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ELCRA
Environmental Literacy

Climate Change Activism and the risk of Radicalization: Insights on how to foster Climate Engagement through Environmental Literacy

RESPONSIBLE PARTNER

Jagiellonian University in Krakow
(Poland)

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ELCRA Environmental Literacy

Environmental literacy in Higher Education Context for preventing radicalization in climate change activism.

WP2 Research on issues related to environmental activism and radicalization.

OS1.2 Identify existing literature on the topic of environmental activism and study emblematic cases of radicalization within environmental movements (A2.2)

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PREMISE

This document presents the outcomes of the activities carried out under OS1.2 “Identify existing literature on the topic of environmental activism and study emblematic cases of radicalization within environmental movements”. It serves as a comprehensive discussion encompassing the latest scholarly works on the core themes of our project, namely environmental literacy, environmental activism, and radicalization, along with their interconnected aspects. These concepts are considered to be essential in the development and study of Environmental literacy in Higher Education context for preventing the development of violent radicalization in the climate activism movement while fostering climate literacy among young generations.

This report is the result of the collective effort of all scientific collaborators affiliated with ELCRA, who have contributed their expertise to furnish the most up-to-date insights within their respective domains (i.e., Social Psychology, Pedagogy, Law, and Communication Science).

Our approach to constructing the knowledge documented herein involved a series of methodical steps. Initially, during our kick-off meeting in Arezzo, we deliberated and established a consensus on the delineation of the main areas of analysis. Subsequently, we disseminated guidelines among our team to facilitate a succinct and comprehensive literature review on these topics, with each partner focusing on their specialized discipline for analysis. Additionally, each partner provided descriptions of at least one case study concerning environmental activists.

We integrated each literature review into this report, wherein we explore climate change activism, radicalism, and environmental literacy through a holistic scientific lens. Furthermore, the case studies were seamlessly integrated into this review as exemplifications of the phenomena expounded upon in the literature.

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CLIMATE CHANGE ACTIVISM AND THE RISK OF RADICALIZATION: INSIGHTS ON HOW TO FOSTER CLIMATE ENGAGEMENT THROUGH ENVIRONMENTAL LITERACY

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ABSTRACT

Global concerns over environmental issues have reached unprecedented levels in recent years, with strong evidence linking extreme weather events to human influence. In response, vibrant activist movements have emerged, advocating for urgent environmental action. These movements engage in a spectrum of actions, from normative (e.g., organizing marches) to more extreme and potentially illegal activities (e.g., blocking roads or property destruction). Environmental activism, defined as collective action aimed at advocating for policy changes, has been extensively studied, revealing insights into its dynamics, including the role of education in fostering environmental consciousness and the related behavioral outcomes, including the tendency to radicalization. While radicalization has often been equated with terrorism and, therefore, with violent manifestations, it actually refers to a psychological process that does not necessarily lead to violence and can manifest itself in various contexts, including environmental activism. Although current instances of violent radicalization in environmental movements are rare, there is a growing concern, highlighted by public institutions and scholars, that escalating climate crises and perceived inefficacy of normative measures may lead to future radicalization. In this report, we discuss how to foster peaceful climate change activism and reduce the risk of radicalization through educational programs by reviewing definitions of the wide spectrum of environmental activism and the theoretical approaches used to study them, discussing the effectiveness of different actions and the portrayal of climate change activists in the media, and focusing on environmental litigations and the role of environmental literacy as a potential tool to empower climate change movements.

INTRODUCTION TO THE ISSUE

In recent years, global concerns over environmental issues have reached unprecedented levels. The evidence substantiating observed changes in extreme weather events has grown even stronger, particularly in terms of attributing these changes to human influence (see Hopkins, 2020). As a response to this crisis, lively activist movements have emerged as a prominent force in advocating for environmental causes and demanding urgent action (Arya & Henn, 2021). Despite legal barriers in some nations limiting individuals under 18 from some forms of political participation, the rise of climate change activism especially among young people has become a prevailing trend (Cameron & Weyman, 2022), gaining significant visibility through figures like Greta Thunberg and the #FridaysforFuture movement.

Contemporary movements developed around the climate change issues engage in a wide range of collective actions, differing in the extremity of their actions with some being more normative and accepted by observers (e.g., organizing marches) and others being less normative and potentially illegal (e.g., blocking roads or property destruction). However, despite these differences, these are all examples of environmental activism, which is defined as any collective and organized action undertaken by individuals as psychological group members to address and advocate for policy changes (van Zomeren, 2016). Scholars have explored these differences in manifestations of climate change activism through various lenses, offering insights into the dynamics of environmental movements, the role of education in fostering environmental consciousness, and the potential pathways to radicalization within the context of environmental justice and sustainability.

In our project, we distinguish between *violent radicalization* and *radicalization* within environmental activism. Indeed, the term "radicalization" encompasses a plethora of meanings and investigative perspectives (Schmid, 2011). Similarly, in his comprehensive literature review aimed at discerning the guiding principles shaping research on radicalization within academic discourse, Kundnani (2012) highlighted how, particularly in the aftermath of the 9/11 attack, radicalization and terrorism were often regarded as interchangeable terms, reflecting distinct aspects of the same phenomenon. This tendency to limit radicalization to the religious or political-religious sphere has vitiated the scientific debate by pushing it on the focus on the forms of (terrorist) radicalization of religious, political or cultural origin rather than the multiplicity of precursor phenomena and on the educational implications of these processes (Antonacci et al., 2019). However, radicalization manifests in various contexts, including environmental activism, where the desire for significant societal change intersects with perceptions of injustice. Currently, instances of violent radicalization in environmental or climate activism are not prominent. Even when groups or individuals engage in property damage, they typically avoid harming people, as most environmental movements adhere to non-violence principles. However, based on knowledge regarding radicalization processes, the escalation of the climate crisis, and a perception of low efficacy regarding normative measures to pressure decision-makers into taking adequate action, scholars and public institutions anticipate potential cases of violent radicalization within environmental movements in the coming years (EU Counter-Terrorism Coordinator, 2024; Europol, 2023; Spadaro, 2020). For instance, a recent report by Europol, states that “environmental extremism” is expected to gain further prominence.” (2023, p. 73). EU’s Counter-Terrorism Coordinator (2024) in their report clearly

states that the actions of the groups currently functioning in the context of climate activism in Europe, such as Extinction Rebellion, Last Generation, Soulèvements de la Terre cannot be classified as terrorism, but suggests that they have the potential for radicalization. At the same time, the report generally points out that the signs of violent radicalization in the environmental movement are limited and currently do not pose a significant threat.

In this report, we discuss how to foster peaceful climate change activism and reduce the risk of radicalization through educational programs. We do so by first reviewing definitions of the wide spectrum of environmental activism and the theoretical approaches used to study them. Then, after we discuss the effectiveness of different actions and the portrayal of climate change activists in the media, we focus on environmental litigations and the role of environmental literacy as a potential tool to empower climate change movements.

