Climate activism: what we know and what more we need to learn.

A psychological and sociological review

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Abstract

Earth is experiencing severe global heating due to anthropogenic activities, and while measures to reduce CO2 emissions need to be quickly set in place, most governments are not doing so. Grassroot collective action plays a fundamental role in putting pressure on governments to increase emission regulations, yet few people engage in such collective action. It is important to better understand what triggers one's decision to join collective action and why. In this review, I summarize some of the factors that have been found to correlate with engagement in environmental collective activism, drawing on the empirical psychological and sociological literature. I then propose that additional factors have been pointed out by theoretical sociology, that are relevant candidates for future empirical testing. I conclude by pointing out limitations of the current literature on climate activism, and I make suggestions for methodological improvements.

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Introduction

Earth is experiencing severe climate disruption due to anthropogenic activities that emit CO₂ and other greenhouse gasses. After sunlight reaches the surface of the earth, some of it is reflected back to space as infrared light; greenhouse gasses trap this infrared light in the atmosphere, leading to an increase in global temperature (Bennett, 2016; Hansen, 2018). Anthropogenic global warming (AGW) is generating a urgent and potentially catastrophic problem for humanity; there is high consensus in the scientific community that we must substantially reduce emissions in the next decade to have a decent chance of limiting overall heating to only 1.5 degrees Celsius (Change, 2018) (Hansen, 2018).

As witnesses of this climate crisis, we have the option to act. We can act individually by making personal life changes such as driving electric cars or voting, or we can act collectively in multiple ways such as spreading knowledge and concerns about climate change, pushing local institutions and elected representatives to act, or creating a broad-based movement to ultimately achieve high level global-political action. Given the urgency of the problem, sustained collective action is essential to produce change in a short time frame (Bamberg, Rees, & Schulte, 2018; Ockwell, Whitmarsh, & O'Neill, 2009). In fact, governments are unlikely to enact carbon limits without public pressure (Ockwell et al., 2009).

“Environmental activism” is the purposeful and effortful engagement in collective behaviors aiming at preserving or improving the quality of the environment, increasing public awareness of environmental issues (Seguin, Pelletier, & Hunsley, 1998), and pursuing social and institutional change. This includes behaviors such as public protesting, rallying, petitioning, educating the public, lobbying the government and corporations, participating in conservation or revegetation work, contacting public representatives (Alisat & Riemer, 2015; Barkan, 2004; Fielding, McDonald, & Louis, 2008; Roser-Renouf, Maibach, Leiserowitz, & Zhao, 2014; Seguin et al., 1998).

Psychology and sociology look at human behavior - like environmental activism - from different perspectives; *psychology* studies the explanatory processes for individuals' thoughts, feelings and behaviors (Thoits, 1995), while *sociology* analyses society and human social behavior, from intra-group interactions to global social processes (American Sociological Association, 2016). Both these fields have explored multiple factors that correlate with engagement in environmental activism, including climate activism. The main focus of psychological research has been on factors like the belief one's participation is essential to the group (self-efficacy), or activist identification (self-identity), while sociology has studied societal factors such as faith in institutions and socio-economic status. However, the two share common ground, for example, in studying how environmental activism is predicted by one's belief that group action will achieve change (social-efficacy) or the feeling of belonging to an activist group (social-identity). As for most human behaviors, the motivation to engage in environmental activism is likely

determined by the complex interaction between personality traits and social context; therefore, it is important to summarize and unify these two perspectives to understand the triggers of climate activism.

This review will be divided in three parts: an empirical section, a theoretical section and a final critical analysis. In the first part I will summarize and merge the psychological and sociological factors *empirically* shown to predict environmental activism. In the second part I will suggest additional factors proposed by *theoretical* sociology; these are factors that, if empirically tested, I believe would greatly add to our understanding of environmental and climate activism. Lastly, I will conclude by pointing out the limitations of the current literature on environmental and climate activism, and I will propose ways to overcome them.

The goal is to offer an overview on the influencing factors of climate activism for those entering this research field either from a psychological or sociological perspective. But even more importantly, this overview could help grassroot organizers to shape their communication strategies around the psychological and sociological drivers of climate activism, to help triggering such action in the general public.

Factors from empirical psychology and sociology

The research investigating environmental activism and its triggering factors is rich and eclectic. Empirical psychology and empirical sociology have unveiled multiple predictors of participation.

The studies reviewed in this section take similar approaches across the two literatures. The most common data-collection methods are surveys of the general population (such as the Environmental Action Scale, the European/World Values Survey, the New Ecological Paradigm) or semi-structured interviews of environmental activists. The analyses often use regression models to correlate the factors I will talk about (e.g. affective involvement, self-identity, world values) with levels of participation in environmental activism; alternatively, the presence/intensity of a given factor is compared between activists and non-activists.

In this first part of the review, I will merge and summarize the factors that significantly correlate with engagement in environmental activism. These factors have only been shown to *correlate* with activism, and it should be kept in mind that correlation is not causation; however, because they covary with activism, it is possible that some of these factors play a triggering role in joining action, a possibility that should be causally tested in the future. If it was shown that some of these factors causally increase participation, this would make them good targets for a motivational intervention to join climate activism.

Affective involvement:

Emotions like fear and worry motivate us to remove ourselves from a dangerous situation or to change the environment in ways that reduce our feeling of being at risk (Weber, 2006). There have been many studies of affect in relation to environmental activism; here I break them down into five categories.

Environmental risk perception. Multiple studies have found negative emotions, such as the fear arising from realizing the dangerous consequences of global warming (risk perception), to predict participation in environmental activism. For example, Seguin et al. (1998) showed that in a sample of 733 survey respondents, higher “concern” ratings collapsed across 19 items (e.g. air pollution, water pollution, endangered species) positively correlate with the overall frequency of joining events organized by ecological groups, financial support of ecological orgs, circulation of environmentalist petitions and protest participation. Another study showed that higher ratings of “worry that humans are damaging the environment” positively correlate with the number of environmental citizenship behaviors performed in the past, like taking part in or donating money to an environmental group, or signing a petition about environmental issues (N=2817)(Barkan, 2004). Similarly, in another study measuring the perception of environmental threat (1-5 danger scale for air pollution, water pollution, nuclear power, collapsed), Lubell (2002) found that threat significantly correlate with activist behavior – activist behavior here was measured as the sum of having donated to environmental organizations, signed a petition or taken part into protests and rallies (N=2066). One study used a collapsed 23-item index to measure individual risk perception related to global warming, asking questions about “who is threatened,” “what will be the impacts,” “how probable these impacts will be” and “when will they begin to harm people” (N=2164)(Roser-Renouf et al., 2014); in a regression analysis, the scores of risk perception positively correlated with climate change activism, where activism was the self-reported past actions and future intentions measured on a 1-7 scale.

Health risk perception. Risk perception related to AGW entails environmental concerns (as explained in the last section) but also health ones. Seguin et al., (1998) found that if people perceived a higher risk to their health, related to environmental conditions (1-7 ratings of perceived risk collapsed across 21 health items), they reported more frequent participation in environmental org events, petition signing, voting for governments proposing environmentally conscious policies and writing letters to companies that manufacture harmful products. Of the many predictors of environmental activism in this model, perceived health risk was the most closely linked to environmental activism. The authors also showed that perceived risk was significantly correlated to the overall amount of information on health risks related to environmental conditions (1-7 Likert scale) that participants received from various sources (e.g. medical doctors, university scientists, environmental groups); possibly, being better informed about

health consequences due to AGW triggers emotional arousal, which may motivate engagement in activism.

Why we are not scared enough. While the above sections suggest that high risk perception is related to increased activism, it seems that many people are just not worried enough. Weber (2006) suggests an interesting theory for why such a small share of the global population is engaging in climate activism, despite the enormous risks our world is facing. It is suggested that people use two information processing systems, the associative system (based on affective responses such as fear, dread and anxiety), and the analytic system (based on analytic rules and algorithms); while these two processes seem to work hand in hand ultimately leading to behavioral responses, in some cases there might be a dissociation in the output of the two. For example, the *recency* of a dangerous event is greatly related to affective arousal (e.g. the longer ago something bad happened, the less we are scared by it). The *probability* of the same event instead is processed more analytically (e.g. the event is happening more frequently now than 1000 years ago). Weber suggests that the affective response to the recency of an event has greater weight than the analytical response to the probability of the same event. In other words, how close in time an extreme weather event happened last seems to have more weight on our risk perception than the increase in frequency of the event. Since increased probability of extreme weather events is the main implications of AGW (Change, 2018), this theory may explain why many are not as emotionally triggered by AGW, as they would if they had just experienced a wildfire.

Disruption of what we care about: anger and sadness. Risk perception is not the only emotional trigger related to AGW; emotional engagement is also sparked by witnessing the disruption of what is most relevant to an individual, whether it is environmental health, social justice, or egalitarianism (see worldview/values section). Through qualitative interviews of 17 climate activists from 14 different countries, a study found that becoming aware of environmental devastation and the related social consequences was particularly emotionally salient as a transformative experience for the participants (Fisher, 2016). The emotions reported by the participants in relation to these experiences were fear and sadness; however, learning about the ways in which populations were negatively affected also triggered solidarity. In their review, Bamberg et al. (2018) focus on the group-level emotions of anger and moral outrage resulting from unfair collective disadvantage (such as the social injustice due to global warming on the lives of millions of people); they suggest outrage is a powerful motivator of protest behavior, resulting from the strong identification with an afflicted group. The feeling of relative deprivation is suggested to relate to the feeling of injustice that ultimately leads to collective action (Van Stekelenburg & Klandermans, 2013)

Guilt. Emotions such as guilt and shame for one's own CO2 footprint may play a complex role in people's motivation to engage in environmental activism to fight a fight where, in a way, we are all the

“enemy” (Bamberg et al., 2018). However, guilt may also motivate participation; Rees et al. (2014) showed that guiltiness (the collapsed ratings of “I feel guilty about how we humans are treating the environment” and “I am ashamed of what future generations might think of us because of our environmental behavior,” from “disagree completely” to “agree completely”) was a significant positive correlate of the intention to participate in collective climate action (Likert score of the willingness to participate in neighborhood initiatives for climate protection)(N=538).

