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What Sustains Youth Activism?

A Short-Term Longitudinal Analysis of Factors Shaping

Indian Young Adults' Climate Activism

A dissertation submitted in partial satisfaction of
requirements for the degree Doctor of Philosophy
in Social Welfare

by

Sara Wilf

2024

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ABSTRACT OF THE DISSERTATION

What Sustains Youth Activism?

A Short-Term Longitudinal Analysis of Factors Shaping

Indian Young Adults' Climate Activism

by

Sara Wilf

Doctor of Philosophy in Social Welfare

University of California, Los Angeles, 2024

Professor Laura Wray-Lake, Chair

Millions of young people have risen up to fight the growing climate crisis through youth-led climate movements. Several factors are associated with youths' engagement in climate protest, such as a desire to be with like-minded people and direct experience with the climate crisis. However, longitudinal research is needed to understand what sustains youth climate activism over the short-term. This dissertation uses three waves of original data collected from a sample of 193 young (18-24 years old) climate activists in India over 6 weeks in 2023. Multinomial logistic regression was used to examine the associations between seven factors (personal growth, sense of community, individual and collective agency, seeing tangible achievements, political repression, climate anxiety, and online and in-person harassment) and changes in youths' level of

climate activism (increased, stable, or decreased) cross-sectionally within each wave, and longitudinally across each pair of waves. The predictors were developed based on an inductive qualitative study (Wilf et al., under review). A Youth Research Advisory Board of 6 young Indian activists supported survey development and recruitment. Cross-sectional results showed that heightened personal growth, collective agency, and seeing tangible achievements from activism were associated with youths' increased and stable compared with decreased activism, and that social media and in-person harassment were negatively associated with youth reporting stable compared with increased climate activism. Youth with heightened individual agency (power) were less likely to report increased or stable compared with decreased activism. Longitudinally, agency (competence) was positively associated with youths' increased versus decreased activism, and negatively associated with youths' stable versus increased activism. Across analyses, school and family responsibilities were significant deterrents to youths' increased and stable activism, and religious minority youth were less likely to report stable compared with increased and decreased activism. In cross-sectional analysis, men were more likely to report increased and stable compared with decreased activism than women. Few of the results were consistent across waves, or in both cross-sectional and longitudinal analysis, and therefore should be interpreted with caution. This study provides insights into the factors that may shape short-term youth climate activism, with implications for scholars, climate movements, and youth-focused practitioners.

Keywords: Climate activism, Environmental protest, Social movements, Adolescents, Young adults

The dissertation of Sara Wilf is approved.

Parissa Ballard

Ananya Roy

Cindy Sangalang

Laura Wray-Lake, Committee Chair

University of California, Los Angeles

2024

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Curriculum Vitae

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PUBLICATIONS

- Kathan, S., Lai, J., Liévano-Karim, L., **Wilf, S.**, & Imbroane, M. (2024). Student Knowledge of University Confidential Resources for Survivors of Sexual Violence. *Violence Against Women*.
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- Wray-Lake, L., **Wilf, S.**, & Oosterhoff, B. (2020). Reconsidering the Voting Age in Los Angeles and California. *California Policy Options 2020*.

CONFERENCE ACTIVITY

- Wilf, S.,** Parvez, F., & Wray-Lake, L. (April 2024). “What Sustains Climate Activism? Results from a Mixed Methods Study with Young Indian Climate Activists.” *2024 Society for Research on Adolescence (SRA) Biennial Meeting*. Poster Blitz: Youth Facing the Climate Crisis.
- Malorni, A., & **Wilf, S.** (Jan 2024). “Social Media and Youth Critical Action: A Photovoice Project Examining the Ways Online Experiences Shape Critical Action for 12 Adolescent Organizers.” *2024 Society for Social Work Research Annual Conference*. Poster presentation.
- Wray-Lake, L., Henderson, D., **Wilf, S.**, Saavedra, J.A., & Diaz, A. (Jan 2024). “The Role of Ageism in Shaping Adolescents' Mental Health.” *2024 Society for Social Work Research Annual Conference*. Oral presentation.
- Wilf, S.**, Rudra, A., & Wray-Lake, L. (April 2023). “An Exploration of Climate Anxiety’s Impacts on Indian Youths’ Climate Activism.” *2023 Society for Research on Adolescence (SRA) Biennial Meeting*. Poster Presentation.
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Introduction

The climate emergency is accelerating across the globe, and scientists' warnings about the need to reduce carbon emissions are growing increasingly dire. In India, the climate emergency has caused devastating floods and heat waves and has stunted agricultural production (IPCC, 2022). In 2024, India's capital city of Delhi recorded its highest-ever temperature of 49.9 degrees Celsius (121 degrees Fahrenheit), and 2023 was India's second-hottest year on record (Times of India, 2024). Tens of thousands of Indian youth have responded to the crisis. In 2019, when the international movement Fridays for Future (FFF) was formed, thousands of young Indians participated in climate strikes to protest government inaction on the climate emergency (Adve, 2021). Since 2019, FFF chapters have been formed in dozens of cities across India, led primarily by young people in adolescence and young adulthood. These FFF chapters in India added to a rich ecosystem of youth-led climate organizations in India, such as Youth for Climate India and the Indian Youth Climate Network (Datta, 2024).

Despite the growing climate crisis and young people's significant contributions to the climate movement in India (Adve, 2021), scant research explores Indian youths' climate activism (Datta, 2024; Dutta, 2022; Roy, 2023). In addition, although research with non-Indian youth has identified factors that may shape youths' initial engagement in the climate movement, such as their desire to be with other like-minded individuals (Brügger et al., 2020), little scholarship explores what keeps young people engaged — in other words, what *sustains* their climate activism. Therefore, this study explores factors supporting and detracting from Indian youths' sustained climate activism, with the goal of informing climate activists and organizations, scholars, social workers and educators to better support youth to continue their important work.

This dissertation examined factors that sustained Indian youths' climate activism by using three waves of original, longitudinal data collected from young Indian climate activists over a period of six weeks. Multinomial logistic regression was used to analyze the relationships between different factors and changes in youths' level of climate activism within each survey wave, and between waves. Constructs of interest were determined based on a qualitative study with Indian youth climate activists, described further below (Wilf et al., under review), as well as prior literature. The first study aim was to examine the relationship between supporting and mixed/ detracting factors and young people's level of climate activism. The supporting factors were sense of community, individual and collective agency, personal growth, and seeing tangible achievements from activism. The mixed and detracting factors were climate anxiety, political repression, and in-person and online harassment. The second study aim was to examine gender, age, and religious differences in youths' sustained level of activism. The goal of this study was to identify factors that shape youths' sustained climate activism. This study utilized a Youth Research Advisory Board composed of young Indian climate activists to support the research process and ensure the study findings are relevant for, and disseminated to, climate activists and organizations.

This study can point to pathways for future scholarship, centering youth in India who play a large and increasingly important role in mitigating the climate crisis, and identify actionable ways that the climate movement in India can better support all young activists. It may also have implications for youth-focused practitioners, such as social workers, who seek to support youth agency and leadership in mitigating the climate crisis through community organizing (Kemp et al., 2015; Sanson & Masten, 2024).

Literature Review

The Youth Climate Movement in India

The climate movement in India was well established before the 2018 Fridays for Future (FFF) strike took place. India's social movements cannot be separated from its legacy of colonialism (Fadaee, 2017; Oommen, 2004; Rao et al., 2022), and environmental movements in India during Britain's violent colonial rule were often entangled with anti-colonial protest, such as collective uprisings against the commercialization of forests (Sahu, 2007). Since India's independence from Britain in 1947, many environmental movements have responded to the Indian government's focus on economic development to become self-reliant and extract itself from the vestiges of colonialism (Baviskar, 2019). Particularly since 1991, when the Indian government opened the country up to international investment, communities formed grassroots movements to resist extractive industrial projects (Kumar, 2014). Many of these movements were led by Indigenous communities to prevent development projects like dams and mines from destroying natural resources (Dutta, 2022; Nayak, 2015; Roy & Martinez-Alier, 2019). For instance, in the Northeastern state of Odisha, the government allocated thousands of acres of land to corporate extractive projects, such as mines and steel plants; this land was often located in tribal communities (Kumar, 2014). Kumar (2014) noted that although these industrial projects claimed to reduce poverty and provide employment, local communities rarely benefited and were often displaced from their homes. Indeed, scholars estimate that government- and corporate-led economic development projects have displaced tens of millions of people (Hemadri et al., 1999), many of whom were forcibly removed from their ancestral land and economic lifeline (Baviskar, 2019).

Development projects continue into the present day, as the government continues to prioritize industrial projects like dams, roads, and mines, over environmental protection and community livelihoods (Rao et al., 2022; Swain, 2015). Many communities have endured displacement multiple times, during Britain's colonial rule and to make way for contemporary infrastructure and extractive projects. The dynamics of environmental movements across India, particularly those led by tribal and Indigenous peoples (Pattnaik, 2013), have been well-studied, such as the Chipko and Appko Movements (Nayak, 2015), Narmada Bachao Andolan (Dwivedi, 1997), and the ecofeminist movement (Parameswaran, 2022). In contrast to the U.S., where 20th-century environmentalism was viewed as a middle- and upper-class movement, Indian environmental movements historically have been led by less socioeconomically advantaged communities (Guha, 2006; Misra, 2007). For example, the Adivasi tribal communities living in Aarey Forest were forced off their ancestral land by the British in the eighteenth century and then again by the Indian government in the 1980s, both times to make room for the growing city of Mumbai (Pradeep, 2021). In 2011 the Mumbai government decided to clear land in Aarey Forest to make way for a new metro line, sparking protests by tribal residents there, who argued that the project would destroy a vital forest ecosystem and their home (Indian Express, 2019). Following widespread protests by tribal communities in Aarey and residents of Mumbai, the government in 2020 moved the site of the proposed transportation center to a different location, but in 2022 a new government came into power and reversed that decision (The Wire, 2022). On World Environment Day in 2023, the Mumbai chapter of Fridays for Future posted a flyer stating "No to Destructive Development" and asking "if not for the people of this state, whom is this "destructive development" for? Who benefits from it?" (FFF Mumbai, 2023). India's current environmental movements are thus shaped by community-led resistance to development projects

that are part of India's history of colonialism and the politics of the post-independence period (Rao et al., 2022).

Scholars further argue that environmental movements in India must be viewed within their sociocultural, religious, and spiritual context (Misra, 2007; Rao et al., 2022). For example, Indian environmental movements may be inspired by religious values and philosophies. Hinduism, India's most commonly practiced religion, differs from Judeo-Christian traditions in viewing divinity in all forms of nature (Guha, 2006), and Buddhism explicitly propounds non-violence and compassion towards nature and all living beings (De Silva, 2001). As another example, scholars have argued that India's colonial legacy continues to be perpetuated through the government's deliberate exclusion of communities from power and decision-making roles regarding the environment, including instigating "development projects" such as mines that separate communities from resources upon which they depend for their livelihoods (Rao et al., 2022; Swain, 2015). In addition to its unique sociohistorical, political, and cultural context, India merits further research on its environmental movements because it is a critical player in the climate crisis; not only is it the world's most populous country (UN, 2023), but it is the third-largest emitter of carbon dioxide (CO₂; Ritchie et al., 2020) and continues to invest heavily in coal and other fossil fuels (NYTimes, 2022).

More recently, Indian adolescents and young adults have formed youth-led climate organizations at national and local levels. The Indian Youth Climate Network (IYCN, 2022), which has engaged over 10,000 volunteers, was founded in 2008, focusing on providing leadership training to young people across India, and the Swapna Foundation has mobilized over 1,500 young volunteers to lead clean-ups and climate awareness campaigns in several cities (Swapna Foundation, n.d.). There are countless local youth-led initiatives across India such as

the Pune Ploggers group, which has conducted more than 180 clean-up drives in the state of Maharashtra. Social media has also facilitated youth climate activism, as even grassroots actions such as a youth-led campaign in Assam to save the Dehing Patkai Wildlife Sanctuary went viral online (Indian Express, 2020). Youth for Climate India has mobilized over 8,000 young people in 20 cities to educate youth about climate policy, lead in-person strikes, and campaign against the government's dilution of environmental laws. Youth for Climate India also organizes workshops to teach young people how to lead climate strikes in their own communities (Youth for Climate India, 2023). More recently, the youth-led climate movements Extinction Rebellion and FFF have joined the ranks of the growing climate movement in India (Adve, 2021). In particular, FFF India's stated goal is to reduce India's greenhouse gas emissions by organizing campaigns, seminars, and marches aimed at raising awareness among other young people (FFF India, 2023).

Despite Indian youths' notable achievements and broad mobilization to fight the climate crisis, little empirical research focuses on Indian youths' climate activism. Three studies examined Indian climate organizations' and activists' social media accounts, including FFF and youth-led chapters (Datta, 2024; Khoja-Moolji & Chacko, 2024; Titzman, 2023), and one study explored how the environmental movement utilized social media to mobilize and continue campaigns during the COVID-19 pandemic, although this study did not focus on youth-led organizations (Tuli & Danish, 2021). In a study of 12 youth-led climate organizations active on social media, Datta (2024) found that India's FFF chapters were decentralized in their social media posting strategies and targets, with the national chapter primarily remaining apolitical, and some local chapters more willing to actively challenge the government. Datta (2024) argued that the distinct strategies FFF India chapters use on social media demonstrate a broad ideological

diversity in how chapters view their role vis-a-vis politics, and in their views about how best to mitigate climate change. Khoja-Moolji and Chacko (2024) examined how two young girl climate activists, Disha Ravi (co-founder of Fridays for Future Bangalore) and Greta Thunberg, utilize social media to disrupt traditional power structures and resist archetypes of “good activism” by defying sexist stereotypes. Collectively, these studies show that social media is a critical space for the youth-led climate movement in India, and that youth-led climate organizations (including distinct Fridays for Future chapters) are largely decentralized and diverse in their strategies to achieve change.

Two articles have explored the Indian climate movements, including a focus on youth-led movements like Fridays for Future (Dutta, 2022; Roy, 2023). In an article analyzing the impact of FFF India on Indian politics, Roy (2023) questioned how FFF India’s stated values are to be “beyond politics” and to “actively avoid power structures” when the climate-related changes they demand are primarily controlled by the government and corporations in power. The Fridays for Future India website (www.fridaysforfutureindia.com) is, as of spring 2024, no longer active. However, Roy (2023) previously documented FFF India’s stated mission as an “inclusive and egalitarian, non-partisan, autonomous and decentralized movement.” In analyzing two central events in FFF India’s history — the movement’s opposition to the government’s Environmental Impact Assessment in 2020, and the arrest and detainment of Bangalore-based youth climate activist Disha Ravi in 2021 — Roy (2023) concluded that the FFF India movement is not as apolitical as it claims to be, and has been successful in challenging state actions and rallying people to its cause. Yet Roy (2023) and Datta (2024) shared concerns that contemporary Indian youth-led climate organizations are not proposing a radical vision to reimagine sociopolitical structures as earlier environmental movements had done, as Datta argued, failing “to focus on

conflicts of interest and the underlying social structures of class and caste (Indian context) which produce those conflicts” (para. 5, overall findings). It is possible that this discrepancy between FFF’s apolitical mission and some of its chapters’ political actions is due to government stigmatization and surveillance of young climate activists, explored further below. In addition, there are dozens of FFF chapters across the country, and chapters’ values and activist strategies may depend on leadership or other locally relevant factors.

Several recent critiques of the global FFF movement may be relevant to the broader youth-led climate movement in India. First, in Western countries FFF is composed of youth who are whiter and from higher income families (Della Porta & Portos, 2021; Neas et al., 2022). Protesters from higher social class backgrounds may have more confidence in the government, for instance (Della Porta & Portos, 2021). In India, emerging research suggests that the youth-led climate movement is composed of more urban and higher-income youth (Datta, 2024). Second, FFF is a decentralized movement, but its unofficial founder Greta Thunberg has been criticized for her activism strategy. Although many scholars and activists believe that climate change mitigation efforts should tackle structural inequities born from capitalism and neo-colonialism that led the world to the climate crisis, Ms. Thunberg and FFF activists historically have focused more on reformist strategies — such as raising awareness about the climate crisis or entreating political leaders to “listen to the science” (Rödder & Pavenstädt, 2023) — rather than more radical strategies, such as demanding a “radical rebuilding of society” and a new green economy (Datta, 2024; Herfort et al., 2023). Many scholars and climate activists argue that a complete and radical transformation of global capitalist systems towards a green economy, as well as a stronger focus on climate justice for historically marginalized groups, is necessary to mitigate the climate crisis (Marquardt, 2020; Sultana, 2022).

Despite these critiques, examining youth engaged in FFF and other youth-led climate organizations in India is important because they encompass youth from diverse religious, geographic, and ideological backgrounds. Youth engaged in these climate organizations are not monolithic, and the movement includes youth who may participate in FFF strikes while also engaging in more radical climate justice simultaneously (Datta, 2024). In addition, because FFF is decentralized, each city chapter in India may be founded by young people holding diverse and even divergent opinions about the best activist strategies to mitigate the climate crisis. Indeed, research comparing FFF national and city chapters' discourse strategies on social media shows that local chapters vary substantially in their approach to climate activism (Datta, 2024).

Some research has explored broader Indian youth civic engagement (e.g., Bhangaokar, 2021; Bhangaokar & Mehta, 2012; Elias et al., 2016; Ilavarasan, 2013; Michael & Mehrotra, 2015).¹ Ilavarasan (2013) noted that youth have been heavily involved in social and political movements in India such as the movement against India's emergency rule in 1977; removing Indira Gandhi from power; and protesting reservation policies in the 1990s (see also Shah, 2004). In Bhangaokar and Mehta's (2012) case study of a young man's civic engagement journey from childhood through young adulthood, they highlighted several important themes. First, institutional and organizational contexts, such as university clubs and animal rights organizations, were critical access points in affording opportunities to gain awareness and skills related to his civic engagement. Second, the young man was raised in a Hindu family that

¹ There is research documenting Indian youth engagement in the Hindu Rashtriya Swayamsevak Sangh (RSS), a political organization founded in the 1930s that espouses values of Hindu nationalism and xenophobia against Muslim and Christian communities (see Banaji, 2008, for an overview of RSS and young people's involvement). The RSS runs camps and other activities for young people, during which youth are taught RSS values and take part in related civic activities. This literature is not reviewed here because it is unlikely that RSS-engaged youth are part of any climate activist movement such as FFF that has been stigmatized as "anti-national" by the government, due to RSS's focuses on patriotism and duty to the nation.

emphasized value for all forms of life, particularly nature, and his parents were key influences in shaping his philosophy of compassion for animals. Finally, through adult mentors and time spent volunteering with an animal rights organization, the young man gained expertise and skills that increased his confidence and may have motivated his continued engagement (Bhangaokar & Mehta, 2012). Bhangaokar (2021) analyzed two case studies of Indian youth who engaged in volunteering organizations emphasizing Gandhian philosophy and principles (e.g., the concept of *sewa*, or selfless service), and concluded that youth experienced profound personal transformations during their volunteering that encompassed positive changes in values, emotional and cognitive skills, and in youths' relationships and career goals. In a sample of mostly urban college-attending youth, Michael and Mehrotra (2015) found associations between youths' sense of belonging to a community and their civic engagement (measured by volunteering and involvement in an activity for a social cause). The most common motivation for youth to civically engage was to learn new skills, and whereas having a mentor or role model facilitated youths' civic engagement, family and school pressures were cited as frequent barriers (Michael & Mehrotra, 2015). Elias and colleagues (2016) surveyed college-aged Indian youth about the motivations and perceived benefits of volunteering, finding that youth were more likely to volunteer if they wanted to expand their social circle or to find professional networks and contacts.

In addition, some research focuses on Indian youths' political views and opinions about the government, finding broad disillusionment with political parties but higher rates of beliefs in democracy and youths' power to create sociopolitical change. For instance, in interviews and focus groups with 66 youth across several cities in India, Ilavarasan (2013) found that most youth were not interested in politics, felt low trust in government, and had internalized the idea

that politics was inherently corrupt. Youth believed that their engagement was better supported by NGOs than by politicians or government institutions, but many still saw power in young people's political engagement, particularly voting (Ilavarasan, 2013). In a survey of youths' civic and political engagement in the Indian state of Maharashtra, Acharya and colleagues (2010) found similar sentiments towards politics, with high percentages of young men (80%) and women (75%) reporting that no matter which political party was in power, their community would see no improvement. Youth who reported greater parental communication and lower levels of parental control were more engaged in civil society, although there was no such association with youth political participation (Acharya et al., 2010). In a national survey of youth across India, DeSouza and colleagues (2009) found that nearly half showed low interest in politics, although nearly all youth reported at least moderate belief in democracy. Broadly, these studies indicate low levels of trust in political institutions, although Indian youth still appear to hold positive beliefs about democracy and the power of youth engagement in politics and civil society.

Finally, several international studies focused on climate change and climate activism have included Indian youth. In a comparison of youth (ages 12-24 years) who did and did not engage in the 2018 and 2019 climate strikes, including Indian youth, Prendergast and colleagues (2021) found that civic skills and organizational membership were positive correlates of youth engaging in the strikes. Individual and collective agency were not associated with youths' protest participation (Prendergast et al., 2021). This lack of association may have been because most young people in the study reported high levels of agency. In a qualitative study, Walker (2020) explored Indian and English children's conceptualizations of the climate crisis in their local context. Although the study was not comparative, children in both countries connected global

climate discourses to their own personal experiences with climate change, and were frustrated by their lack of agency and power in tackling the climate crisis due to their age (Walker, 2020). A study with 16-25 year olds across 10 countries found that Indian youth reported higher than average rates of worry about climate change, and tied with youth from the Philippines for the highest percentage of youth reporting that worry about climate change negatively impacted their daily functioning (Hickman et al., 2021). In this study, Indian youth reported the second-highest rate of feeling betrayed by their government over its response to climate change, after youth in Brazil (Hickman et al., 2021). Cumulatively, this research indicates that Indian youth are being impacted by the climate crisis, for example by showing high rates of worry about climate change, and that sociocultural and religious values, as well as a belief in young people's power to create change, may drive their civic action despite low levels of trust in government.

Civic Action in Young Adulthood

This study focuses on climate activism during young adulthood, a developmental period that is typically characterized as late adolescence (around age 18) through the mid- to late-twenties and is also termed “emerging adulthood” or “the transition to adulthood” (Arnett, 2015). Due to the scarcity of literature on developmental changes specifically focused on activism during young adulthood, this review focuses more broadly on civic action. Civic action is a term that encompasses a range of prosocial and political activities in which youth may engage, including activism, community organizing, voting, volunteering, and informal community helping (Wray-Lake & Ballard, 2023).

Studying civic action in young adulthood is important for several reasons. First, young adulthood is a developmental period in which young people tend to become more politically engaged, and civic interest, responsibility, and leadership in civic action increase on average

(Wray-Lake & Ballard, 2023). For instance, political voice, including activism, increases across the transition to adulthood (Wray-Lake et al., 2020). Although patterns of civic development vary across young people (Wray-Lake & Shubert, 2019), this time period is critical to solidifying youths' civic values alongside other important developmental processes such as socioemotional development (Metzger et al., 2018) and identity development (Mathews et al., 2019). Particularly in the context of globalization, some scholars hypothesize that identity development among non-Western youth could continue into the mid- to late-twenties (Arnett, 2002).

Second, civic action during this age period can play a positive role in youths' future political and community engagement, leading to benefits for young people, democracy and society (Flanagan & Levine, 2010; Terriquez, 2015). Some research has found positive associations between youth civic action and their health and well-being (Ballard & Ozer, 2016; Maker Castro et al., 2022) and socioeconomic status in adulthood (Ballard et al., 2019). Thus, youth civic engagement can spur later civic action and have positive spillover benefits to other areas of young people's lives.

Although substantial research has explored distinctions and changes in youth civic action across young adulthood in the U.S. (e.g., Arnett, 1999, 2015; Flanagan & Levine, 2010; Wray-Lake & Ballard, 2023), less research is available exploring this developmental period in the context of Indian youths' civic action. Although research on this topic is scarce, there may be unique ways in which young adulthood is defined in India compared to other contexts (Mitra & Arnett, 2021), which could shape youths' civic action. A study with college-attending and non-student 18- to 26-year-olds in the Indian state of Tamil Nadu found that most youth felt they had achieved adulthood (Seiter & Nelson, 2011), in comparison to the U.S., where fewer than 20 percent of 18- to 25-year-olds reported feeling like adults (Nelson et al., 2007). This study

indicates that the distinction between young adulthood and adulthood may not be as salient for Indian youth, or that Indian youth view themselves as adults earlier than youth in other contexts.

A number of important sociocultural and economic factors in India may shape youths' transition to adulthood and their access to civic opportunities. For instance, a much higher percentage of Indian youth in their 20s continue to live with their parents than in other countries — a 2016 survey found that over 80 percent of urban Indian youth aged 22-29 were living with parents, compared with 35 percent in Australia (CBRE, 2016). Indian youth who continue living at home into young adulthood would likely continue to have access to the social networks for civic engagement that they built throughout adolescence (Flanagan & Levine, 2010), perhaps supporting them in accessing civic opportunities. Given that more Indian youth live at home for longer periods of time extending into young adulthood, they may also have heightened family obligations compared to youth in other countries. A study with 18-29-year-old youth in three Indian cities found that compared to prior research conducted in Western contexts, Indian youth cared more about meeting their parents' expectations and fulfilling family responsibilities (Mitra & Arnett, 2021). According to youth, responsibility towards family was the most important factor influencing their life choices, followed by other factors such as independence/autonomy and financial security (Mitra & Arnett, 2021). A heightened sense of obligation to family could affect youths' availability to engage in climate activism. In addition, India's fast-paced social, political, and economic transformations may be causing shifts in youths' civic action in the 18-24-year-old age range that have not yet been captured in predominantly Western-centered research. Recent rapid urbanization, globalization, and the relocation of economic opportunities to cities has led to sociocultural changes in how many Indian youth view their priorities and responsibilities (Bhatia, 2017, 2021; Kapadia, 2017). For instance, as a result of globalization,

young Indians may have changing views on cultural norms such as less support for arranged marriage (Jensen, 1998), which can lead to intergenerational conflicts with family members holding differing values and opinions (Verma & Saraswathi, 2002).