2. ENVIRONMENTAL AND CLIMATE CHANGE ACTIVISM

People undertake a wide range of actions to protect the environment. In the scientific literature this diverse array of actions functions under an umbrella term of Pro-Environmental Behaviors (PEBs). They encompass behaviors undertaken by individuals and groups to foster environmental sustainability and address pressing ecological concerns - ranging from simple individual acts like recycling and reducing energy consumption to more complex endeavors such as participating in environmental advocacy groups or lobbying for policy changes (e.g., environmental group membership; Edwards & Oskamp, 1992) or voting for politicians recognizing an importance of environmental issues (Stern et al., 1995). Both private-sphere PEBs, as well as collective, political actions are motivated by a wide range of personal beliefs and attitudes, self-concepts, social values (e.g., Bamberg & Möser, 2007), but also broader contextual factors such as social norms, political climate, local environmental challenges (Hornsey & Fielding, 2020).

In recent years, there has been a growing recognition of the importance of collective climate change activism, with youth and adults increasingly mobilizing to demand action through various approaches and models (Ostrom, 2014; Rees et al., 2015). Interestingly, according to the recent research conducted on representative samples in 125 countries, 89% of the global population demands intensified political action, and 69% expresses a willingness to contribute 1% of their personal income to support actions alleviating climate change (Andre et al., 2024).

Environmental activism, characterized by collective and coordinated efforts, aims to effect change at both the individual and systemic levels. We define here environmental activism as **"**a broad and multifaceted concept that encompasses a range of practices, strategies, and behaviors for social and political change on issue related to the environment (such as climate change, pollution, deforestation, and wildlife conservation), including protests, lobbying, direct and indirect action, group and community organizing". Thus, it encompasses a diverse range of civil disobedience strategies aimed at advocating for environmental sustainability and policy change. These diverse tactics seem to form a continuum regarding

their normativity - from peaceful demonstrations that are widely accepted by society, community organizing or lobbying (Horton, 2006; Lee et al., 2014), to more non-normative, infrequent actions like hunger strikes, tree-sitting, or defacing artwork.

Civil disobedience as a means for climate change activism might be the result of the perceived ineffectiveness of the existing means of action – conventional democratic participation – is questioned as young people feel more and more frustrated by the inaction of governments (Lemons & Brown, 2011, Gaborit, 2020). Non-violent civil disobedience may arise when a citizen refuses to comply with a law, they deem immoral when they perceive a moral right has been denied to someone, or when they advocate for changing morally objectionable public policies or laws (Kress & Anderson, 1989). An example of such logic is expressed by Polish Extinction Rebellion activists who share in their social media frustration that leads them to undertake non-normative actions such as blockade of the Ministry of the Climate, showing how other methods failed them: *"We organized marches and petitions. They had no effect. We were looking for support from scientists writing reports on the most valuable natural areas. The authorities ignore them. We blocked the devastation of forests with our own bodies, risking our lives and health. We were sent to the government. Today we blocked the Ministry."* (Extinction Rebellion Polska, 2023). Some activists also decide to blockade a road individually or in pairs, sharing that their fear of the consequences is much smaller than the fear they experience due to the climate crisis or the horror they feel due to the inaction of people in power.

However, civil disobedience is not without its complexities and risks. While initially nonviolent in nature, civil disobedience can evoke some violent response or escalate into more extreme behaviors under certain circumstances. The first example of experiencing a violent response to the non-violent civil disobedience comes from the Wild Carpathians Initiative in Poland. The group has blockaded roads leading to seven areas at risk of major logging for over 800 days. During the protest participants experienced attacks from the local community. On the day after the protest started the driver of a heavy forestry tractor used for logging drove into people standing in the middle of a blocked road. He pushed them a few meters with a plow, destroyed the tent roof they were hiding under and then stopped. Another situation of attack took place on 23 May, 2021 when five men came by car to the camp. One of the men wearing a balaclava ran towards the protesters, holding a baseball bat in his hand and hit them. After one of the protesters sprayed pepper spray on the attacker he ran to her car, broke four windows and damaged the trunk lid. On July 13, 2023, this peaceful protest was shut down by the police and the State Forests using violence. Four people engaged in the logging blockade were detained and released after 48 hours without charges. More people were detained and charged with false accusations at the solidarity demonstration in Warsaw.

A less recent example of escalation of civil disobedience is the Earth Liberation Front, a group that gained the label of eco-terrorists for the activities carried out especially in the United States in the late 90s early 2000s. Their actions consisted mostly of arson and so-called monkeywrenching - sabotage actions against facilities and companies involved in exploiting the environment and inhabitants, such as logging, genetic engineering, SUV sales, luxury home developments (Best & Nocella, 2006).

Additionally, environmental activism spans a spectrum in terms of its use of violence. While some actions employ peaceful methods like nonviolent civil disobedience or sit-ins to raise awareness and

garner public support, others may escalate into using aggression, involving property destruction or harming people. The most notable instances of such violent radicalization linked to environmental concerns are frequently linked with eco-fascism—an ideology that merges radical far-right politics with environmentalism (Zimmerman, 2008). Advocates of eco-fascism often contend that overpopulation poses the primary threat to the environment and propose extreme measures such as advocating for a complete cessation of immigration or, at its most extreme, endorsing genocide against minority groups and ethnicities, mostly from the Global South. An example of violent extremism exploiting environmental concerns as a pretext is the Swedish self-identified eco-fascist group, the Green Brigade linked to a neo-Nazi organization known as The Base, that carried out arson attacks targeting entities perceived as adversaries of nature, resulting in extensive damages worth millions of dollars (Farrell-Molloy & Macklin, 2022). Swedish police arrested two members of the Green Brigade for allegedly plotting to assassinate judges and orchestrate bombings (Lamoureux, 2020).

The perception of environmental emergencies, exacerbated by the lack of effective action from authorities, can contribute to the radicalization of activists. As frustrations mount and perceived injustices persist, activists may become increasingly inclined to adopt more confrontational and disruptive tactics (Fritsvold, 2009; Ryall, 2023). The perceived illegitimacy of authorities' reactions to environmental demonstrations can further fuel radicalization, as activists perceive the need for more drastic measures to achieve their objectives.

Pickard et al. (2020) in their analysis of the motivations, demands, and protest strategies of young environmental activists in Britain, particularly within the framework of school climate strikes and Extinction Rebellion, observe generational shift towards more radical, non-violent direct action in response to perceived deficiencies in institutional politics and the urgent ecological crisis. Hence, while currently climate activists predominantly employ nonviolent civil disobedience, there's a rising apprehension regarding the potential for radicalization within certain factions of these movements.

Radicalization is a process through which an individual adopts extreme ideologies and behaviors that deviate from beliefs that are normative in a society and that violate established social rules to achieve societal and/or political changes. Extreme behaviors involve engaging in actions (usually in the service of extreme ideologies) that are themselves non-normative and violate established social rules, often involving violence. From this perspective one may be radicalized to the point that they endorse and advocate extreme beliefs but do not engage in extreme forms of behaviors. Kruglanski and colleagues (2014) suggested viewing radicalization as a continuum; a lower degree of radicalization might involve support for radical groups and violence, whereas a higher degree represents the actual commission of violent acts". Theoretical approaches to radicalization identify the starting point of the radicalization process with perceiving injustice and frustration (e.g., Borum, 2003; Moghaddam, 2005; Kruglanski et al., 2019).