In summary, affective involvement has been repeatedly shown to relate to environmental activism participation. Specifically, the environmental and health risk aspects, the negative feelings resulting from the destruction of what matters to us, the outrage of our group being afflicted and guilt towards the environment all significantly relate to collective action. While these relationships are correlational, it would be important for future research to test whether making people “scared enough” or increasing outrage would drive greater participation.

Intention to act (goal intention to engage in environmental action):

Intention refers to the motivation that influences the execution of a behavior; how hard people are willing to try in order to perform a behavior (Icek Ajzen, 1991). There are theories of how intention relates to action, such as the theory of planned behavior (Icek Ajzen, 1991; Conner & Armitage, 1998), which considers intentions as a necessary precursor of behavior (however see (Sutton, 1998): without the intention to act there is very little likelihood that action will take place (Gollwitzer & Sheeran, 2006; Sussman & Gifford, 2019). While it is intuitive that people who perform climate activism hold the intention to do so, it is informative to measure whether the opposite relation is true: how likely is it that people who intend to engage in environmental activism will actually do so? I will now discuss 3 different aspects of intention.

Is it worth it? An important concept that is often studied in sociology in relation to activism is the “free rider effect.” This refers to the idea that the most rational behavior for citizens would be to “free ride” on the activism of others to save themselves the costs of protesting, while enjoying the positive outcomes of others’ protest. Lubell et al. (2002) argues that in order for environmental activism intentions (and related behavior) to arise, the expected value of participating should be greater than the expected value of not participating. The “rational” citizen may assess the value of participating by adding the total value of the public good at stake (e.g. environmental health), the probability their participation will affect collective outcomes (self-efficacy), and the selective benefits and costs of participation. In this study, participants rated their willingness to sacrifice material well-being for environmental protection and to contribute directly to the clean-up of a polluted bay as a measure of intention (1=not willing, 5=very willing); both intention, and actual behavior (attendance of environmental org events and protests, and

petition signing) similarly correlated to the same factors (e.g. the perception of environmental threat and self-efficacy). However, while greater costs (e.g. spending precious time doing activism for lower-income and lower-education people who work higher-than-average hours) resulted into decreased activism behavior, intentions remained the same. So, intention does not always translate into behavior when real costs get in the way, despite activism intentions being predicted by the same factors as behavior (although causality was not assessed). Lubell argues that intentions are “necessary but not sufficient” for behavior to take place, in that “they are essentially a costless expression of opinion,” that might not necessarily translate into a costly behavior. In support of this point, a meta-analysis of 171 studies across 56 nations found that although believing in the science of AGW predicts both intentions to engage in mitigation behaviors and actual engagement, the relationship is stronger for intentions, which the authors suggest are “less compromised by practical reality constraints” (Hornsey, Harris, Bain, & Fielding, 2016).

Implementation intentions. From the above criticism that intentions are not the strongest predictors of behavior (Sheeran, 2002), comes the idea of *implementation intention*. Implementation intention entails planning realistic steps of action in order to implement one’s intention to act (Gollwitzer & Sheeran, 2006; Sheeran, 2002). This approach consists of structuring action through an “if, then” plan: e.g. for larger scale action “one day X we will organize a protest” or smaller scale action “on day X at time Y I will join a certain climate org meeting.” Even though the ability/eagerness to formulate clear implementation intentions has not been tested as a specific modulator of climate activism, it seems relevant as a possible missing link between abstract intentions and actual participation. A possible obstacle to this kind of step-by-step plan may be the lack of knowledge of how climate activism works. For example, in an in-depth semi-structured interview to two climate activists, Fung et al., (2017) found that the initial lack of knowledge on the existence/functioning of climate activist groups was a boundary to the participants’ involvement in climate activism (prior to their full engagement). Not knowing what is out there to do may prevent us from taking practical steps to turn our activism into real action.

Intention modulators. Three major modulators of intention to engage in a given behavior have been suggested by Ajzen (1991): attitude, social approval (or “subjective norm”) and perceived behavioral control (PBC). Attitude refers to the individual motivation to act, related to the favorable or unfavorable evaluation/appraisal of the behavior; if we have a positive attitude towards collective action, we will more likely form the intention to engage in it (see attitude section). Subjective norm refers to the influence exerted on us by our social surrounding, or the approval or disapproval from people that matter to us; if our parents, friends or mentors are supportive of environmental activism, we will more likely form the intention to engage in it (see social norm section). Perceived behavioral control (PBC) refers to the perceived ability to engage in environmental activism; if we feel that we do not have enough time, money or mental space to dedicate to activism, we will less likely form the intention to engage in it (see

PBC section). This framework was applied and tested in the context of environmental activism and pro-environmental behavior (Fielding et al., 2008). In this study (N=169), the 1-7 ratings of participants' attitudes (how good/beneficial=7 or bad/harmful=1 they thought engaging in environmental activism is) and subjective norms (how much people that are important to them would approve=7 or disapprove=1 of their engagement) were significant positive predictors of 1-7 ratings of their intention to participate in collective environmental activism in the following 6 months. Intentions were also predicted by social identity (number of orgs they were members of) and self-identity (1-7 rating of how much participants identified as being part of an environmental group). Activism intentions are also predicted by beliefs of self-efficacy (the extent to which we believe our skills can be useful to the collective action), and negative affective involvement such as anger and outrage (Bamberg et al., 2018)

In summary, intentions to engage in environmental activism are controversial predictors of actual engagement; they seem to share common correlates with behavior, but intentions might be unrealistic statements that, unlike behavior, are detached from the actual ability to participate (e.g. a high enough income to allow for volunteering time). The gap between intention and actual behavior might be filled by a strategy to implement the intention: plan precise steps to engage. In accordance with the theory of planned behavior, intentions are modulated by attitude and social norm, but also by social and self-identity, self-efficacy and affective involvement.

Attitude:

Attitude refers to the favorable or unfavorable evaluation/appraisal about the attributes and outcomes of a certain behavior (Icek Ajzen, 1991). Attitudes develop from the beliefs people hold about the behavior, such as its outcomes or the cost of performing the behavior; by evaluating these attributes positively or negatively, we automatically acquire an attitude toward the behavior (Icek Ajzen, 1991). In environmental psychology, two kinds of attitudes are studied in relation to environmental activism: the attitude towards activism itself, and the attitude towards the natural environment. Cognitive dissonance is also discussed, followed by the modulators of attitudes.

Attitudes towards environmental activism. Studies have looked at attitudes towards environmental activism such as protesting, petition signing, donating money to environmental orgs, and how these predict actual participation. Fielding et al. (2008) measured attitudes by having subjects rate statements like "I think that engaging in environmental activism is..." from 1 to 7, "bad/good, foolish/wise, harmful/safe, unpleasant/pleasant, unsatisfying/satisfying, unfavorable/favorable." This study showed that the collapsed attitude score was significantly positively correlated with the intention to engage in environmental activism (1-7 rating). One study used the European Value Survey and the World Value Survey to study the effect of environmental attitudes on volunteer work with environmental orgs,

across 32 European countries (Valinas et al., 2012). In this study, attitudes were operationalized as 0-3 ratings of the “willingness to give up part of one’s stipend or to increase taxes if the extra money would be used to prevent environmental pollution,” and shown to be strongly positively correlated with reported volunteer work in an environmental organization.

Attitudes towards the natural environment. The second kind of attitudes studied by environmental psychology is attitudes towards nature and the environment (e.g. how is it affected by humans) and how these predict participation in collective climate action. The most common scale to measure these is the New Ecological Paradigm (NEP)(Dunlap, Van Liere, Mertig, & Jones, 2000). This is a scale of 15 items, aimed at capturing attitudes on the following topics: balance of nature, limits to growth and human domination of nature. Example items rated by the participants are: “humans are severely abusing the environment,” “the balance of nature is strong enough to cope with the impacts of modern industrial nations,” “humans have the right to modify the environment to suit their needs.” It was shown that the NEP score, collapsed across the 15 items, correlates with participation in environmental activism, and with both behavioral intentions and self-reported pro-environmental behaviors (Fielding et al., 2008; Matsuba et al., 2012). While the NEP mainly focuses on attitudes related to the relationship between humans and nature, other scales like Environmental Attitudes Inventory attempt to capture the multidimensional and hierarchical nature of environmental attitudes (Milfont & Duckitt, 2010). In fact, this includes measures of enjoyment of nature, support for interventionist conservation policies, readiness to support environmental activism, anthropocentric concerns, confidence in science and technology, environmental fragility and so on. In their review Matsuba et al., (2013) summarize the evidence that a positive attitude towards the environment (which is highly influenced by the amount and quality of childhood experiences in nature) is correlated with collective climate activism. The authors suggest that the amount and quality of childhood experiences in nature may determine a pro-environmental attitude; the latter will shape self-identity as a “naturalist,” which in turn highly contributes to engagement in collective activism (see self-identity section). Supporting this point, in a qualitative interview to three environmental activists, Buttigieg et al. (2013) suggest that the gap between pro-environmental attitude (to conserve the environment) and actual activism may be filled by a deep and personal connection with the natural environment, generated by childhood experiences in nature.

Cognitive Dissonance. Gifford (2008) points out that what may prevent people from turning their attitudes into a lifestyle change (such as reducing their CO₂ footprint or engaging in activism) may be long-term habits. For example, many are used to CO₂-expensive comforts (high electricity use, flying, driving) which may be hard to uproot, regardless of a positive attitude towards activism or environmental preservation. The clash between pro-environmental attitude and high-emission behavior can lead to cognitive dissonance. This is the inherently unpleasant tension we feel when we act in a manner that is

inconsistent with our attitude (Festinger, 1957). In order to relieve this tension, one can either change their habits (reduce CO2 footprint) or change their pro-environmentalist attitude. Living in a society where most of our daily activities entail production of greenhouse gasses, changing our behavior may seem too costly (Frantz & Mayer, 2009) and a (conscious or subconscious) change of attitude may prevail.