Scholars have argued that a new paradigm of decolonized psychology is needed to understand India's unique sociocultural, historical, and political contexts and its implications for youth development. Indeed, many Western psychological theories of human development are rooted in, and reinforce, colonial hierarchies and racialized beliefs (Bhatia, 2021; García Coll, 2021). Some studies have inductively explored Indian youth development with the goal of developing new frameworks that can deepen, or in some cases refute, tenants of Western theories of youth development (reviewed below). As Bhatia (2017) stated, a new decolonized psychology should take into account “how the co-mingling of colonial, modern, traditional, postcolonial, local, and global creates new narratives of identity that go beyond the binary logic of East versus West, collectivistic versus individualist, and autonomy versus relatedness.”

Kapadia (2017) conducted qualitative research with Indian youth to develop new frameworks that are situated in India's unique sociohistorical context to guide scholars in examining Indian youth development. Kapadia (2017) noted that the Western view of adolescent development (e.g. Arnett, 1999) largely depicts adolescence as a crisis period where youth take risks and instigate conflict with their parents with the goal of developing autonomy and an independent sense of self. Kapadia (2017) argued that in India, rather than preparing for independence from parents, many Indian adolescents undergo rituals and ceremonies that prepare them for the next stage in life when they will hold increased duties and obligations to their parents and to the new family they will form through marriage. Kapadia (2017) therefore proposed a new Indian Model of Human Development, Family, and Self to “understand

adolescence as a culturally shaped phase of human development,” and in particular that views religion as a cultural system that shapes youth development at individual and collective levels (p. 43). In this model, the Hindu life stages (described further below) define youths’ relationships, values, and behaviors. Kapadia (2017) notes that in earlier Hindu life stages (corresponding to adolescence and young adulthood) Indians hold a greater sense of personal responsibility, particularly to family, and therefore youths’ personal goals and freedoms may be deprioritized. Similar to Saraswathi and colleagues’ (2011) framework described below, Kapadia (2017) states that her model is rooted in a Hindu worldview.

In their chapter proposing a new framework of lifespan development based on Hinduism, Saraswathi and colleagues (2011) explain that the Hindu life stages are associated with specific rituals and life transitions. For example, the *Brahmacharya* stage corresponds roughly to the age of 12 through adulthood, and is focused on skill and moral development. The next stage, *Grahashtya*, is conceptualized as young adulthood to middle adulthood (or midlife) and is focused on building the individual’s reflective practices to increase self-discipline and regulation. An individual’s movement from *Brahmacharya* to *Grahashtya* is primarily marked by marriage. The authors argued that in contrast to Western literature that examines development within individuals, the Indian (here, Hindu) context necessitates a new theory for lifespan development that examines an individual’s development “as situated in transformations-in-individual’s-social-world” (Saraswathi et al., 2011, p. 288). In other words, an individual’s development must be highly contextualized within their social relationships and cultural norms. Building on these ideas of decolonizing developmental research with Indian youth, this study seeks to integrate Bronfenbrenner’s ecological model (described below) within the Indian context in exploring youths’ climate activism.

Theoretical Framework

In the 1970s, American psychologist Urie Bronfenbrenner introduced the bioecological model of human development (Bronfenbrenner, 1977), which has served as a foundation for substantial literature on youth civic action (e.g., Lerner, 2004). In the bioecological model, different systems of youth development are nested within one another, comprising youths' immediate contexts and interpersonal relationships; the interactions between these contexts and different people and settings in youths' lives; and social structures, cultures, and systems that impact the young person's development without interacting with them directly (Bronfenbrenner, 1977; 1994).

Developmental psychologists have critiqued and expanded upon Bronfenbrenner's theories to incorporate more racially, ethnically, and culturally diverse perspectives on youth development. A primary critique is that in the bioecological model, culture and history are conceptualized as further from the child in comparison to contexts such as families and schools (García Coll, 2021). Scholars of Indian youth development, in contrast, argue that culture and history must be understood in relation to every context youth inhabit (Kapadia, 2017; Saraswathi et al., 2011), including how youth may be active agents in reinterpreting and reimagining their own identities in the context of India's colonial history and cultural changes such as globalization (Bhatia, 2017; 2021). Vélez-Agosto and colleagues (2017) argued that placing culture in the "macrosystem" of Bronfenbrenner's contexts creates an artificial and spurious distinction between culture and youths' everyday practices. Therefore in Vélez-Agosto and colleague's (2017) reconceptualization of Bronfenbrenner's ecological theory of development, culture is a system that exists across settings and is a mutual process between the young person and the broader community.

Youth sociopolitical development and critical consciousness scholars have further added to Bronfenbrenner's original (1974) model by documenting ways in which systems of oppression, marginalization, and injustice, as well as community assets and affirming collective identities, shape young people's development (Hope et al., 2023). Scholars have also developed new bioecological models adapted to specific populations. For instance, Stern and colleagues (2022) adapted Bronfenbrenner's model to U.S.-based Black youths' development and attachment processes, adding components such as racial-ethnic identity, systemic racism, and intergenerational and historical trauma. In another example, Mistry and colleagues (2016) propose a new conceptual framework for Asian American youth development that integrates several prior theories including Bronfenbrenner (1979). Similar to Vélez-Agosto and colleagues (2016), the authors argue that instead of viewing culture as a component of a young person's context — similar to political or historical events — culture infuses and undergirds all contexts that a young person inhabits, shaping all aspects of their development and the different bioecological systems they inhabit (Mistry et al., 2016).

Empirical literature exploring Indian youth civic engagement aligns with the view that current models of youth development may not fully encompass the unique experience of Indian youth. As described above, Bhangaokar's (2021) case study with two young Indians volunteering with organizations inspired by Gandhian philosophy demonstrates how the concepts of self transformation and societal transformation can be inseparable. In particular, Bhangaokar (2021) noted that India's unique sociocultural and historical context, encompassing the British occupation, Hindu philosophy, and India's movements for independence, all inform the way that many Indian youth view their civic action and how they engage in civic organizations. In this way, Bhangaokar (2021) provides a concrete example of Saraswathi and colleague's (2011)

argument that Western models of youth development focused on the individual existing within society must be updated for Indian youth to incorporate a focus on bidirectional transformations between the young person's social world and their development.

Drawing from prior extensions of the Bronfenbrenner's model (Stern et al., 2022; Vélez-Agosto et al., 2017), literature on youth climate activism reviewed below, and the results of a qualitative study with young Indian climate activists (Wilf et al., under review), this study's theoretical framework is based on a bioecological model that incorporates contexts and factors shaping Indian youth climate activism. In this model, rather than a meso-system through which the micro and macrosystem interact, all contexts are assumed to interact with each other depending on each young person's unique context. Further, culture (which is not assumed to be monolithic, but actively reinterpreted and understood differently by each young person) underlies and interacts with all contexts. The individual child at the center of the model is agentic in seeking out experiences that align with their personal values and support their positive development, facilitating factors related to their climate activism such as a sense of personal growth, community, and agency. Certain contexts and interactions may lead to factors that could play a role in shaping youths' climate activism, such as seeing tangible achievements from activism, feeling climate anxiety and worry about political repression, or experiences of harassment on social media and in-person. Within this framework, culture is a non-monolithic system that includes values, norms, and beliefs, and underlies and interacts with all contexts in youths' lives.

Changes in Levels of Youth Activism and Pro-Environmental Behaviors

Longitudinal scholarship demonstrates that adolescents and young adults experience increases, stability, and decreases in their activism over time (e.g., Wray-Lake & Shubert, 2019).

Research demonstrates year-to-year changes (both increases and decreases) in youth activism levels during high school (Wegemer, 2022) and college (Hope et al., 2016). In addition, longitudinal research with U.S.-based high school students demonstrated that many youth experienced increases and decreases in their level of critical action (a construct similar to activism measuring youths' actions to dismantle oppressive systems and combat injustice) over the course of high school (Seider et al., 2023), high school semesters (Pinedo et al., 2024), and over roughly six month periods during college (Monjaras-Gaytan et al., 2021; Pinedo et al., 2021). Longitudinal research more specifically on changes in levels of youth climate activism is scarce (Neas et al., 2022; Thomas et al., 2009), although there is some longitudinal and experimental research on the effects of educational interventions with non-activist youth described below (e.g., Riemer et al., 2016; Stevenson et al., 2018).

Several studies demonstrate changes in youth pro-environmental behaviors over time; “pro-environmental behaviors” encompasses a range of individual and collective behaviors including raising awareness online, signing petitions, and attending community events (Riemer et al., 2016). For instance, a longitudinal study with university students in several countries including India found that following the implementation of an environmental change program, many youth reported increases in their pro-environmental behaviors at 3 and 6 months, although these new behaviors then decreased over longer-term periods (Riemer et al., 2016). Several studies with youth (Bissing-Olson et al., 2016; Oosterhoff et al., 2022; Wray-Lake et al., 2017) and adults (Bissing-Olson et al., 2013) using daily diary methods show daily fluctuations in pro-environmental behaviors. For instance, in a 7-day daily diary study, Wray-Lake and colleagues (2017) found that on days when young people's levels of pro-environmental behaviors were higher, they also reported higher levels of well-being. However, these studies were not

conducted with youth who identified as climate activists, and research is lacking on short-term ups and downs in young people's levels of climate activism. In a daily diary study with non-activist college students over four days, Bissing-Olson and colleagues (2016) noted that in their model, a high percentage (67%) of participants' variance in their pro-environmental behaviors was due to within-person or daily changes, as well as error variance, indicating that daily experiences could have a substantial role in shaping youths' daily pro-environmental behaviors. Some research has explored youth activists' attrition from social and political movements (e.g., Conner et al., 2023; Gorski, 2019), although the focus of these studies was not on changes in youths' level of activism. Thus, little is known about the rate at which youths' climate activism may change.

In qualitative research conducted with young climate activists in 13 cities across India (Wilf et al., under review) youth conceptualized their climate activism on a weekly basis due to their involvement in FFF, which held weekly strikes and events — for example, one youth described her local FFF chapter meeting every Sunday for a river cleanup. Youth described increases and decreases in their level of climate activism at daily, weekly, and monthly levels. For instance, one youth reported that if he saw a discouraging social media post about wildlife dying due to climate change, his climate anxiety would increase immediately, and he might take a break from posting about the climate on social media for several hours or several days. This young person's experience with climate anxiety mirrors extant research showing that climate anxiety may have immediate (e.g., daily-level) negative associations with youths' wellbeing and functioning (Heeren et al., 2020). However, other youth described changes in their overall activism levels due to factors that affected them over longer time periods; for instance, feeling a sense of personal growth and seeing tangible achievements could slowly motivate youth over

time to sustain their climate activism, such as over a period of several months (Wilf et al., under review). Because youth reported that their climate activism shifted over both short-term (daily) and longer-term (monthly) levels, short-term longitudinal research could help clarify the factors that are associated with fluctuations in youths' climate activism over shorter time periods.

Prior qualitative research has documented highly civically engaged youths' (Bhangaokar & Mehta, 2012; Wray-Lake et al., 2024) and climate activists' (Budziszewska & Głód, 2021; Buttigieg & Pace, 2013; Gray, 2023) growing personal commitment to activism as a result of feeling a sense of personal growth and discovery that occurred over longer time periods, although gauging the rate at which young people's activism changed was not a focus of these studies. In qualitative research (Wilf et al., under review), Indian youths' core religious and cultural values, such as being inspired by their ancestors' environmental work or their religious duty to care for the environment, played a substantial role in initiating their activism and motivating them to continue, although sociocultural and religious values did not appear to play a role in causing shorter-term (less than six month) fluctuations in youths' activism levels. Literature on youth (e.g., Fisher, 2016) and adult climate activism (e.g., Nita, 2013) supports this finding, showing that religious, moral, and cultural values are stable factors that are core to instigating climate activism, but are unlikely to cause short-term shifts.

In sum, although research shows that youth can experience short-term (daily and weekly) changes in their climate activism, scant research longitudinally examines the factors that support or detract from young peoples' sustained engagement. An understanding of the role that factors like climate anxiety, personal growth, and agency play in youths' short-term climate activism could support the development of a more robust literature and theory explaining the factors that sustain young people's activism over time. In turn, this research could support climate

organizations in developing strategies to retain young climate activists over shorter time periods, which could motivate young people's longer-term and sustained engagement in the climate movement.

Factors Shaping Youths' Sustained Climate Activism

Young Indian climate activists are leading important social and political change by raising awareness of the climate crisis, challenging government and corporate projects that would harm the environment, and promoting more environmentally conscious policies, among other accomplishments (Adve, 2021; Datta, 2024). Certain factors may support or detract from young peoples' ability to continue their activism. For example, youth may be motivated to continue by seeing tangible achievements from their climate activism (Gray, 2023; Pickard, 2022). Climate activists may also encounter negative experiences in the course of their activism, such as climate anxiety (Heeren et al., 2022) or social media harassment (NBC, 2019), which could reduce their engagement in the climate movement. Therefore, inspired by Bronfenbrenner's bioecological model (1977) and developmental frameworks situated in the experiences of Indian youth (Bhatia, 2021; Kapadia, 2017; Saraswathi et al., 2011), an important question to explore is the supporting and detracting factors that can help sustain youths' climate activism over time.

Substantial literature has examined factors that support and detract from youths' one-time engagement in climate protest (e.g., Busch et al., 2019; Brügger et al., 2020; De Moor et al., 2020; Haugestad et al., 2021). This literature has identified factors that may support general (non-activist) youth protest participation, such as being asked by a peer (De Moor et al., 2020), as well as those that have mixed or detracting effects on youth protest, such as worry about the climate crisis (Haugestad et al., 2021) and climate anxiety (Sarrasin et al., 2022). There is also

qualitative research that provides deeper insights into factors that support and detract from youth engaging in protest (e.g., Cattell, 2021; Feldman, 2021; Pickard et al., 2020). Although identifying factors that support or detract from youth protest participation can provide insight into how a broad population of youth are mobilized into joining one-time events, it is unclear whether and how these same factors shape the activism of youth who are engaged more deeply (e.g., beyond one-time events) within the climate movement.

Further complicating study of the supporting and detracting factors that sustain youth climate activism is that little extant research is longitudinal. A lack of longitudinal (quantitative and qualitative) research limits scholarship's ability to examine more precisely the relationships between certain factors and youth activism over time. One qualitative study used a life history approach to explore youths' journeys into climate activism (Fisher, 2016), although it did not draw conclusions about the factors that may sustain youths' activism over time. This study found that young people were inspired to join the climate movement due to diverse supporting factors including direct experience with climate change and a personal concern for social justice (Fisher, 2016). Longitudinal and experimental research with non-activist adults (Hamann & Reese, 2020; Latkin et al., 2022) and young adults (Bissing-Olson et al., 2016) has identified factors associated with youth engaging in pro-environmental actions, such as feelings of pride, individual and collective agency (supporting), and climate change distress (mixed), although this literature does not examine how these factors may shape sustained engagement. A short-term longitudinal approach could shed light on factors that support or detract from youths' sustained climate activism over days or weeks, supporting the development of more holistic frameworks to distinguish factors shaping youths' sustained activism in the short- and longer-term.

A final notable feature of existing literature is that most studies with young climate activists are conducted with European, Australian, and U.S.-based youth (Neas et al., 2022). As the prior review noted, scholars of Indian youth development have challenged theories developed with Western youth, such as Bronfenbrenner's (1977, 1994) bioecological systems theory, for neglecting to center the critical role of culture and history in shaping all aspects of Indian youth development (Bhatia, 2017, 2020; Saraswathi et al., 2016), as well as for creating artificial distinctions between "self" and "group" that assume and prioritize Western values of independence and personal freedom (Kapadia, 2017). Factors that may affect Indian youths' climate activism, such as political repression and in-person harassment, and the influence of demographic factors, such as religious background, have yet to be examined in research on youths' climate activism. In-person harassment was not identified as an important factor shaping youth climate activism in any of the studies reviewed below, although it was a challenge raised by nearly all youth in the qualitative study (Wilf et al., under review) and was mentioned in other research with civically engaged Indian youth (Bhangaokar & Mehta, 2012). Studying Indian youth climate activism using a longitudinal research design can help identify factors that may support and detract from youths' sustained climate activism, incorporating salient demographic factors such as gender and religious background.

In summer 2022, I conducted a qualitative study with 22 youth ($M_{age} = 19$, 55% male) who were all highly engaged in 13 different Indian city chapters of Fridays for Future (Wilf et al., under review). In one-hour semi-structured virtual interviews, youth described factors that led to changes in their level of climate activism. I used reflexive thematic analysis to inductively identify factors (broadly encompassing experiences and psychosocial concepts) that youth reported led to changes in their level of climate activism. Factors that supported youths' climate

activism included (1) personal growth, (2) sense of community, (3) seeing tangible achievements from activism, (4) collective agency, and (5) internal motivations. Factors that had mixed effects or detracted from youths' climate activism included (1) political repression, (2) climate anxiety, and (3) online and in-person harassment. Muslim youth reported increased harassment and fear of political repression, and rural and Indigenous youth reported feeling excluded from the urban-centered climate movement. These findings clarified the factors that are most salient in supporting and hindering Indian youths' engagement in the climate movement. For this study, I used all the factors from the qualitative study except internal motivations (e.g. sociocultural and religious values, sense of personal responsibility to future generations) because youth described these factors as integral to who they were as human beings, and therefore I did not expect them to change over the course of the six weeks. Throughout the literature review below, I will supplement extant scholarship with findings from this preliminary qualitative study to emphasize the relevance of each factor for Indian youth.

Supporting Factors in Youths' Sustained Climate Activism

Personal Growth.

Participating in social movements and grassroots organizing can support youths' development of knowledge and skills that are relevant both to organizing and to other domains in their lives (Christens & Dolan, 2011; Kirshner & Ginwright, 2012). For instance, youth can gain leadership, problem-solving, and public speaking skills from engaging in activism (Kirshner, 2007; Terriquez, 2015). Youth value this type of personal growth and recognize it as a positive outcome of their activism, and personal growth may therefore be associated with youths' sustained climate activism. For example, young climate activists in Poland (Budziszewska & Głód, 2021), Malta (Buttigieg & Pace, 2013), and the U.S. (Gray, 2023) reported that learning

and acquiring new skills were a primary way they found meaning in their activism. In a survey of non-activist youth in India, Michael and Mehrotra (2015) found that the most common motivator for youth to civically engage was to “learn new skills,” ranking above other motivators such as encouragement from parents or volunteering to be with friends. In this study general skills, such as leadership and public speaking, are conceptualized as personal growth and distinct from individual agency - competence (described further below), which is specifically focused on young people’s sense that they have the skills needed to fight climate change.

In addition to skills such as leadership, personal growth encompasses a sense of self-discovery and development into more educated, compassionate, and mature people. Qualitative research with young climate activists in the U.S. found that youth believed their activism had led to self-growth, in the form of learning new skills and experiencing growth as a person (Gray, 2023). In a case study of a young man volunteering with an animal shelter in Gujarat, India, Bhangaokar and Mehta (2012) noted that a primary motivator in his sustained civic engagement journey was building competence, learning practical skills, and developing from a shy child to a more extroverted and confident young man. The young man also described how his civic engagement prompted changes in his career path, towards obtaining an M.S.W., which echoes research showing that climate activism may prompt youth to pursue careers in activism-adjacent areas such as with nonprofits or other environmentally-focused organizations (Buttigieg & Pace, 2013; Thew et al., 2022). Elias and colleagues (2016) found that adults in India who were engaged in non-climate related volunteering reported improved cognitive (e.g., decreased self-centeredness), behavioral (e.g., increased assertiveness as a citizen), and emotional (e.g., improved emotional regulation) changes as a result, and that volunteers were more likely to engage when they believed volunteering would support their professional and career interests..

This study was conducted with adults, and youth may be even more likely to report positive personal changes because young adulthood is a developmental period when young people focus on personal growth and discovery (Arnold, 2017). In this way, feeling a sense of personal growth and self-discovery could be a motivating factor in youths' sustained climate activism.

Personal growth through civic action may be particularly relevant in India, where volunteering activities are often integrated with a Gandhian philosophy that intertwines personal (such as volunteering as a form of *sewa*, or selfless service), and collective goals (e.g., a new social order based on non-violence and truth). In a case study with two young adult volunteers in an organization inspired by Gandhian ideas, Bhangaokar (2021) found that volunteering led to a process of personal transformation that altered youths' perspectives and relationships. For instance, the young volunteers explained that volunteering had increased their self-awareness, helped with emotional regulation and self-expression, and changed their views on potential career paths. Bhangaokar (2021) wrote that "Gandhian ideas of social transformation and self-development are interdependent and inseparable" (p. 340) and that "self-development and civic engagement in India are akin to soul and body, inner and outer dimensions of one's being" (p. 343). Thus, Indian youth may view their personal growth and their civic action as intertwined and mutually reinforcing if they were raised, or are engaged in an organization, espousing a Gandhian philosophy.

Research shows that personal growth is a motivator for youth's engagement in climate activism (e.g., Buttigieg & Pace, 2013), but the extent to which this factor may sustain their activism over time is unclear. In interviews exploring the relationship between youth environmental behaviors and wellbeing, Jia and colleagues (2021) identified self-directed learning about the environment as a potential mediator that fostered a sense of meaning. In

Bhangaokar and Mehta's (2012) case study of a young volunteer in Gujarat, they identified a complex process where the young man's volunteering engagement led to increased training, skills, and knowledge, culminating in his sustained engagement over a long period of time (from early adolescence through young adulthood). In this model, Bhangaokar and Mehta (2012) concluded that skills and knowledge (e.g., personal growth) contributed to the young man's continued engagement in volunteering, which in turn led to an increased sense of purpose in his life. Therefore the relationship between personal growth and youths' continued activism may be bidirectional, in that activism can inculcate knowledge and skills that give youth a sense of personal growth, which in turn can motivate them to continue engaging. Longitudinal research can help uncover whether personal growth sustains youth climate activism over time.

Sense of Community.

Sense of community is defined as a feeling that one belongs to and is an important part of a larger collective (Sarason, 1974). Sense of community may be particularly important for youth in the climate movement, as peers are an important part of adolescents' and young adults' civic development (Wray-Lake et al., 2017), and research with young activists in other issue areas shows that building a strong community with other civically engaged youth can lead to social connections that motivate youth to stay engaged (Cheung, 2021). Indeed, regardless of the type of activist cause, social connections with peers within organizations may play a role in youths' sustained activism, inspiring and motivating them to continue (Rosen, 2019; Wray-Lake et al., 2023). In a study with non-activist college-attending Indian youth, Michael and Mehrotra (2012) found that youth who reported a higher sense of belonging to a group or community had higher rates of civic engagement. A study with young Maltese climate activists found that youth believed their overall activism levels changed based on their engagement in local climate

organizations (Buttigieg & Pace, 2013). In many cases, social connections within communities of activists are strengthened by a shared identity or experience — whether racial/ethnic identity (Cheung, 2021; Ginwright, 2007), undocumented status (Fiorito, 2019), or shared experience as climate activists (Nairn, 2019). For instance, one longitudinal study with college students found that environmental group membership and sense of identity as an environmental activist was associated with greater intentions to participate in pro-environmental activism (Fielding et al., 2008).

For young climate activists, the movement is global and therefore a sense of community can occur at local, national, and international levels (Pickard, 2022). In this study, sense of community refers to feelings of belonging in local climate organizations with whom youth engage most frequently, because Indian youth reported that those were the places where feeling a sense of belonging and connection mattered most (Wilf et al., under review). In India, online communities are particularly powerful in connecting youth across geographies (Datta, 2024; Ilavarasan, 2013), giving marginalized activists a space to make their voices heard and mobilize collectively to challenge the state (Khoja-Mooli & Chacko, 2024). Qualitatively, when Indian youth described the global climate movement, they more so referenced a sense of collective efficacy than a sense of belonging to a community (Wilf et al., under review).

Sense of community can motivate and sustain youth climate activism in several important ways. First, youth may find like-minded people within communities who also care about the environment and can motivate each other through shared values (Budziszewska & Głód, 2021; De Moor et al., 2021), such as believing that climate change is an important issue and action urgently needs to be taken (Pickard, 2022; Weij, 2022). Particularly when climate activists face climate denialism from society, having a community with shared beliefs around climate change

and the importance of climate activism can be motivating (Wilf et al., under review). Second, youth may feel a personal connection and develop relationships with other individuals in the movement (Buttigieg & Pace, 2013; Gray, 2023; Weij, 2022). Indian youth noted that having a sense of community — particularly friendships they had formed with other young activists in organizations like Fridays for Future — motivated them to continue their climate activism (Wilf et al., under review). As 22-year old Indian climate activist Bellum@ said, “Fridays for Future, I feel like we are not a team. It feels like we are a family.” In Khoja-Mooli and Chacko’s (2024) study exploring Disha Ravi’s online presence, they argued that digital communities had formed to support and mobilize around her following her arrest, such as with the hashtag #StandWithDishaRavi. The authors noted examples, including with Greta Thunberg, where strangers had come together online to form affective ties with each other and mobilize around the young climate activist’s cause. Finally, community can offer youth critical support networks as they deal with the challenges of activism, including burnout, climate anxiety, and stress (Conner et al., 2023; Gray, 2023; Wilf et al., under review).

Sense of community and collective agency may operate in tandem. With Indian adults, research shows that having a sense of both local and international community may promote a sense of collective agency that encourages them to engage in climate activism (Sabherwal et al., 2021). Importantly, although sense of community and collective agency may be interrelated, these are different constructs, as collective agency (described below) focuses on youths’ perceptions of their group’s power and competence to create change, whereas sense of community is related to youth feeling a sense of belonging and connection alongside other like-minded individuals. In writing about applications of social-cognitive theory (including individual efficacy, described further below) to youth climate activism, Bandura and Cherry (2020)

conceptualize social support systems as a core component that work in tandem alongside individual and collective agency to motivate youth climate activism.