Thus, the prevailing circumstances surrounding the climate crisis, marked by an escalating threat, perceptions of injustice, and a perceived inadequacy in governmental and public responses, create a fertile ground for the possibility of radicalization to take root. A recent theoretical article (Jansma et al., 2022) develops a definition of climate radicalization as a "*process of growing willingness to pursue and/or support radical changes in society that are in conflict with or could pose a threat to the status quo or*

democratic legal order to reach climate goals" (p. 2). The authors stress the role of perceptions of unfairness as potentially motivating both - peaceful climate protests, as well as more violent forms of climate collective actions. An important aspect of the radicalization process that they outline regards the dynamic interaction between people and social movements, as well as those between different social actors and developments, influencing moving between different strategies and tactics.

As mentioned earlier, currently we observe growing numbers of people engaging in non-normative collective actions on behalf of the climate, but most of the observed cases in the mainstream of the climate movement do not include using violence against other people. The eco-fascist movement is currently the one that openly talks about using violence against whole groups, even expressing some genocidal intentions. Also, the perpetrators engaged in hurting or killing other people in the context of environmental protection are mostly inspired by eco-fascist ideas. In the next section, we delve deeper into the theoretical approaches allowing us to better understand the wide spectrum of environmental activism.

3. THEORETICAL APPROACHES TO THE UNDERSTANDING OF ENVIRONMENTAL ACTIVISM.

3.1. CLASSIC THEORETICAL APPROACHES TO UNDERSTANDING ENVIRONMENTAL AND CLIMATE CHANGE ACTIVISM.

Environmental activism is considered as a pro-environmental behavior (PEBs) in the public sphere, which are distinguished from PEBs in the private sphere. The latter have traditionally been examined within theoretical frameworks such as the Theory of Planned Behavior (TPB; Ajzen, 1991) and the Norm Activation Model (NAM; Schwartz, 1977). The TPB posits that individual behavior is shaped by three fundamental components: attitudes, subjective norms, and perceived behavioral control. Attitudes represent an individual's personal evaluations, whether positive or negative, of engaging in a specific behavior. Subjective on the other hand, encompass the perceptions of social pressures or expectations exerted by influential others regarding that behavior. Perceived behavioral control pertains to an individual's perception of the ease or difficulty associated with executing the behavior, considering factors such as time constraints, financial implications, or the availability of necessary resources.

According to the TPB, PEBs within private domains are influenced by individuals' attitudes towards these actions (e.g., perceiving recycling as beneficial or necessary), the perceived social norms linked with these behaviors (e.g., experiencing pressure from peers or family to recycle), and their perceived control over executing these actions (e.g., believing in their ability to recycle effectively). For instance, researchers have provided evidence for the efficacy of TPB in predicting behaviors such as reducing water usage (Lam, 2006) and food waste (Visschers et al., 2016), bicycle commuting (Muñoz et al., 2016), saving energy (Allen & Marquart-Pyatt, 2018), and engaging in recycling activities (Echegaray & Hansstein, 2017; Rhodes et al., 2015; White and Hyde, 2012).

In contrast, according to the Norm Activation Model (NAM, Schwartz, 1977), individuals are inclined to partake in pro-environmental behaviors when they perceive them as morally obligatory and feel a personal responsibility to align their actions with their moral values. Activation of personal norms is contingent upon four key factors: problem awareness (or recognition of the need for action), attribution of responsibility, belief in the effectiveness of the outcome, and confidence in one's ability to enact change (self-efficacy). Notably, personal norms are strengthened when individuals are cognizant of the environmental issues stemming from their behavior, take personal accountability for these issues, and refrain from attributing them solely to external entities such as industry or government.

An extension of the NAM is the the Value-Belief-Norm theory of environmentalism (VBN theory; Stern 2000). The VBN theory of environmentalism posits that PEBs are driven by three key factors. Firstly, individuals who prioritize values aligned with environmental conservation or sustainability are more inclined to engage in such behaviors. Secondly, people are spurred to action when they perceive threats to aspects of their personal values, such as clean air, biodiversity, or the well-being of future generations, stemming from environmental degradation, climate change, or unsustainable resource exploitation. Lastly, individuals must believe in the efficacy of their personal actions to address environmental threats and restore valued factors, thus motivating proactive steps toward environmental conservation and sustainability.

PEBs in the public sphere, including environmental activism, have also been studied using similar approaches. For instance, Fielding and colleagues (2008) demonstrated that, consistent with the conventional TPB framework, individuals who hold more favorable attitudes toward environmental activism and perceive stronger normative support for it are more likely to engage in such activities. Additionally, Stern and colleagues (1999), applying the value-belief-norm (VBN) theory to understand support for environmental movements, found that individuals who embrace the core values of a movement, perceive threats to those values, and believe in their ability to contribute to reinstating them feel compelled by personal norms to support the movement. These studies share a common perspective: they typically conceptualize activism as mainstream public behavior, such as participating in demonstrations, signing petitions, or joining environmental organizations.

However, as we discussed, environmental activism encompasses not only normative behaviors but also a spectrum of non-normative actions - ranging from peaceful to violent ones. The forms of activism largely reflect local availability, with young people often adopting the politics and tactics prevalent in their geographic regions (Prendergast et al., 2021; Rainsford & Saunders, 2021). Thus, to account for the nuances of these behaviors, scholars have begun to adopt a political activism theoretical approach to study the nuances of environmental activism.

3.2. RECENT THEORETICAL TRENDS IN ENVIRONMENTAL AND CLIMATE ACTIVISM.

In recent years, as environmental activism has gained prominence, research has increasingly applied theories traditionally used to understand political activism to explore its dynamics. These approaches take

into account motivational factors and contextual and social factors. Most importantly they identify a grievance as a motivational factor that prompts the action.

One of the longstanding theories of collective action is the concept of relative deprivation, which refers to feeling unfairly worse off compared to others. A meta-analysis of over two hundred studies revealed that perceiving relative deprivation is linked to a higher likelihood of participating in both normative and non-normative collective actions (Smith et al., 2012). For example, research has shown that the experience of relative deprivation mediates the relationship between attachment to a place and pro-climate behavior amid worsening environmental conditions (Walker et al., 2015). This association is particularly pronounced when the sense of relative deprivation applies to the entire group rather than just to individuals (Kunst & Obaidi, 2020). Perceptions of relative deprivation are closely intertwined with overall considerations of the importance of climate issues and risk perceptions. Studies have found, for instance, that risk perceptions related to climate change are positively correlated with climate activism (Roser-Renouf et al., 2014). This relationship has been also supported by another study that showed that viewing climate change as an imminent threat with tangible consequences sparks a sense of relative deprivation and urgency when contemplating their future (Haugestad et al. 2021). This perception emerged as a key driver in encouraging collective engagement among activists. However, it is not only the threat perceptions that may evoke experience of relative deprivation, but also the notion of violating moral norms.