Correlates of Attitudes. On top of activism, environmental attitudes have been shown to correlate with other factors. For example, attitudes (average NEP score) are significantly positively correlated with biospheric values (ratings of nature-centered motives to protect the environment), perspective taking values (1-7 scores of the tendency to take someone else's point of view) and negatively correlated with egoism (ratings of self-centered motives to protect the environment) (Mayer et al., 2004). Fear can trigger a shift in attitudes, especially when communicated to instill the urgency to act (Frantz & Mayer, 2009). However, the danger with this approach is that instead of encouraging people to engage in activism, a fear-strategy can trigger anxiety that will then lead to reactions of avoidance and inaction. This can be avoided when specific recommendations are provided regarding the behavior that needs to be performed in order to avoid the unwanted outcome (Frantz & Mayer, 2009); when conveying the dangerous impacts of climate change, we want to direct our audience to solutions like activism, that they can engage in, rather than leave them paralyzed by fear. Lastly, in a meta-analysis of collective action by Van Zomeren (2008), the factors of injustice affect (the perceived feeling of inequality and unjust disadvantage), efficacy (the ability of a group to advance their goals and interests) and social identification with a group were shown to predict attitude toward collective action with a stronger size effect than they could predict intention or actual behavior.

In summary, pro-environmental activism and environmental attitudes are generally correlated with participation in environmental activism. These attitudes may be countered by cognitive dissonance, due to the tension between a high-emission comfortable life and protecting the environment by leading a consistent pro-environmental lifestyle. Finally, attitudes are correlated with environmental values, perspective taking values, affects like fear and, like other types of collective activism, by the feeling of injustice, efficacy and social identification with an activist group.

Social norm:

The network of people we value the opinion of (e.g. friends, colleagues, cultural agents such as family, role models) and their encouragement or disapproval of our actions also plays a role in predicting our behaviors. This concept has taken different names across different behavioral theories; it is generally known as social norm or “subjective norm.” Rees et al. (2014) argues that decisions to engage in climate

activism (and likewise other forms of collective action) are not taken in a vacuum; this kind of decisions are often affected by the expectations of important reference people.

Social norm and environmental activism. Social norms (measured through ratings of statements such as “if I engaged in environmental activism people who are important to me would approve/disapprove”) were a strong predictor of intentions to participate in environmental activism (Bamberg, Rees, & Seebauer, 2015; Fielding et al., 2008; Rees & Bamberg, 2014). In one study, social norms were measured as the perceived participation expectations from other neighbors, through questions like: “would people from your neighborhood that are personally important to you expect that you participate in such a group?” and “how likely is it that they would participate in it themselves?” It was found that social norms strongly predicted the intention to engage in neighborhood-organized climate activism. Social norms also mediate the effect that social identity (feeling of belonging to the neighborhood) had on activism intentions; once one feels that they belong to a group, the expectations of the other group members will boost their intention to participate in climate action (Rees & Bamberg, 2014).

Opinion leadership. Social norms are not only passively experienced but also actively enacted. Roser-Renouf et al. (2014) show that opinion leadership – characteristic of people who communicate frequently about climate change and exercise social influence on it – was the strongest direct predictor of climate activism. Opinion leadership in this study was measured asking subjects if they thought others perceive them to be a good source of information, if they came to them for advice on the issue of climate change, if they gave more information than they received on the topic (high scores indicating high opinion leadership). It is possible that being a climate “social influencer” may enhance our feeling that we can really change things by driving people and groups to action (self-efficacy), fueling our participation in climate activism. The authors make the point that “only climate scientists are more trusted on global warming than interpersonal contact.”

Detrimental social norms. Social norms, when pressing on the opposite side of the issue (e.g. high consumptions and environmental disregard) can be a barrier to interest, concern and action in relation to climate change, as suggested by a review of 3 qualitative studies of the UK general population (Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007).

In summary, social norm was shown to be related to engagement in environmental activism. Not only the approval of our social surrounding matters to our engagement, but so does how actively we perpetuate the same social norm that we are affected by. Social norms can affect us in the opposite direction as well, away from environmental engagement.

Perceived Behavioral Control:

Perceived Behavioral Control (PBC) refers to how much we feel we have control over engaging in a behavior, and how performing the behavior is up to us (I. Ajzen, 2002). It refers to the perceived ability to *engage* in the behavior (not to reach the desired outcome, contrary to self-efficacy): specifically, the perceived ability to overcome whatever obstacle one may encounter that prevents us from engaging in a given behavior (like environmental activism). This is different than self-efficacy in that the latter reflects how successfully we believe we will perform an action (e.g. we have skills that will increase the success of the collective action), independently of the obstacles that may prevent us from engaging in the action. PBC is operationalized into subject-created lists of factors that they believe could make it easier or more difficult to perform the behavior (I. Ajzen, 2002). In the case of environmental activism PBC may be captured by the perception that external constraints (such as time, money, family responsibilities, general life treadmill) or internal ones (mental space, willpower) may prevent us from or facilitate engagement in activism.

Ambiguity. PBC is a controversial predictor of the intention to perform a certain behavior; multiple studies were unable to find a relationship between PBC and intention (Armitage & Conner, 2001; Manstead & Parker, 1995). This controversy applies to environmental activism as well. For example, Fielding (2008) measured this construct through ratings of the following statements/questions: “How much control do you have over whether you engage in environmental activism?” “It is mostly up to me whether I engage in environmental activism.” The study found no evidence that PBC predicts the intention to engage in environmental activism. However, these results were contradicted by Bamberg et al. (2015); they asked subjects to rate the question like: “given the background of your current life situation, how do you judge the active and regular participation in local climate activist groups?” from “tedious” to “effortless.” The results showed that perceived behavioral control was significantly associated with the intentions (from “less likely” to “highly likely”) to actively and regularly participate in a local climate activist group.

Intentions versus behavior. As mentioned in the “intention” section, Lubell (2002) tested the predictive effect of selective costs of participation in environmental activism: this is the ability to pay the costs of participating, in terms of time, money and civic skills necessary to engage. These factors can be measured through socio-demographic variables such as income, and education, where people with a higher availability of these resources should face less selective costs of participation. It could be expected that greater resource availability makes people feel like they have more control over whether or not they participate in activism, as opposed to those who lack the resources. The authors found that this is not necessarily the case; in fact, regardless of their available resources, people tend to have greater *perceived* behavioral control than the *actual* control they have (in terms of resource availability) to really engage in

environmental activism. For example, while, as expected, less educated participants are less likely to engage in activism, the *intention* to participate is the same across higher and lower education levels. People may have little control on their actual ability to participate due to lack of resources (such as time, if they work three jobs), but they may not realize such constraints when expressing their intentions to engage in environmental activism. The author suggests that this may be due to the fact that intentions do not entail real commitment (and real costs) as behaviors do.

In summary, perceived behavioral control is an ambiguous correlate of environmental activism; some studies show a positive correlation between the two, while others show no relationship. Perceived control seems to be higher when people express their intentions to participate, but then greater selective costs such as a lower income is likely to negatively affect actual participation.

Self-Identity:

Self-identity is the salient and enduring aspects of one's self-perception (Sparks & Shepherd, 1992) and it reflects the extent to which a person sees him or herself as fulfilling the criteria for a given societal role (Conner & Armitage, 1998). The environmental psychology literature focuses on two kinds of self-identity constructs that are shown to modulate participation in activism: being an "activist" and being a "naturalist." In relation to one's self-identity interesting observations have been made on the intrinsic motivation to participate in environmental activism and on the visibility of such behavior to others

Activist identity. Fielding et al. (2008) tested the specific role of activist self-identity in predicting intentions to participate in environmental activism. The study used three previously established measurements of self-identity such as the agreement ratings (1-disagree, 7-agree) to the three following statements: "I think of myself as an environmental activist," "To engage in environmental activism is an important part of who I am" and "I am not the type of person who would be involved in environmental activism." They found that identifying as an environmentalist is highly correlated with the intention to "engage in environmental activism in the next 6 months" (Fielding et al., 2008; Hornsey et al., 2006; Roser-Renouf et al., 2014). Roser-Renouf (2014) found that identifying one selves as climate activist was the major modulator of climate activism among AGW believers.

Naturalist identity. A sense of belonging to the natural world may be a prerequisite to increase environmental protection; Mayer et al (2004) suggest that expanding the sense of self to the broader natural world may increase our willingness to identify with it and the will to protect it. They propose a scale to measure "oneness" with the natural world: the Connectedness to Nature Scale (CNS). This scale measures one's affective, experiential relationship with nature, where example items are: "I think of the natural world as a community to which I belong," "I often feel disconnected from nature," "I feel as though I belong to the earth as equally as it belongs to me." A similar scale is the Environmental Identity

Scale developed by Clayton (Clayton, 2003), assessing how individuals think about their personal relationship to nature and about the proper role of humans in the natural environment; this scale asks questions like “I think of myself as part of nature, not separate from it,” and “behaving responsibly toward the earth is a part of my moral code;” the Environmental Identity Scale was shown to correlate with participation in climate activism as measured by the Environmental Action Scale (how often in the past 6 months someone participated in actions like protests, rallies, petitioning)(N=281)(Alisat & Riemer, 2015). Early childhood experiences in nature (both positive moments of enjoyment and stressful witnessing of harm done to nature), are very salient to the creation of a strong “naturalist” identity and connection with the natural environment; in one study prominent environmental activists declared these experiences shaped their connection to the environment and their movement toward environmental activism (Matsuba & Pratt, 2013). Additionally, environmental activists were shown to score higher on measures of environmental identity (Matsuba et al., 2012).

Intrinsic motivation. Seguin et al. (1998) found that the level of autonomous motivation towards protecting the environment (collapsed ratings of “personal love and enjoyment of an intact environment,” “being environmentally conscious has become a fundamental part of who I am” on a scale from 1=does not correspond to 7=corresponds exactly), predicted higher levels of environmental activism than a more extrinsic/non-autonomous motivation (1-7 ratings of items like “my friends insist that I help protecting the environment,”). In support of this point, Buttigieg (2013) argues that, on top of the formal knowledge children receive about the environment, an intimate relationship and connection with the natural world is necessary for them to internalize responsibility and environmental protective action. The environmental activists in the qualitative study report the deep connection with nature established during childhood as a strong motivator for their environmental activist path (e.g. once nature was internalized, environmental degradation triggered the need to take action for some of them).