Collective Agency.

Collective agency is defined as youths' sense of power and competence in creating sociopolitical change as part of a group (Ginwright & Cammarota, 2007). This concept is also termed "collective efficacy" in some studies. Cross-sectional research with youth in Europe and the U.S. found that a sense of collective agency was linked to youth intentions to join community pro-environmental actions (Rees & Bamberg, 2014), participate in protest (Besta et al., 2017; Wallis & Loy, 2021), and intentions to engage in general climate activism (Sarrasin et al., 2022; Van Zomeren et al., 2010). Based on interviews with young climate activists in England, Pickard (2022) concluded that youth believed collective protest action was the only way to face the enormity and urgency of the climate crisis due to their decreasing faith in political leaders and the global nature of the crisis. Thus, perhaps for climate activists more so than activists in other issue areas, collective action at the global level is viewed as more necessary and effective than individual actions, and collective efficacy may play a larger role in youth's decisions to keep engaging in the climate movement.

In prior research with Indian youth and adults, collective agency shows mixed associations with climate activism. In Wilf et al. (under review), youth reported that seeing the dedication of the climate movement at an India-wide and international level, particularly a growth in numbers and power, was inspiring and supported their continued climate activism because they believed that together they could make a difference. For 15-year old Indian climate activist Kabir, seeing other people rally together for a cause that he was passionate about helped to sustain his activism even when he felt discouraged. Indeed, Kabir noted that after he had a

“disappointing” event happen in his activism, “when I see young activists enthusiastic about continuing the protest or restarting the protest. I again [think], you know, alright, let's do it.” However, in a cross-sectional study of youths’ motivations to join global climate strikes, including Indian youth ($N=192$), Prendergast and colleagues (2021) found no significant associations between collective agency and youths’ participation in the strikes, although 84% of activists believed that “acting with other people” could create positive change. A national survey with Indian adults found that collective agency was significantly correlated with behaviors to help an individual’s community adapt to drinking water scarcity (Thaker et al., 2019). Longitudinal research could help disentangle whether collective agency might support youths’ climate activism across short-term intervals.

Individual Agency.

Individual agency (also known as efficacy) is the degree to which youth feel that they are capable of effecting change (Bandura, 2006). In psychological empowerment research, agency is also referred to as “sociopolitical control” wherein young people believe they have the leadership competence and policy control to create change (Christens, 2012). Substantial literature documents significant and positive relationships between individual agency (also termed sociopolitical control, political efficacy, and critical motivation) and youth activism and civic engagement (Christens, 2012; Diemer & Rapa, 2016; Delia & Krasny, 2018). This study considers individual agency as composed of two primary aspects: power and competence. In other words, youth may feel more individually agentic if they perceive that they have power to create change, and if they have the competence (skills and knowledge) needed to create change. Competence here refers to youths’ perceptions that they have the skills necessary *to create*

change through their climate activism, and is thus distinct from the skills youth develop in the course of their activism that are measured by the personal growth scale.

Research is mixed on whether individual agency is related to youths' climate activism. In part, these discrepancies may be methodological as individual agency is measured in various ways, from single-item measures of young people's perceptions of their influence on government (Boulianne & Ohme, 2022) to scales focusing on youth sense of control over climate change (Sarrasin et al., 2022). Whereas some cross-sectional research with youth demonstrates positive associations between individual agency and intentions to engage or current engagement in climate activism (Boulianne & Ohme, 2022; Sarrasin et al., 2022), experimental research finds null effects (Van Zomeren et al., 2010), or that individual agency primarily acts as a moderator between collective agency and youth activism (Jugert et al., 2016). Other research finds no associations between youths' intentions to join climate strikes and their individual agency (Prendergast et al., 2022).

Prior research has found that when people feel more competent and educated about pro-environmental behaviors they are more likely to participate in them (De Young, 2000). In one qualitative study, Indigenous youth from Canada who traveled to the United Nations Climate Change Conference (COP24) developed confidence in their ability to create change in climate policy that motivated them to engage further when they returned home (MacKay et al., 2020); in another qualitative study, developing competence in their climate activism was a factor in youth future environmental behaviors (Chawla, 2020). In Wilf et al. (in progress), youth reported that as they developed a sense of competence in their climate activism, such as through successfully organizing strikes or coordinating forest plantation drives, they were more motivated to continue. In a cross-sectional analysis of the predictors of youth engaging in climate strikes, including

nearly 200 Indian youth, Prendergast and colleagues (2021) found that individual agency was not associated with youths' intentions to strike, although civic skills was positively related.

Because of the global nature of the climate crisis and the urgency of the issue, collective agency may be more salient than individual agency in sustaining youth engagement in the climate movement. In a longitudinal study with over 14,000 adults in New Zealand, Thomas et al. (2020) found that individual political efficacy was negatively associated with collective action over time. This study was conducted with adults who did not identify as climate activists, and the authors used a single item to measure political efficacy ("the average citizen can have an influence on government decisions"); nevertheless, the authors concluded that higher individual political efficacy may actually decrease an individual's interest in participating in collective actions over time because they feel they can make an impact through personal actions such as recycling (Thomas et al., 2020). Specifically, Van Zomeren and colleagues (2010) explained that because climate change was a collective problem, collective efficacy is conceptually more important than individual efficacy in shaping people's pro-environmental behaviors. In their experiment with college students in the U.S., Van Zomeren and colleagues (2010) manipulated fear of climate change, self efficacy (measured as whether participants felt they could individually mitigate the impacts of the climate crisis), and group efficacy to explore pathways to pro-environmental behaviors. In the first experiment fear, but not individual efficacy, was associated with pro-environmental behaviors. In the second experiment fear and group efficacy were together associated with college students' intentions to engage in pro-environmental behaviors (Van Zomeren et al., 2010). Thus with a non-activist sample, collective, but not individual agency, may be associated with pro-environmental behaviors.

Although individual agency is associated with youth civic action in longitudinal studies, it is unclear whether this relationship is similar for youth climate activism specifically. Because extant research with young climate activists is cross-sectional, a longitudinal analysis can help ascertain potential links between the two dimensions of agency conceptualized in this study — power, and competence — and youths’ sustained climate activism. Examining data both cross-sectionally and at a two- and six-week time scale could provide further insight into whether potential cross-sectional associations between agency and youth climate activism are sustained over time.

Seeing Tangible Achievements from Climate Activism.

When young people see the direct impact of their activism, it can inspire feelings of pride and accomplishment that motivate them to continue (Wray-Lake et al., 2023), even in the face of challenges such as mental health struggles (Conner et al., 2021). In one study with young climate activists, Weij (2022) found that seeing an impact was a motivator in youth activism. Weij (2022) described one activist who said that being able to educate others about climate change motivated them to continue. In a qualitative study exploring how young climate activists made meaning of their “successes,” Gray (2023) found that not seeing tangible achievements could discourage youth in their activism, and that seeing tangible achievements could contribute to youths’ sense of their longer-term growth and development, both as organizers and as people, although perceived success varied depending on how the young person made meaning of their own experience. Some youth viewed “success” as building relationships and collective power, whereas others pointed to concrete actions (Gray, 2023). A mixed methods study with long-term non-climate activist youth found that seeing a “win” from one’s activism was associated with the young person’s perceptions of the effectiveness of their overall activism (Fatoki et al., 2024). It

is possible that seeing “wins” from activism motivated these highly engaged youth to continue in their activism.

There is scant research showing linkages between seeing tangible achievements and sustained climate activism, although social-cognitive theory posits that seeing success will lead to youth gaining a sense of mastery (i.e., competence) that can increase their individual agency and lead to increased levels of youth political action (Bandura, 2006; Chawla & Cushing, 2007). As mentioned, two qualitative studies with young climate activists (Gray, 2023; Weij, 2022) and a mixed methods study with general activist youth (Fatoki et al., 2024) point to potential links between seeing tangible achievements and sustained activism. Yet seeing tangible achievements from activism is an important concept to study because it could provide actionable recommendations to the climate movement; for example, climate organizations could highlight successes (no matter how small) with their members via social media. Indeed, one study conducted a qualitative analysis of Greta Thunberg’s social media posts and found that she often highlighted the successes or achievements of the movement to promote hopefulness among her followers (Molder et al., 2022). Celebrating successes could be a relatively easy way for climate organizations to motivate and mobilize their members and thus merits further examination. In addition, there may be distinct dimensions to how youth view their tangible impacts. For instance, in the qualitative study (Wilf et al., under review), we noted two forms of tangible impacts that youth described as particularly important: changing the climate views and behaviors of people around them, and seeing the successful completion of an initiative (such as plantation drives or policy change). Seeing a tangible impact was important in helping youth overcome doubts about the efficacy of their activism, particularly when peers, family members, and

societal expectations pressured them to decrease their activism and focus on academics or their career.

Mixed and Detracting Factors from Youths' Sustained Climate Activism

Harassment.

Online harassment is an increasing concern for climate activists who use social media for civic engagement (NBC, 2019), and is a particular concern for activists holding minoritized identities across political causes (Earl et al., 2022; Goyal et al., 2022). In one prominent example, an African youth climate activist was cropped out of an image on Twitter by the AP. When she called out the AP for cropping her out, she was subject to online harassment and bullying (Rafaely & Barnes, 2020). Online harassment of activists may be particularly harmful to the climate movement because social media is a primary context where many youth are learning about climate change and opportunities to mobilize for activism (Datta, 2024; De Moor et al., 2021).

Scarce research examines online harassment of young climate activists in India, although a recent article discussed Disha Ravi's experience of cyberbullying following her arrest (Khoja-Moolji & Chacko, 2024). Khoja-Moolji and Chacko (2024) noted how online, Hindu nationalists depicted Ms. Ravi as "outside the pale of ideal Hindu femininity," transforming her "into a legitimate target of statist masculinist violence" (p. 107). Ms. Ravi has been open about the cyberbullying she experienced and how it negatively impacted her mental health (NBC, 2022). Qualitatively, Indian youth, particularly Muslim youth, reported decreasing their climate activism online when they felt unsafe from social media bullying and harassment (Wilf et al., under review). One Muslim youth even reported being "doxxed," where her address was shared online to threaten her. In Bhatia's (2022) interviews with Muslim adult women protestors,

women who used social media described being constantly harassed by Hindu nationalists who reported their activism-related posts to social media companies for threatening national peace and security (which can cause the companies to remove activists' posts or delete their accounts).

Research has also examined the in-person violence and harassment that climate activists experience from the government (Almeida, 2018), and corporations (Simbulan, 2016). Yet research is needed on in-person harassment that activists experience from members of the general public in the course of their climate activism. A case study of a young man's civic engagement journey in India notes that he experienced "criticism or resistance" from members of the general public when engaged in animal rescue work, and sometimes argued with people who wanted to kill animals they viewed as pests; however, it is unclear how negatively the young man viewed these experiences and how they impacted his sustained engagement (Bhangaokar & Mehta, 2012). Qualitative research with racial justice activists (Gorski, 2019) and feminist activists (Langohr, 2013), describe how activists experienced harassment and violence from the general public while protesting; yet these studies do not explore how fear of harassment or violence might affect their level of activism. In addition, a study with adult human rights activists in Colombia, Indonesia, and Kenya exploring reasons for their disengagement found that 92 percent reported experiencing harassment from community members and other actors (the definition of harassment included extreme forms of violence such as sexual assault, in contrast to verbal harassment or societal criticism) (Peña et al., 2023). The authors noted that harassment could contribute to a deterioration in activists' mental health, contributing to disengagement from their activism.

In qualitative research (Wilf et al., under review), young Indian climate activists reported facing harassment from civilians in the form of taunting and bullying comments when they were

performing activities in public such as trash cleanups. It was unclear what exactly motivated this harassment, but youth briefly mentioned several reasons such as denial about the climate crisis, a widespread belief that climate activists were hypocritical (using air conditioning while encouraging others to use reusable bags, for example), and a belief that climate activists were anti-national or anti-development. Indian youth also faced harassment when they attempted to raise awareness about the climate crisis or encouraged the public to be more environmentally friendly, such as using reusable bags at the market. Public harassment may hinder youth climate activism as it can compound any doubts they have about their activism not making a difference in mitigating the climate crisis. For many youth, raising awareness about the climate emergency is a primary goal (Hilder & Collin, 2022); therefore public harassment, in addition to causing fear or anxiety, could contribute to reducing their climate activism. Research is needed to explore how in-person harassment and bullying may shape youth climate activism, and how it may differ from online harassment. Based on youth experiences in Wilf et al. (in progress), in-person harassment had different effects on youth climate activism, making youth feel more stigmatized but not altering their strategy. In contrast, online harassment was scarier for youth because it involved doxxing (having public details posted online), threats of violence, and fear of their and their family's reputation being publicly and permanently tarnished. Therefore, it is possible that online harassment might be associated with decreases in youths' level of climate activism over the study period.

Similar to online harassment, in-person harassment may be particularly harmful for women and Muslim youth. In the abovementioned study with Muslim women activists in India, Bhatia (2022) reported that women were afraid of male civilians when they protested in-person. Indeed, civilian Hindu nationalist “vigilantes,” as they are termed by Bhatia (2022), fired upon

protestors and there was a pogrom in a Muslim area of Delhi that was prompted by the protests (Kadiwal, 2021). Thus protesting can be physically dangerous for youth holding minoritized gender and religious identities, and they may be subject to higher levels of both verbal abuse and violence. Higher levels of harassment could lead to youths' eventual disengagement from activism, as has been documented over longer-term periods (such as over several years) (Peña et al., 2023), although research is scarce on the short-term associations between harassment and youth activism.

Climate Anxiety.

Climate anxiety, defined as the emotional, cognitive, and behavioral impacts of persistent worries about climate change (Clayton & Karazcia, 2020), is rising for young people around the world, and has been positively associated with Generalized Anxiety Disorder (Schwartz et al., 2023). A recent survey across 10 countries found that Indian youth had some of the highest rates of worry about the climate crisis and the highest proportion of respondents who reported negative impacts of climate change on their daily functioning (Hickman et al., 2021). Surveys of FFF youth strikers in cities across Europe found that of several emotions (including worry, anger, frustration and hopelessness), worry was the most commonly reported emotion related to the climate crisis (De Moor et al., 2020). Emerging research shows that climate anxiety may be more common in adolescence and young adulthood than in other developmental periods (Clayton & Karazsia, 2020). Indian youth pointed to climate anxiety as an issue that affected most climate activists, and even youth who reported that they had not experienced climate anxiety referenced it as a detractor for others (Wilf et al., under review). As a 16-year old Indian youth said, "climate anxiety really exists. And it's quite difficult. And one of the worst aspects of being a climate activist."

Although climate anxiety can have negative implications for young people's mental health, it may be a motivating factor in their climate activism. Indeed, some research views climate anxiety as an adaptive coping response to the reality of the climate crisis (Sangervo et al., 2022). In qualitative (Godden et al., 2021; Wilf et al., under review) and cross-sectional quantitative (Noth & Tonzer, 2022; Sarrasin et al., 2022; Schwartz et al., 2023) research, climate anxiety motivates young people to take action. In other words, climate anxiety may spur young people to participate in climate activism because they are worried about the crisis. In qualitative interviews with young climate activists across the world, including India, Fisher (2016) found that a concern for nature (indicating some worry about the climate crisis) was a primary reason young people committed to climate activism. A longitudinal study with non-activist adults over 8 months found that climate change distress was associated with pro-environmental actions, such as volunteering and signing petitions (Latkin et al., 2022). In addition, a cross-sectional study with adults ($M_{\text{age}} = 23$ years old) in 32 countries, including India, found an association between climate anxiety and pro-environmental behaviors and climate activism (Ogunbode et al., 2022).

Climate anxiety, similar to other mental health disorders, can operate on a variety of timescales. Some research shows that climate anxiety affects youth on a daily basis (Heeren et al., 2022), which was emphasized by young Indian climate activists in the qualitative study (Wilf et al., under review). Scholars have found positive associations between youths' climate anxiety and their climate activism, although this research is cross-sectional (e.g., Schwartz et al., 2023), limiting a more comprehensive understanding of potential associations between climate anxiety and climate activism over time. This study will examine the relationship between climate anxiety and youths' sustained climate activism cross-sectionally and over periods of 2 and 6 weeks,

giving a clearer picture of the extent to which climate anxiety supports sustained, heightened or decreased activism across short-term periods of time.

Political Repression.

The government is an important player in youth climate activism; for example, frustration with government inaction can motivate youth to participate in climate protest (Pickard, 2022), whereas political repression — such as government arrests and surveillance of climate activists — can chill a movement (Hasler et al., 2020). Political repression is defined as “state or private action meant to prevent, control, or constrain noninstitutional, collective action (e.g., protest), including its initiation” (Earl, 2011, p. 263). Because political repression can have substantial impacts on social movements (Almeida, 2018), it is important to note India’s historical and current political context and how it may play a role in youth climate activism.

India’s historical and current political dynamics play a role in what youth can and cannot expect to achieve from their climate activism, particularly as many Indian youth lack faith in the government (Ilavarasan, 2013). Scholarship has explored government corruption and inconsistent application of legislation in India (Krishnan et al., 2014; Kumar, 2015), with particularly negative impacts on poor and marginalized communities (Ahuja & Chhibber, 2012). Roy (2009) wrote that the informality and inconsistent implementation of laws in India “is the site of considerable state power and violence” (p. 80). Thus, as scholarship has noted (e.g., Roy, 2023; Swain, 2015), climate activism focusing on policy or legislative change in India may contend with unique dynamics whereby laws and political processes are informal, opaque, and inconsistently enforced. Because of these dynamics, activism aimed at changing laws or policies may not be as effective, and climate activists may turn to alternative strategies to effect change (Swain, 2015).

As in many countries across the world, India's government has become more conservative in recent years and there is a growing trend towards nationalism (Khosla & Vaishnav, 2021). Prime Minister Narendra Modi heads the Bharatiya Janata Party (BJP), a political party with roots in Hindu nationalism. Under Modi's government, freedom of the press and speech have been curtailed due to surveillance and arrests, including on social media (Chadha & Arya, 2021). Climate activists have been prevented from traveling abroad, arrested, and experienced condemnation from political leaders (Swain, 2015). As Swain (2015) wrote, the Indian government under Modi is "intensely hostile to environmental activism in the country and regularly branding them not only anti-development but also anti-national" (p. 16). For instance, in 2020 when FFF India members mobilized to protest legislation that would exempt many development projects from government oversight, the FFF India website was shut down by the government (the website was later reinstated) (LiveMint, 2020). In 2021, prominent young climate activist Disha Ravi was arrested and detained for three months under charges of "terrorism" for sharing Swedish climate activist Greta Thunberg's social media post with a toolkit for peaceful protest. Ms. Ravi endured extensive cyberbullying from Hindu nationalists following her arrest (Khoja-Moolji & Chacko, 2024), and government representatives framed her climate activism as an anti-nationalist attempt to "defame India and create unrest here" (The Wire, 2021, para. 2). A Washington Post (2021) investigation found that in India, numerous activists such as Ms. Ravi were being surveilled by the government. These arrests targeting young climate activists are largely seen as retaliation for collective actions against government-led development projects (Dutta, 2022). As journalist Adve (2021, para. 3) wrote: "The state's targeting of climate and environmental organisations in recent years is deeply worrying, as is the worldview underlying it: that voicing environmental concerns or...to question environmental

damage is to attack the nation-state.” Indian youth climate activism must be understood in the context of these political dynamics.

Several studies have detailed the history of state-sponsored violence against social movements in India (Baviskar, 2001; Roy & Martinez-Alier, 2019; Swain, 2016). Violence against environmental activists in particular has only increased; in 2016, Global Witness reported a threefold increase in deaths of environmental activists in India, ascribing this increase in large part to state suppression and police brutality (Global Witness, 2017). In 2021, India experienced its highest-ever number of violent attacks against human rights activists (Hines, 2023). As described previously, Indian youth climate activists have faced increasing political repression in the form of arrests and surveillance (Washington Post, 2021), and politicians stigmatizing their activism (Adve, 2021).

Political repression includes a broad range of actions intended to suppress or control collective action (Earl, 2003). Earl’s (2003) typology of political repression includes overt repression, which constitutes aggressive state actions to quell activism such as violence and arrest, as well as covert or “soft” forms that use subtler techniques to hinder activist mobilization, such as government surveillance. Soft political repression has been categorized into three overlapping dimensions of ridicule, stigma, and silencing (Ferree, 2004). In Ferree’s (2004) conceptualization, soft repression is instigated both by the state and civil society actors. More recently, scholars have added digital repression to the typology of political repression (Earl et al., 2022). Digital political repression can include censorship of information related to activist causes or surveillance of activists’ social media accounts and online activity. The threat of political repression (including violence) to environmental activists’ safety in global South countries is well documented, particularly against Indigenous communities in non-democratic

nations (Rojas-Páez, 2017; Scheidel et al., 2020). An area of research that is less explored is how political repression in democracies, particularly “soft” forms of repression such as surveillance and stigma, may shape youth climate activism.

Research shows that political repression can have mixed impacts on youth activism. In a longitudinal study with Umbrella Movement youth activists in Hong Kong who faced political repression from the Chinese government, Chan and colleagues (2021) found that youth perceptions of the government’s responsiveness decreased over time, and that for youth with the highest protest participation, positive perceptions of the government’s responsiveness predicted their positive psychological wellbeing over the year-long study. In a study of the factors contributing to adult human rights activists’ attrition from organizing spaces in Colombia, Kenya, and Indonesia, Peña and colleagues (2023) noted that a lack of trust in government, and an associated perception in government impunity for human rights abuses, was one of the primary drivers behind activists’ disengagement. The authors noted that a lack of trust in government led to activists feeling isolated and hopeless. Almeida (2018) reviewed literature showing that in authoritarian contexts, state violence including police abuse and human rights atrocities could radicalize protestors; however, softer forms of repression may have helped governments quell protests and prevent further mobilization.

Yet, soft repression does not always succeed in quelling protest, as it may lead activists to downplay their involvement publicly while continuing with more private forms of activism. For example, in research with Swedish activists, Jämte and Ellefsen (2020) showed that the stigmatization that radical-left libertarian activists felt from the general public, media, and the government made them cautious to conduct their activism in public while still continuing their activism privately through closed groups. Similarly, in response to government digital

surveillance in the U.S., activists reported changing their strategies to avoid government detection while maintaining their organizing work (Starr et al., 2008). However, in India soft repression could result in activists being more public with their protest – following the government’s proposed Citizenship Amendment Act (CAA) and the National Register of Citizens (NRC), nationwide protests broke out over the acts’ discriminatory intent (Chopra, 2021). Women in Delhi who occupied a public space in peaceful protest against these acts were called “terrorists” by government leaders and surveilled by the police; in response, they shared photos of themselves openly on social media and used peaceful protest strategies, such as offering flowers to police, to counter the violent rhetoric and stigma (Chopra, 2021). In interviews with journalists, Indian youth climate activists reported being attacked by online trolls and government officials for being anti-development and anti-national (Vice, 2022), which may have changed their activist strategy but not shaped overall increases or decreases in their activism (Wilf et al., under review). Nevertheless, in Peña and colleagues’ study with human rights activists, they argued that soft repression including stigmatization and surveillance could have “devastating consequences” because it was “a tactic that is subtler than direct violence or intimidation but has serious and damaging effects on activists’ lives and work, because it relies on widespread societal and political prejudices that are impossible to change in the immediate term” (2023, p. 36). Thus, the research on political repression and activism shows widely varying impacts on increases or decreases in activists’ engagement depending on a number of structural and personal factors.

The three types of political repression that came up most frequently in the qualitative study with young Indian climate activists were surveillance, stigmatization, and arrest (Wilf et al., under review). These types of political repression had differing effects on youths’ climate

activism. For the highly engaged activists in the study, arrest appeared to cease some young people's climate activism completely for several months. For instance, when the young climate activist Disha Ravi was arrested and charged with terrorism for posting a toolkit for peaceful protest on social media, youth reported that the Fridays for Future movement "went underground" and participation sharply decreased (Wilf et al., under review). Although in Western contexts, young climate activists may use arrest strategically as part of their protest strategy (e.g., Pickard et al., 2020), there appears to be scarce research on the consequences of arrest for young people's climate activism in contexts of political repression (Khoja-Moolji & Chacko, 2024). Surveillance, particularly online, caused changes in youth activists' strategy and increased their anxiety about being engaged in climate activism, which reflects prior research that digital surveillance can quell social movements when they are in more emergent stages (Weidmann & Rød, 2019), such as the FFF India chapters (Roy, 2023). Meanwhile, stigmatization caused structural barriers to youth climate activism, such as government administrators refusing youths' requests to peacefully protest (Wilf et al., under review). Although none of the youth in the study reduced their own climate activism due to stigmatization, they reported witnessing other youth leave the movement because their parents disapproved of their climate activism as a result of stigmatization (and ensuing worry about their family's reputation and child's future career). Prior research shows that government surveillance can cause negative emotions such as fear (Starr et al., 2008) and contribute to activists' burnout and emotional exhaustion (Peña et al., 2023), and it is possible that fear of political repression could exacerbate youths' negative emotions related to activism, such as climate anxiety, to detract from young people's level of engagement in the climate movement.