Additionally, studies clearly show that perceptions of relative deprivation evoke moral emotions. A recent review by Bamberg et al. (2018) suggests that witnessing unfair collective disadvantage evokes group-level emotions such as anger and moral outrage which serve as potent motivators for protest behavior. This is also consistent with observations made by Martiskainen et al. (2020), who point out that environmental activism revolves around the concept of “climate justice,” recognizing that the impacts of climate change disproportionately affect the most vulnerable, marginalized, and least resilient populations in society (Perkins, 2019). This perspective frames climate change as both an ethical and political issue (Caney, 2014), linking climate justice with human rights and human-centered approaches to development that prioritize safeguarding the rights of the most vulnerable while ensuring equitable sharing of the burdens and benefits of climate change (Mary Robinson Foundation, 2019).

In line with this, generally, the role of social norms in the context of climate activism is essential, as they are a strong predictor of intentions to participate in environmental activism (Bamberg et al., 2015; Rees & Bamberg, 2014). Both prescriptive and descriptive norms strongly predict the intention to engage in climate activism, with their effect being the strongest among nonactivists (Grzymala-Moszczynska et al., 2022; Rees & Bamberg, 2014). Among other key motivators for collective action engagement, the literature identifies environmental concern, past political and protest engagement, familial and intergenerational apprehension, solidarity, anti-capitalism sentiment, security considerations, collective guilt, and social connections (Martiskainen et al., 2020; Kenis, 2021).

In the exploration of individuals' engagement in pro-environmental actions, scholars have extensively studied the role of social identity, considering it a pivotal factor shaping collective behavior (Van Zomeren, 2016; Van Zomeren et al., 2008). Among the various theoretical frameworks developed to understand this phenomenon, the Social Identity Model of Collective Action (SIMCA) offers significant insights into how

individuals mobilize politically to advocate for group interests. Central to this model are three primary motivators driving political engagement: group identification, group-based injustice, and group efficacy.

Group identification refers to the extent to which individuals perceive themselves as integral members of a particular group. In the context of environmental activism, this could involve identification with environmental organizations, climate advocacy groups, or broader movements such as the Extinction Rebellion. Strong identification with a group fosters a sense of belonging and solidarity, motivating individuals to align their actions with the collective goals of the group. According to the SIMCA model, group-based injustice pertains to the subjective experience of unfair treatment or marginalization faced by the group within society. In the realm of environmental activism, this may include perceived injustices such as environmental degradation disproportionately affecting marginalized communities or governments prioritizing economic interests over environmental protection. Feelings of injustice can galvanize individuals to take action to address these disparities and advocate for environmental justice.

Lastly, group efficacy encompasses the belief in the group's capacity to enact meaningful change through collective action. Individuals who believe in the effectiveness of collective efforts are more likely to engage in pro-environmental actions, such as participating in protests, signing petitions, or advocating for policy changes. This belief in collective efficacy is reinforced by successful collective actions and positive outcomes, further motivating continued engagement. While all three factors—group identification, group-based injustice, and group efficacy—play significant roles in predicting political involvement, SIMCA suggests that group identification emerges as the most influential factor. Strong identification with a group amplifies perceptions of injustice and bolsters beliefs in collective efficacy, thereby motivating individuals to overcome barriers and actively participate in pro-environmental actions. This notion is also elaborated by Fritsche and colleagues (2017) who propose a Social Identity Model of Pro-Environmental Action (SIMPEA). In the model, they delineate how social identity processes influence appraisal of large-scale environmental crises, such as climate change, and social responses to them. The model proposes that both individual and collective pro-environmental behaviors are determined by ingroup identification, ingroup norms and goals, and collective efficacy. Low perceptions of collective efficacy may be also connected with potential radicalization in the environmental movement (Kenis, 2021).

As young people's comprehension of the climate crisis deepens, the literature indicates a shift towards more radical forms of action. Specifically, youth are increasingly inclined towards collective action and civil disobedience as strategies for addressing climate change (Gaborit, 2020; Pickard et al., 2020; Kenis, 2021). Kenis (2021) observes how young activists employ politicized tactics that effectively bring climate change to the forefront of public discourse. Although, as we discussed, the vast majority of the climate movement embraces principles of nonviolence, some experts (e.g., Spadaro, 2020) have advanced the hypothesis that activism related to environmental issues could soon spill over into more violent and radicalized forms of protest and even into eco-terrorism phenomena. Jansma et al. (2022) delve into the theoretical underpinnings of climate radicalization, linking unfairness perceptions to support for radical societal changes. Their work suggests that these perceptions can motivate individuals to engage in various actions, from peaceful protests to disobedience or even violence, to pursue climate goals.

Scholars agree that a fundamental condition for any kind of radicalized action is a motivational imbalance in which, either temporarily or in a protracted fashion, a given need gains predominance over

other needs (Kruglanski et al., 2018; 2021). This allows formerly constrained behaviors to be considered reasonable and permissible. The nature of the dominant need that prompts that kind of behavior, and the conditions under which that behavior is selected to address the need, are treated in the Significance Quest Theory (SQT; see Kruglanski et al., 2014). SQT assumes that radicalization into violent extremism involves three basic ingredients: the need for personal significance (i.e., the fundamental need to matter), the narrative (i.e., the ideology that identify the actions required to achieve significance), and the network (i.e., the group of people who subscribe to the narrative). In this vein, SQT posits that individuals have a fundamental need to feel respected. Situations that trigger relative deprivation or unfair treatment can frustrate this need for personal significance. When individuals experience disrespect or rejection, they undergo an aversive state of loss of significance, motivating them to alleviate it, becoming more inclined to engage in violent actions in support of their ideological beliefs (Jasko et al., 2017) and expressing greater support for extreme political groups (Webber et al., 2018). This insight suggests that extreme social behavior, such as violent protests or radical activism, may serve as a means for individuals to reaffirm their commitment to important cultural values and restore their personal significance (Dugas et al., 2016).

4. EFFECTIVENESS OF DIFFERENT ACTIONS

One of the important questions that climate activists ask themselves regards the effectiveness of actions undertaken by the movement members. Some of them adopt research-based rules, such as reported in the empirical research done by Chenoweth and Stephan (2011) on resistance campaigns from 1990-2006. The rule claims that if the given campaign succeeded in mobilizing at least 3.5% of the population to protest, the movement would achieve its goals. Matthews (2020) offers a critical perspective on the strategic use of research within environmental movements, explicitly addressing the Extinction Rebellion's adoption of the 3.5% rule. Matthews argues that while the intention behind such strategies is to effect change, there is a risk of misusing research findings, potentially leading to misguided actions that do not achieve the desired outcomes. Also, there is some research devoted to the effectiveness of different types of climate protests in influencing public sentiment. Bugden (2020) found that peaceful climate protests resonate with independents and Democrats while different outcomes are observed in Republican voters in a US sample, showcasing the importance of tactical diversity within the climate movement. This diversity allows movements to appeal to a broader audience by catering to varying political and environmental awareness levels. There is also some experimental data (Thomas & Louis, 2014) suggesting that non-violent collective action more effectively conveys a sense of legitimacy of the issue and efficacy of the group, which increases the support for the group's future actions. As suggested in a recent study by Badullovich et al. (2024) not only the kind of action but also the target of the action counts. The authors found that non-violent civil disobedience actions are accepted by Americans when they are targeted towards fossil-fuel companies or other entities responsible for the climate crisis. At the same time actions involving violence or targeting ordinary people or institutions that are not seen as complicit are much less accepted.

