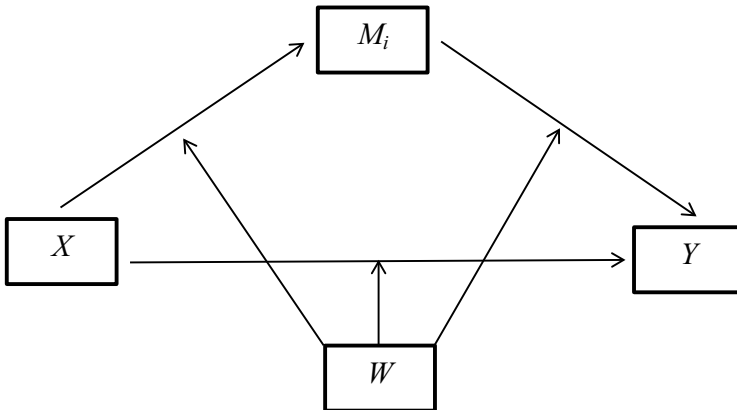
Fig. 3 **a** Model 4 used in the PROCESS Macro given by Hayes (2013). **b** Model 59 used in the PROESS Macro given by Hayes (2013)

Data availability The dataset is publicly available on OpenICPSR (OpenICPSR Project 108312).

Declarations

Conflict of interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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