Political repression was particularly salient for Muslim youth climate activists (Wilf et al., under review). Rising rates of Islamophobia and violence against Muslims in India, coupled with the government's increasingly anti-Muslim and Hindu nationalist policies (Bajoria, 2020; Mehta, 2022; Ramachandran, 2020; Varshney & Staggs, 2024) could intersect with government stigmatization of climate activism (for example, with both Muslims and climate activists separately being labeled as "anti-national") and other identities youth hold. For instance, religious background and gender may intersect in Indian Muslim women's fear of political repression; in interviews with Muslim women who joined a sit-in protest against the Citizenship Amendment Act, Bhatia (2022) found that women activists feared violence from the police in what they perceived to be a male-dominated, Hindu-centered space. However, scant research explores the consequences of political repression for youth climate activism, particularly in democracies such as India. It is possible that youth who report higher worry about political repression are more likely to engage in climate activism, because they have a higher critical awareness and engage in activism to counteract the government's failings, as with radical climate activists in Britain (Pickard, 2022). However, higher rates of worry about political repression may reduce the activism of other youth who cannot afford to risk their career prospects at the prospect of potential reputational damage, or who are frightened for their and their family's safety, as shown in research with non-climate activists in other contexts (Peña et al., 2023).

Method

Research Design

This study used a short-term longitudinal design to examine the relationship between seven factors (grouped into supporting and mixed/detracting factors) and youth's sustained climate activism. Data came from a survey that was distributed to young climate activists in

India once every 2 weeks for 6 weeks, for three waves total. The time period of six weeks was chosen in collaboration with a Youth Research Advisory Board (YRAB, described below). The YRAB believed a longer time period than six weeks to examine longitudinal changes in youth climate activism, noting that increases or decreases in youths' activism might not take place within the shorter time frame. However, due to time and funding constraints, as well as results of the preliminary qualitative study (Wilf et al., under review), finding that many of the factors could change on a daily or weekly basis (such as seeing tangible achievements, climate anxiety, experiences of political repression and harassment), the YRAB approved the six-week period for the study.

Eligibility

Participants were eligible for the study if they were between the ages of 18 and 24 years old, currently resided in India, and were engaged in climate activism. The term “climate activism” was not defined in the recruitment materials, although participants were asked to describe their climate activism and climate organizations with whom they worked in an open-ended question in the signup form. I used the short descriptions of youths' climate activism in the signup form to screen out participants who were ineligible for the study. Participants were screened out if they were only engaged in “eco-friendly” behaviors that had no interpersonal connections. For example, one participant was screened out who described their climate activism as “not using public transport, not using lifts,” and another was screened out who said they “walk on foot to college and market...[and] always switch off fan whenever I go out of room.” Several participants were also screened out who indicated interest in climate activism, but stated they were not currently engaged, such as this participant: “I haven't done anything till now but I will take this as my first opportunity to start my activities.”

Sample

Sample descriptives are displayed in Table 1. A total of 190 participants completed the first wave, 151 completed the second wave, and 159 completed the third wave. Two participants were added in wave 2 and one participant was added in wave 3, for a total of 193 participants who completed at least one of the three waves.

The mean age of participants was 20 years old ($SD = 1.90$). A little over half the sample was cisgender women, and nearly three-quarters (70%) identified as having a majority (Hindu) religious background. Less than ten percent of the sample ($N = 15$, 7.89%) identified as part of a scheduled tribe or scheduled caste, and due to low sample size this aspect of youths' identity was not included in data analysis as a separate demographic category. The mean length of time engaged in climate activism was between 6 months and one year, although over a quarter of the sample had been engaged for more than 2 years ($N = 53$, 28%). Nearly 80% of participants were living in an urban or semi-urban area, with just 26 (13.68%) participants living in rural or semi-rural areas.

Table 1

Sample Demographics by Time Point

		T1 (N=190)		T2 (N=151)		T3 (N=159)	
		Mean (SD)		Mean (SD)		Mean (SD)	
Age							
	18-21	20.72 (1.90)		20.74 (1.89)		20.71 (1.93)	
	22-24	N	%	N	%	N	%
Gender							
	Cisgender woman	99	52.1	83	54.9	87	54.7
	Cisgender man	70	36.8	59	39.1	60	37.7

Gender diverse	15	7.9	11	7.3	12	7.5
Missing	6	3.2	0	0	0	0
Religious Background						
Majority (Hindu)	133	70	108	71.5	115	72.3
Minority religion	47	24.7	43	28.5	41	25.8
Missing	10	5.2	0	0	3	1.9
Scheduled Tribe/ Scheduled Caste						
Yes	15	7.9	11	7.3	13	8.2
No	162	85.3	137	90.7	140	88.1
Missing	13	6.8	3	2.0	6	3.8
Length of Engagement in Climate Activism						
Mean (SD)	4.38 (1.56)		4.42 (1.51)		4.43 (1.51)	
Less than one month	12	6.3	7	4.6	8	5.0
Between 1-3 months	16	8.4	15	9.9	15	9.4
Between 4-6 months	19	10.0	17	11.3	15	9.4
Between 6 months and a year	28	14.7	23	15.2	25	15.7
Between 1-2 years	47	24.7	40	26.5	43	27.0
More than 2 years	53	27.9	45	29.8	46	28.9
Missing	15	7.9	4	2.6	7	4.4
Geography						
Rural	26	13.7	21	13.9	22	13.8
Urban	150	78.9	127	84.1	130	81.7
Missing	15	7.9	3	2.0	7	4.4

Positionality

I decided to conduct my dissertation work in India because I saw a contradiction between extant literature's focus on white, wealthy climate activists from Western countries (Neas et al., 2022), and my own experience witnessing Indian youths' activism. Prior to my doctoral studies, I worked with nonprofits in several cities in India (Mumbai, Ahmedabad, and Bengaluru) for three years as a volunteer English teacher and mentor, researcher, and program evaluator. I also have family in India through my husband. I do not claim any insider knowledge, but I feel more passionate about supporting Indian youth due to my personal ties to the country. I have participated in activism work, most recently as co-founder of the UC student research and advocacy organization Survivors + Allies, but I have not engaged extensively with the climate movement. Because I do not share important identities and experiences with participants, I incorporated participatory and qualitative methods in my research, positioning youth as experts of their own experience. Ultimately, I hope YRAB members felt like they had agency and decision-making power in the research process, and that providing feedback to participants (such as a short report that will summarize main study findings) will help to avoid extractivist research. A primary goal of this dissertation is to disseminate recommendations for the climate movement to better support all Indian youths' climate activism.

Recruitment

To screen youth who were potentially ineligible for the study, a signup form was utilized during recruitment prior to the first survey. The signup form asked for participants' first and last name, phone numbers and emails, a short description of their climate activism work (including approximate hours per week), their state of residence in India, language preference for the

survey, age, and gender. Gender was included in the signup form to monitor and make changes to recruitment procedures if necessary.

The original target for the recruited sample was 300 youth. Youth were recruited in four primary ways. First, participants were recruited via the YRAB, who shared the link within their networks of FFF chapters and other climate organizations. YRAB also reached out to individuals who were prominent in the climate movement in India to ask them to share the study flyer and information. Second, I reached out to the non-YRAB 16 youth I interviewed for the qualitative study to ask for their help in distributing the survey. Several youth agreed to take the survey and/or share the study information within their networks. Third, I reached out to climate organizations directly via Instagram to ask for their support in sending the survey to eligible youth through whatever means they typically use to contact their members. Very few responses were received for the third outreach strategy, and one young person who did respond told me that others were likely wary of being contacted for information about their climate activism due to young climate activists being arrested and surveilled by the government.

Fourth, I utilized Instagram advertisements (through an Instagram account created for this study) to post the study flyer and reach young people in India who were 18-24 years old and interested in social activism and environmental issues. Instagram allows advertisers to specify age, location, and interest areas in advertising. However, I was unable to advertise using the first flyer, which was created in collaboration with the YRAB, because it was flagged as a “social or political issue” by Instagram (see Figure 1: Advertisements). Instagram’s advertising page explained that they require a “paid for by” disclaimer “to run social issue ads that seek to influence public opinion through discussion, or debate or advocacy for or against important topics, such as health and civil and social rights” (Instagram, 2024). Instagram’s website notes

that each country has different “top-line social issues” that may require additional transparency before being run; in India, “environmental politics” is one of these (Instagram, 2024). Although the advertisements I submitted did not seek to influence public opinion or advocacy, but rather to document and study youths’ existing advocacy work, I appealed the decision only to be rejected several times. Instagram’s advertising team sent a message saying that for my advertisement to be approved, I must verify my identity as an Indian citizen first with Instagram and then post my full legal name and address on each advertisement. Because I was unable to meet these criteria, I changed the advertisements to remove terms related to activism. Ultimately, the advertisement that was approved was not cost-effective and only around 40 youth in total were brought into the study from Instagram advertising.

Figure 1

Advertisements

	Advertisement	Approved/ Rejected
1		Rejected

2		Rejected
3		Approved

The fifth and final recruitment strategy was snowball sampling, which was utilized after around 150 participants had already signed up for the study. I contacted all participants on Whatsapp, offering an additional INR100 if they agreed to ask 2 friends to sign up for the study. Per IRB protocol, the additional INR100 was not contingent on youth actually following through

in asking their friends, or the friends signing up for the study. The snowball sampling strategy resulted in recruiting another 78 participants.

Data Collection

IRB approval was received from UCLA for this study. Because some city-based chapters of climate organizations are very small and could enable individual respondents to be identified based on their age and other demographic information, the survey did not analyze responses by city or state in India. YRAB members did not have access to the dataset or any participant contact information.

The three bi-weekly surveys were sent to participants on August 19th, September 2nd, and September 16th. Participants were given two days to complete the surveys, although a few (about 2-4 youth in each survey wave) requested additional time due to personal circumstances. All such individual requests were granted, as long as participants completed the survey within one week from the start date.

Surveys were distributed via personalized Qualtrics links sent by email and Whatsapp, with 2-3 reminders to complete the survey. The signup form required an email address and phone number; in subsequent waves, participants were assigned an ID and received a personalized link to the survey. I removed all identifying information at the completion of data collection, and used the ID number to connect participants' responses over time when merging the data to prepare for data analysis.

Participants in the study were promised INR800 as a stipend, but all received INR900, because the sample size was lower than projected and additional funds were available. Most stipends were paid in December 2023; several participants did not see the link to the payment survey (which was at the end of the final survey) and reached out individually in January and

February 2024 to receive their stipend. Any participant who completed at least one survey received the stipend. All YRAB members received approximately \$200 for their time.

Youth Research Advisory Board (YRAB)

The Youth Research Advisory Board (YRAB) is inspired by aspects of Participatory Action Research (PAR), which reflects more equitable power relations between research participants and researchers and shared decision making (Jacquez et al., 2013). Through a collaborative process of democratic deliberation with adults in pursuit of a social justice goal, PAR can have benefits for youth including increased sense of civic agency and learning new skills (Zeldin et al., 2013). PAR is viewed both as a method and an orientation wherein youth are seen as experts and holders of knowledge who can change inequitable systems and policies (Ozer et al., 2020).

In this project, the intention of using a participatory approach was to give youth real decision-making power in the research process to fulfill the study goal of strengthening the climate movement. The intention of including a YRAB was to ensure that young climate activists themselves were part of the research process, giving valuable input on aspects of the methodology and results. Although PAR is not a methodology, many studies utilizing PAR with youth engage them early in the research process to support in conceiving the study, in particular its methods or how the study will be used and disseminated (e.g., Sangalang et al., 2015). In contrast, this dissertation already had primary variables of interest and a set methodology; although I was flexible on adding variables or modifying existing variables, I preferred not to remove any variables because they were based on the initial qualitative study (Wilf et al., under review).

It was important for me to closely attend to power dynamics within this participatory framework. In addition to privileges based on my social identities (upper-class, highly educated, white, from the United States), I was also a doctoral student at a well-known university, would most likely be perceived as an “expert” in research methods, and had insider knowledge of the study as I had been immersed in the qualitative data and this dissertation preparation for nearly a year, in contrast to youth who joined in spring 2023. Throughout the YRAB activities (see Table 2 below), I attempted to amplify youth expertise by deferring to their decision making around the measures we used in the survey and recruitment strategies, and to incorporate their own research interests into new survey questions they co-designed.

The YRAB in this study consisted of 6 youth who participated in the qualitative study and were interested in engaging in future research. To recruit youth for the YRAB, I reached out to youth directly via Whatsapp asking whether they were interested. The message included a description of the study, as well as their role and anticipated hours and stipend. The YRAB members did not take an ethics training for this research study because they did not have access to any of the data or information about study participants.

I faced several challenges in working with the YRAB. The primary challenge was scheduling team meetings, because all youth were very busy with activism work (often in multiple different organizations, and in leadership positions) as well as school. I staggered our meetings so that two or three youth attended each meeting, where we covered identical agendas. However, because the group was never able to meet at the same time, I was unable to inculcate a sense of community among YRAB members, several of whom never met because of their conflicting schedules. I was also frequently unable to complete meeting agendas, because the start of each meeting was devoted to reviewing my conversations with other YRAB members

from parallel meetings. These circumstances inhibited our ability to conduct group decision making, as we were having conversations about nearly identical topics in different meetings and there was no formal way to make group decisions. I was open with the YRAB about this challenge, and they were sympathetic to the difficulty scheduling meetings but agreed that group decision making would not be fully possible in this scenario.

Maintaining consistent and open communication with, and between, YRAB members was particularly difficult due to the time difference between California and India, network reception issues, YRAB members' obligations to school and activism, and a lack of prior relationships between YRAB members. Multiple members suggested forming a Whatsapp group to facilitate communication, and I used the group primarily to schedule meetings and to make group decisions. Although I encouraged the YRAB members to introduce themselves on this group and get to know each other, it was difficult to form social connections when the YRAB members had never met and did not know much about one other. The YRAB members were (intentionally) from different regions and backgrounds, and their climate activist strategies and commitment varied. For instance, some members were more involved in community-level climate activism, whereas others had leadership positions in national organizations. Some YRAB members also had less time for climate activism during the study because of their schoolwork. In the end, YRAB members provided substantive input and opinions on the decision points listed below, but I often ended up making the final decision on my own (informing the YRAB members when I did so) due to time constraints and inability to convene the whole team in a meaningful discussion.

Table 2

YRAB Meetings and Decision Making

Meeting	Goals	Activities
1	- Get to know each other - Establish community rules - Understand how participating in the YRAB will support members - Brainstorm social movement goals for the study - Review findings from preliminary qualitative study and discuss how dissertation study will extend this research - Discuss power dynamics	- Icebreakers - Community rules together - Discussion: why are people participating in the YRAB? What are they hoping to learn/ do? - Design thinking activity brainstorming study goals
2	- Decisions about survey timing - Brainstorm recruitment methods	- Discuss how often to send survey to participants to examine changes in key variables - Discuss recruitment options - Who to recruit (existing networks, through organizations) - When to recruit - How (via whatsapp/ social media) - Could recruitment help YRAB members build relationships with organizations they've been meaning to connect with?
Group actions: YRAB reviews flyer and Instagram ad used for recruitment; changes survey timings from weekly to biweekly; decides on recruitment strategy through personal networks and social media		
3	- Brainstorm open-ended questions/ different methodologies	- Brainstorm open-ended questions that could empower participants with more voice and agency - Questions for discussion: - What do you personally hope to learn from the survey? - Is there anything about climate activists' experience you want more people outside the climate movement to know about? - Is there any group knowledge we could gather from the surveys that would be helpful internally for the movement?
4	- Review study measures together - Decide which measures to use (climate anxiety scales) and modifications to make	- Pilot measures together - Group discussion about any modifications - What open-ended questions can we add to the survey to make it feel more empowering and give participants more agency?

Group actions: YRAB pilots the survey and makes modifications to several items; adds open-ended and multiple choice questions about participants' type of climate activism involvement, opinions on strategies to create change, and feelings of inclusion in the movement		
[Future meetings]	- Learn about findings of the study based on analysis so far - Discuss any additional analyses to do	- Review analyses so far and preliminary findings - Discuss any gaps in knowledge/ questions that the YRAB wants to pursue in further analysis
[Future meetings]	- Decide on dissemination methods for the study findings - Decide what parts of the research youth want to be involved in	- Design thinking brainstorm around how the study findings could support the climate movement - Discussion of methods to disseminate findings (i.e., media outreach, social media, reports, webinars, etc)

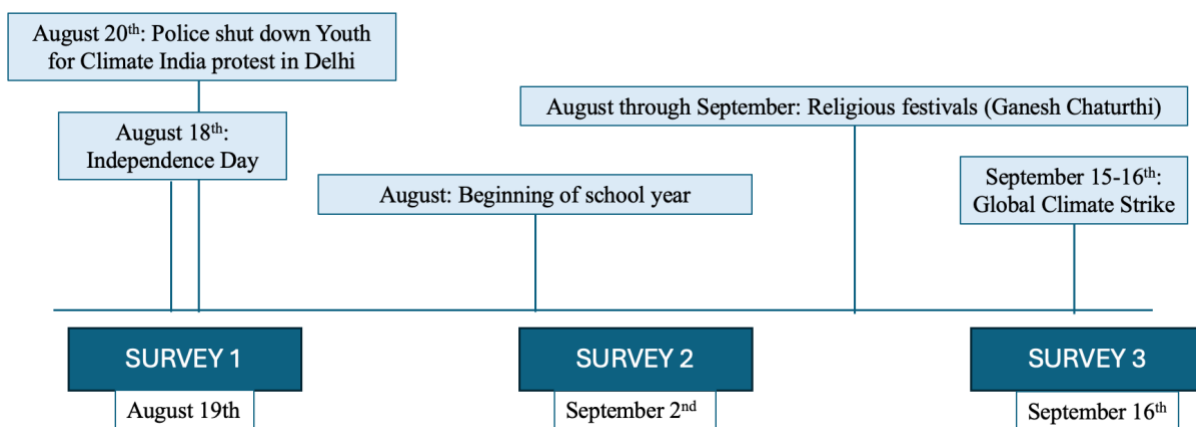
Sociopolitical Context

Throughout the data collection period, I kept track of relevant current events and news that were related to youth climate activism and could influence any of the variables in the study (see Figure 2). For example, the Global Climate Strike occurred the same weekend as the third survey wave, which could have inflated youths' climate activism compared to what it would otherwise have been. I primarily followed Indian youth climate organizations' public Instagram accounts to learn about current events that might shape their sustained activism or any of the variables in this study, as I saw few articles in Indian news outlets reporting on youth climate activism. I also learned about relevant events, such as police actions at protests, from the YRAB and participants in the study who shared this information with me. The first wave of data collection took place the same weekend as India's Independence Day, during which community organizations and political parties typically coordinate massive civic actions, although these actions likely would not be geared towards climate activism, but rather less controversial environmental events such as tree planting. Youths' participation in civic actions related to Independence Day could have led to short-term increases or decreases in their reported level of climate activism. Prior to the second wave of data collection, many youth were starting the new

school term and also engaging in religious holidays and festivals with their families (sometimes necessitating travel to visit family members). Religious holidays and the start of the new academic year may have affected youths' availability for climate activism in the second survey. The third wave of data collection took place one day after the Global Climate Strike, which may have led to artificially inflated levels of youths' climate activism in the third wave. However, the Global Climate Strike also could have reduced youths' climate activism who did not want to participate in in-person strikes and protests. The implications of these sociopolitical events are explored further in the Discussion.

Figure 2

Timeline of Data Collection and Relevant Sociopolitical Events



Measures

Level of Climate Activism

This study's primary dependent variable was youth's level of engagement in climate activism. In interviews with youth (Wilf et al., under review), the decentralized nature of FFF, and the broader climate movement in India, led to a wide range of specific activities involved in climate activism. For example, some climate organizations focused on local clean-up drives,

whereas others hosted large events with government attendees. Youths' activism also depended on their role within the organization, with some youth focusing more on communications and outreach via social media, and others on coordinating and planning events. Because of the wide range of youths' climate activism, as well as prior findings that political repression may inhibit Indian climate activists from engaging in protest, existing scales of youth climate activism (e.g., Alisat & Riemer, 2015) were not suitable for this study. Instead, as the primary measure of changes in youths' climate activism, a single question asked youth whether their activism had increased, remained the same, or decreased over the prior two weeks. Response options included *Increased a lot*, *Increased slightly*, *Stayed about the same*, *Decreased a little*, and *Decreased a lot*. The question was piloted with YRAB members, who agreed that the question wording was clear and easy to understand. To examine how the supporting and mixed/detracting factors were associated with increased, stable, and decreased activism, all increased and decreased responses were consolidated into single categories. To compare increased and stable with decreased activism, increased responses were coded as 1; stable were coded as 2; and decreased were coded as 3 (MPlus automatically uses the highest category as the reference group for multinomial logistic regression). To compare stable and increased activism, the reference group was switched and increased responses were coded as 3; stable were coded as 2; and decreased were coded as 1.

Climate Anxiety

The Hogg Eco-Anxiety Scale is a 13-item scale with four sub-factors measuring affective symptoms, rumination, behavioral symptoms, and anxiety about one's negative impact on the planet (Hogg et al., 2021). The Hogg Eco-Anxiety Scale was measured with undergraduate students at an Australian university who were between 17 and 65 years ($M = 22.23$). No racial or ethnic information was provided or validity tests presented in the original study, although

subsequent studies with German (Heinzel et al., 2023) and Turkish (Türkarslan et al., 2023) adults found internal consistency in the scale and confirmed a four-factor model. In this study, only the first factor measuring affective symptoms, comprising four items, was used in analysis. This decision was made because several of the items in factors 2-4 were not mentioned by youth in the qualitative study (Wilf et al., under review), in contrast to the first factor which reflected wording used by youth to describe their climate anxiety using words like “worry” and “afraid.” Using this study’s data, confirmatory factor analyses demonstrated that the fourth item in the scale (“feeling afraid”) had low factor loadings compared to the other three items (.518 compared with .658, .782, and .860), and therefore only items 1 through 3 of the affective symptoms scale were utilized as a latent variable in analysis. The final three items used to measure climate anxiety were how often, over the past two weeks, youth felt the following as a result of climate change: “Feeling nervous, anxious or on edge,” “Not being able to stop or control worrying,” and “Worrying too much.” Response options included *Never (1), A few days (2), Half the days (3), Most of the days (4), and Everyday (5)*. In this study, the Cronbach’s alpha for this three-item scale was .811 at wave 1, .872 at wave 2, and .856 at wave 3.

Political Repression

Political repression was measured by items developed for this study based on the qualitative study (Wilf et al., under review) and consultation with the YRAB. Three variables measured participants’ level of worry about three aspects of political repression identified from the qualitative study: arrest, surveillance, and stigma. The items included “In the past two weeks, how much did you worry about getting into trouble with the authorities as a result of your climate activism?”, “In the past two weeks, how much did you worry about being surveilled online as a result of your climate activism?”, and “In the past two weeks, how much did you

worry that your reputation or future career might be damaged as a result of your climate activism?” In these questions the word “government” was not mentioned, based on the YRAB’s request, to ensure participants were comfortable responding. Response options were on a Likert scale of *None at all (1)*, *A little (2)*, *A moderate amount (3)*, *A lot (4)*, and *A great deal (5)*. These variables were combined to create a latent variable measuring political repression. The Cronbach’s alpha for this scale was .825 at wave 1, .892 at wave 2, and .834 at wave 3.

Harassment

Based on a review of the literature, there does not appear to be a scale to measure in-person or online harassment experienced by activists. In the qualitative study (Wilf et al., under review), youth used the words “bullying” and “harassment” to describe their experience. Therefore, I used two items developed for this study that were approved by the YRAB: “In the past two weeks, how much did you experience in-person bullying or harassment related to your climate activism?” and “In the past two weeks, how much did you experience online/ social media bullying or harassment related to your climate activism?” Response options were on a likert scale of *None at all (1)*, *A little (2)*, *A moderate amount (3)*, *A lot (4)*, and *A great deal (5)*. These two items were used separately in analysis to measure in-person and online harassment.

Personal growth

Personal growth was assessed based on a six-item Personal Growth subscale of the Self-reported Experiences of Activity Settings scale (King et al., 2014), which measures how youth derive meaning from their experiences in varied settings. The scale included six items: “I learned a new skill,” “I became better at something,” “I was challenged,” “I gained knowledge,” “I grew or changed,” and “I discovered things about myself.” Although the original scale had seven response options, for this study we asked participants “In the past two weeks, how much did any

of the following happen as a result of your climate activism?” and provided a star rating for each item, with participants told that 1 star = *None at all* and 5 stars = *A great deal*. The stars in between were not labeled with response options for participants. The responses were coded as 1 star = 1, 2 stars = 2, 3 stars = 3, 4 stars = 4, and 5 stars = 5. The scale was validated with 160 high school-aged youth, 10 of whom had severe disabilities (King et al., 2014). Although the sample size was not high enough for validation based on 10 participants per item (Little, 2013), the authors followed a rigorous procedure to develop the scale including (1) a literature review to generate items, (2) consulting with experts on the scale, (3) piloting with youth, and (4) psychometric testing involving Principal Components Analysis and validation by assessing the scale’s correlations with theoretically similar constructs (King et al., 2014). In addition, the items in the scale are easily understood and reflect how participants in the qualitative study described personal growth to be a combination of gaining new knowledge and skills and learning about oneself (Wilf et al., under review). In this study, the six items were used as a latent variable in analysis, and the Cronbach’s alpha for the scale was .817 at wave 1, .851 at wave 2, and .870 at wave 3.

Seeing Tangible Achievements

Seeing tangible achievements was measured by a single item developed for this study based on the preliminary qualitative study, and was a continuous variable in the model: “According to you, in the past two weeks did your climate activism achieve any tangible impact?” Response options included *Yes (3)*, *Maybe/ Not sure (2)*, and *No (1)*.