Thus, a large question regards the effects of the radical action, such as blocking roads, sit-ins, or spilling the paint on artworks, on popular support for the movement's claims. This has led scholars to explore

empirically the effect of radical factions (i.e., radical flank hypotheses, Haines, 1984) in social movement. Scholars have identified that radical flank can have either positive or negative effects. According to the negative radical flank hypothesis, these negative effects will spill over to moderate factions within the movement, leading to lower levels of identification and support. The positive radical flank hypothesis predicts instead that the presence of radical flanks will lead to greater identification with and support for more moderate movement factions.

Feinberg et al. (2020) study reveals how extreme protest often diminishes popular support for social movements. This reduction in support stems from a decreased social identification with the movement, as extreme actions can be perceived as immoral or counterproductive, alienating sympathetic observers and potential allies. Adding depth to this discourse, research conducted by Dasch et al. (2024) indicates that the presence of radical elements can serve a dual function: on the one hand, it can galvanize support for moderate factions by providing a stark contrast in tactics and ideology; on the other hand, it can alienate potential supporters if the radical actions are perceived as too extreme or disconnected from the movement's core values.

On the other hand, Simpson et al. (2022) investigate the positive radical flank effect. In two online experiments conducted in the context of the climate movement and the animal rights movement, they show that the presence of a radical flank increases support for a moderate faction within the same movement. The results suggest that it is the use of radical tactics, such as property destruction or violence, rather than a radical agenda (e.g., seeking an immediate end to the use of all fossil fuels vs. a moderate agenda such as seeking to phase out the use of fossil fuels over the next 15 years), that drives this effect. Due to the contrast between radical and moderate activists, the latter seems to be less radical, which increases self-identification with moderate activists and greater support for this faction.

In conclusion, empirical investigations into the effects of radical actions suggest that such actions can bring some positive effects, such as galvanizing support for moderate factions of the climate movement. However, the effectiveness of actions within the climate movement remains complex and to be understood. Public response to such actions is closely related to the issue of understanding the role of the media which seems essential for shaping public discourse and driving societal change.

5. ROLE OF THE MEDIA IN ENVIRONMENTAL ACTIVISM AND RADICALIZATION

The role of the media in mobilizing support for environmental activism has become prominent in both shaping the climate change activism movement and its perception and public support. Here we will first explore the role of the media in portraying climate activism, and later on we will delve into the role of the social media for mobilization and organization in the climate movement.

5.1 FRAMING OF ENVIRONMENTAL ACTIVISM BY TRADITIONAL SOCIAL MEDIA

The traditional media's portrayal of environmental activists, especially the youths, is a contentious issue because of its impact on public perception and the effectiveness of environmental movements that underlies biases and power dynamics. For instance, von Zabern and Tulloch (2021) found that, while articles may offer these activists a voice, they typically portrayed them as apolitical actors which in turn undermines protesters' agency and reproduces existing power structures. The pervasive influence of media framing on shaping public discourse surrounding environmental activism is outlined by the concept of the 'protest paradigm' (Lee, 2014; McLeod & Hertog, 1999). According to this paradigm, media coverage tends to render protests as episodic events rather than delving into the underlying issues driving these movements. This episodic framing not only diminishes the significance of protests but also fails to provide a comprehensive understanding of the societal challenges they seek to address. Consequently, such coverage undermines the legitimacy of activists and impedes their ability to mobilize support for their cause. Interestingly, such media portrayals do not necessarily negatively affect willingness to participate in actions. Results of an experiment and a representative survey designed and conducted at the height of the summer 2011 protests in Israel suggest that perceptions of public opinion and media use did affect participation in the social movement. Specifically, increased perception of majority support for the movement led to increased participation rates. Moreover, media use was inconsequential among those respondents who perceived that most of the public supported the protest. Digital media had a moderate effect on the association between perceptions and support for the protest movement, but there was no such effect with respect to mainstream media use.

As media coverage often leans heavily on official sources and perspectives, it tends to sideline dissenting voices and alternative viewpoints. By privileging narratives from positions of power, the media perpetuates existing power imbalances and marginalizes voices challenging the status quo. This one-sided portrayal not only skews public perception but also inhibits the diverse representation necessary for robust democratic discourse. The dominance of adult voices in debates surrounding young climate strikes, as highlighted by Huttunen and Albrecht (2021), further underscores the marginalization of youth activists in media narratives. This imbalance not only silences the perspectives of those most affected by environmental degradation but also reinforces ageist biases that undermine the credibility and agency of young activists. Additionally, Bergmann and Ossewaarde (2020) shed light on the presence of ageist bias in media coverage of environmental activism in Germany. This bias not only perpetuates stereotypes but also hampers efforts to foster intergenerational dialogue and collaboration in addressing environmental challenges. Thus, the tendency to delegitimize young activists, the episodic framing of protests, and the marginalization of dissenting voices all contribute to a distorted representation of environmental movements. In order to bypass some of such practices of the media, climate activists have been strongly engaging with social media.

A study on constructing social media messages to communicate climate change analyzed Facebook content produced by 289 global climate nonprofits from 18 countries offers important insights (Vu et al., 2021). The most frequently used message frame by these organizations is the diagnostic one, meaning presenting a part of reality that is problematic and suggesting that it needs to be changed. In the context of climate change it could be e.g., showing how the rise of the temperatures affects the unpredictable weather phenomena or its effects on coral reefs. On the other hand, while writing the posts regarding

climate change organizations referred most frequently to actions that can be taken in order to mitigate climate change or adapt to its consequences, such as participating in a protest, engaging in a climate group or limiting the use of fossil fuels. Surprisingly, posts regarding efficacy were the least frequent, despite the research suggesting that the efficacy messaging is effective in boosting participation by increasing feelings of hope (Feldman & Hart, 2016). However, these organizations use social media not only to describe their actions, but also for a number of other purposes, as described later on.

5.2. SOCIAL MEDIA AS A TOOL FOR THE CLIMATE MOVEMENT

Media mobilization as a very powerful tool has been used by the whole spectrum of people wanting to advance their causes - from peaceful activists to terrorists. According to Tyson et al. (2021), Gen Z, as well as Millennials, are more likely than older adults to engage with climate posts, saying they have interacted with or shared a post about the need for action on climate change in the past few weeks or that they follow an account focused on this cause. Climate activists seem to use the potential of social media in many ways. First of all, they use social media applications and platforms to reach the public - both already engaged individuals and those potentially interested, but not active in the movement yet. Especially potent tool used by climate campaigners is the disruptive social media virality, namely a situation when certain stakeholders who don't consider themselves as having power in the conventional methods of organizing, turn to social media to gain some momentum and demand change (Hopke & Paris, 2022).