Visibility. Interestingly, when observers are present, and an actor is performing a pro-environmental behavior that reflects her/his identity (i.e. the actor reports high collapsed ratings of “I see myself as a pro-environmentalist” and “I identify with pro-environmentalist people), she/he will increase the behavior. Vice versa, when observers are present but the identity signaled by the pro-environmental behavior is unwanted by the actor (i.e. the actor is someone with lower scores on environmental identity), the actor will reduce their behavior (N=357)(Brick, Sherman, & Kim, 2017). Although this study did not look specifically at *collective* activism behaviors, it raises interesting questions about how visibility to others may boost the behaviors we identify with (environmental protection or activism).

Relationship with values. A major component of identity formation for environmental activists is the development of environmental ethics and values; these are brought about by their life experiences in nature and by their social surrounding (see worldviews and values section)(Horwitz et al. 1996).

In summary, self-identity as an environmental activist but also as a naturalist are positively correlated with participation in environmental activism. Participation is higher when the motivation to protect the environment is intrinsic and if we identify as environmentalists, pro-environmental action is boosted by the visibility of our action. Environmental ethics may play a role in the formation of an environmental activist identity.

Social identity:

Social identity refers to ‘that part of an individual’s self-concept which derives from one’s knowledge of their membership to a social group, and to the value and emotional significance attached to that membership (Tajfel & Turner, 1986). A whole body of literature on collective action has repeatedly shown that the more people identify with a group, the more they are inclined to protest on behalf of that group (for a review Van Stekelenburg & Klandermans, 2013). Specifically, social identity has been shown to strongly correlate with participation to environmental activism (for a review Bamberg et al., 2015). Below I will mention some of these studies, the concept of politicized group identity, the affective component of social identity, and the feeling of belonging.

Social identity and environmental activism. Tindall et al. (2002) suggests that the level of identification with an environmental group strongly correlates with the level of participation in environmental activism. In this study, identification was measured as the feeling of belonging to a number of groups in the British Columbia Wilderness Preservation Movement, and participation was measured as the time and effort required by the participants’ level of commitment to environmental activism (N=397). Dono et al., (2010) assessed social identity through the collapsed score of a 10-item index (1-5 ratings of statements like “I consider the group X important” or “I feel strong ties to the group X” or “I try to hide that I belong to the group X”); they found that a model using social identity as predictor explained 60% of the variance in activism (the average participation to protests, rallying, financial support to orgs and writing letters to representatives) (N=131). Feeling strong ties specifically to an environmentalist group strongly predicts intention to participate in environmental activism (Bamberg et al 2015, Rees et al 2014). Fielding et al (2008) showed that the formal membership in an environmental group was a strong predictor of intention to engage in environmental activism, probably due to the group’s normative message encouraging participants to engage in activism. The tie between social identity and environmental activism was confirmed by a meta-analysis of 182 studies, where Van Zomeren et al. (2008) tested a social identity model of collective action (SIMCA). The study showed that a stronger sense of social identity relates to a stronger motivation to engage in collective action (thanks to adherence to group norms), but also to a stronger perception of injustice (through group-based emotional experience), and to a stronger sense of efficacy (through group-empowerment). The effect size of these

relationships is greater when a very specific type of group identity is considered: *politicized* group identity.

Politicized group identity. This refers to the identification with an activist organization, as opposed to, for example, a disadvantaged group. Identifying with an organization shifts the focus of action to a political struggle for power with authorities in the public domain, which in turn fuels a personal “inner obligation” to engage in activism (Van Zomeren et al., 2008). In support of this idea, Schmitt et al. (2019) found that politicized environmental identification (defined as the identification with a group that is engaged in a collective struggle to create pro-environmental social change) strongly predicted climate activism, while identification with nature did not (when the two identity types were tested simultaneously)(N=150). The authors argue that climate activism entails the willingness to change social systems and institutions, which is more strongly related to a politicized identity versus a nature-based identity; however, when on top of identifying with nature one acquires a politicized environmental identity, even natural identity gains predictive power over climate activism.

The affective component. One of the most salient aspects of collective identity may be the affective one, where the more we identify with the group the more we “feel” for the group and our shared faith (Van Stekelenburg & Klandermans, 2013). Bamberg et al. (2018) makes the point that identifying with a group can empower us by making us feel part of “something bigger” which can actually make a difference. Social identity generates from interactions that create bonding with the group, among which shared opinions about desired climate reforms (Bamberg et al., 2018); opinions, in fact, can be used as a basis for collective self-definition. Social identity strongly predicts group-based emotions and collective efficacy, which in turn predict the intention to participate in environmental activism (confirming the SIMCA model of collective action) (Bamberg et al., 2015; Rees & Bamberg, 2014).

Belonging. Matsuba et al. (2013) mention the prominence of educational activities in nature done within a social context such as outdoor orgs, boys/girls scouts in the childhood of young environmental activists. From qualitative interviews with environmental activists, these social contexts and bonds seem to trigger pro-environmental and activist behavior in adulthood. In fact, belonging to a group can be as salient as the activism cause in motivating activists. In Fisher et al (2016), climate activists highlighted the importance of their commitment to the international youth climate movement itself, and not just to the issue of climate change. They mentioned the welcoming, inclusivity and internationality of the movement, which made them feel global citizens. Women activists especially reported excitement for seeing strong women leading the movement. A striking aspect of activists’ identification with the movement was practicing inside their own activist group the changes they hope to see in the world.

In summary, social identity has been shown to correlate with environmental activism. This is particularly true when we identify with a group engaged in a collective struggle to create pro-environmental social change (politicized group identity). Social identity may boost the affective link we have with the group (e.g. solidarity), and further fuel our participation. Social identity is tightly linked to the feeling of “fitting in” a certain social context that we feel we belong to.

Self-efficacy:

Self-efficacy refers to the conviction that one can successfully execute a behavior to achieve an expected outcome (Icek Ajzen, 1991; Bandura, Freeman, & Lightsey, 1999). It reflects the ease or difficulty of performing a behavior and people’s confidence that they have the skills to perform it if they want to do so (I. Ajzen, 2002). Self-efficacy has been generally found to be a powerful predictor of the intentions to act (I. Ajzen, 2002; Cheung & Chan, 2000). In the case of environmental activism, self-efficacy is the belief that we have valuable skills to contribute to the group efforts to achieve our goals (e.g. we know how to organize a rally, we have good teaching skills or oratory skills). Below I will first present the studies that found a correlation between self-efficacy and environmental activism, and then discuss four aspects of self-efficacy.

Self-efficacy and environmental activism. An example of self-efficacy is found in the qualitative interview by Buttigieg et al. (2013), where 3 environmental activists believed that their action and competence could bring about changes in urban development, and improve ecotourism. Lubell (2002) refers to this same concept as “personal efficacy” or “internal efficacy;” he shows that personal efficacy, measured as the perception that “the individual’s behavior will influence environmental outcomes” (1-5 rating) has a significant and positive effect on the intention to pay higher taxes and accept cuts in one’s standards of living to protect the environment; self-efficacy is also correlated with having joined an environmental group, signed an environmental petition or taken part in a protest (yes/no ratings). In other words, people who believe that they can positively contribute to activist endeavors are more likely to both express intentions to engage in environmental activism and to actually engage. Similarly, disagreeing with statements like “it is too difficult for someone like me to do much about the environment” and “there is no point in doing what I can for the environment unless others do the same” (greater efficacy), positively correlates with whether someone has taken part in, donated money to an environmental group or signed a petition about environmental issues (Barkan, 2004).

Fear vs efficacy. When the fear of a threatening outcome is high (e.g. the consequences of climate change) but self-efficacy is low, instead of being motivated to action, people employ coping responses that reduce their fear but not the threat (such as defensive avoidance, denial)(Roser-Renouf et al., 2014). Instead, when efficacy is high, people adopt intentions and behaviors that reduce the threat. This idea may

inform educational interventions, where after the scary prospects of AGW consequences are laid out, the audience is encouraged to contribute their personal skills to collective action (instead of being left with fear and a sense of powerlessness).

Specific actions versus broad goals. In one study, when subjects rated their perceived self-efficacy (rating of the statement “it is just too difficult for someone like me to do much about the environment” from 1=agree to 5=disagree) over specific behaviors (volunteering time and money for 14 specific pro-environmental actions), this collapsed score of self-efficacy was more salient as opposed to when they rated general behaviors like “sacrificing economic self-interest for environmental protection” (M. Lubell, 2002). This concept is in line with the idea that it is easier to shift from intention to behavior if the target behavior is a specific action versus a broader goal (Icek Ajzen, 1991). Possibly, the lack of self-efficacy when faced with a broad and overwhelming task may prevent people from turning their activism intentions into actual action.

Free riding. Self-efficacy may be a successful boundary to free riding; if we believe that our skills are highly relevant (or even essential) to the success of collective action, the idea of benefiting from others’ activist efforts is undermined (Bamberg et al., 2018). In fact, believing we can contribute an essential piece to the group action entails that without us the group may not be able to achieve the same positive outcomes (which are the premise for free riding).

Powerlessness. As mentioned above, in a qualitative interview to 3 environmental activists, participants believed that their action and competence could bring about change such as urban development, and improve ecotourism (Buttigieg & Pace, 2013). However, they reported occasionally experiencing discouragement and demotivation due to feelings of powerlessness against the difficult fight against climate change. However, they declared this sense of powerlessness was relieved by successful outcomes of activism. This point is essential to the long-run resilience necessary to enduring climate activism; remembering and building upon achievements can help putting defeats in perspective and continuing on to the next objective undiscouraged.

In summary, self-efficacy has been shown to positively correlate with participation in environmental activism, possibly by helping us overcome the paralyzing fear of AGW consequences. Self-efficacy is perceived as higher in relation to specific actions as opposed to broad goals and it may be a successful neutralizer of the free riding effect. Finally, self-efficacy is fueled by successful outcomes, through which it can help beat the feeling of powerlessness towards climate change.