Sense of Community

This construct was measured by the Social Belonging sub-scale (King et al., 2014) from the Self-reported Experiences of Activity Settings scale, which includes four items: “How much

did you feel like you got along well with others at this climate organization?” “How much did you feel like you belonged (i.e., were part of the group) at this climate organization?” “How much did you feel like you were supported and encouraged by others at this climate organization?” and “How much did you feel like you were valued by others at this climate organization?” Response options were on a 5-point Likert scale: *Not at all (1)*, *A little (2)*, *A moderate amount (3)*, *A lot (4)*, and *A great deal (5)*. This scale was validated with 160 youth and was piloted with youth with severe and moderate disabilities and found to be reliable ($\alpha = .0.78$) (King et al., 2014). In this study, two items were added to this scale, resulting in a 6-item scale: “In the past two weeks, how much did you feel a sense of community with the broader climate movement in India?” and “In the past two weeks, how much did you feel a sense of community at this climate organization?” These two questions were added to explicitly ask participants about their sense of community, both with their local climate organization and with the broader climate movement in India, as participants in the qualitative study had used the term “community” to describe their climate organization involvement. Skip logic was utilized in the survey so that only participants who reported currently being a part of at least one climate organization responded to this scale (missing data included 31 participants in wave 1, 16 in wave 2, and 18 in wave 3). In this study, the Cronbach’s alpha for the scale was .816 at wave 1, .852 at wave 2, and .859 at wave 3.

Agency

In this study, agency was composed of items measuring two dimensions of individual agency — power, and competence (“In the past two weeks, how much did you feel that you could make a difference in fighting climate change?” and “In the past two weeks, how much did you feel that you had the skills you needed to fight climate change?”) and one item measuring

collective agency (“In the past two weeks, how much did you feel that organized groups of young people could make a difference in fighting climate change?”). Response options were on a 5-point Likert scale: *None at all* (1), *A little* (2), *A moderate amount* (3), *A lot* (4), and *A great deal* (5). These items were developed based on scales for individual and collective agency in a separate study (Wegemer et al., under review). For this study, I took one item from each scale assessing individual power, individual competence, and collective power. Although I originally conceptualized these items as a three-item scale, the Cronbach’s alpha was low (.645) and the items were not highly correlated, indicating they measured distinct constructs. Therefore, the three items were included as separate variables in the regression results to measure distinct dimensions of agency.

Sociodemographic Variables

Gender. Youth were asked to report their gender by selecting all that applied from a list of gender identities. Response options were: *Woman*, *Man*, *Transgender*, *Nonbinary*, and *Another gender identity* with a write-in option. Participants who selected only woman were coded as 1; participants who selected only man were coded as 2; and participants who selected any of the remaining options, or selected more than one option, were coded as “gender diverse” and 3. Although around 7% of participants were gender diverse, due to small sample size ($N = 15$ at wave 1), unfortunately only a binary gender variable could be included in analyses.

Age. Age was measured by asking participants’ age at the first wave of the survey from a list ranging from 18 to 24: “How old are you?” Age was used as a dichotomous variable in analysis: the age range 18 to 21 was coded as 0, and the range 22 to 24 was coded as 1. Age was dichotomized because youth may have differing access to activism opportunities depending on whether they are in college or working, so these age ranges roughly reflect college-aged and

college-graduate youth. We did not ask youth whether they were attending college, but based on prior research with climate activist youth outside of India (Neas et al., 2022) and the qualitative study in India (Wilf et al., under review) showing that youth engaged in contemporary youth-led climate movements like FFF tended to be from more educated and socioeconomically privileged backgrounds, I decided to dichotomize the age variable in this way.

Religion. Religious affiliation was measured by a question asking “What is your family’s religious background? Select all that apply if you are from a mixed religious family background.” Response options included the most frequent religions in India according to the most recent 2011 Indian census (the 2021 census did not take place due to COVID-19): *Hinduism, Islam, Christianity, Sikhism, Buddhism, Jainism, Judaism, and Zoroastrianism*. In addition, the response options included *Agnostic/ Atheist* and *Another religious background* with a write-in option. Participants who selected Hindu were coded as 1 (majority religious background), and all others were coded as 2 (minority religious background). I intended to conduct analysis separately for Muslim participants due to my findings from the qualitative study (Wilf et al., under review), but sample size was insufficient.

Caste. Participants were asked “Are you part of a scheduled caste/ scheduled tribe? Select all that apply.” with response options “*Scheduled Caste*,” “*Scheduled Tribe*,” and “*No*.” These are terms the Indian government used in its most recent 2011 Census, and the YRAB approved of this question. Due to the small sample size of participants who identified as Scheduled Caste or Scheduled Tribe, I was unable to use this question as a covariate in analysis.

Length of Climate Activism. This variable was measured by the question “How long have you been engaged in climate activism?” Response options included *Less than one month* (1), *Between 1-3 months* (2), *Between 4-6 months* (3), *Between 6 months and a year* (4), *1-2*

years (5), and *More than 2 years* (6). Length of climate activism was used as a continuous control variable in analysis, as youth engaged in climate activism for longer periods of time may have more supports and community connections than youth engaged for shorter time periods.

Personal Responsibilities. This control variable was intended to capture participants' level of responsibilities over the prior two weeks with respect to three domains of their lives outside of climate activism that came up frequently in the qualitative study: school, family, and work (Wilf et al., under review). The three items asked: "In the past two weeks, how busy were you with school or college work?" "In the past two weeks, how busy were you with family responsibilities?" and "In the past two weeks, how busy were you with your job?" Response options were a 4-point scale: *Not at all* (1), *A little* (2), *Moderately* (3), and *Extremely* (4). The three items were not used to create a latent variable as they were not consistently correlated over the three waves. At wave 1, school and work responsibilities were negatively correlated ($r = -.163, p = .03$), and at wave 2 and wave 3, family and work responsibilities were positively correlated ($r = .181, p = .026$; $r = .223, p = .005$). The three items were added into the model separately as covariates.

Research Questions and Hypotheses

RQ1: Over a two-week period, which supporting factors (personal growth, seeing tangible impact, individual and collective agency, and sense of community) and mixed/ detracting factors (climate anxiety, political repression, in-person and online harassment) are associated with increasing, decreasing, or stable climate activism?

Hypothesis 1a: Political repression and harassment will be associated with decreases in youths' climate activism within each wave and two and six weeks later.

Hypothesis 1b: Personal growth, seeing tangible impact, individual and collective efficacy, and sense of community will be associated with increases and stability in youths' climate activism within each wave, and two and six weeks later.

Note: I did not have a hypothesis about climate anxiety due to the mixed findings from previous research on youth climate activism.

RQ2: What is the relationship between demographic factors (age, religious background, and gender) and increasing, decreasing, or stable climate activism?

Hypothesis 2a: I did not have specific hypotheses about age differences due to the scarcity of research comparing the age ranges (18-21 and 22-24 years old) and changes in their level of activism.

Hypothesis 2b: Young women will be more likely to decrease their climate activism than young men.

Hypothesis 2c: Religious minority youth will be more likely to decrease their climate activism than religious majority (Hindu) youth.

Analytic Plan

Missing Data

Missing data were handled using FIML (full information maximum likelihood) in MPlus, which has shown to be effective in longitudinal analysis if the variables in the study are those related to missingness (Lee et al., 2019). Attrition analysis (chi-square tests or t-tests, as appropriate) were conducted to determine whether any variables were related to attrition, and those variables were included in the longitudinal analysis as auxiliary variables. Auxiliary variables improve estimation for missing data if they correlate with at least one core study

variable (Asendorpf et al., 2014). In MPlus, auxiliary variables can be added into the model syntax and supplement analysis using Full Information Maximum Likelihood (FIML).

Descriptive Analyses

Means, standard deviations, and correlation coefficients of the variables of interest were assessed for normality, outliers, and that correlations were in the expected direction. Means, standard deviations, and correlations were examined using SPSS. In SPSS, latent variables (personal growth, sense of community, political repression, and climate anxiety) were assessed by averaging the items to create a composite score.

Invariance Testing

First, in MPlus I used longitudinal measurement invariance to assess the validity of four scales used over time, testing progressively for configural, metric, and scalar invariance. The scales that were tested included sense of community, personal growth, political repression, and climate anxiety. Political repression and climate anxiety were 3-item scales and therefore just identified, so their validity was assessed in invariance models together to evaluate fit. Configural invariance compares the pattern of factor loadings and items between groups, metric invariance compares the factor loadings, and scalar invariance compares the item intercepts (Brown, 2014). Model fit comparisons were determined non-significant with a change in CFI of no more than .01, change in SRMR of no more than .030 (metric) or .015 (scalar), and change in RMSEA of no more than .015 (Putnick & Bornstein, 2016). Non-significant chi-square tests are not a reliable indicator of fit because they are sensitive to sample size (Shi et al., 2018) and cannot adequately control for type I or type II errors (Yuan & Chan, 2016). Emerging research shows that the SRMR and RMSEA may be the least biased fit indices and should be prioritized in

invariance analysis (Shi et al., 2018; Ximénez et al., 2022). Therefore, the CFI, TLI, SRMR and RMSEA were prioritized in evaluating model fit.

Research Question 1

In MPlus, I used multinomial logistic regression to examine the relationships between the independent variables and dependent variable (a) within each wave and (b) between waves. Please see Table 3 below for a full list of variables used in analysis. Utilizing both cross-sectional and longitudinal data together helped validate findings by demonstrating consistency of results (or lack thereof). I used maximum likelihood estimation with robust standard errors (MLR), which can provide more rigorous estimates with non-normal data. Each regression model controlled for the participants' level of personal responsibilities (measured by three items including school, family, and employment workload over the prior 2 weeks), as well as demographic covariates including age, gender, religious background, and length of time engaged in climate activism. The three-category dependent variable was whether youths' climate activism increased, stayed stable, or decreased over the prior two weeks (in the two weeks prior to week 1, between waves 1 and 2, and between waves 2 and 3) or six weeks (between waves 1 and 3). For analyses comparing increased and stable to decreased activism levels, the reference category was decreased activism, coded as 3, which MPlus automatically uses as the reference category. For analyses comparing stable to increased activism levels, the reference category was increased activism and coded as 3. For cross-sectional analysis, independent and dependent variables were based on participants' experiences over the prior two weeks. Statistical significance was determined by $p < .05$; results that were close to statistical significance (between .05 and .06) were reported in the Results section but not interpreted in the Discussion.

Research Question 2

To address RQ2, in all cross-sectional and longitudinal models I examined associations between gender, religious background, and age and the dependent variable (youths' decreased, stable, or increased climate activism).

Table 3

Variables Used in Study

Variable	Type of Variable	Variable Value
Changes in level of activism	Dependent, categorical	(Decreased as reference) Increased = 1, Stable = 2, Decreased = 3 (Increased as reference) Increased = 3, Stable = 2, Decreased = 1
Sense of community	Independent	6-item likert scale, 1-5
Personal growth	Independent	6-item likert scale, 1-5
Individual agency (two separate questions)	Independent	Single-item likert scale, 1-5
Collective agency	Independent	Single-item likert scale, 1-5
Seeing tangible impact	Independent	Yes = 3, Maybe/Not sure = 2, No = 1
In-person harassment	Independent	Single-item likert scale, 1-5
Online harassment	Independent	Single-item likert scale, 1-5
Political repression (three separate questions)	Independent	Single-item likert scale, 1-5
Climate anxiety	Independent	3-item likert scale, 1-5
Age	Covariate, dichotomous	1 = 18-21, 2 = 22-24
Gender	Covariate, dichotomous	1 = Cisgender woman, 2 = Cisgender man
Religious background	Covariate, dichotomous	1 = Religious majority (Hindu), 2 = Religious minority
Length of time in climate activism	Covariate, continuous	Single-item likert scale, 1-5
Personal responsibilities (three separate questions)	Covariate	Single-item likert scale, 1-4

Attrition Analysis

Data were missing due to attrition. The first wave had 190 participants, the second wave had 151 participants (20.53% attrited), and the third wave had 159 participants (16.32% attrited). Retention was lowest at wave 2 for unknown reasons. As explored in the sociopolitical context section, wave 2 coincided with the start of the school year for college-attending youth as well as a number of religious festivals, which may have contributed to attrition at this wave. In total, 27 youth participated in only one wave, 25 youth participated in only two waves, and 141 participated in all three waves.

Attrition analyses were conducted to determine whether youth were more likely to drop out of the study based on gender, religious background, or age. Chi-square tests were used for all variables, which were dichotomous. None of the demographic variables were significantly associated with whether participants attrited from the study from wave 1 to wave 2, or from wave 1 to wave 3.

Attrition analyses were also conducted to examine whether attrition was associated with any of the key variables in the study (see Table 8). Independent sample t-tests were used in SPSS for all variables (latent variables' items were averaged to create a composite score). Youth who dropped out of the study at wave 2 had higher levels of individual agency related to competence ($M = 3.41$) than youth who stayed ($M = 2.94$, $t = -2.45$, $p = .015$) and lower sense of community ($M = 3.09$) than youth who did not attrit ($M = 3.42$, $t = -2.16$, $p = .032$). Youth who attrited at wave 2 reported lower rates of decreased activism in wave 1 ($M = .08$) than youth who stayed ($M = .21$, $t = -2.28$, $p = .025$) Youth who dropped out of the study between wave 1 and wave 3 had lower levels of social media harassment ($M = 1.20$) than youth who stayed in ($M = 1.47$, $t = -2.48$, $p = .016$). Youth who attrited at wave 3 had lower sense of community ($M = 3.08$) than youth who stayed ($M = 3.42$, $t = -2.13$, $p = .035$).

Although the attrition analyses found significant differences in some variables at certain waves, these differences were not consistent across waves. Youth who attrited had lower sense of community in waves 2 and 3, but the average for both groups at both time points was around 3, which translated to the same response (“a moderate amount”) on the scale used. Therefore we proceeded with analysis without making any modifications based on the attrition analysis.

Table 4

Attrition Analysis for Key Study Variables

	Wave 1-2		Wave 1-3	
	Attrited	Not Attrited	Attrited	Not Attrited
Supporting Factors (M)				
Personal growth	3.60	3.48	3.39	3.51
Sense of community	3.09*	3.42*	3.08*	3.42*
Seeing tangible achievements	2.00	2.19	1.97	2.19
Individual agency (power)	2.90	2.95	3.08	3.92
Individual agency (skills)	3.41*	2.94*	3.20	2.99
Collective agency	2.76	3.85	3.68	3.66
Mixed/ Detracting Factors				
Political repression	1.98	1.90	1.81	1.93
Climate anxiety	2.71	2.48	2.56	2.52
In-person harassment	1.72	1.54	1.72	1.54
Social media harassment	1.38	1.44	1.20*	1.47*
Covariates				
School responsibilities	2.69	2.78	2.88	2.75
Family responsibilities	2.72	2.57	2.84	2.56
Work responsibilities	1.41	1.46	1.56	1.43
Length of time engaged in climate activism	4.14	4.42	4.00	4.43

Dependent Variable

Increased activism	0.36	0.38	0.34	0.38
Stable activism	0.56	0.41	0.50	0.42
Decreased activism	0.08*	0.21*	0.16	0.20

Note: Two-sided t-tests conducted. * $p < .05$.

Results

Descriptive Analyses

Descriptive analyses were conducted to examine means and bivariate correlations and to check for normality in variables of interest. Means of the independent and dependent study variables were visually inspected and presented in Table 4. All variables were normally distributed except for social media harassment at wave 1, which was positively skewed due to lower overall levels of harassment reported. At wave 1, social media harassment had a skewness of 2.4 and kurtosis of 6.2. The variable was normally distributed at waves 2 and 3. However, skewness and kurtosis levels for this variable at wave 1 were still within the accepted ranges of ± 3 for skewness and ± 7 for kurtosis (Kline, 2010).

Means were visually inspected to explore change over time and trends. Means for political repression and in-person and social media harassment were all under 2 throughout the waves, corresponding to “a little” worry about political repression and harassment, on a scale of *None at all* (1) to *A great deal* (5). Climate anxiety means ranged between 2.32 and 2.52, corresponding to feeling climate anxiety a little over “a few days” a week. On average, throughout the waves youth reported around 2 (corresponding to “maybe/ not sure” in the survey) to whether they had seen any tangible achievements from their climate activism over the prior two weeks. Youths’ perceptions of their personal growth and sense of community were

both consistently above 3 across the waves, with 3 corresponding to “a moderate amount” on a scale of *None at all* (1) to *A great deal* (5). The means for individual agency (power and competence) were slightly lower than personal growth and sense of community but also around 3 across the waves, corresponding to “a moderate amount.” Means for collective agency were higher, at nearly 4 (corresponding to “a lot”) in the first wave. On average, youth reported being between “a little” and “moderately” busy with school and family responsibilities, and between “not at all” and “a little” busy with work responsibilities (on a 4-point scale from *Not at all* (1) to *Extremely* (4)).

Bivariate correlations between the study variables at each wave are presented in Tables 5-7 below. There were several significant associations of note. Across all three waves, sense of community was positively associated with personal growth ($r = .196, .314, \text{ and } .427$) and seeing tangible achievements ($r = .318, .442, \text{ and } .371$). Sense of community was also positively associated with the three agency items, although not consistently across all waves. Personal growth was positively associated with social media harassment across all three waves ($r = .201, .208, \text{ and } .165$), and was also positively associated with in-person harassment and the agency items (not consistently across all waves). Across all three waves, seeing tangible achievements was positively correlated with individual agency - power ($r = .299, .331, \text{ and } .345$), individual agency - competence ($r = .215, .342, \text{ and } .338$), and collective agency ($r = .227, .203, \text{ and } .323$). Political repression was positively associated with climate anxiety ($r = .224, .270, \text{ and } .307$), personal growth ($r = .155, .206, \text{ and } .307$), and in-person harassment ($r = .279, .366, \text{ and } .251$) across all three waves, and with social media harassment in waves 2 and 3 ($r = .324 \text{ and } .284$). Climate anxiety was positively associated with in-person harassment across all three waves ($r = .239, .318, \text{ and } .250$). As expected, youths’ level of family, work, and school responsibilities

were largely not associated with other variables in the study. In some waves, the two items related to family and work responsibilities were positively correlated.

The correlations showed some evidence of bidirectionality between the factors and changes in youths' level of climate activism. For example, personal growth at wave 2 and wave 3 was positively associated with wave 1 increased activism, and negatively associated with wave 1 decreased activism. Similarly, collective agency at wave 2 was positively associated with increased, and negatively associated with decreased, activism levels at wave 1. Seeing tangible achievements at wave 3 was positively associated with wave 2 increased activism, and negatively associated with wave 2 decreased activism. These results indicate that youths' level of climate activism may play a role in shaping some of the factors, including seeing tangible achievements, collective agency, and personal growth. For instance, youth who are more engaged in climate activism may feel a stronger sense of community as a result.

Table 5

Means and Standard Deviations of Study Variables Across Waves

Variable	Wave 1	Wave 2	Wave 3
	Mean (SD)	Mean (SD)	Mean (SD)
Supporting Factors			
Personal Growth	3.50 (.873)	3.36 (.986)	3.45 (1.011)
Sense of Community	3.37 (.701)	3.30 (.745)	3.39 (.750)
Tangible Achievements	2.15 (.751)	2.17 (.725)	2.29 (.747)
Agency (Power)	2.94 (.975)	2.89 (1.047)	3.18 (1.028)
Agency (Competence)	3.02 (.968)	2.79 (.949)	3.01 (.892)
Collective Agency	3.84 (1.018)	3.74 (1.061)	3.73 (1.032)
Mixed/ Detracting Factors			
Political Repression	1.92 (1.001)	1.88 (1.088)	1.86 (.993)

Climate Anxiety	2.52 (.997)	2.33 (.962)	2.32 (.963)
In-Person Harassment	1.57 (.856)	1.42 (.734)	1.40 (.722)
Social Media Harassment	1.43 (.849)	1.44 (.796)	1.39 (.738)
Covariates			
School Responsibilities	2.77 (1.162)	2.84 (1.291)	2.68 (1.350)
Family Responsibilities	2.60 (.814)	2.64 (.891)	2.58 (.960)
Work Responsibilities	1.45 (1.544)	1.62 (1.660)	1.53 (1.626)
Dependent Variable			
Increased Activism (Y/N)	0.37 (.485)	0.42 (.496)	0.49 (.502)
Stable Activism (Y/N)	0.44 (.498)	0.30 (.459)	0.27 (.446)
Decreased Activism (Y/N)	0.19 (.392)	0.28 (.450)	0.24 (.428)

Table 6*Bivariate Correlations Between Wave 1 Study Constructs*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Political Repression	1												
2. Climate Anxiety	.224**	1											
3. Personal Growth	.155*	0.145	1										
4. Sense of Community	0.002	0.018	.196*	1									
5. Tangible Achievements	0.062	0.046	.564**	.318**	1								
6. In-Person Harassment	.279**	.239**	.171*	-0.097	0.136	1							
7. Social Media Harassment	.309**	0.141	.201**	-0.044	.225**	.406**	1						
8. Agency (Power)	0.048	0.067	.335**	.277**	.299**	.223**	0.077	1					
9. Agency (Competence)	0.117	0.128	.349**	.187*	.215**	.202**	.170*	.458**	1				

10. Collective Agency	-0.021	0.064	.286**	.350**	.227**	0.041	0.003	.357**	.320**	1			
11. School Responsibilities	-0.064	0.067	-0.026	0.023	-0.114	0.057	0.049	-0.052	0.084	0.088	1		
12. Family Responsibilities	-0.058	0.087	-0.042	-0.067	0.021	0.08	0.078	0.079	-0.006	-0.094	0.1	1	
13. Work Responsibilities	0.054	-0.104	-0.005	-0.059	0.011	0.079	0.059	0.055	-0.009	-0.108	-.163*	0.091	1
14. Wave 1 Increase (Y/N)	.160*	0.008	.367**	0.082	.426**	.231**	.206**	.177*	0.143	0	-.196**	0.142	0.119
15. Wave 1 Stable (Y/N)	-0.086	-0.08	-0.046	-0.019	-.207**	-.182*	-0.098	0.027	0.079	.185*	0.065	-.289**	-0.069
16. Wave 1 Decrease (Y/N)	-0.089	0.09	-.395**	-0.082	-.263**	-0.055	-0.13	-.252**	-.276**	-.232**	.159*	.188*	-0.059
17. Wave 2 Increase (Y/N)	0.04	-0.061	0.115	-0.024	0.094	.168*	0.131	.168*	.308**	0.042	0.111	0.102	-0.013
18. Wave 2 Stable (Y/N)	-0.076	-0.005	-0.092	-0.072	-0.084	-0.065	-0.149	-0.12	-0.117	-0.049	-0.057	-0.057	-0.068
19. Wave 2 Decrease (Y/N)	0.034	0.072	-0.033	0.095	-0.018	-0.119	0.007	-0.062	-.218**	0.003	-0.064	-0.055	0.083

20. Wave 3 Increase (Y/N)	0.001	0.133	.189*	-0.003	0.128	0.101	.172*	0.029	.204*	0.135	0.036	0.143	-.174*
21. Wave 3 Stable (Y/N)	-0.09	-0.142	-0.152	-0.061	-0.004	-0.086	-0.049	0.016	-0.118	-0.128	-.161*	-0.041	0.123
22. Wave 3 Decrease (Y/N)	0.089	-0.011	-0.066	0.063	-0.144	-0.03	-0.15	-0.049	-0.119	-0.028	0.121	-0.124	0.079

*Note: Results marked with two stars (**) indicate a p-value of less than .01; results marked with one star (*) indicate a p-value of less than .05.*

Table 7

Bivariate Correlations Between Wave 2 Study Constructs

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Political Repression	1												
2. Climate Anxiety	.270**	1											
3. Personal Growth	.206*	0.054	1										
4. Sense of Community	-0.033	0.055	.314**	1									
5. Tangible Achievements	0.136	0.032	.371**	.442**	1								

6. In-Person Harassment	.366**	.318**	.192*	0.022	0.158	1							
7. Social Media Harassment	.324**	.221**	.208*	-0.019	0.151	.507**	1						
8. Agency (Power)	.172*	.213**	.385**	.358**	.331**	0.032	0.04	1					
9. Agency (Competence)	0.157	.171*	.290**	.281**	.342**	0.099	0.018	.548**	1				
10. Collective Agency	0.007	0.079	.168*	.199*	.203*	-0.066	-0.047	.455**	.415**	1			
11. School Responsibilities	-0.019	0.054	-0.086	0.009	-0.043	0.063	-0.042	-0.052	.174*	0.067	1		
12. Family Responsibilities	0.098	0.13	-0.027	-0.124	-0.112	0.132	0.057	-0.085	-0.1	-0.079	0.036	1	
13. Work Responsibilities	-0.015	-0.05	0.025	0.096	0.036	0.021	0.035	0.031	0.072	-0.135	-0.159	.181*	1
14. Wave 1 Increase (Y/N)	0.08	0.047	.265**	0.114	0.145	0.119	0.073	0.16	0.141	-0.031	-.208*	0.087	0.062
15. Wave 1 Stable (Y/N)	0.015	-0.117	-0.007	-0.02	0.071	-0.089	-0.035	0.02	0.01	.206*	0.081	-.212**	-0.13
16. Wave 1 Decrease (Y/N)	-0.112	0.084	-.307**	-0.117	-.255**	-0.034	-0.045	-.212**	-.178*	-.210**	0.148	0.151	0.082

17. Wave 2 Increase (Y/N)	0.028	0.07	.290**	0.152	.415**	0.06	0.068	.254**	.305**	0.095	-0.029	-.161*	-0.064
18. Wave 2 Stable (Y/N)	-0.028	-0.015	-0.112	0.003	-0.149	-0.055	-0.049	-0.045	-.206*	0.091	-0.055	0.055	-0.053
19. Wave 2 Decrease (Y/N)	-0.002	-0.062	-.207*	-0.169	-.306**	-0.011	-0.025	-.234**	-0.126	-.198*	0.088	0.122	0.124
20. Wave 3 Increase (Y/N)	0.036	.239**	0.05	0.014	0.066	0.087	0.113	0.13	0.164	0.112	0.084	-0.036	-0.071
21. Wave 3 Stable (Y/N)	-0.038	-0.081	-0.049	-0.102	-0.123	-0.073	-0.115	-0.125	-0.152	-.202*	-.222**	0.065	0.005
22. Wave 3 Decrease (Y/N)	-0.003	-.190*	-0.009	0.079	0.045	-0.027	-0.016	-0.026	-0.037	0.07	0.121	-0.023	0.075

*Note: Results marked with two stars (**) indicate a p-value of less than .01; results marked with one star (*) indicate a p-value of less than .05.*

Table 8

Bivariate Correlations Between Wave 3 Study Constructs

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Political Repression	1												
2. Climate Anxiety	.307**	1											

3. Personal Growth	.257**	0.044	1										
4. Sense of Community	-0.012	0.05	.427**	1									
5. Tangible Achievements	0.064	0.093	.480**	.371**	1								
6. In-Person Harassment	.251**	.250**	0.049	-0.08	0.072	1							
7. Social Media Harassment	.284**	.182*	.165*	-0.034	0.12	.582**	1						
8. Agency (Power)	0.149	0.105	.345**	.387**	.345**	-0.015	-0.003	1					
9. Agency (Competence)	.197*	0.101	.350**	.319**	.338**	-0.014	0.035	.615**	1				
10. Collective Agency	0.123	0.053	.355**	.303**	.323**	-0.144	0.005	.534**	.375**	1			
11. School Responsibilities	-0.028	0.125	-0.104	-0.046	-0.044	-0.131	-0.062	0.041	0.007	0.006	1		
12. Family Responsibilities	0.043	0.039	-0.046	-0.073	-0.122	0.025	0.035	-0.079	0.003	-0.059	0.146	1	
13. Work Responsibilities	-0.118	-0.093	-0.142	-0.101	-0.102	0.149	0.152	-0.136	-0.055	-.179*	-0.08	.223**	1

14. Wave 1 Increase (Y/N)	0.116	-0.019	.282**	0.122	.163*	0.076	.161*	0.089	0.119	.173*	-.308**	0.011	0.072
15. Wave 1 Stable (Y/N)	0.009	-0.068	-0.098	-0.098	-0.08	-0.032	-0.087	0.08	0.07	-0.022	.183*	-0.118	-0.13
16. Wave 1 Decrease (Y/N)	-0.153	0.108	-.224**	-0.028	-0.101	-0.053	-0.088	-.208*	-.233**	-.183*	0.148	0.134	0.074
17. Wave 2 Increase (Y/N)	0.07	0.046	.246**	0.038	.251**	0.093	0.109	0.144	.214*	0.143	-0.041	0.079	0.01
18. Wave 2 Stable (Y/N)	-0.126	-0.093	-.184*	0.095	-0.074	-0.085	-0.081	-0.112	-0.116	-0.123	-0.025	-0.033	-0.041
19. Wave 2 Decrease (Y/N)	0.052	0.044	-0.085	-0.135	-.200*	-0.015	-0.036	-0.043	-0.116	-0.031	0.07	-0.053	0.032
20. Wave 3 Increase (Y/N)	0.009	0.121	.367**	.305**	.439**	.156*	.187*	.289**	.249**	.298**	0.006	-0.118	-0.058
21. Wave 3 Stable (Y/N)	-0.076	-0.073	-.184*	-0.149	-0.091	-0.035	-0.121	-.274**	-.214**	-.189*	-.220**	-0.093	-0.012
22. Wave 3 Decrease (Y/N)	0.068	-0.066	-.240**	-.205*	-.422**	-0.147	-0.094	-0.055	-0.071	-0.153	.220**	.234**	0.08

*Note: Results marked with two stars (**) indicate a p-value of less than .01; results marked with one star (*) indicate a p-value of less than .05.*

Longitudinal Measurement Invariance of Scales

Longitudinal measurement invariance was tested across the three waves by estimating configural, metric, and scalar models for the sense of community, personal growth, political repression, and climate anxiety scales (see Table 9). Overall, no adjustments were made to the scales to improve fit.