However, the climate movement does not use social media purely for external purposes, as it is also an important internal organizing tool. The literature stresses how social media is essential for organizing the movement, planning the events, and coordinating actions during large, multi-site events (Hopke & Paris, 2022). There has however been a lively discussion whether online activism actually undermines offline actions, a phenomenon called slacktivism or clicktivism (Glenn, 2015; Greijdanus et al., 2020; Kristofferson et al., 2014). In their paper, Boulianne & Ohme (2021) challenge this notion, demonstrating the significant impact of online engagement on real-world activism. Their findings highlight how social media platforms serve as vital tools for organizing protests, disseminating information, and building community among activists, amplifying the movement's reach and influence. This notion is also elaborated by Hemmi and Crowther (2013) who investigate the impact of social networking sites on the relationship between environmental movement organizations and their supporters. They focus on the Friends of the Earth Scotland's Facebook group, aiming to determine the changes resulting from using social media for recruiting new members, fundraising, and promoting causes. As social networking sites enable two-directional communication between organizations and supporters, they may be altering the nature of the relationship and potentially giving rise to a new public sphere of activism.

Another important area of social media use is creating a space for different actors in the climate movement to identify each other, see common ground, and show solidarity for each other in the situations of facing repressions connected with their engagement (Kavada & Specht, 2022). In this way, social media

facilitates creating stronger umbrella movements, by integrating groups active in slightly different topics and areas, but essentially working on climate issues.

However, social media mobilization has not only been used for networking by peaceful actors but has been proven effective also for terrorist groups. Odağ et al. (2019) reviewed a total of 88 studies to investigate the role of the Internet in radicalization processes, particularly in the context of right-wing extremism and radical jihadism. The findings highlighted the use of the Internet by extremist groups to spread ideologies and recruit new members. Also, Göktuğ Sönmez (2023) discusses how terrorist groups have exploited social media and the internet to disseminate messages quickly, claim responsibility for attacks, and plan operations using messaging applications. It also addresses the use of online platforms for recruitment, indoctrination of young people, and fundraising through social media networks. The literature suggests that countering these activities requires leveraging the advantages of the online world used by these groups, such as disseminating messages quickly, adjusting messaging strategies, and developing creative and engaging counter-messaging efforts (Sönmez, 2023).

6. LAW AS MEANS TO FIGHT CLIMATE CHANGE

In the global effort to address climate change, activists also refer to the legal mechanisms as they play an important role in shaping policies, regulating behaviors, and holding entities accountable for their environmental impact. Young activists are reshaping approaches to human rights law by emphasizing the interconnectedness between people and the environment. Their activism highlights the interplay between ecological and social concerns and a comprehensive understanding of the connections between the environment and well-being. Human rights are viewed through a lens of mutual accountability, a sense of responsibility towards one another, and recognition of the interconnectedness among individuals. Furthermore, "youth activists have brought to human rights a linkage between the environment of present and future generations" (Daly, 2022, p. 21). From international agreements to domestic legislation, the legal framework provides a foundation for addressing the multifaceted challenges posed by climate change. As emphasized by Ryall (2023), the environment requires robust advocacy and protection, particularly amidst the pressing challenges of climate change and biodiversity loss.

The procedural democracy rights enclosed in The Aarhus Convention encompass the fundamental principles of access to information, public participation, and access to justice regarding issues concerning the local, national and transboundary environment. These rights, often referred to as 'Aarhus rights,' serve as crucial instruments in safeguarding the right to a healthy environment. They empower individuals to actively engage in environmental decision-making processes by ensuring access to relevant information, facilitating public involvement in environmental matters, and enabling recourse to legal avenues when environmental rights are violated. By providing citizens with the means to voice their concerns and participate in environmental governance, these rights contribute to fostering transparency, accountability, and sustainability in policymaking and resource management.

By implementing the 'Aarhus rights', climate litigation has emerged as a powerful tool for advancing climate justice and accountability on a global scale. Research by the Columbia Law School, commissioned

by the United Nations Environment Programme (UNEP, 2023), reveals that the number of climate-related court cases has more than doubled since 2017 and is steadily rising around the world. Their report confirms a trend highlighted in the World Economic Forum's Global Risks Report 2023, which noted that individuals and environmental groups were turning to the law as it became clear that the pace of transition to net-zero emissions was too slow. Not only is the frequency of climate litigation increasing but also the range of legal theories is expanding, as they also address the human rights of the groups most vulnerable to the consequences of climate change. According to the UNEP report at the beginning of 2023, there were 2,180 climate change cases underway in 55 countries.

Some identify the shift in the legal landscape of climate litigation in the successful lawsuit, initiated by the Dutch environmental advocacy non-profit Urgenda against the Dutch government in 2015 (Kaminski, 2023). In this vein, in 2015, as Urgenda succeeded in advancing its case through various levels of the Dutch legal system, similar legal actions began to emerge worldwide, spanning a wide spectrum of issues ranging from insufficient state carbon reduction targets and strategies to corporate negligence and disinformation campaigns, as well as claims for climate-related damages.

In another interesting case filed by eight Indigenous residents of Australia and their six children, the UN Human Rights Commission made a ruling in 2022. It concluded that the Australian government had not adequately safeguarded the lives and human rights of Indigenous Torres Strait Islanders from climate-related disasters due to its insufficient climate policy. As a result of the decision, Australia was mandated to implement substantial climate adaptation measures.

Rights-based climate change youth litigation is becoming increasingly frequent throughout the world (Cameron & Weyman, 2022). The case of Duarte Agostinho and others vs. Portugal and 32 other countries (2020) in the European Court of Human Rights is a notable instance of such litigation, where four Portuguese children and two young adults, represented by the Global Legal Action Network (GLAN), argued that inadequate climate policies of 33 European countries violated their rights under the European Convention on Human Rights (ECHR). Recently, the ECHR declared that there were no legal grounds within the Convention to extend their jurisdiction beyond national borders as requested by the applicants (ECHR, 2024). Additionally, since the applicants did not pursue any legal recourse within Portugal regarding their grievances, their complaint against Portugal was deemed inadmissible due to failure to exhaust domestic remedies. As a result, the Court ruled the applications lodged against Portugal and other states regarding climate change issues as inadmissible. Although unsuccessful, this case is groundbreaking as it marks the first time young people have brought a climate case to the ECHR directly (without exhaustion of domestic remedies) and involved countries previously challenged in regional courts for climate change issues. Additionally, it introduced a novel use of Article 14, alleging discrimination due to the disproportionate impact of climate change on children.

Similar cases happened in Canada, where, however, the lawsuits are youth-led and rights-based. In their litigation, they advance claims for present and future generations, based on the Canadian Charter of Rights and Freedoms. Another example of such litigation is the case won in 2021 by a group of young people from Germany. The Federal Constitutional Court ruled that the government should implement climate efforts in line with the Paris Agreement. Interestingly, in the justification, the court said that the

high CO2 consumption by one generation would leave future generations with a radical reduction burden leading their lives to serious losses of freedom.

Other cases show that there is a need to pay more attention to instances of alleged abuse of power by the police authorities. In one case reported by Diário de Notícias (2024) authorities of Lisbon subjected environmental activists to strip searches during a raid at the police station. Importantly, not only young citizens are reaching for legal measures. For instance, in 2020, an NGO Senior Women for Climate Protection Switzerland (KlimaSeniorinnen) took the Swiss government to the European Court of Human Rights (ECtHR) due to inadequate measures taken to protect them from heat waves worsening due to the climate crisis. On April 9, 2024, the ECtHR recognized the applicant association as a victim and, for the first time, examined the substantive relationship between Convention rights and climate change.