Collective efficacy:

Collective efficacy refers to the beliefs that a group can achieve a successful final outcome through their action (e.g. governmental policy will be put in place in response to the group’s action), but also that other

members of the community will successfully join the group action (M. Lubell, 2002). It is the belief that group-related problems can be solved by collective efforts (Bandura, 2000). Multiple studies have shown that people engage in collective action if they believe this will make it more likely that relevant goals are achieved (see Van Zomeren et al., 2008 for a review). Group efficacy gives people a sense of collective power or strength through which they believe themselves capable of transforming the situation (Van Zomeren et al., 2008). Below I will discuss the evidence linking collective efficacy to environmental activism, the relationship between collective efficacy and group identity and the role that faith in others and institutions.

Collective efficacy and environmental activism. One study measured collective efficacy among protesters, as the ability of a protest to “influence public opinion,” “influence government leaders and policy makers” and “expressing certain values” (collapsed 1-7 ratings); the study shows that the stronger the rating of group efficacy, the higher the 1-7 score of the intention to participate to the same protest the following year, and to engage in collective action in the next 6 months (N=231)(Hornsey et al., 2006). Ratings of how effective participants thought behaviors like contacting officials, donating time/money, and attending rallies/meetings are (1=no effect, 3=highly effective), significantly predicted an integrated score of past participation and future intentions to participate in all these activities (Roser-Renouf et al., 2014).

Relationship with group identity. The feeling of collective identity can boost collective efficacy (Bamberg et al., 2018; Van Zomeren et al., 2008); if we feel like we belong to a group, this will boost our perception of the group’s efficacy. Interestingly, Bamberg et al. (2018) suggests that this relationship may be two-fold, where the effect of collective efficacy on intentions is modulated by group identity; in other words, we might believe in the efficacy of collective action, but only when we identify with a certain activist group will we be motivated to engage in action with them.

Faith in others and institutions. According to the Collective Interest model used in sociology, collective efficacy entails trust in reciprocal efforts from the community (Mark Lubell, Vedlitz, Zahran, & Alston, 2006). Specifically, the 1-4 rating of the extent to which the respondent believed other people in the community would reciprocate their air policy activism positively correlated with the intention to support air pollution policies (collapsed 1-7 scores of the will to support items like tax incentives and enforcement of low-emission vehicles)(N=626). Group-efficacy is dependent on faith in institutions as well – people need to perceive that politics are receptive to the claims made by their group to conceive the possibility of change (Mark Lubell et al., 2006; Van Stekelenburg & Klandermans, 2013).

In summary, collective efficacy is a strong correlate of participation in environmental activism. Identifying with an environmentalist group can boost our perception of collective efficacy, while the high

faith in people's participation to the group action and trust that institutions will listen to the public correlates with increased collective action.

Faith in institutions:

As we just saw, believing in a responsive government/institution is important to motivate engagement in collective action. Lubell (2002) calls this concept "external efficacy," or the belief in the efficacy of the government to both listen to the public and implement appropriate policies in return. In this study, agreement with the statement "most public officials are not really interested in the problems of the average man" (0=agree, 1=disagree), positively correlated with the intention to pay more taxes or accept cuts to a comfortable standard of life. In a later study, Lubell et al. (2006) showed that the average score of "trust" of 3 governmental agencies (the federal government, the Texas Department of transportation, Texas Commission on Environmental Quality, the U.S. Environmental Protection Agency) to place appropriate environmental policies positively correlated with participant's support of air pollution policy.

Institutional sympathy. As McAdam (2017) argues, empirical evidence on movement emergence suggests that in the modern United States, grassroot forces have been encouraged to mobilize when dominant institutional actors were sympathetic to the movement's aims. This was true for many progressive movements that flourished between 1932 and 1968, during a period of extended Democratic dominance (e.g. labor, civil rights, anti-Vietnam war, women's movements). Citizens who believe that government actors are responsive to their citizens' voice and have an important influence on the environment are more likely to participate in environmental activism (M. Lubell, 2002). In fact, the belief that governments and institution will respond to a political request is an important modulator of collective efficacy (Van Stekelenburg & Klandermans, 2013); this suggests that the more we believe our government will listen to our voice, the more we will feel that collective activism efforts are worth it (without excluding that activist movements can arise in reaction to a distrusted government, e.g. see women rights activism during the Trump administration).

Disenchantment with politics. Disenchantment, distrust and fatalism towards public officials can trigger the tendency for the public to feel like their opinions are irrelevant to policy-makers and therefore to question those authorities (Ockwell et al., 2009). With the support of multiple general population surveys (DEFRA and BBC), the authors suggest that apathy and disengagement from political processes may result from skepticism about the utility of contributing to political debates (Ockwell et al., 2009). Fairbrother, 2019 showed that the more people thought that their government officials were corrupted or incompetent (ratings of questions like "do you think people running the government are corrupt?" or "do you feel like people running the government are smart people?" ranging from "not many are" to "very

many are”), the lower was their willingness to pay higher taxes to protect the environment (1=not at all willing to 3=very willing)(N=2236). From the literature above, the relationship between faith in institutions and environmental activism seems to suggest that lower faith would induce lower motivation to participate; however, this relationship has not been causally demonstrated, and it should be kept in mind that the opposite may also be true: a distrusted government can trigger reactive activism (as supported by multiple real-world examples such as a huge increase in the women’s movement during the Trump administration or the tea-party movement during the Obama administration). This factor clearly needs deeper investigation in order to better assess the directionality of this relationship and its nuances.

In summary, the trust that political institutions will listen to our voices and implement appropriate policies may facilitate the engagement in collective environmental activism. However, the relationship between faith in institutions and environmental activism should be further investigated to reconcile the theory with real-world activist movement formation in recent history.

Worldviews and (personal and moral) values:

Worldviews and personal values entail someone’s idea of how society should be structured (Hornsey et al., 2016), from a socio-political-economic standpoint, or values in regard to certain behaviors that are closely related to a person’s self-identity (Conner & Armitage, 1998). Moral norms refer to one’s own socially determined and socially validated values attached to a particular behavior (Conner & Armitage, 1998). Because the distinction between these three constructs is often unclear in the environmental psychology literature, we will collapse them in this section.

Egalitarianism versus hierarchy. An important societal value shaping our behaviors is egalitarianism and its counterpart hierarchical views. Hierarchical values legitimize privileges and obligations based on static social strata defined by class, gender, ethnicity and so forth, while egalitarian values endorse a social order where social class is irrelevant to the distribution of entitlements and resources (Hornsey et al., 2016). High social dominance (a construct of hierarchical values) predicts support of environmental exploitation, which reinforces the dominance of humans over nature (Milfont, Richter, Sibley, Wilson, & Fischer, 2013); strikingly, such support is only given when the economic profit from it benefits high-status groups in society versus the whole community (Milfont & Sibley, 2014). Roser-Renouf et al. (2014) found that 17% of the variance in climate activism among global warming believers was explained by values of egalitarianism or individualism (assessed through 4 collapsed Likert scores each), where egalitarianism was positively correlated, and individualism negatively correlated with participation to environmental activism.

Relationship with attitudes. Personal values are often included in the assessment of pro-environmental attitudes. It is intuitive to think that based on our values we will develop certain attitudes

(attraction or repulsion) to certain behaviors such as protecting the environment through activism. Milfont et al. (2010), found that environmental preservation attitudes (assessed via the Environmental Attitudes Inventory) were positively related to 1-9 ratings of importance of biospheric values (protecting the environment, unity with nature and respecting the earth, of which the scores were collapsed) while negatively related to the importance rating of conservatism values (honoring parents and elders, family security and self-discipline). They also observed that pro-environmental attitudes positively related to the importance rating of self-transcendence values (protect the environment, world-peace and social justice) while they negatively related to the importance ratings of self-enhancement values (authority, influence and wealth). Because of their closeness to attitudes, environmental values can be captured by items included in the New Ecological Paradigm (NEP - Dunlap et al., 2000). In fact, some items in the NEP unveil worldviews that may shape attitudes about environmental activism. Some examples are: “plants and animals have as much right as humans to exist” or “humans were meant to rule over the rest of nature.” As explained in the attitude section, the NEP was shown to successfully predict engagement in environmental activism, and this may be also due to the contribution of values and worldviews to the scale.

Sacredness versus profaneness. Values about the sacredness or profaneness of the natural environment (also defined as “moral beliefs”) were also shown to affect participation in environmental activism. A study asked participants to select what was closest to their view about nature, among a “creational schema” statement (“nature is sacred because it is created by God”), and an “intrinsic schema” statement, which indicate non-religious spiritual values of nature sacredness (“nature is spiritual or sacred in itself”) (Farrell, 2013). The study found that choosing the intrinsic schema statement related to higher rates of having signed a petition, donated money to environmental organizations in the past 5 years. However, both intrinsic and creational schemas were associated with membership in environmental groups (N=2817).

Values versus reality. Our internal values, when clashing with outside events, may trigger action (or “reaction”). When contextual triggers (e.g. climate news) unveil the environmental and social damage caused by human emissions, this may clash with a person’s moral values about how the world should work (e.g. governments should regulate environmental exploitation). The moral outrage resulting from value-violation may increase one’s motivation to engage in activism. As described in the affective involvement section, indeed Rees et al. (2014) showed that moral outrage has an indirect effect on collective action intention via social identification. Valinas et al. (2012), found that perception of public littering (assessed by subjective rating of the question “according to you, how many of your compatriots through away litter in a public place?” from 1=almost none to 4=almost all) is positively correlated with the support of tax increases to fund pro-environmental policy; this suggested that the internalized values

of environmental protection trigger even greater motivation in response to environmental disregard by others.

Generativity. In their review, Matsuba et al. (2013) describes the concept of “generativity,” as people’s concern and care for the next generations, as a correlate of environmental activism. Generativity entails the will to establish the next generation and contributing to the future shape of society; it does not necessarily refer to one’s immediate family, but a highly motivated desire to contribute to the wider social and political world. Specifically, Matsuba et al. (2012) propose that generativity is a mediating factor between identity formation and environmentalism; with identity maturation come growing concerns for the next generation (generativity), which in turn leads to further engagement in environmental activities.