The configural model for the sense of community scale showed a strong fit measuring the latent construct (Kline, 2010). Factor loadings for all items were above .45 across the three waves. In metric and scalar invariance model testing, none of the changes in fit indices reached the thresholds for significance, thus allowing me to conclude that the scale was longitudinally invariant at the metric and scalar levels.

Regarding the personal growth scale, the configural model demonstrated an acceptable fit to the data (Kline, 2010). Factor loadings were moderate to high across the three waves (above .56) with the exception of one item in wave 1 that loaded at .45. The metric model showed slight improvements in fit to most fit indices, $\Delta CFI = .002$. The fit indices for the scalar model showed a slightly decreased fit, but none of the changes in fit reached a level of significance. I concluded that measurement invariance across the three waves was established at metric and scalar levels for the personal growth scale.

Because political repression and climate anxiety each had only 3 items, they were examined together in the same model for identification purposes. Both scales showed high factor loadings (above .70) across all three waves and showed an acceptable fit in the configural model (Kline, 2010). The metric and scalar models showed small changes in fit that did not reach significance. In sum, these analyses established that the four latent variables fit the data well and had a similar meaning for participants over the three waves of the study.

Table 9*Fit Indices for Latent Variables*

	CFI	ΔCFI	TLI	ΔTLI	SRMR	ΔSRMR	RMSEA	ΔRMSEA
Sense of Community								
Configural	.958	-	.944	-	.047	-	.045	-
Metric	.957	-.001	.946	-.002	.063	.016	.044	-.001
Scalar	.950	.008	.942	.002	.062	.015	.046	.001
Personal Growth								
Configural	.904	-	.871	-	.069	-	.073	-
Metric	.906	.002	.884	.013	.075	.006	.069	.004
Scalar	.897	.007	.881	.01	.076	.007	.070	.003
Political Repression and Climate Anxiety								
Configural	.940	-	.924	-	.052	-	.060	-
Metric	.934	-.006	.923	-.001	.062	.010	.061	.001
Scalar	.932	-.008	.924	.000	.062	.010	.060	.000

Cross-Sectional Multinomial Regression Analysis

To explore associations between the factors and youths' sustained climate activism, I first conducted cross-sectional analysis within each of the three waves. The results of the cross-sectional multinomial regression analyses for waves 1, 2, and 3 are presented in Tables 10-12. The dependent variable (changes in youth's level of climate activism over the prior 2 weeks) was a nominal categorical variable with three categories of increased, stable, and decreased. The reference category was decreased activism for the first two models (comparing increased and

stable activism with decreased activism) and the reference category was increased activism for the third model (comparing stable to increased activism). Models included all factors of interest as well as demographics (age, gender, and religious background) and control variables of personal responsibilities for school, family, and work and length of time engaged in climate activism.

Supporting Factors

At wave 1, youth with higher rates of personal growth were nearly 12 times more likely to report increased versus decreased climate activism ($OR = 11.848, p = .009$), and were 5 times more likely to report stable versus decreased climate activism ($OR = 5.351, p = .023$). Personal growth did not significantly differ between stable versus increased activism levels. At wave 2, personal growth comparing stable and increased activism was close to, but did not reach, significance ($OR = .565, p = .054$).

At wave 1, youth who saw higher rates of tangible achievements from their climate activism were 75% less likely to report stable compared to increased activism ($OR = 0.250, p = .001$). At wave 1, seeing tangible achievements was not associated with youth's increased or stable compared with decreased activism. At wave 2, youth who reported higher rates of seeing tangible achievements were six times more likely to report increased versus decreased activism ($OR = 6.099, p = .001$), and were 76.2% less likely to report stable versus increased activism ($OR = 0.238, p = .002$). At wave 3, youth who reported seeing higher tangible achievements were four times more likely to report increased versus decreased activism ($OR = 4.342, p = .005$), and nearly four times more likely to report stable versus decreased activism ($OR = 3.996, p = .014$).

At wave 2, youth with higher levels of collective agency were nearly twice as likely to report stable versus decreased activism over the prior two weeks ($OR = 1.991, p = .020$), and nearly twice as likely to report stable versus increased activism over the prior two weeks ($OR = 1.937, p = .018$). At wave 3, higher rates of collective agency were associated with youth being 2.416 times more likely to report increased versus decreased activism ($p = .027$). Collective agency at waves 1 and 3 comparing stable and decreased activism was close to, but did not reach, significance ($OR = 1.928, p = .053$; $OR = 2.131, p = .056$).

Unexpectedly, at wave 3, youth who reported higher rates of individual agency (power) were 62.5% less likely to report increased versus decreased activism ($OR = .375, p = .027$), and were 79.6% less likely to report stable than decreased activism ($OR = .204, p = .002$). Individual agency (power) did not differentiate between stable versus increased activism.

At wave 2, individual agency (competence) comparing stable with increased activism was close to, but did not reach, significance ($OR = .491, p = .053$).

Mixed/ Detracting Factors

At wave 1, youth who reported higher rates of in-person harassment over the prior two weeks were 54.3% less likely to report stable versus increased activism ($OR = 0.543, p = .006$).

At wave 2, no mixed or detracting factors were associated with levels of activism.

At wave 3, youth who reported heightened social media harassment were 63.3% less likely to report stable compared to increased activism ($OR = 0.367, p = .036$).

Covariates

At wave 1, youth with higher rates of school responsibilities over the prior two weeks were 68.5% less likely to report increased versus decreased activism ($OR = .315, p = .010$). At wave 3, youth with heightened school responsibilities were 57.7% less likely to report stable

compared with decreased activism ($OR = .423, p = .017$), and 32.4% less likely to report stable versus increased activism ($OR = 0.676, p = .046$).

At wave 1, youth who reported higher rates of family responsibilities in the two weeks prior were 58.6% less likely to report stable compared with decreased climate activism ($OR = .414, p = .034$), and 66.4% less likely to report stable compared with increased activism ($OR = 0.336, p = .001$). There was no association between family responsibilities and youths' increased compared with decreased activism.

At wave 1, youth who had been engaged in climate activism for longer periods of time had a 1.508 higher likelihood of reporting stable versus increased activism ($OR = 1.508, p = .011$), and at wave 3 they were 48% less likely to report stable compared with decreased activism ($OR = .520, p = .009$). There was no association between length of time engaged in activism and youths' increased compared with decreased activism.

Demographics

At wave 1, men were six times more likely to report increased compared to decreased activism over the prior two weeks ($OR = 6.344, p = .013$), and five times more likely to report stable compared to decreased activism over the prior two weeks ($OR = 5.539, p = .011$). At wave 2, men were three times more likely to report stable versus decreased activism than women ($OR = 3.487, p = .042$). There was no association between gender and youths' stable compared with increased activism.

At wave 3, youth from minority religious backgrounds were 91.2% less likely to report stable versus decreased activism ($OR = .088, p = .017$), and 91.1% less likely to report stable compared with increased activism ($OR = .089, p = .013$). There were no associations with youths' religious background and their increased versus decreased activism.

Table 10*Cross-Sectional Multinomial Logistic Regression, Wave 1 (N=160)*

	Increased vs. Decreased		Stable vs. Decreased		Stable vs. Increased	
	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI
Supporting Factors						
Personal Growth	11.848 (0.947)*	(1.850, 75.859)	5.351 (0.736)*	(1.264, 22.652)	0.452 (0.593)	(0.141, 1.443)
Sense of Community	1.029 (0.573)	(0.335, 3.163)	0.941 (0.527)	(0.335, 2.640)	0.914 (0.449)	(0.379, 2.204)
Seeing Tangible Achievements	2.362 (0.583)	(0.754, 7.402)	0.591 (0.550)	(0.201, 1.738)	0.250 (0.405)*	(0.113, 0.553)
Individual Agency (Power)	0.731 (0.473)	(0.289, 1.847)	0.915 (0.444)	(0.383, 2.187)	1.252 (0.278)	(0.726, 2.158)
Individual Agency (Competence)	1.333 (0.425)	(0.580, 3.064)	1.488 (0.392)	(0.690, 3.208)	1.116 (0.281)	(0.644, 1.935)
Collective Agency	1.430 (0.358)	(0.709, 2.887)	1.928 (0.339)	(0.992, 3.747)	1.348 (0.240)	(0.842, 2.158)
Mixed/ Detracting Factors						
In-Person Harassment	1.478 (0.427)	(0.640, 3.410)	0.441 (0.374)	(0.284, 1.604)	0.457 (0.285)*	(0.262, 0.798)
Social Media Harassment	1.506 (0.487)	(0.579, 3.916)	0.504 (0.375)	(0.583, 4.200)	1.038 (0.219)	(0.676, 1.595)
Political Repression	0.809 (0.556)	(0.272, 2.408)	0.519 (0.623)	(0.280, 2.143)	0.958 (0.353)	(0.479, 1.915)

Climate Anxiety	0.439 (0.626)	(0.128, 1.498)	0.578 (0.205)	(0.155, 1.492)	1.095 (0.387)	(0.513, 2.338)
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Covariates

School Responsibilities	0.315 (0.446)*	(0.132, 0.754)	0.449 (0.436)*	(0.191, 1.056)	1.425 (0.224)	(0.919, 2.209)
Family Responsibilities	1.231 (0.465)	(0.495, 3.062)	0.414 (0.417)	(0.183, 0.936)	0.336 (0.322)*	(0.179, 0.631)
Work Responsibilities	1.256 (0.254)	(0.763, 2.069)	1.114 (0.225)	(0.717, 1.731)	0.887 (0.173)	(0.631, 1.246)
Length	0.668 (0.234)	(0.423, 1.056)	1.007 (0.201)	(0.680, 1.493)	1.508 (0.161)*	(1.101, 2.065)

Demographics

Gender	6.344 (0.746)*	(1.469, 27.393)	5.539 (0.677)*	(1.470, 20.868)	0.873 (0.496)	(0.330, 2.310)
Age	2.542 (0.756)	(0.577, 11.194)	1.018 (0.733)	(0.242, 4.284)	0.401 (0.614)	(0.120, 1.333)
Religion	1.010 (0.725)	(0.244, 4.181)	0.796 (0.672)	(0.213, 2.967)	0.788 (0.559)	(0.263, 2.356)

Note: For increased and stable versus decreased, the categorical dependent variable was coded as decreased = 3; stable = 2; and increased = 1. For increased versus decreased, the categorical dependent variable was coded as increased = 3; stable = 2; and decreased = 1.

*p< 0.05; **p< 0.005; ***p< 0.001.

Table 11

Cross-Sectional Multinomial Logistic Regression, Wave 2 (N=135)

Increased vs. Decreased	Stable vs. Decreased	Stable vs. Increased
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	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI
Supporting Factors						
Personal Growth	1.893 (0.677)	(0.940, 3.814)	1.070 (0.365)	(0.548, 2.090)	0.565 (0.296)	(0.316, 1.009)
Sense of Community	0.500 (0.327)	(0.139, 1.799)	0.931 (0.513)	(0.316, 2.743)	1.864 (0.551)	(0.633, 5.492)
Seeing Tangible Achievements	6.099 (2.524)***	(2.710, 13.728)	1.451 (0.594)	(0.650, 3.239)	0.238 (0.457)**	(0.097, 0.582)
Individual Agency (Power)	1.333 (0.504)	(0.635, 2.799)	1.259 (0.455)	(0.620, 2.555)	0.944 (0.301)	(0.524, 1.703)
Individual Agency (Competence)	1.028 (0.404)	(0.476, 2.223)	0.505 (0.204)	(0.229, 1.114)	0.491 (0.367)	(0.239, 1.008)
Collective Agency	1.028 (0.318)	(0.560, 1.885)	1.991 (0.590)*	(1.115, 3.558)	1.937 (0.281)*	(1.118, 3.359)
Mixed/ Detracting Factors						
In-Person Harassment	1.011 (0.412)	(0.455, 2.249)	0.922 (0.403)	(0.391, 2.173)	0.911 (0.490)	(0.349, 2.380)
Social Media Harassment	0.581 (0.246)	(0.253, 1.333)	0.630 (0.241)	(0.298, 1.335)	1.086 (0.354)	(0.542, 2.173)
Political Repression	0.721 (0.244)	(0.371, 1.400)	0.990 (0.329)	(0.516, 1.900)	1.374 (0.299)	(0.764, 2.471)
Climate Anxiety	1.660 (0.862)	(0.599, 4.595)	1.151 (0.564)	(0.441, 3.005)	0.694 (0.443)	(0.291, 1.652)
Covariates						
School Responsibilities	0.971 (0.190)	(0.662, 1.424)	1.066 (0.223)	(0.708, 1.607)	1.098 (0.210)	(0.728, 1.656)
Family Responsibilities	1.064 (0.308)	(0.603, 1.878)	1.231 (0.373)	(0.680, 2.228)	1.157 (0.312)	(0.628, 2.133)
Work Responsibilities	0.802 (0.138)	(0.573, 1.123)	0.927 (0.150)	(0.675, 1.273)	1.155 (0.160)	(0.843, 1.582)

Length	0.717 (0.145)	(0.482, 1.067)	0.714 (0.138)	(0.488, 1.043)	0.995 (0.176)	(0.705, 1.406)
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Demographics

Gender	2.542 (1.596)	(0.743, 8.699)	3.487 (2.143)*	(1.046, 11.627)	1.372 (0.562)	(0.456, 4.127)
Age	2.811 (1.664)	(0.881, 8.971)	3.117 (1.892)	(0.949, 10.241)	1.109 (0.556)	(0.373, 3.299)
Religion	1.503 (0.910)	(0.459, 4.923)	0.973 (0.622)	(0.277, 3.409)	0.647 (0.569)	(0.212, 1.976)

Note: For increased and stable versus decreased, the categorical dependent variable was coded as decreased = 3; stable = 2; and increased = 1. For increased versus decreased, the categorical dependent variable was coded as increased = 3; stable = 2; and decreased = 1.

*p < 0.05; **p < 0.005; ***p < 0.001.

Table 12

Cross-Sectional Multinomial Logistic Regression, Wave 3 (N=139)

	Increased vs. Decreased		Stable vs. Decreased		Stable vs. Increased	
	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI
Supporting Factors						
Personal Growth	1.717 (0.780)	(0.705, 4.181)	0.736 (0.397)	(0.255, 2.118)	0.428 (0.484)	(0.166, 1.107)
Sense of Community	1.277 (0.635)	(0.482, 3.385)	1.379 (0.769)	(0.462, 4.113)	1.080 (0.518)	(0.391, 2.978)
Seeing Tangible Achievements	4.342 (2.259)**	(1.566, 12.041)	3.996 (2.253)*	(1.324, 12.064)	0.920 (0.459)	(0.374, 2.264)
Individual Agency (Power)	0.375 (0.166)*	(0.157, 0.893)	0.204 (0.103)**	(0.076, 0.548)	0.545 (0.424)	(0.237, 1.253)
Individual Agency (Competence)	1.311 (0.530)	(0.594, 2.893)	0.820 (0.347)	(0.358, 1.879)	0.626 (0.388)	(0.292, 1.339)

Collective Agency	2.416 (0.960)*	(1.108, 5.265)	2.131 (0.844)	(0.981, 4.629)	0.882 (0.308)	(0.482, 1.614)
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Mixed/ Detracting Factors

In-Person Harassment	2.511 (1.689)	(0.672, 9.385)	0.319 (0.196)	(0.096, 1.062)	0.757 (0.479)	(0.372, 1.540)
Social Media Harassment	0.869 (0.425)	(0.333, 2.266)	0.885 (0.180)	(0.594, 1.318)	0.367 (0.479)*	(0.144, 0.939)
Political Repression	0.528 (0.235)	(0.221, 1.261)	0.820 (0.451)	(0.279, 2.411)	1.553 (0.495)	(0.589, 4.094)
Climate Anxiety	1.608 (0.858)	(0.566, 4.573)	1.733 (1.153)	(0.470, 6.384)	1.077 (0.517)	(0.391, 2.970)

Covariates

School Responsibilities	0.625 (0.206)	(0.328, 1.194)	0.423 (0.152)*	(0.209, 0.857)	0.676 (0.196)*	(0.460, 0.993)
Family Responsibilities	0.567 (0.185)	(0.298, 1.076)	0.679 (0.239)	(0.340, 1.354)	1.198 (0.278)	(0.695, 2.063)
Work Responsibilities	0.996 (0.187)	(0.690, 1.439)	0.885 (0.180)	(0.594, 1.318)	0.888 (0.185)	(0.618, 1.276)
Length	0.630 (0.162)	(0.380, 1.044)	0.520 (0.130)	(0.319, 0.847)	0.825 (0.171)	(0.590, 1.154)

Demographics

Gender	0.709 (0.461)	(0.198, 2.538)	1.327 (0.943)*	(0.330, 5.340)	1.872 (0.519)	(0.677, 5.178)
Age	1.378 (0.897)	(0.385, 4.934)	2.219 (1.831)	(0.440, 11.186)	1.610 (0.729)	(0.386, 6.717)
Religion	0.995 (0.730)	(0.236, 4.195)	0.088 (0.090)*	(0.012, 0.650)	0.089 (0.978)*	(0.013, 0.603)

Note: For increased and stable versus decreased, the categorical dependent variable was coded as decreased = 3; stable = 2; and increased = 1. For increased versus decreased, the categorical dependent variable was coded as increased = 3; stable = 2; and decreased = 1.

*p< 0.05; **p< 0.005; ***p< 0.001.

Longitudinal Multinomial Regression Analysis

Next, I examined longitudinal relationships between the factors and youths' sustained activism over 2 and 6 weeks (see Tables 13-15 below). Dependent variables from wave 2 and 3 were regressed on independent variables from the prior wave, respectively; an additional model regressed change in activism at wave 3 on independent variables from wave 1. Models included all factors of interest, demographics, and controls.

Supporting Factors

Youth who reported higher levels of individual agency (competence) at wave 1 were four times more likely to report increased than decreased activism at wave 2 ($OR = 4.054, p = .001$). Youth who reported higher levels of individual agency (competence) were 50% less likely to report stable compared with increased activism between waves 1 and 2 ($OR = .050, p = .028$). Individual agency (competence) was not associated with stable versus decreased activism.

From wave 1 to 3, individual agency (power) related to youths' stable versus increased activism approached, but did not reach, statistical significance ($OR = 1.963, p = .050$).

From wave 2 to 3, sense of community in relation to increased versus decreased activism was close to, but did not reach significance ($OR = .387, p = .058$).

Mixed/ Detracting Factors

From wave 2 to 3 climate anxiety was close to but did not reach significance in relation to increased versus decreased activism ($OR = 2.748, p = .055$).

Demographics

From wave 2 to 3, being from a religious minority background was associated with an 81.9% decreased likelihood of reporting stable compared to decreased activism ($OR = .181, p =$

.041), and with a 90% reduced likelihood of reporting stable versus increased activism ($OR = .100, p = .002$). From wave 1 to 3, religious minority youth were 87.8% less likely to report stable versus decreased activism than religious majority youth ($OR = .122, p = .008$), and were 93.7% less likely to report stable versus increased activism ($OR = 0.063, p = .001$). There were no associations between religious background and youths' increased versus decreased activism.

Covariates

From wave 1 to 2, youth who had been engaged in climate activism for longer periods of time were 36.5% less likely to report increased versus decreased activism ($OR = .635, p = .043$), and 38.2% less likely to report stable compared to decreased activism ($OR = .618, p = .043$). Youth who had been engaged in climate activism for longer periods of time were 43.4% less likely to report increased compared to decreased climate activism from wave 2 to 3 ($OR = .566, p = .005$), and 41.2% less likely to report stable versus decreased activism ($OR = 0.588, p = .012$). From wave 1 to 3, youth who reported a higher length of engagement in activism were 34.5% less likely to report increased versus decreased activism ($OR = 0.655, p = .023$). There were no associations between length of engagement in climate activism and comparing youths' stable and increased activism.

Youth who reported higher levels of school responsibilities from wave 2 to wave 3 were 42.8% less likely to report increased versus decreased activism ($OR = .572, p = .026$), and 58.2% less likely to report stable compared with decreased activism ($OR = .418, p = .003$). From wave 1 to 3, youth with heightened school responsibilities were 53% less likely to report stable versus decreased activism ($OR = 0.470, p = .015$). Youth who reported higher levels of family responsibilities from wave 2 to 3 were 50.7% less likely to report increased versus decreased

activism ($OR = 0.493, p = .040$). There were no associations between school or family responsibilities and youths' stable compared with increased activism.

Table 13

Multinomial Logistic Regression Between Waves 1 and 2 (N=135)

	Increased vs. Decreased		Stable vs. Decreased		Stable vs. Increased	
	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI
Supporting Factors						
Personal Growth	1.567 (0.443)	(0.657, 3.736)	0.747 (0.488)	(0.287, 1.945)	0.477 (0.420)	(0.209, 1.085)
Sense of Community	0.716 (0.436)	(0.305, 1.683)	0.617 (0.545)	(0.212, 1.793)	0.861 (0.459)	(0.350, 2.117)
Seeing Tangible Achievements	0.710 (0.419)	(0.313, 1.614)	1.151 (0.465)	(0.463, 2.861)	1.620 (0.420)	(0.711, 3.690)
Individual Agency (Power)	0.729 (0.298)	(0.406, 1.307)	0.646 (0.330)	(0.338, 1.233)	0.886 (0.281)	(0.365, 1.277)
Individual Agency (Competence)	4.054 (0.380)***	(1.924, 8.543)	2.028 (0.391)	(0.943, 4.361)	0.500 (0.315)*	(0.372, 1.297)
Collective Agency	0.748 (0.289)	(0.425, 1.318)	1.050 (0.292)	(0.593, 1.861)	1.404 (0.268)	(0.270, 0.927)
Mixed/ Detracting Factors						
In-Person Harassment	1.667 (0.356)	(0.830, 3.349)	1.138 (0.376)	(0.545, 2.378)	0.683 (0.320)	(0.830, 2.375)
Social Media Harassment	0.790 (0.302)	(0.437, 1.427)	0.549 (0.350)	(0.276, 1.090)	0.695 (0.318)	(0.703, 1.513)
Political Repression	1.417 (0.408)	(0.637, 3.153)	1.306 (0.433)	(0.559, 3.055)	0.922 (0.317)	(0.495, 1.717)
Climate Anxiety	0.499 (0.485)	(0.193, 1.290)	0.945 (0.427)	(0.409, 2.180)	1.894 (0.447)	(0.788, 4.551)
Covariates						

School Responsibilities	0.933 (0.182)	(0.653, 1.333)	0.962 (0.201)	(0.649, 1.427)	1.031 (0.196)	(0.864, 2.782)
Family Responsibilities	0.634 (0.285)	(0.363, 1.108)	0.983 (0.292)	(0.555, 1.740)	1.550 (0.298)	(0.701, 1.263)
Work Responsibilities	0.916 (0.163)	(0.666, 1.260)	0.862 (0.167)	(0.621, 1.196)	.941 (0.150)	(0.262, 0.798)
Length	0.635 (0.224)*	(0.409, 0.985)	0.618 (0.229)*	(0.394, 0.968)	0.973 (0.162)	(0.709, 1.336)

Demographics

Gender	0.900 (0.539)	(0.313, 2.590)	1.650 (0.566)	(0.544, 5.005)	0.764 (0.529)	(0.271, 2.157)
Religion	1.579 (0.543)	(0.544, 4.581)	1.206 (0.619)	(0.359, 4.057)	1.589 (0.833)	(0.568, 4.441)
Age	1.291 (0.511)	(0.474, 3.514)	2.051 (0.546)	(0.703, 5.984)	0.606 (0.501)	(0.120, 1.333)

Note: For increased and stable versus decreased, the categorical dependent variable was coded as decreased = 3; stable = 2; and increased = 1. For increased versus decreased, the categorical dependent variable was coded as increased = 3; stable = 2; and decreased = 1.