The lawsuits are not only filed by the citizens who are not only suing their governments, but also the state challenging the oil and gas industry. One such notable example is the case where the state of Minnesota filed in 2020 a lawsuit against the American Petroleum Institute and numerous fossil fuel companies, alleging that they were aware of the detrimental effects of fossil fuels for many years but deliberately understated the risks. For instance, a 1968 report written by Robinson and Robbins (1968) and commissioned by the American Petroleum Institute warned that continued burning of fossil fuels could result in severe environmental damage. Instead of informing the public, these companies pursued a calculated "multi-pronged campaign of deception" over three decades to safeguard their profits. The case is currently proceeding.

The companies are also sued in connection to the erratic climate disclosures and greenwashing. One of the examples is the situation when the campaigners for Fossielvrij NL sued in 2022 Dutch aviation company KLM for their misleading corporate statements regarding climate change and their actions supposedly making flying more sustainable.

These growing litigations against corporate entities and governments underscore a significant shift in public engagement with climate issues. Concurrently, a surge in activist demonstrations and related endeavors garners widespread media coverage, sparking public discourse on the implications of such actions. For example, in November 2022 four activists of the movement End Fossil - Occupy! were arrested and fined for civil disobedience in Portugal (Demony, 2022). The activist movement advocates for systemic changes, aiming at the elimination of fossil fuels by 2030 and a complete transition to 100% renewable electricity by 2025. However, despite facing legal consequences, one of the first effects of the actions led by the movement End Fossil – Occupy! was bringing the climate crisis to the public floor as a topic of national debate, prompting media coverage and government dialogue.

Litigations are not only reshaping the public discourse surrounding climate change but also exerting tangible pressure on policymakers and corporate entities to enact meaningful change, irrespective of the legal outcomes. Indeed, the impact of this wave of climate litigation extends far beyond the courtroom, as highlighted in a report jointly issued by the Sabin Center and the UN Environment Programme (UNEP, 2023). By establishing legal precedents and catalyzing shifts in government and corporate policies, these lawsuits are playing a pivotal role in shaping global climate action initiatives. Their significance was

underscored by the Intergovernmental Panel on Climate Change (IPCC) in 2022, which identified litigation as one of several innovative mechanisms driving the evolution of climate policy (Dubash et al., 2022).

In conclusion, climate litigation has emerged as a powerful tool for advancing climate justice, as proved by the number of both filed and won cases pertaining to this issue. From shaping policies to holding corporations accountable, the legal measures provide a foundation for addressing the challenges posed by climate change.

7. ENVIRONMENTAL LITERACY AS EMPOWERING TOOL FOR NON-VIOLENT ENVIRONMENTAL ACTIVISM

To foster a shift towards a more sustainable society, it is crucial for individuals to understand the factors contributing to the current situation and possible ways of alternating the *status quo.* However, research on the role of knowledge in predicting PEBs has yielded inconsistent results. While knowledge about the environment and pro-environmental behavior is deemed necessary, it may not always be sufficient to induce such behaviors, as highlighted by various studies (McKenzie-Mohr et al., 2011; Roczen et al., 2014; Schultz, 2002).

A recent meta-analysis on the effect of environmental education of adolescents and children by van de Wetering et al. (2022) suggests that environmental education can indeed positively influence students' environmental behavior, aligning with findings from earlier research (Zelezny, 1999). One interpretation of these results is that environmental education might be more effective in overcoming psychological barriers hindering children and adolescents from engaging in environmental actions. For instance, while knowledge alone may not spur environmental behavior, imparting "action knowledge" on how to enact eco-friendly behaviors, like recycling, could instill in young people the belief that they can make a tangible environmental impact, thus driving behavior change (Otto & Pensini, 2017). Scientific knowledge regarding the complexity of factors contributing to undertaking actions on behalf of the environment, lead to the emergence of a more holistic approach to environmental education, emphasizing not only the transmission of knowledge but also the cultivation of environmental values and skills (Spence & Pidgeon 2010). In this vein, Anderson (2012) provides recommendations for teaching and learning about climate change to develop learners' environmental education. These guidelines include encouraging active learning through local problem-solving activities connected to climate change impacts, fostering problem-solving and critical thinking skills by framing messages and emphasizing individuals' capacity for positive outcomes, and presenting learners with options to reduce their environmental footprint, connecting their actions to their impact on the environment. From this perspective, Anderson's recommendations for teaching about environmental issues are in alignment with the concept of environmental literacy (Alkaher, 2020).

Environmental literacy, as proposed by UNESCO in 1977, encompasses awareness, understanding, values, problem-solving skills, and active participation in addressing environmental issues at all levels. This concept serves as a cornerstone in promoting sustainable development and environmental stewardship, emphasizing informed decision-making and responsible actions to safeguard the planet's health.

According to Fang et al. (2022) environmental literacy (EL) is distinct from simple awareness or personal conduct knowledge because of its depth of information and the actual skills (thinking and doing) that are imparted. EL takes time: it starts out with framed information but it also imparts underlying principles, the skills needed to investigate the subject, and an understanding of how to apply the information. Taking that into account, a personally meaningful environmental ethic requires a fundamental affection for and identification with nature and related capacity to perceive oneself as an integral and obligate member of the ecological community.

McBride et al. (2013) navigate the evolution of EL, stressing the importance of developing comprehensive educational frameworks that address the multifaceted nature of environmental issues. They argue for a transformative approach to education that emphasizes sustainable communities and informed civic participation, which is crucial for fostering a society capable of addressing complex environmental challenges. Similarly, Flanagan et al. (2021) paint a picture of EL transcending traditional education, advocating for an inclusive, action-oriented system deeply interconnected with civic life.

According to Maurer and Bogner (2020) environmental literacy includes cognitive knowledge, values, and individual behavior. With regards to the cognitive aspect of environmental literacy, the Authors posit that environmental knowledge refers to the basic ability of recognizing environmental problems (i.e., factual knowledge), the ability to engage in pro-environmental actions (i.e., action-related knowledge), and the ability to assess the potential of different pro-environmental behaviors (i.e., effectiveness knowledge). The values related to environmental literacy are preservation (that is, environmental protection and appreciation for nature; Thompson & Barton, 1994) and utilization (that is, the inclination to utilize or take advantage of natural resources; Wiseman & Bogner, 2003). Finally, the behaviors involved in environmental literacy refers to consumer habits, energy consumption, transportation choices, recycling practices, vicarious behavior and minimizing waste.

Recently, a new concept has emerged, expanding EL to encompass its collective dimension. Collective environmental literacy, as conceptualized by Ardoin and colleagues (2023) “encapsulates action along with its various supporting structures and resources” (p. 31). By employing the term “literacy,” the authors aim to emphasize that learning, skills, attitudes, and behaviors can be developed iteratively over time. In their paper, they propose a framework outlining key aspects of collective actions: scale, dynamic processes, shared resources, and synergy. There is a question though, what psychological mechanisms are involved in translating environmental literacy into non-violent climate activism.