Post-materialism. Tindall et al. (2002) found that post-materialist values (preferring a high quality of life over high economic standards of living, as assessed by the collapsed rating of 7 post-materialist items) positively correlated with the number of acquaintances within a given environmental organization (“weak ties”); weak ties in turn predicted greater engagement in activism, especially among younger participants. The authors suggest that due to relatively high levels of stability and security in Western countries since WWII, there has been a shift from materialist to post-materialist values among substantial segments of the population. Younger cohorts in particular may have more focus on quality of life rather than economic standard of living. This may have fueled the birth of new social movements among which environmental protection. In support of this theory, people who believe environmental health should not be sacrificed for economic self-interest are more likely to participate in environmental activism (M. Lubell, 2002).

Biospheric, altruistic, egoistic values. Stern et al. (1995) identified three general value orientations with regards to the environment. Biospheric values refer to unity with nature, respect for the earth, finding beauty in the world, and are measured through a 1-7 score of subjective importance as “guiding principle in the respondent’s life.” Altruistic values refer to equality, social justice, loyalty and are rated with the same method as biospheric values. Egoistic values refer to respect of authority, social power and wealth, also rated with the same method. They found that the first two sets of values strongly positively relate to the willingness to act to protect the environment (averaged score from a 4-item intention scale), while egoistic values are negatively correlated with intentions. Mayer et al. (2004) tested whether these values correlated with their Connectedness to Nature Scale (CNS); this scale measures individuals’ values of community with nature (or environmental identity). Biospheric values positively correlated with the CNS (therefore, with environmental identity), while consumerism values were negatively correlated with the CNS. So, by contributing to an environmental identity, biospheric and altruistic values may contribute to the role identity plays in environmental activism. Biospheric and social-altruistic values were of great concern to youth activists in Fisher et al. (2016): “for me it is holistically both. [] I don’t think we are

going to find climate solutions unless we address all these issues together. [] climate is really just a matrix that can go over issues of food shortage, human rights, resource wars.”

Influences on environmental ethics. Through a semi-structured qualitative interview, Horwitz et al. (1996) investigate the factors that influence environmental ethics in 29 environmental activists; environmental ethics is defined by the activists as “committed valuing of natural world manifested in sustained actions, feelings, and attitudes relating to protecting and conserving nature.” Among the precursors to environmental ethics that emerge from these interviews are naturalism instilled by families and mentors, nature experiences in adulthood and observing environmental destruction and realizing that growth cannot be unlimited. But also intellectual experiences (books, education, teaching), philosophical religious and cultural influences (e.g. the positive relationship of certain cultures with the environment, or religious love for all beings), and experiencing certain historical events/social changes play a role in shaping environmental ethics, together with one’s work experience (e.g. jobs that put participants in contact with nature or related to education or social justice). As suggested by Conner et al. (1998), Horwitz et al. also characterize environmental ethics as part of one’s identity; the growth of these values among activists may involve a process of identity formation (tying a sense of self to environmentalism and the related activism).

Social justice. Social justice is mentioned in Fisher et al. (2016) as a salient value that, once triggered by various experiences, helped directing climate activist’s life trajectories. Participants describe their concern about people that will lose their homes, access to safe food and water; when asked about how they came to care about these issues, someone responds :“that’s the way I am constructed, and not much I can do about it.” Others say “Everything is interrelated. For me, I see it as protecting human and nature life and our futures. The planet isn’t compartmentalized, and neither are our lives.” This suggests internal values and worldview that are explainable only as “a part of the self” motivate activist behaviors.

In summary, worldviews and values correlate with participation in environmental activism under multiple points of view. Egalitarian values predict greater participation, together with “intrinsic sacredness of nature.” Values help shape attitudes towards environmentalism and may boost participation when clashing with reality. Generativity and post-materialism are positively correlated with participation, as are biospheric and socio-altruistic values. Environmental ethics can be shaped by multiple developmental experiences, among which childhood contact with nature. In addition to biospheric values, social justice values are of great (if not the main) concern to some environmental activists.

Socio-demographic context:

Someone’s current socio cultural and economic context plays a big role in the decisions they make and the behaviors they engage in. Tracing a clear relationship between sociodemographic variables and

environmental activism is quite hard (the studies investigating this topic often disagree with each other on the existence or direction of such relationships). However, unveiling the influence of sociodemographic information on environmental activism can be a valuable starting point to understand why some groups are disengaged.

Age. Age has been repeatedly shown to have a direct effect on level of activism, however results are ambiguous in regard to the direction of this effect. Some studies have shown that younger people are more likely to engage in activism (Barkan, 2004; M. Lubell, 2002; Rees & Bamberg, 2014; Tindall, 2002); these results are often interpreted as youth having more time and flexibility on their side to be able to engage in activism. However, others have shown that age is negatively related to environmental activism (Brick et al., 2017; Mark Lubell et al., 2006; Roser-Renouf et al., 2014; Valinas et al., 2012); this second observation has not attracted much interpretative interest.

Education. Most studies considering demographics in their models agreed on the positive correlation between education and engagement in environmental activism, where the higher the level of education, the more is the engagement in environmental activism (Barkan, 2004; Fairbrother, 2019; Farrell, 2013; M. Lubell, 2002; Mark Lubell et al., 2006; Roser-Renouf et al., 2014; Valinas et al., 2012).

Income. From the studies here analyzed it is ambiguous whether a higher income predicts higher levels of environmental activism; some studies suggest this is the case (Roser-Renouf et al., 2014; Tindall, 2002; Valinas et al., 2012), while others show that income makes no difference on activist participation (Barkan, 2004; Fairbrother, 2019; Farrell, 2013; M. Lubell, 2002; Mark Lubell et al., 2006).

Gender. Multiple studies found that gender predicts environmental activism, where women are significantly more engaged in global warming activism than men (Barkan, 2004; Fairbrother, 2019; Roser-Renouf et al., 2014). Roser-Renouf et al. (2014) found that gender is also a significant predictor of egalitarianism values and risk perception (which were both significant modulators of climate activism). Barkan (2004) shows some interesting modulators of gender-related citizenship (intended as signing petitions, giving money to environmental groups or taking part in protests). Education seemed to have an increasing effect on women's participation versus men (on which it had no effect). On the other hand, a higher family income seemed to increase men's citizenship. A higher number of children decreases women's citizenship but not men's. Religious fundamentalism decreases women's citizenship. Valinas et al. (2012) however, shows opposite results with respect to gender, where women are less likely to volunteer as environmental activists overall; the authors suggest it might be the case that women are more active at the community level while men are more likely to engage in formal organizations, or that women have less time at their disposal. It should be kept in mind that Valinas' data was collected in a time frame (1981-2001) that is posterior to the other studies, and levels of women's engagement in activism may have changed through this time.

Ethnicity. Ethnicity also generated ambiguous results. Barkan (2004) observed that environmental citizenship was significantly higher for white people, and for people living in more urban areas. Caucasians showed greater citizenship than African Americans, even when controlling for environmental concerns, while urban residence promotes environmental citizenship by Caucasians but not by African Americans. The authors interpret these results to suggest that the generally more disadvantaged socio-economic status among African Americans may put many demands on their time, energy and attention, preventing them from engaging in activism. However, Lubell (2006) found that African Americans, Hispanics and Asians were significantly more likely to engage in air policy activism than Caucasians. They suggest that while minorities may have greater financial and time challenges to engage in activism, they also face greater risks of environmental harm (e.g. living in poorer areas that are more exposed to the consequences); this increases the benefits of participating if positive outcomes are achieved. Relatedly, these minorities have a greater risk perception of environmental damage than Caucasian participants do.

Political and religious views. Political interest is the extent to which someone values their political system and staying informed about it. Greater political engagement predicts greater engagement in activism (Farrell, 2013). Barkan et al. (2004) found that political interest, measured as frequency with which in the past year a respondent had discussed their “views about political or social policy issues, current affairs, or political campaigns with other people,” is positively correlated with environmental citizenship (whether or not someone is a member of a group protecting the environment, signed a petition about environmental issues or has given money to an environmental group). Additionally, liberal political values predict greater environmental citizenship and so does greater religious engagement (Barkan, 2004).

Previous participation. Lubell (2002) additionally found that participation in many different types of activist groups (what he refers to as “social capital”) increases the engagement in activism behaviors, suggesting that participation in different groups provides civic skills that are translated into the context of environmental activism.

In summary, age, income, gender and ethnicity are controversial predictors of environmental activism, where some studies show they correlate with participation, while others show inverse relationships or no relationship. Education, political interest and previous participation in environmental activism, however, seem to be reliable predictors, and potential starting points for a deeper investigation on what makes these sociodemographic aspects tightly related to participation.

Factors from theoretical sociology

The factors listed so far have been tested as correlates of environmental activism (or intention to participate) by empirical psychology and empirical sociology. While an empirical approach allows us to make observations and test statistical relationships between variables, it is important to note that theory is needed to build a framework of collective climate activism. By drawing theoretical connections, more questions arise, that can then be answered through more empirical research.

As mentioned in the introduction, sociology is the study of society and human social behavior, from intra-group interactions to global social processes (American Sociological Association, 2016). Much of this is done through theoretical analyses, which have proposed compelling candidate predictors of climate activism; I believe these should be tested empirically to increase both our understanding and predictive power of climate collective action. In this section, I propose a few examples that I have encountered in my readings of environmental sociology. While I believe that empirical testing and sociological theory have much more to exchange than just these few examples, from my personal experience as a climate activist these seem particularly relevant to explain what may motivate individuals to engage in climate activism.

Imagination & mental flexibility

When we are settled in a certain circumstance, it is hard to transition to a very different one. For example, it has been argued that people have an existential and relational motivation to protect the prevailing social, political and economic system (Hornsey et al., 2016); see system justification theory (Jost & Banaji, 1994). These “system justification” motives may lead people to deny environmental realities or avoid actively changing them because this requires a recalibration of the status quo. It is often heard that despite the awareness of AGW, some individuals find changing their habits (from reducing flying to becoming vegetarian to using public transports) too challenging, and therefore continue the old ways, setting the climate issues on the side.