*p< 0.05; **p< 0.005; ***p< 0.001.

Table 14

Multinomial Logistic Regression Between Waves 2 and 3 (N=130)

	Increased vs. Decreased		Stable vs. Decreased		Stable vs. Increased	
	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI
Supporting Factors						
Personal Growth	1.195 (0.352)	(0.600, 2.382)	1.430 (0.392)	(0.663, 3.084)	1.196 (0.363)	(0.587, 2.439)
Sense of Community	0.387 (0.502)	(0.145, 1.034)	0.377 (0.585)	(0.120, 1.185)	0.974 (0.570)	(0.319, 2.975)
Seeing Tangible Achievements	0.821 (0.451)	(0.339, 1.987)	0.567 (0.531)	(0.200, 1.606)	0.691 (0.435)	(0.295, 1.621)

Individual Agency (Power)	1.033 (0.372)	(0.498, 2.141)	0.673 (0.458)	(0.275, 1.650)	0.948 (0.586)	(0.301, 2.991)
Individual Agency (Competence)	1.677 (0.360)	(0.828, 3.397)	1.524 (0.443)	(0.640, 3.628)	0.541 (0.405)	(0.245, 1.196)
Collective Agency	0.843 (0.300)	(0.468, 1.519)	0.626 (0.320)	(0.334, 1.173)	0.743 (0.294)	(0.418, 1.321)

Mixed/ Detracting Factors

In-Person Harassment	0.639 (0.561)	(0.213, 1.921)	0.606 (0.664)	(0.165, 2.226)	0.731 (0.219)	(0.476, 1.121)
Social Media Harassment	1.166 (0.422)	(0.510, 2.666)	0.631 (0.480)	(0.246, 1.617)	1.230 (0.244)	(0.762, 1.985)
Political Repression	1.009 (0.316)	(0.543, 1.873)	0.875 (0.358)	(0.434, 1.764)	0.868 (0.261)	(0.520, 1.448)
Climate Anxiety	2.748 (0.526)	(0.979, 7.710)	2.645 (0.602)	(0.813, 8.606)	0.963 (0.478)	(0.364, 2.548)

Covariates

School Responsibilities	0.572 (0.250)*	(0.350, 0.935)	0.418 (0.297)**	(0.234, 0.748)	0.874 (0.170)	(0.626, 1.220)
Family Responsibilities	0.493 (0.345)*	(0.250, 0.969)	0.606 (0.364)	(0.297, 1.237)	0.038 (0.170)	(0.221, 0.825)
Work Responsibilities	0.987 (0.172)	(0.704, 1.383)	0.862 (0.205)	(0.577, 1.287)	0.651 (0.359)	(0.322, 1.317)
Length	0.566 (0.204)*	(0.380, 0.844)	0.588 (0.211)*	(0.389, 0.889)	1.038 (0.177)	(0.744, 1.449)

Demographics

Gender	0.551 (0.597)	(0.171, 1.778)	0.734 (0.682)	(0.193, 2.793)	1.331 (0.757)	(0.436, 4.060)
Religion	1.816 (0.602)	(0.558, 5.909)	0.181 (0.837)	(0.035, 0.936)	0.100 (0.730)**	(0.024, 0.418)
Age	0.729 (0.610)	(0.221, 2.410)	1.382 (0.685)*	(0.361, 5.287)	1.895 (1.200)	(0.548, 6.557)

Note: For increased and stable versus decreased, the categorical dependent variable was coded as decreased = 3; stable = 2; and increased = 1. For increased versus decreased, the categorical dependent variable was coded as increased = 3; stable = 2; and decreased = 1.

*p< 0.05; **p< 0.005; ***p< 0.001.

Table 15

Multinomial Logistic Regression Between Waves 1 and 3 (N=143)

	Increased vs. Decreased		Stable vs. Decreased		Stable vs. Increased	
	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI	Odds Ratio (SE)	95% CI
Supporting Factors						
Personal Growth	1.128 (0.506)	(0.418, 3.044)	0.897 (0.533)	(0.316, 2.549)	0.795 (0.453)	(0.327, 1.933)
Sense of Community	0.585 (0.448)	(0.243, 1.408)	0.341 (0.648)	(0.096, 1.212)	0.582 (0.623)	(0.172, 1.972)
Seeing Tangible Achievements	1.391 (0.422)	(0.609, 3.179)	1.119 (0.519)	(0.405, 3.095)	0.804 (0.448)	(0.334, 1.935)
Individual Agency (Power)	0.794 (0.286)	(0.453, 1.391)	1.559 (0.381)	(0.740, 3.287)	1.963 (0.344)*	(1.000, 3.852)
Individual Agency (Competence)	1.417 (0.319)	(0.759, 2.646)	0.686 (0.441)	(0.289, 1.627)	0.484 (0.431)	(0.208, 1.127)

Collective Agency	1.060 (0.249)	(0.651, 1.726)	0.833 (0.347)	(0.422, 1.643)	0.786 (0.340)	(0.403, 1.531)
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Mixed/ Detracting Factors

In-Person Harassment	0.918 (0.314)	(0.496, 1.698)	0.640 (0.419)	(0.281, 1.454)	0.697 (0.368)	(0.339, 1.433)
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Social Media Harassment	1.669 (0.338)	(0.860, 3.241)	1.777 (0.476)	(0.699, 4.520)	1.065 (0.400)	(0.486, 2.331)
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Political Repression	0.733 (0.324)	(0.389, 1.383)	0.471 (0.475)	(0.186, 1.194)	0.642 (0.441)	(0.271, 1.522)
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Climate Anxiety	1.572 (0.370)	(0.762, 3.244)	1.073 (0.441)	(0.452, 2.549)	0.683 (0.384)	(0.322, 1.449)
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Covariates

School Responsibilities	0.627 (0.287)	(0.357, 1.100)	0.470 (0.309)*	(0.256, 0.861)	0.749 (0.163)	(0.544, 1.031)
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Family Responsibilities	0.673 (0.309)	(0.367, 1.232)	0.618 (0.328)	(0.325, 1.175)	0.919 (0.252)	(0.560, 1.506)
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Work Responsibilities	0.911 (0.146)	(0.685, 1.213)	0.802 (0.198)	(0.545, 1.182)	0.880 (0.182)	(0.616, 1.258)
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Length	0.655 (0.187)*	(0.454, 0.944)	0.655 (0.219)	(0.454, 0.944)	1.078 (0.182)	(0.755, 1.539)
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Demographics

Gender	0.487 (0.517)	(0.177, 1.341)	0.678 (0.621)	(0.201, 2.286)	1.391 (0.506)	(0.516, 3.751)
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Religion	1.936 (0.558)	(0.648, 5.785)	0.122 (0.790)*	(0.026, 0.572)	0.063 (0.721)***	(0.015, 0.258)
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Age	0.942 (0.540)	(0.327, 2.714)	1.947 (0.620)	(0.578, 6.560)	2.066 (0.563)	(0.685, 6.229)
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Note: For increased and stable versus decreased, the categorical dependent variable was coded as decreased = 3; stable = 2; and increased = 1. For increased versus decreased, the categorical dependent variable was coded as increased = 3; stable = 2; and decreased = 1.

p < 0.05; **p < 0.005; *p < 0.001.*

Discussion

This study used cross-sectional and short-term longitudinal methods with young climate activists in India to examine how supporting factors (personal growth, sense of community, agency, and seeing tangible achievements) and mixed/ detracting factors (climate anxiety, political repression, and harassment) were related to their sustained climate activism, over periods of 2 and 6 weeks. Although Indian youth are making critical contributions to local and global climate movements (Roy, 2023), and their participation is necessary to achieve global progress to mitigate the climate crisis, they are understudied in the climate activism literature (Neas et al., 2022). Cross-sectional results showed that heightened personal growth, collective agency, and seeing tangible achievements were associated with youth reporting increased and stable versus decreased activism. Seeing tangible achievements, social media harassment, and in-person harassment were negatively associated with youth reporting stable compared with increased climate activism. Longitudinally, agency (competence) was positively associated with youths' increased versus decreased activism, and negatively associated with youths' stable versus increased activism. The remaining four factors in the study (sense of community, individual agency (power), climate anxiety, political repression) were not significantly associated with youths' sustained climate activism in any analyses. Across analyses, school and family responsibilities were significant deterrents to youths' sustained climate activism. Youth from a minority (non-Hindu) religious background were less likely to report stable activism (versus both

increased and decreased activism) in both cross-sectional and longitudinal analysis. In cross-sectional analysis, men were more likely to report sustained activism than women. No associations were found between youths' age and their sustained activism.

This discussion reviews the study results from cross-sectional and longitudinal analysis between survey waves, incorporating an analysis of how gender, age, and religious background may interact with youths' sustained climate activism. It concludes by exploring implications and future directions for research and social work practice. In addition, it discusses the strengths and limitations of this study.

Factors Shaping Youths' Increased, Stable, and Decreased Climate Activism

Although some factors showed associations with youths' sustained climate activism (e.g., personal growth, seeing tangible achievements, individual agency (competence), collective agency), results were inconsistent across waves and types of analysis, and ultimately most factors were not significantly associated with youths' activism in cross-sectional or longitudinal analysis. These results were unexpected based on the importance young Indian climate activists placed on this study's non-significant factors such as climate anxiety, political repression, and sense of community in qualitative research (Wilf et al., under review), as well as extant research with non-Indian youth climate activists, for example finding positive associations between climate anxiety and activism (Schwartz et al., 2023) or the positive role of community in qualitative research on youths' climate activism (Gray, 2023).

There are several reasons why significance may not have been present for these factors. A visual inspection of the means showed that factors did not appear to change substantially across waves, which could have made it more difficult to detect significant associations. Although prior research found that factors such as climate anxiety change on a daily basis

(Heeren et al., 2021), in this study the factors were relatively stable over a 6-week time period. The time frame could have been too short, or too long, for some of the factors to show significant associations with youths' activism. For instance, sense of community may be the result of deepening relationships that shape youths' level of climate activism over periods of time longer than 2 or 6 weeks. In addition, all questions in the surveys asked youth to reflect on the prior two weeks; it is possible that in thinking back over that period of time, youth responded by smoothing out their experiences of the factors, thinking about an average rather than reporting highs or lows. Perhaps asking youth to report the extremes would have been more accurate (e.g., asking youth to report the most sense of community they felt, and the least, over the past 2 weeks). Alternatively, for some factors that might affect youth more immediately, such as climate anxiety, a daily diary method could be helpful in examining associations with youths' activism. Sociopolitical context — including the Global Climate Strike at wave 3, political stigmatization and arrest of young climate activists, and the start of the academic year — may have played a role in the results, particularly for religious minority youth. Further, the average length of time youth had been engaged in climate activism was between six months and one year; it is possible that a sample with longer-term climate activists would have yielded different results. For example, a sample of youth who were relatively newer to climate activism may have experienced greater changes in their activism over shorter time periods.

In addition, there was evidence of bi-directionality between some supportive factors and youths' activism in bi-variate correlation analysis. Seeing tangible achievements, collective agency, and personal growth at wave 2 and 3 were associated with youths' activism levels at wave 1 and 2, indicating that youths' engagement in climate activism may shape these factors. The cross-sectional models had more significant findings than the longitudinal models, and these

bidirectional associations may have contributed to the supportive factors showing null associations with youths' sustained activism between waves.

Supporting Factors

Seeing Tangible Achievements.

Cross-sectionally, seeing tangible achievements was positively associated with youths' increased and stable activism. However, seeing tangible achievements was not significant in longitudinal analysis. Qualitative scholarship has examined how seeing tangible achievements could inspire young people to continue their activism — including both climate activists (Gray, 2023; Weij, 2022) and youth engaged in other social causes (Fakoti et al., 2024; Wray-Lake et al., 2024), including Indian youth engaged in non-climate related volunteering (Bhangaokar & Mehta, 2012). It is possible that seeing tangible achievements is a significant motivator in youths' sustained climate activism, but only in shorter or longer time periods than was examined in this study. As mentioned, many of the youth in this study were relatively new to climate activism (nearly 40% had been engaged for less than one year), which could have played a role in how they viewed their achievements. Research has found that young activists who were engaged in activism for longer time periods viewed their activism as more effective (Fakoti et al., 2024). Research with young climate activists also shows that seeing “success” from activism is highly individualized and may depend on the young person's own personality and how they make meaning of their activism (Gray, 2023). For instance, some youth who do not see tangible achievements from their climate activism may still view it as a learning experience and feel motivated to continue, whereas others may become discouraged and question their role in the movement (Gray, 2023). In this way, this study's one-item measure of whether youth saw tangible achievements may have been insufficient to understand how seeing (or not seeing)

tangible achievements was interpreted by the young person themselves, and consequently how it may have shaped their climate activism. Further research with young climate activists could conceptualize how youth view their tangible achievements (such as Fakoti and colleagues (2024) study exploring social justice activists’ “wins”) as well as utilize qualitative methods to explore how young people make meaning of their tangible achievements (as in Gray’s (2023) study with young climate activists in the U.S.), to understand how these different conceptualizations and meaning-making processes may play a role in youths’ sustained climate activism.

Personal Growth.

In cross-sectional analysis at wave 1 of this study, personal growth was positively associated with youths’ sustained climate activism. However, it was not significant in remaining cross-sectional analysis or in any of the longitudinal analyses. This lack of significance was surprising given qualitative research with young activists showing that a sense of personal growth and development — such as a sense of self-discovery, or learning new skills — might propel young people’s engagement in climate activism (Budziszewska & Głód, 2021; Buttigieg & Pace, 2013; Gray, 2023), including youths’ non-climate related civic engagement in India (Bhangaokar & Mehta, 2012; Michael and Mehrotra, 2015). In young adulthood, personal growth could be more salient in youths’ lives as they navigate changes in their relationships and responsibilities (Arnold, 2017). It is possible that youth view personal growth as a positive outcome of their climate activism, but that it is not necessarily a core motivator sustaining their activism over time. Personal growth could also be a longer-term variable that affects shifts in youths’ levels of climate activism over periods of time that were not captured in this study (e.g., more than six weeks), as suggested by some qualitative research (Gray, 2023). Further, when completing the first survey at wave 1, youth might have been thinking back longer-term in

reporting their personal growth, whereas in waves 2 and 3 they were viewing personal growth more narrowly over the prior two weeks, leading to significant findings only in wave 1. Personal growth is conceptualized in different ways in the literature, from a sense of self-discovery to gaining an education about activism-related topics and learning new skills (e.g., Bhangaokar & Mehta, 2012; Buttigieg & Pace, 2013; Gray, 2023). Future research could more precisely distinguish personal growth from similar concepts (such as agency (competence), mastery, and skill development), as well as explore how youths' sense of personal growth, and its relation to their sustained activism, may be distinct depending on youths' unique sociocultural context. This research should be situated in the Indian context, based on models of Indian youth development (e.g., Kapadia, 2017), as youths' perceptions of their personal growth from activism may be entangled with other developmental processes and their transition to later life stages that are dependent on context.

Collective Agency.

This study also examined whether three different facets of agency — sense of individual power in fighting climate change (power), sense of individual skills to fight climate change (competence), and sense of collective power in fighting climate change — were associated with youths' sustained climate activism. In cross-sectional analysis, collective agency was positively associated with youths' sustained activism at waves 2 and 3. Collective agency was not associated with youths' activism levels in longitudinal analysis. Research with young activists across social causes has shown that collective agency is positively associated with youth engaging in activism, such as protests and strikes (Besta et al., 2017; Boulianne & Ohme, 2021; Haugestad et al., 2021; Sarrasin et al., 2022; Van Zomeren et al., 2010). However, other research finds null associations between collective agency and youths' climate protest participation (Wallis & Loy, 2021),

including with a sample of global youth that included young climate activists in India (Prendergast et al., 2021). Collective agency may drive youths' activism over shorter time periods, which is why it was significant in the cross-sectional but not longitudinal analysis. It is also possible that collective agency is more strongly associated with specific actions, such as attending climate strikes (e.g., Haugestad et al., 2021), than with youths' longer-term sustained activism. Youths' sense of their collective agency may differ based on the type of climate organization with which they engage, or the context in which they are engaged in activism work. Future research could map out different dimensions of collective agency and how they may play a role in youths' sustained activism. For example, this study only measured collective agency related to power, whereas there may be collective agency related to competence, or drive to achieve change (see Wegemer et al., under review) that could shape youths' climate activism. Further research is also needed to examine how the relationship between youths' sustained climate activism and collective agency may differ in the context of key sociopolitical events, such as the global climate strikes.

Individual Agency.

In this study, there were mixed relationships between individual agency and youths' sustained climate activism. In cross-sectional analysis at wave 3, individual agency (power) was unexpectedly negatively associated with youths' sustained climate activism. Wave 3 was conducted the same weekend as the Global Climate Strike, and it is possible that the findings on negative associations and individual agency (power) were influenced by youths' increased focus on collective, rather than individual, actions. Nevertheless, these mixed findings mirror previous research showing both positive (Hamann & Reese, 2020) and negative (Prendergast et al., 2021; Wallis & Loy, 2021) associations between individual agency and youths' intentions to engage in

future climate activism. Notably, Hamann and Reese's (2020) study was with a sample of university students, whereas Wallis and Loy's (2021) analysis was based on Fridays for Future youth spanning adolescence and young adulthood, and may be more analogous to the youth in this study, who were also primarily drawn from the FFF movement. Wallis and Loy (2021) suggested that this seemingly contradictory finding may reflect the fact that youth with higher levels of individual agency in their own power to fight climate change may be correspondingly less likely to engage in collective climate action, as they have a stronger belief in their ability to create change on their own.

In contrast to findings regarding the power dimension of agency, in this study individual agency (competence) was the only significant factor in longitudinal analysis, showing positive associations with youths' sustained climate activism between waves 1 and 2. Extant research suggests that feeling a sense of competence in one's climate activism work is a positive motivator of youths' engagement (Trott, 2020). Indeed, Prendergast and colleagues' (2021) cross-sectional analysis of motivations for youth to engage in climate strikes, including a sub-sample of Indian youth, found that whereas power-related individual agency was not related to youths' striking, youth who reported higher levels of civic skills were more likely to strike. These results contribute to emerging research on the different dimensions of agency (e.g., Wegemer et al., under review), and how they may be related to youths' sustained climate activism. This study extends scholarship to show that single-item questions may not accurately measure youths' sense of agency, and that different dimensions such as power and competence, as well as individual versus collective agency, may have widely varying roles in shaping youths' climate activism. The mixed (positive and negative) associations between individual agency and youths' sustained activism, and the consistently positive role of collective agency, also adds

nuance to scholarship debating whether individual agency is a useful concept to examine in the context of climate activism, as it may lead to less effective individual actions, such as recycling, compared with mass actions to change underlying systems and policies (Thomas et al., 2020; Van Zomeren et al., 2010).

Sense of Community.

Although young climate activists in multiple studies reported that a sense of community motivated their climate activism (Budziszewska & Głód, 2021; De Moor et al., 2021; Gray, 2023), including a study in India with non-activist youth (Michael & Mehrotra, 2015), in this study there were no significant associations between sense of community and youths' sustained climate activism. In addition, bivariate correlations found almost no significant associations between sense of community and youths' increased, stable, or decreased activism (with the exception of wave 3, where sense of community was positively associated with youths' sustained activism). This lack of significant findings was consistent throughout the results, including both cross-sectional and longitudinal analysis. The lack of significant findings was surprising due to the heavy importance young Indian climate activists placed on feeling a sense of community within their climate organizations (Wilf et al., under review), as well as prior scholarship demonstrating that Indian youth engage in non-climate related volunteering to strengthen their social contacts (Michael & Mehrotra, 2015), and that youth are more likely to engage in climate activism when they are asked by a peer (Wallis & Loy, 2021). It is possible that sense of community's effect on youths' sustained climate activism must be viewed over a longer time period, or that it is an important motivator (e.g., Budziszewska & Głód, 2021), but not sustaining factor, in youths' climate activism. Further longitudinal research could examine how youths' sense of community changes over longer time periods (such as six months or a year), as well as

potential bidirectional associations between sense of community and youths' sustained climate activism. There may also be different dimensions to youths' sense of community that this study did not capture. Future research could develop more precise measures that capture youths' sense of community within specific organizations and in the broader climate movement, for example.

Mixed and Detracting Factors

Political Repression.

The effects of political repression on social movements have been extensively studied, including the impacts of state-sponsored violence and online surveillance on environmental movements (e.g., Almeida, 2018; Earl, 2011; Ferree, 2004; Goyes, 2015; Rojas-Páez, 2017; Starr et al., 2008). However, the impacts of political repression on activism can vary widely based on sociopolitical context, with some types of repression, such as violence and arrest, appearing to both instigate and suppress social movements depending on other contextual factors (Chopra, 2021; Jämte & Ellefsen, 2020; Starr et al., 2008). In this study, political repression was not associated with youths' likelihood of reporting increased or stable climate activism in any analyses, and there were almost no significant bivariate correlations between political repression and youths' sustained activism. This finding was surprising based on the large role that young Indian climate activists reported political repression playing in their climate activism in qualitative research, particularly Muslim youth (Wilf et al., under review). For instance, one participant noted that when Disha Ravi was arrested, the entire Fridays for Future movement "went underground." In wave 3 analyses (both cross-sectional and longitudinal from wave 2 to 3 and wave 1 to wave 3), religious minority youth were less likely to report stable activism. It is possible that because the sample was predominantly Hindu youth, who may be less likely to worry about political repression due to the context of rising Hindu nationalism in India, the

models did not show significant associations between political repression and youths' activism. In addition, there may have been an interaction effect between political repression and religious background that this study did not examine. There may have been selection bias in youth who felt comfortable filling out this survey; in other words, youth who were more afraid of online surveillance or political repression may not have participated, which could also be reflected in the relatively low means for political repression shown in this study's descriptive analyses. Another explanation is that youths' worry about political repression is based not on individual experiences, but the collective — for instance, seeing a young climate activist like Disha Ravi arrested, or seeing a prominent politician call out young climate activists in their speech. In this way, perhaps this study should have measured political repression differently, with questions asking youth to report how worried they were about the Indian climate movement as a whole experiencing political repression, rather than their own personal level of worry. These contradictory findings from the qualitative study (Wilf et al., under review) and this study raise questions about the role of political repression in youths' sustained climate activism. First, qualitative research is urgently needed to understand how Muslim youths' climate activism and wellbeing may be affected by India's current political context of rising Hindu nationalism, as well as specific political repression events they, or others in the climate movement, may experience. Research is also needed with young climate activists to understand how different forms of political repression (such as stigma, surveillance, and arrest) may play distinct types of roles in youths' sustained activism and in their wellbeing, extending prior research with adults (Peña et al., 2023). Research documenting case studies of successful youth-led climate activism in political repressive contexts could also be useful in supporting climate movements in these contexts.

Harassment.

In this study, online harassment was only associated with youth's sustained climate activism in cross-sectional analysis at wave 3; unexpectedly, the results seem to indicate that online harassment is associated with increased climate activism. This result is surprising, because in qualitative research with young Indian climate activists, online harassment was cited as a deterring factor for youth to continue engaging in their activism (Wilf et al., under review), and cyberbullying of young climate activists has been documented in India (Khoja-Moolji & Chacko, 2024). Perhaps online harassment affects only a small number of activists, making it difficult to see trends in a larger sample, or there were interaction effects between online harassment and demographic variables such as gender and religious background that were not explored in this study. Online harassment could also be motivating in youths' activism, as they might increase their engagement in climate movements to counter the negativity or perceived ignorance they see online. Despite news reports of young climate activists experiencing bullying and harassment online, particularly girls (NBC, 2019), and emerging scholarship on online sexism and ageism towards young climate activists (Khoja-Moolji & Chacko, 2024; Park et al., 2021), scant scholarship has examined how online harassment might impact youths' climate activism. Future research with young climate activists should integrate measures of online harassment to explore the extent to which this phenomenon is affecting youth, incorporating an intersectional analysis to understand how gender, religious background, and other salient identities may lead to distinct experiences of online harassment for certain youth. Because the percentage of young climate activists experiencing online harassment may be small, qualitative research could be helpful in exploring how online harassment plays a role in youths' wellbeing and climate activism, again with an intersectional focus on youth holding multiple marginalized identities.