Environmental literacy seems to engage at least two mechanisms that potentially can have positive effects on willingness to engage in climate activism. First of all, it could foster pro-environmental behaviors (Otto & Pensini, 2017, van de Wetering et al., 2022) and environmental activism (Kolenatý et al. 2022) through increasing personal and collective efficacy, and increasing feelings of empowerment to act on behalf of the climate cause.

For instance, an interesting mixed methods study conducted in the context of the school climate awareness program (Kolenatý et al. 2022) demonstrated that enhanced climate change knowledge positively influenced climate change concern, subsequently enhancing participants’ self-efficacy and willingness to engage in climate-protective behavior. The findings suggest that knowledge regarding

climate change plays a pivotal role in driving climate action, particularly among young individuals. Also focus group interviews indicated that heightened willingness to act often translated into tangible climate action, with learning about carbon footprint calculation proving to be an effective catalyst for personal climate engagement. Another study suggests that raising perceptions of efficacy can lead to the heightened willingness to engage in climate actions among adolescents (Meinhold & Malkus, 2005).

Also, research by Flanagan et al. (2021) explores the intersection of environmental literacy and civic engagement through the lens of civic science. In this paper they argue that integrating scientific knowledge with civic practices may empower urban youth, especially those from historically marginalized communities. This approach aims to rejuvenate civic engagement and positions science as a public good, essential for the development of informed citizens capable of contributing meaningfully to environmental policy and action.

Second, increasing environmental literacy can have a positive impact on individuals' perceptions of procedural justice (Ottinger, 2013). Procedural justice refers to the fairness and impartiality perceived by individuals in the procedures or processes used to determine outcomes or allocate resources. Procedural justice is not solely focused on the outcomes themselves but rather on the perceived fairness of the procedures leading to those outcomes. It is an essential aspect of justice in various domains, including legal, organizational, and environmental contexts, as it influences individuals' trust (Schnaudt et al., 2021), satisfaction (Lambert et al., 2020), and compliance with decisions and institutions (Nagin et al., 2020).

When individuals possess a deeper understanding of environmental issues, policies, and processes, they are more likely to feel that decision-making procedures related to environmental matters are fair and equitable. This heightened awareness enables individuals to comprehend the rationale behind environmental decisions and being actively involved in them, recognize the voices of various stakeholders, and appreciate the importance of inclusive and transparent processes. As a result, environmental literacy not only empowers individuals to make informed choices but also fosters a sense of trust and legitimacy in environmental governance systems, ultimately contributing to perceptions of procedural justice in environmental decision-making (Ottinger, 2013). The perception of the political processes as fair and transparent fosters trust in democratic institutions and promotes civic engagement including normative forms of activism. On the other hand, according to Moghaddam' staircase model of radicalization (Moghaddam, 2005), procedural injustice exacerbates feelings of relative deprivation by undermining trust in societal institutions. When individuals perceive that the systems meant to uphold justice and fairness are biased or corrupt, they are more likely to feel aggrieved and marginalized which in turn can lead to radicalization. Thus, environmental literacy can mitigate the risk of radicalization through political empowerment.

DISCUSSION AND CONCLUSION

This review presents the literature on the issues of environmental and climate activism, environmental radicalization, and environmental literacy with the goal of (a) defining climate activism and environmental

radicalization, (b) identifying their influential factors, and (c) discussing potential tools of strengthening engagement in peaceful climate activism among young people.

A significant issue arising from this review pertains to the ethical considerations surrounding discussing violent radicalization within environmental activism. The case studies outlined by the Partners studies depict climate or environmental activist groups employing non-normative tactics such as road blockades and sit-ins, but none have resorted to violence against individuals. It is essential to prioritize the use of precise language when describing radicalization processes within the climate context to avoid inaccurate generalizations. The EU Counter-Terrorism Coordinator report (2024) underscores that equating peaceful climate activism with radicalization and terrorism may exacerbate polarization by mislabeling activists as radicals, potentially becoming a self-fulfilling prophecy.

Interaction between ideology and climate concern seems like an important issue given that only extreme right-wing individuals who are concerned about the environment commit acts of violence against people. Past research on the use of violence on behalf of various political causes clearly suggests that the attacks motivated by right-wing ideology cause much more harm than those committed by left-wing individuals or groups (Jasko et al., 2022).

Prioritizing comprehensive research to discern the factors influencing both radical and non-radical environmental activism is essential for effectively addressing environmental challenges. Notably, studies emphasize the counterproductive nature of violence in garnering popular support for a cause, as evidenced by reduced identification with activists and perceptions of decreased legitimacy and effectiveness in comparison to peaceful activism (Feinberg et al., 2017; Thomas & Louis, 2013). This emphasizes the importance of informed strategies that promote peaceful and collaborative environmental engagement.

An issue closely linked to the precise articulation of processes within climate activism is the protection of the human rights of those involved. As highlighted in the recent position paper by the UN Special Rapporteur Michel Forst (2024), the repression of environmental protests and civil disobedience by states poses a significant threat to human rights and democracy. The Special Rapporteur on Environmental Defenders, operating under the Aarhus Convention, provides clear recommendations to member states. These recommendations include taking immediate action to counter-narratives that depict environmental defenders and their movements as criminal, as well as refraining from restricting civic space and fundamental freedoms such as expression, peaceful assembly, and association. Additionally, the Special Rapporteur urges states to refrain from employing measures designed to combat terrorism or organized crime against climate activists engaged in peaceful civil disobedience.

The literature review also highlighted how the current sustainability challenges necessitate a reevaluation of dominant pedagogies and learning approaches in higher education to equip students and staff to navigate accelerating change, increasing complexity, contested knowledge claims, and inevitable uncertainty. Strengthening the environmental literacy of students and staff can foster environmental cohesion, cultivate modern social citizenship, and generate environmental collective consciousness.

However, one theoretical and conceptual issue that emerged is the need for improving the operationalization of the concept of environmental literacy. Currently the definitions of this concept are

extremely wide, which makes it difficult to clearly understand what aspects of environmental knowledge, skills, and attitudes we are measuring exactly, as well as understanding how these components specifically influence climate activism. This is especially important to understand prior to designing interventions.

Integrating environmental literacy, activism, and radicalization highlights the need for a nuanced understanding of the factors that influence environmental engagement. Education plays a foundational role in equipping individuals with the knowledge and skills necessary for effective activism, while the tactics employed by movements can significantly influence public support and the overall effectiveness of environmental campaigns. The potential for radicalization, driven by perceptions of unfairness and a desire for significant societal change, stresses the importance of addressing systemic injustices and fostering inclusive dialogue within environmental movements.

In summary, the literature on environmental literacy, activism, and radicalization presents a complex picture of the challenges and opportunities facing environmental movements today. Effective engagement requires a multifaceted approach combining educational initiatives, strategic activism, and understanding the social dynamics that influence radicalization. By fostering a deeper understanding of these interconnected themes, scholars and practitioners can better navigate the complexities of environmental advocacy and work towards more sustainable and equitable solutions for the planet.

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Environmental Literacy

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