Along these lines, Norgaard (2018) proposes an interesting theory. Because both responsibilities and impacts of anthropogenic global warming seem far away from those not yet affected (geographically and temporally), we need to use our *imagination* to, based on the scientific knowledge we have, visualize 1) the ecological damage that is being done (ecological imagination) and 2) potential alternative courses of our societies (sociological imagination). As Norgaard says, citing C.W. Mills, “imagination is the capacity to range from the most impersonal and remote transformations to the most intimate features of the human self – and to see the relations between the two.” Such kind of imagination can help us link the abstract/intangible to the individual (e.g. the impact that the carbon footprint of our driving has on the change in precipitations).

Imagination is also essential to realize the environmentally-disruptive economic growth our society is embedded in (Foster, 2000, 2002), where the very labor most people contribute to is structured to perpetuate this endless growth. It takes imagination to realize how our personal carbon footprint may be impacting glacier melting, fire seasons, sea levels, expansion of diseases, climate refugees. It also takes imagination to envision an alternative course for our society, other than the profit/growth-first machine that is driving the climate crisis. What would a different society look like? How can we implement those changes? Having the mental flexibility necessary to answer these questions may fuel the motivation to engage in climate activism, to work to change the current status-quo.

“Imagination” could be operationalized as the ability to connect the abstract to the tangible, the causes to the consequences, the present to the future (whether as general mental skills or specific to climate-related mechanisms), to ask the question: does a more sophisticated imagination lead individuals to greater motivation to participate in climate activism?

Theory of change

Reducing CO₂ emissions across the world is a huge undertaking that most people are intimidated by. Even when climate awareness is present, self-efficacy and collective efficacy can be dampened by a feeling of powerlessness. Can one group really make any difference against the power of stakeholders such as the fossil fuel industry in changing our economic and political status quo to a climate-safe one? The idea of investing effort and expectations in an impossible cause may paralyze individuals intentioned to engage in climate activism. However, contrary to what many believe, there are multiple ways in which local activist groups can influence the broader society (Mihaylov & Perkins, 2015). In their sociological overview of local environmental grassroots activism, Mihaylov et al. suggest for example that local environmentalism can engage in political expansion, grassroots expansion and cultural expansion. This is done by networking and building coalitions with groups with similar grievances (e.g. issues of social justice), coordinating national or regional challenges to put pressure on the national policy level, and spreading a cultural desire to create alternative ways of living. Once understood and internalized, these different ways that local activist efforts can spread change to a global level (whether by shaping policy, or culture) may empower prospective activists. This theory of change is best captured by the phrase “act locally, think globally.”

A more concrete example of this theory is the idea that successfully decarbonizing one’s community or institution (e.g. a university or a company), may trigger a competitive effort from similar institutions to implement the same changes (Aron et al., 2020). In fact, while the issue of the climate crisis becomes of greater relevance among the general public (also thanks to activists and climate advocates), companies and institutions will need to comply with the evolving standard of carbon emissions, to

maintain a positive reputation/appeal to the public. This way, the cultural pressure of emission reduction may allow decarbonization to spread. Having a clear local-to-global theory of change may empower and motivate people to engage in collective action, if they think that their local efforts can really change the global culture (see self and collective efficacy sections). The theory of change construct may be operationalized by asking participants whether they believe local change can trigger global change, and if so, in what way. Alternatively, a local-to-global theory of change could be proposed to a pool of participants and their motivation to participate/actual participation recorded before and after.

Recognizing victims and perpetrators

As McAdam (2017) reasons, “one problem that climate change activists have had in trying to mobilize action is the difficulty of concretizing or personifying climate change or identifying specific villains to blame for the escalating threat. [] it is much easier to mobilize people when you can focus their anger on a potent symbol of the evil they are seeking to vanquish.” The fossil fuel industry is known to exert enormous power on political institutions through lobbying and campaign contributions to members of congress, to encourage their endorsement of climate-disrupting interests (such as opening up new tar sand and coal mines and persist with natural gas fracking)(Klein, 2015; McAdams 2017). The same industry is known to have funded million-dollar misinformation campaigns by supporting climate-change-denying think-tanks to mislead the public on the catastrophic biospheric and social effects of AGW (Klein, 2015; McAdam, 2017; Oreskes & Conway, 2011). These entities are the main obstacle to the change of direction that our societies and economies need in order to embark in a pro-climate future (Klein, 2015); they are not only majorly responsible for environmental and social damage, but also for actively misleading the public about the impairments to their health and futures.

However, the guilty realization of one’s personal carbon footprint often holds people back in looking at the fossil fuel industry as the “enemy.” This same realization induces cognitive dissonance in front of the option to engage in climate activism; if people feel like active perpetrators of the climate crisis through their own emissions, how could they become climate activists? I argue that while individual carbon footprints are certainly a concerning issue that individuals must face, clearly there are way more impactful and powerful forces actively working against a change in the emissions status quo. The ability to discern the relatively small impacts of individual emissions versus the great responsibility of fossil fuel giants may motivate the public and neutralize their cognitive dissonance to participate in the climate movement.

It is also challenging to connect CO₂ emission to the social destruction provoked by extreme weather events (e.g. draughts, fires, floods) on vulnerable populations. Many are in fact unable to clearly

identify the direct victims of climate change and what is happening (and will continue happening) to them; this may reduce the empathetic motivation to join climate action.

Recognition of victims and perpetrators can be operationalized by interviewing participants on their beliefs about whether there are clear victims and perpetrators of AGW, and if so, who they are and what roles they play. One could predict that the greater the ability to recognize the powerful interest groups actively exacerbating climate change and the victims directly impacted by it, the more someone will be motivated to participate in climate action. Alternatively, offering a factual and supported perspective of these dynamics may trigger increased engagement in climate activism.

Place attachment

Place attachment has been extensively investigated by environmental psychology as a precursor of pro-environmental behavior (Carrus, Scopelliti, Fornara, Bonnes, & Bonaiuto, 2014). A strong identification with a specific environment may shape social identity and place identity, triggering the will to protect the place we are attached to from extreme weather events caused by climate change. For example, talking to people about climate-disruption consequences in terms of local changes (e.g. raised water levels or local drought) may drive a stronger motivation to engage in climate activism (Larsen, 2008). Therefore, place attachment (intended as attachment to the local environment) may predict participation in climate activism, either directly or through other factors such as social identity (in fact, often place attachment is strongly linked to the social attachment to the local community and possibly the two affect each other), or self-identity as a citizen of that area. There are multiple metrics to measure place attachment, among which semi-structured interviews to community members about their relationship with the local environment.

Gaps in the current literature

While the research conducted so far by both empirical psychology and empirical sociology on the factors modulating engagement in climate activism has revealed important results, some limitations should be pointed out.

Lack of causality. While most empirical studies analyzed in this review draw correlational links between predictor factors and participation in environmental activism, nearly none is able to assess the causality of these relations. In most of the quantitative studies here reported participants fill up surveys asking questions about the predictors (e.g. attitudes, emotions, cognitions) and self-reports of participation in environmental/climate activism. Regression analyses are then run to test correlations between the predictors and participation. Significant correlations may entail that 1) the factors tested as

predictor cause activism (causality), or 2) activism causes the factors (reverse causality) or 3) no direct causal relation exists, and simply participations and the tested factors vary together as function of a third common causal variable. While correlations can be informative, their contribution to a potential intervention to boost climate activism may not be as significant as causal relations are. Successful interventions should target and boost causal or quasi-causal predictors to increase engagement in climate activism; I argue that in order to provide evidence of factor-to-activism causal relationships (useful to implement such interventions), a methodological shift would be of help. Multiple interesting factors have been observed to correlate with climate activism in cross-sectional studies; continuing forward, longitudinal studies may be able to assess causality by manipulating these factors and tracking changes in activist behavior through time. This type of design would allow to draw stronger inference on the modulating role of these psychological factors upon climate activism.

Climate specificity. Most studies here reported focus on predicting “environmental activism.” This term entails a large umbrella of multiple sub-categories of activism; I argue the differences among them are not negligible, and they should therefore be treated separately. For example, “environmental activism” includes climate change activism, waste activism, water pollution activism and local anti-pipelines or anti-dam activism. While these categories are certainly connected by the purpose of preserving the natural environment, they also differ greatly in characteristics such as the level of urgency, visibility of the consequences, social impacts, action strategies, political endorsement and time frame. These differences may entail different motivational triggers needed to engage in action. Specifically, I argue that climate change activism has some unique characteristics worth studying separately. First its urgency. Climate scientists are near-unanimous that we must substantially reduce CO₂ emissions in the next decade to potentially limit warming to only 1.5 degrees Celsius (Change, 2018; Hansen, 2018). This race against time may affect the psychological motivation to join climate activism differently than plastic waste activism (of which the urgency is not globally life-threatening). For instance, the sense of urgency may boost people’s emotional involvement and increase their motivation to get to action. Or on the other hand, the short-term time frame may be so overwhelming to induce lower self/collective efficacy and result in reactive avoidance. Second, the lack of a directly threatened community/identity. Intoxicating land fields, disruptive pipelines or polluted waters from local factories generate the outrage of specific communities or identities immediately affected by the issues (e.g. low-income ethnic minorities living next to the land field). On the other hand, climate change’s impacts (e.g. extreme weather events) do not directly affect individual communities or identities. This lack of specificity in the impacts of climate change subtracts the community-identity aspect of activism, where a single group feels attacked and reacts to the perpetrators. Third, the intangibility of the solutions to climate change. While the object of the fight in waste or water pollution activism is clear and tangible (convince the local factory to stop

water pollution or a local institution to close a landfill), there are hundreds of ways our society needs to change to reduce emissions. Individual and corporate consumptions of electricity and gas, corporate sponsorship of air travel, institutional regulations on fossil fuel extractions, agriculture and livestock and many others all need to change. Unless all these parts of society coordinate to reduce emissions, single efforts become ineffective. These complex dynamics can be extremely overwhelming to a prospective climate activist, as opposed to the specific and tangible aims of other types of environmental activism. These three points are only examples of how climate activism may entail largely different psychological predictors (e.g. a more sophisticated theory of change to fathom how decarbonization can actually happen) than other types of environmental activism. This is why I argue climate change activism and its modulators should be investigated separately.