In this study in-person harassment was only associated with youths' sustained climate activism in cross-sectional analysis at wave 1 and was also unexpectedly associated with increased activism. In-person harassment was mentioned as a detracting factor in youths' sustained climate activism, particularly because many young activists hoped to mitigate the climate crisis by educating others and encouraging behavioral changes (Wilf et al., under review). Therefore, being harassed or mocked by members of the public for their climate activism was cited as discouraging and demoralizing for youth. In-person harassment has also been mentioned in case studies of Indian youths' non-climate related activism (Bhangaokor, 2021), and adult Indian women's protest experience (Chopra, 2021), as well as research with adult human rights activists (Peña et al., 2023). It is possible that activists in this study who reported heightened in-person harassment were more likely to have been engaged in climate activism for longer periods of time, or were more engaged in in-person forms of climate activism compared to online. As with online harassment, in-person harassment could also be a motivating factor for some youth; despite being a negative experience, it could spur youth to increase their climate activism to counter societal apathy or negativity. Future research could explore how young people perceive harassment in the course of their activism, for example to understand whether some forms of harassment can motivate youth to increase their climate activism. An important question for future research to explore is how in-person harassment may work in tandem with other oppressive systems (e.g., casteism, sexism, xenophobia) to affect young climate activists' wellbeing and activism. For instance, studies with Muslim women protesters in India found that the protesters' experience of harassment and violence by the police was exacerbated due to sexism and Islamophobia (Bhatia, 2022; Chopra, 2021). Qualitative research with young climate activists could take an intersectional approach in exploring how in-person

harassment might be experienced with youth holding marginalized identities, and how it may shape their climate activism.

Climate Anxiety.

In this study, there were no significant associations between youths' climate anxiety and changes in their climate activism. Climate anxiety has been studied extensively with young climate activists around the world, but has shown mixed effects on their activism (Bright & Eames, 2022). Research indicates that climate anxiety can both spur climate activism, and potentially reduce youths' ability to engage in the climate movement (Noth & Tonzer, 2022; Ogunbode et al., 2022; Sarrasin et al., 2022; Schwartz et al., 2023; Wilf et al., under review). Climate anxiety could impact youth over shorter time periods, such as hourly or daily, in ways that could negatively impact their activism in shorter-term analysis but would not show up over the time period in this study. Climate anxiety may also compound other issues activists face, such as burnout, that occur over longer time periods than six weeks. It is also possible that climate anxiety only captures one dimension of how youth are cognitively and emotionally reacting to the climate crisis and may only explain a small amount of the variance in their climate activism. For example, scholars have put forth the concept of climate distress (Sanson et al., 2022) and studied emotions such as worry, grief, and hope in relation to youths' awareness of the climate crisis (Ojala et al., 2021). Future mixed methods research could explore the relationships between these different constructs to develop a more holistic understanding of youths' cognitive and emotional processes in reaction to the climate crisis, and how these processes may play a role in their sustained climate activism.

Covariates: School, Family, and Work Responsibilities

A consistent finding across multiple waves and both cross-sectional and longitudinal analysis was the role that personal responsibilities played in youths' climate activism. In cross-sectional and longitudinal analysis, heightened rates of school and family responsibilities reduced the likelihood of youth reporting sustained activism. There were no significant associations between youths' work responsibilities and their sustained activism. Notably, school and family responsibilities showed negative associations both with youths' increased and stable versus decreased activism, and with their stable versus increased activism. These seemingly contradictory results may indicate higher volatility in youths' climate activism based on family and school responsibilities. For example, youth who decreased their climate activism in one wave due to family responsibilities may have intentionally increased their climate activism by the next wave to compensate.

Prior research with young climate activists across several countries found that youths' level of engagement in educational activities was not related to their involvement in protest (Prendergast et al., 2021), although research with Indian youth in non-climate causes found that parents, school, and careers were important factors in their civic engagement (Bhangaokar, 2021; Michael and Mehrotra, 2015). As described in the literature review, family responsibilities (including to siblings, elder, and extended family members) may be particularly salient in India, as a high percentage of youth continue to live with their immediate families into young adulthood (CBRE, 2016), and report a strong sense of duty and obligation to their family (Mitra & Arnett, 2021). In a study with non-activist Indian youth, Michael and Mehrotra (2015) found that a high percentage of youth reported academic pressures and family responsibilities as detractors from their civic engagement. This study points to youths' personal responsibilities as a

critical aspect to their sustained climate activism, raising the possibility for future research to further examine how personal responsibilities play a role in youths' activism, and how climate organizations can involve youth who have heightened responsibilities or less time to devote to activism, but still wish to be engaged. Qualitative research is needed to shed light on youths' agency in structuring their time around climate activism based on family, school, and work responsibilities. For example, do youth recognize time periods when they have heightened school and family responsibilities, and compensate accordingly in later time periods by becoming more engaged in climate activism? Research is also needed over a longer time period to uncover whether family and school responsibilities detract from youths' overall activism levels, or whether time periods with heightened responsibilities are simply short-term decreases that do not affect youths' longer-term level of climate activism.

Religious Background

Religious minority youth were less likely to report stable activism in both cross-sectional and longitudinal analysis at wave 3, although there were no associations between their increased versus decreased activism levels. Based on these findings, religious minority youths' activism levels may have been more volatile at wave 3, with some youth becoming more engaged, and others less so. It is possible that at wave 3, which coincided with in-person protests for the 2023 Global Climate Strike, religious minority youth were wary of encountering police action and therefore less likely to participate, leading to a significant effect of religious background on youths' activism in wave 3. As described in the introduction, a combination of rising Islamophobia and political repression of climate activists in India (Khosla & Vaishnav, 2021; Swain, 2015) could have played a role in some religious minority youths' decision to decrease their climate activism during the wave 3 Global Climate Strike, or perhaps instigated other

religious minority youth to participate in the strike if they felt that participating in global, large-scale collective and peaceful protest was a safe outlet for them to express their opinions.

Qualitative research is needed with young religious minority activists in India to understand how the current political context plays a role in their climate activism, and whether certain types of actions (such as the Global Climate Strike) are perceived as lower- or higher-risk. This research could incorporate a focus on how different types of political repression, such as stigma and arrests, intersect with youths' religious identities to shape their climate activist strategies as well as their sustained climate activism. Qualitative research could also identify barriers to religious minority youths' engagement in climate activism. "Religious minority" is an extremely broad category, comprising dozens of distinct religions and intersecting with other salient identities such as region of origin, caste, class, tribal affiliation, and others. Future research with religious minority youth may benefit from focusing on specific subgroups of youth to gain a more holistic understanding of unique barriers to their climate activism, as well as how their religious backgrounds and communities support their engagement.

Gender

This study found gender differences in sustained climate activism. In cross-sectional analysis for two of the three waves, men were more likely to sustain their climate activism than women. These results run counter to research in Western contexts, which found that girls were more likely to participate in climate strikes than boys (Haugestad et al, 2021), or no gender differences in youths' level of environmental activism (Boulianne & Ohme, 2022). However, girls across several countries reported higher rates of climate anxiety than boys (Heeren et al., 2022), and it is possible that there was an interaction effect between girls' climate anxiety and their sustained activism that this study did not examine. Further, surveys with Indian youth show

lower rates of civic engagement for girls than boys (Acharya et al., 2010), indicating potential structural barriers to girls and women participating in climate activism. Further research is needed to explore this discrepancy in Indian youths' climate activism by gender; qualitative research in particular could help to uncover whether young women view their climate activism differently than young men, have distinct barriers to activism (for example, whether they feel unsafe traveling alone to and from climate actions), or contend with societal expectations and roles that may limit their ability to consistently engage in climate activism. Research is also needed with gender diverse (non-cisgender) youth to understand whether they have unique experiences that play a role in their sustained climate activism. For example, research in the U.S. found that racial minority young climate activists faced microaggressions from fellow white activists (Gray, 2023). Qualitative research with gender diverse youth activists could focus on potential negative experiences youth faced in the climate movement related to cisnormativity or heterosexism; how youths' climate activism may be integrated with their activism for other causes; or how youths' gender identities may shape their understanding and awareness of social justice in ways that could support and deepen their climate activism.

Age

Previous research has shown that age is important in expanding or limiting youths' opportunities to engage in civic action (Wray-Lake & Ballard, 2023); for example, 18–21-year-olds may be in college and more likely to focus on schoolwork, whereas 22–24 year olds may have graduated and are in the workforce, changing their opportunities for climate activism. Yet in this study age was not associated with youths' sustained activism in any analyses. Because many Indian youth continue living with their families into young adulthood (CBRE, 2016), they may maintain more consistency in their contexts for climate activism, which could play a role in

the lack of significant findings. In addition, the concept of young adulthood may not have as much salience in India as in other contexts (Kapadia, 2017; Saraswathi et al., 2011), and therefore this study's dichotomous categorization of youths' age (18 to 21 years, and 22 to 24 years) might not have captured meaningful differences in youths' life stages. Although many youth in the U.S. see a distinction between young adulthood and adulthood (Hartmann & Swartz, 2006), perhaps this developmental period is not as distinct for Indian youth, leading to fewer differences in their activism during this age range. As discussed further in the Limitations section below, it is also possible that the time period for this study was too short to see changes in youths' sustained activism due to age, or that there were interaction effects between age and independent variables that were not examined in this study.

Implications for Social Work Policy and Practice

In recent years, the climate crisis has become a more critical component of social work scholarship and discourse, and one of social work's Grand Challenges is to create social responses to a changing environment (Kemp et al., 2015). Social workers are well positioned to be leaders in supporting youth and communities amid the climate crisis, particularly due to their expertise in issues such as mental health, community organizing, migration, disaster preparedness and response, and environmental and social justice. Social work scholars have advanced theory and practice to focus on environmental justice amid the climate crisis (Bell et al., 2019; Chakraborty et al., 2021; Mathias et al., 2023; Rao et al., 2022; Shackelford et al., 2023) and to promote the integration of ecosocial work into pedagogy (Bell et al., 2019; Powers et al., 2019; Rambaree et al., 2019). However, scant social work research focuses on how social workers can support youth-led climate activism and organizing. This study offers insights into

factors that sustain youth climate activism in India, which social workers could utilize to support young people to sustain their engagement in climate movements.

This study identified a number of factors that may support youths' sustained climate activism over short time periods, including: personal growth, seeing tangible achievements, individual agency (competence), and collective agency. These results demonstrate that social workers and others working with young activists can provide motivation for youths' continued activism by supporting the development of skills that can support young people's climate activism and, perhaps, other aspects of their lives. For example, one qualitative study with young climate activists showed that young people valued learning new skills such as public speaking and leadership, and that these skills and activism experience helped them explore their personal trajectories and careers (Budziszewska & Głód, 2021). In case studies with Indian youth in non-climate related volunteering organizations, Bhangaokar & Mehta (2015) and Bhangaokar (2021) showed that youth valued the sense of growth and personal discovery they gained through civic work, and in deepening their knowledge of and commitment to religious and sociocultural values that were important to their families and communities. Youth-focused social workers and practitioners can ensure that young activists feel that they are equipped with the skills they need to fight climate change.

Social workers can also help encourage youth climate activism by highlighting tangible achievements of the youth-led climate movement, whether by documenting these achievements in op-eds, amplifying youth-led climate activism on social media, or by highlighting young climate activists' achievements in policy advocacy. By amplifying young climate activists' tangible achievements, social workers could also foster their sense of collective efficacy. Social workers can also critically use their power and influence to give young people access to adult-led

spaces; for instance, when social workers are called to testify about environmental issues in policy spaces or in the media, they could invite young climate activists as co-speakers or writers to amplify their perspectives, goals, and achievements.

Although climate anxiety was not significantly associated with youths' climate activism in this study, youth reported high mean rates of climate anxiety (more than a few days a week). Climate change-related experiences like extreme heat, natural disasters, and prolonged drought are linked to poorer mental health outcomes (Palinkas & Wong, 2020), including PTSD among youth (Orengo-Aguayo et al., 2019). Emerging research shows that even awareness of climate change can have negative impacts on youths' mental health and wellbeing (Martin et al., 2022). Further research is needed to develop psychological interventions and resources to support youth dealing with climate anxiety, such as through a resilience framework valuing youths' agency, positive emotions, and skills building (Sanson & Masten, 2024). Social workers are well-positioned to lead interventional research to support youth positive development in their climate activism work. Therefore, a critical way for social workers to support young climate activists, and indeed all youth facing the climate crisis, is to develop, test, and integrate climate-focused interventions into existing mental health programs and practice.

This study's results with gender and religious background indicate that there may be additional barriers to young women and religious minority youths' sustained climate activism. Although this study does not draw any conclusions about why women and religious minority youth were less likely to report sustained climate activism, it is likely that structural factors, such as higher societal expectations for women to prioritize family and household responsibilities (Ram et al., 2014), and rising Hindu nationalism promoting violence against minority religious groups (Khosla & Vaishnav, 2021), as well as hostile political rhetoric towards climate activism

(Adve, 2021; Swain, 2015), may play a role. Social workers should ensure that in their efforts to support community mobilizing and youth-led climate activism, they are attending to community members who hold marginalized identities, and that they are taking action through a climate justice and equity lens (Rao et al., 2022).

An important direction for future research is understanding how social workers, and other frontline youth workers such as teachers, can support youth climate organizing and activism. Empowering youth's climate activism and other pro-environmental collective behaviors could be critical to support young people's resilience and positive development in the face of the climate crisis, particularly by promoting skills and emotions such as hope and agency (Sanson & Masten, 2024). Although Kemp and colleagues (2015) called for social workers to play a leading role in supporting community-led efforts to mitigate the climate crisis, scarce social work research focuses on how social workers can support community-led organizing and activism work, particularly with young people (Mason et al., 2017). Thus, further research is needed into how social workers can support and amplify community-led advocacy, and youth-led climate organizing and activism in particular. In addition, social work scholarship and pedagogy could integrate theory on environmental justice (e.g., Bell et al., 2019; Rao et al., 2022) with interventions for social workers to support youth climate activism, particularly youth in underserved and marginalized communities.

International social work research should incorporate a stronger focus on non-Western communities and contexts that are disproportionately shouldering the burden of the climate crisis. In a working paper for this Grand Challenge, Kemp and colleagues (2015) argued that further research is needed to explore the health and psychosocial impacts of the climate crisis, which are disproportionately shouldered by marginalized communities. In India, for example,

climate change has been studied in the context of smallholder farmers and rural women (Gummadi et al., 2021; Bhalerao et al., 2022; Singh & Singh, 2015; Yadav & Lal, 2018) and indigenous and tribal communities (Minj, 2013; Priyadarshini & Abhilash, 2019), whose livelihoods and wellbeing are disproportionately affected by the climate crisis. Yet research is lacking on how social workers can best support youth leadership and agency in climate activism outside of Western contexts.

Strengths and Limitations

A primary strength of this study was the Youth Research Advisory Board of young climate activists who supported survey design and recruitment efforts. Their involvement resulted in changes to the study time frame (extending the surveys from weekly to biweekly) and re-designed questions that better captured and reflected Indian youths' experience (such as the questions about political repression). However, due to logistical constraints around scheduling meetings, the YRAB was limited in its ability to meaningfully contribute to this study's design and analysis. In this way the YRAB was both a study strength and limitation.

One limitation of this study was the short time period over which data were collected. Prior longitudinal scholarship with young activists has utilized time intervals of more than 6 weeks to examine changes (e.g., Riemer et al., 2016), which was impossible in this study due to time and funding constraints. Measuring changes in youths' level of climate activism may take place over much longer-term time intervals, such as six months, as was suggested by YRAB members. The short time period may be one reason why many results were insignificant.

This study also faced limitations due to a smaller sample size than anticipated. The original goal for the sample was at least 300 participants, and the final sample was only 192. The smaller sample size meant that certain demographic variables were not inclusive (gender diverse

youth could not be included as a third category) or overly broad (religious background was coded simply as majority and minority religion, although based on prior research it is likely that Muslim youth in particular had distinct experiences in their climate activism). Based on prior research with young activists in the U.S., I anticipated being able to recruit my target sample size through Instagram advertisements, supplemented by recruitment support from the YRAB and my direct outreach to youth climate organizations. I believe there are several potential reasons for the smaller-than-expected sample size. First, India's current political context presented a significant hindrance to my recruitment strategies. My Instagram advertisements mentioning climate activism were rejected for being "political content," and the few climate organizations who did respond to my outreach efforts explained they were wary of documenting their climate activism in a survey online when young activists were being surveilled and arrested by the government. Further, youth who had experienced or heard about surveillance of their climate activism online may have avoided sharing details about their activism in a virtual survey, although I emphasized participants' anonymity in recruitment materials. Second, youth may not have had time to participate in the study. In addition to their climate activism, which often took several hours of their week, many had school, family, work, and other responsibilities. Youth who were busier may have chosen not to participate. Finally, young people may have preferred to share details of their climate activism with a fellow climate activist. I explained in recruitment materials that I was involved in advocacy work but that it was not related to the climate. Youth may have been more motivated to join the study to support a peer in the climate movement.

Another study limitation was the representativeness of the sample to climate activism more broadly in India. In this study, most youth lived in more urban areas and nearly all took the surveys in English. As described in the literature review, there is extensive grassroots climate

activism happening in rural and lower-income communities in India, but because of the local (and offline) nature of this work, it is difficult to recruit a large enough sample for longitudinal research with these youth. Therefore the findings from this study may only be relevant for urban, middle- and upper-class Indian youth.

A further limitation is the extent to which I was able to examine political repression; in the qualitative study (Wilf et al., under review), political repression was composed of government inaction, apathy, surveillance, arrest, and politicians describing youth climate activists as anti-nationalist. Yet, precisely because of these dynamics, the YRAB explained that youth might be afraid to answer questions online about their experiences with political repression, and therefore we distilled political repression into just three questions in the survey (which were optional for participants). This decision likely limited the extent to which I could meaningfully analyze political repression as a factor in youth activism.

Further, the dependent variable in this study (changes in youths' level of climate activism) may have been affected by variables that were not included. For instance, youths' climate activism during the study period may have been affected by Independence Day civic activities; religious holidays and festivals; the start of school for university students; and the 2023 Global Climate Strike. The cross-sectional analysis portion of the results may be more rigorous than longitudinal findings, as they are measuring associations between the factors and changes in youths' climate activism over the prior two weeks, and therefore only affected by exogenous variables within that time period.

Finally, this study is limited in only examining certain factors in youth climate activism — for example, the qualitative study was aligned with extant research in finding that personal experience with climate change was a motivator in many young people's climate activism (Wilf

et al., under review), but because personal experience with climate change was unlikely to change in the 6 week time period, it was not included as a variable in this study. Research with young people in India suggests that other variables, such as religious and cultural values (Kapadia, 2017; Saraswathi et al., 2011) and trust in government (Ilavarasan, 2013) may shape young people's civic action. Although I did identify personal values (including sense of personal responsibility, religious and cultural values) as sustaining factors in youth climate activism in the qualitative study, these variables were omitted because I did not anticipate changes over the six weeks. Therefore, this study may miss factors that are relevant to sustaining youth climate activism.

Future Directions for Research

This study raises the need for future research on a number of dimensions of youths' climate activism. First, based on this study's findings and extant scholarship challenging the relevance of Western models of youth development in the Indian context (e.g., Bhatia, 2021; Kapadia, 2017; Saraswathi et al., 2011), a critical direction for future research is to integrate culturally and contextually specific models of youth development into scholarship on youth activism. The developmental frameworks underpinning much of the research with Western youth climate activists, such as Bronfenbrenner's bioecological systems theory (1977) or frameworks that separate youths' culture and social contexts as distinct influences in their civic action (e.g., Martyn et al., 2019), may not accurately speak to Indian youths' developmental processes. In addition, developmental periods for Indian youth (such as adolescence, young adulthood, and adulthood) may be distinct from youth in other contexts in ways that could shape their activism. For instance, whereas Indian youths' transition to later life stages may be marked by rituals and ceremonies like marriage (Kapadia, 2017), U.S. youth may conceptualize their transition to

adulthood as living away from their family for the first time (often when attending college), or by markers of independence such as purchasing a car (Hartmann & Swartz, 2006). Further research is needed to inductively explore Indian youth development and to decolonize psychological research (Bhatia, 2017, 2021; García Coll, 2021), for instance as conducted by Kapadia (2017) in India and other scholars with racially and culturally diverse youth in the U.S. (Mistry et al., 2016; Vélez-Agosto et al., 2017). Future research with young climate activists in non-Western contexts should highlight how unique sociocultural, historical, and political factors may shape young people's activism. For example, qualitative research could explore how Indian youths' family values and histories shape their climate activism, and how youths' religious and cultural practices may play a role in their sense of duty or responsibility to protect the environment. Research could also explore the ways in which India's history of environmental and social movements might influence or motivate youths' climate activism, with a focus on how youths' understanding of protest and social movements during the British occupation of India and in the period post-independence might shape their activist strategies and goals.

Relatedly, this study demonstrates the importance of sociopolitical context and current events in shaping youths' climate activism. For instance, at wave 3 of this study (during the Global Climate Strikes), religious minority activists' level of activism was more volatile, indicating that some were decreasing their activism while others were participating at a higher level. Based on rising Hindu nationalism and anti-Muslim violence in India, which religious minority young climate activists reported was a detracting factor in their activism (Wilf et al., under review), it is likely that some religious minority youth decreased their climate activism during the Global Climate Strikes due to the heightened risk of surveillance and arrest with social media and in-person actions. Although substantial research has examined factors

associated with youth participating in one-time climate protest (Neas et al., 2022), sociopolitical context is rarely taken into account. Future research with young climate activists could investigate how sociopolitical context, such as political repression events (e.g., arrests of young climate activists), or violence against minoritized groups could shape youth climate activism and wellbeing, both in the short- and long-term.

In addition, future research should examine how definitions of “climate activism” may be distinct across contexts, with implications for how scholars measure young people’s climate activism. In this study, the YRAB made the decision not to use a youth climate activism scale because they believed it would not accurately measure their peers’ climate activism (Alisat & Riemer, 2015). For example, YRAB members wanted to remove the item “Organized a boycott against a company engaging in environmentally harmful practices” and add an item “Took personal actions to mitigate climate change (e.g., recycling, reusing grocery bags)” to reflect that boycotting corporations was not a common climate activist strategy, whereas many of their peers focused on their own personal actions to mitigate climate change. Studies in Europe have shown that many young climate activists cite changing policy as a key priority for their activism (Kowasch et al., 2021). Yet in India, youth may be wary of directly challenging the government for fear of arrest or other negative repercussions, and instead may be more likely to focus on raising awareness and education efforts (Adve, 2021; Roy, 2023). Current scales measuring youth climate activism often include items on contacting politicians or attending protests (e.g., Dodson & Papoutsaki, 2017) which may be more challenging and dangerous for Indian youth (and indeed, youth in any country experiencing political repression). In this way, current measures of youth climate activism may undervalue the important contributions of youth in India and other non-Western contexts, particularly in global studies comparing youth climate activism

across contexts. Mixed methods research is needed with youth across countries to develop and test a measure (or perhaps multiple measures) of youth climate activism that more holistically captures youth climate activism in diverse contexts, and that centers youth holding marginalized identities in their context.

Another area for future research is highlighting and amplifying the unique experiences of marginalized young climate activists (e.g., LGBTQIA+, indigenous, rural, religious minority, scheduled caste or scheduled tribe). Across countries, certain groups have been systematically denied decision making power and access to environmental resources (Rao et al., 2022), in addition to facing state-sponsored violence in response to resistance (Nayak, 2015). These groups are now facing disproportionate and more immediate impacts of the climate crisis. In India, for instance, tribal communities in the Northeast have a decades-long history of environmental protest that continues today, with youth involvement (Nayak, 2023). Yet due to these communities' often remote locations and lack of resources, including internet access, scarce research explores youth climate activism in these contexts. In this study, only 5% of young activists were from rural areas (an additional 8% lived in a semi-rural area), indicating that recruitment methods were inadequate to reach rural youth activists. Further, research using an intersectional lens is needed with youth holding identities that may be stigmatized in their context, such as LGBTQIA+ and gender diverse youth, to understand their distinct experiences in climate activism and unique types of support and resources they may need.

Finally, this study raises the need for longitudinal research, over longer periods, examining the factors that sustain youth climate activism over time. For instance, the YRAB in this study suggested that an ideal time period to explore changes in youth climate activism was six months. Although research on the predictors of youth engaging in a one-time protest (e.g.,

Wahlström et al., 2019) or on youths' motivations to initially engage in climate activism (e.g., Budziszewska & Głód, 2021) are important to understand how to bring young people into the climate movement, a more comprehensive and longer-term examination of what keeps youth engaged is critical to achieving a comprehensive understanding of their climate activism.

Conclusion

In the face of a growing climate crisis, young climate activists in India have led successful efforts to raise societal awareness, change social norms and environmental behaviors, challenge and re-envision government policies, and protect and preserve environmental resources (Adve, 2021; Datta, 2024; Dutta, 2023; Roy, 2023). Despite youths' critical contributions to climate movements, scant research examines the factors that may sustain, or detract from, their climate activism over time. Empowering youth's climate activism is not only critical for climate movements' success, but also to support young people's resilience and positive development in the context of a rapidly worsening crisis (Sanson & Masten, 2024). This study found that several factors supported youths' sustained climate activism over the short-term: seeing tangible achievements, personal growth, collective agency, and individual agency (competence). In addition, this study identified several mixed and detracting factors: in-person harassment, social media harassment, and individual agency (power). Men were more likely to report sustained climate activism than women, and religious minority youth reported more volatile activism levels during the Global Climate Strike. Family and school responsibilities were consistently and negatively associated with youths' sustained climate activism. Although the results were inconsistent across cross-sectional and longitudinal analysis, this study begins to shed light on factors that may support or detract from youths' climate activism over short-term periods, which could translate into practical recommendations for climate movements to better

sustain their members' climate activism amidst challenges such as burnout and emotional attrition (Conner et al., 2023; Gray, 2023; Peña et al., 2023). This study also brings together social work's Grand Challenges on the changing environment and on ensuring healthy development for youth, providing insights for social workers, educators, and other youth practitioners to support youth leadership and community organizing for climate justice.

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