Screening for AGW beliefs. The process of becoming an activist goes through multiple stages. First, one needs to familiarize themselves with the cause, learn about it and internalize it. Second, one can decide to shift to action. I argue that separating these two stages will help environmental psychology to rule away potential confounds from our understanding of climate activism. For example, testing the hypothesis that self-efficacy modulates climate activism, if we have not first assessed that the participant believes in global warming, will confuse the final results. In fact, it could be that the person in question has very high self-efficacy beliefs in terms of skills they could contribute to an activist group, but they do not participate in climate action because they do not believe that the earth is warming. Of all the studies here analyzed, only one (Roser-Renouf et al., 2014) did an initial screening for AGW beliefs; I think consistently screening for beliefs in AGW would help focusing the research to what motivates some people to take action on climate change, while other believers remain silent and paralyzed.

Conclusion

To summarize the literature I described in this review: First, *affective involvement* is shown to relate to environmental activism participation via feelings like fear of the consequences of AGW, outrage, anger, sadness and guilt; while these seem to be tightly related to participation, the lack of affective involvement regarding AGW that is common to many people may be due to a reduced perception of the risks. Second, while *intentions* to act share some correlates with participation, intentions are not always followed by actual behavior, due to the selective costs of action; this may be overcome by a step-by-step implementation plan. Third, positive *attitudes* towards both environmental activism and pro-environment are linked to higher participation in collective action, although cognitive dissonance with high emissions lifestyles may silence these attitudes. Fourth, *social norm* correlates with participation both when social norm is measured as the passive perception of others' judgment, and as the active spread of participation

norms through opinion leadership. Fifth, *perceived behavioral control* seems to be higher when people express their intentions to participate, but then greater selective costs such as a lower income is linked to reduced participation. Sixth, *self-identity* as an environmental activist and as a naturalist are positively correlated with participation, especially when intrinsic (as opposed to imposed from external rules); higher visibility of our environmental identity by others will boost our pro-environmental actions. Seventh, *social identity* is highly linked to environmental activism, especially if the group we identify with is “politicized,” it strongly relates to our affective connection to the group and our feeling of belonging. Eighth, *self-efficacy* may help us overcome the paralyzing fear of AGW consequences, it is higher for specific actions than for general goals, it may be a successful neutralizer of the free riding effect (by making us feel a necessary component of successful action), and is fueled by successful outcomes. Ninth, *collective efficacy* strongly correlates with participation and may be boosted by greater identification with the group, together with high faith in the reciprocal participation of other community members, and trust in institutions. Tenth, higher *faith in institutions* may lead to greater confidence that our voices will be heard, and our work will lead to real policy changes, possibly encouraging more participation. Eleventh, *worldviews and values* of egalitarianism, intrinsic sacredness of nature, generativity and post materialism positively correlate with participation, as do biospheric and socio-altruistic values; seeing these values clashing with actual reality may trigger action (or re-action). Twelfth and final, *socioeconomic variables* such as education, political interest and previous participation are consistent predictors of participation in environmental activism.

While empirical psychology and sociology offer a rich body of literature on the above factors, many of them have only been shown to correlate with participation in environmental activism, as opposed to causally trigger this behavior. Further investigation should focus on the causal role of these factors, in order to implement motivational interventions to increase climate activism participation.

Apart from drawing conclusions on the above empirical literature, I can adduce some insights from sociological theories. In fact, additional modulators of climate action have been theoretically proposed, which, if tested empirically, would increase our understanding of what brings people to engage in climate activism: first, the *imagination* and mental flexibility necessary to picture a potential alternative course of our societies (sociological imagination). Second, a *theory of change* of “acting locally and thinking globally,” to spread local change to a global level. Third, the *recognition of victims and perpetrators*, needed to identify who should be protected and who should be targeted by collective action. Fourth and last, *place attachment*: the role that the attachment to the local environment plays on the motivation to protect it from extreme weather events.

Finally, I conclude that the current literature on collective climate action has a number of problems, such as the lack of causal demonstrations that the aforementioned factors trigger participation in

collective action, the lack of climate-specificity in investigating environmental activism, and of initial screening for AGW beliefs. I suggest longitudinal studies allowing for causal inference as a potential solution to improve such limitations.

The goal of this review was to provide a simple overview of a quite scattered empirical literature on the factors correlated with climate activism; this recapitulation may be a useful tool for future research to start investigating the *causal* role each of these factors has on environmental activism, and continue looking at how these factors are related to each other. I believe the help of sociological theory is essential to provide empirical research with new ideas of climate activism modulators, and with a theoretical framework revolved around societal structure to better understand climate activism. I hope this summary will also be useful to grassroots organizers who desire gaining a psychological and sociological insight into the drivers of climate activism; being aware of these driving factors may improve the communication strategies proposed to the public, to successfully engage people in climate activism.

We know that human activities have exacerbated the warming of our planet to a seriously dangerous extent, for the ecosystem and for humanity itself. How humans decide to step up against the current state of affairs is among the most important questions for today's societies, deserving great attention from all social sciences and a comprehensive empirical and theoretical understanding.

References:

- American Sociological Association (2016). *What is Sociology?*
<https://www.asanet.org/about-asa/asa-story/what-sociology>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683. doi:DOI 10.1111/j.1559-1816.2002.tb00236.x
- Alisat, S., & Riemer, M. (2015). The environmental action scale: Development and psychometric evaluation. *Journal of Environmental Psychology*, 43, 13-23.
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British journal of social psychology*, 40(4), 471-499.
- Aron, A. R., Ivry, R. B., Jeffery, K. J., Poldrack, R. A., Schmidt, R., Summerfield, C., & Urai, A. E. (2020). How can neuroscientists respond to the climate emergency? *Neuron*, 106(1), 17-20.
- Bamberg, S., Rees, J., & Seebauer, S. (2015). Collective climate action: Determinants of participation intention in community-based pro-environmental initiatives. *Journal of Environmental Psychology*, 43, 155-165.
- Bamberg, S., Rees, J. H., & Schulte, M. (2018). Environmental protection through societal change: What psychology knows about collective climate action—and what it needs to find out. In *Psychology and Climate Change* (pp. 185-213): Elsevier.
- Bandura, A. (2000). Exercise of human agency through collective efficacy. *Current directions in psychological science*, 9(3), 75-78.
- Bandura, A., Freeman, W., & Lightsey, R. (1999). Self-efficacy: The exercise of control. In: Springer.
- Barkan, S. E. (2004). Explaining public support for the environmental movement: A civic voluntarism model. *Social Science Quarterly*, 85(4), 913-937. doi:DOI 10.1111/j.0038-4941.2004.00251.x
- Bennett, J. O. (2016). *A Global Warming Primer: Answering Your Questions about the Science, the Consequences, and the Solutions*: Big Kid Science.

- Brick, C., Sherman, D. K., & Kim, H. S. (2017). "Green to be seen" and "brown to keep down": Visibility moderates the effect of identity on pro-environmental behavior. *Journal of Environmental Psychology*, 51, 226-238.
- Buttigieg, K., & Pace, P. (2013). Positive youth action towards climate change. *Journal of Teacher Education for Sustainability*, 15(1), 15-47.
- Carrus, G., Scopelliti, M., Fornara, F., Bonnes, M., & Bonaiuto, M. (2014). Place attachment, community identification, and pro-environmental engagement. *Place attachment. Advances in theory, methods and applications*, 154-164.
- Change, I. P. o. C. (2018). *Global Warming of 1.5° C: An IPCC Special Report on the Impacts of Global Warming of 1.5° C Above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*: Intergovernmental Panel on Climate Change.
- Cheung, S. F., & Chan, D. K. (2000). The role of perceived behavioral control in predicting human behavior: A meta-analytic review of studies on the theory of planned behavior. *Unpublished manuscript, Chinese University of Hong Kong*.
- Clayton, S. (2003). Environmental identity: A conceptual and an operational definition. *Identity and the natural environment: The psychological significance of nature*, 45-65.
- Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of applied social psychology*, 28(15), 1429-1464.
- Dono, J., Webb, J., & Richardson, B. (2010). The relationship between environmental activism, pro-environmental behaviour and social identity. *Journal of Environmental Psychology*, 30(2), 178-186. doi:10.1016/j.jenvp.2009.11.006
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). New trends in measuring environmental attitudes: measuring endorsement of the new ecological paradigm: a revised NEP scale. *Journal of social issues*, 56(3), 425-442.
- Fairbrother, M. (2019). When will people pay to pollute? Environmental taxes, political trust and experimental evidence from Britain. *British Journal of Political Science*, 49(2), 661-682.
- Farrell, J. (2013). Environmental activism and moral schemas: Cultural components of differential participation. *Environment and Behavior*, 45(3), 399-423.
- Festinger, L. (1957). *Theory of Cognitive Dissonance*. Evanston, IL: Row. Peterson and Com.

- Fielding, K. S., McDonald, R., & Louis, W. R. (2008). Theory of planned behaviour, identity and intentions to engage in environmental activism. *Journal of Environmental Psychology*, 28(4), 318-326. doi:10.1016/j.jenvp.2008.03.003
- Fisher, S. R. (2016). Life trajectories of youth committing to climate activism. *Environmental Education Research*, 22(2), 229-247.
- Foster, J. B. (2000). *Marx's ecology: Materialism and nature*: NYU Press.
- Foster, J. B. (2002). *Ecology against capitalism*: NYU Press.
- Frantz, C. M., & Mayer, F. S. (2009). The Emergency of Climate Change: Why Are We Failing to Take Action? *Analyses of Social Issues and Public Policy*, 9(1), 205-222. doi:10.1111/j.1530-2415.2009.01180.x
- Fung, C. Y., & Adams, E. A. (2017). What Motivates Student Environmental Activists on College Campuses? An In-Depth Qualitative Study. *Social Sciences*, 6(4), 134.
- Gifford, R. (2008). Psychology's essential role in alleviating the impacts of climate change. *Canadian Psychology/psychologie canadienne*, 49(4), 273.
- Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in experimental social psychology*, 38, 69-119.
- Hansen, J. (2018). Climate change in a nutshell: the gathering storm. *Earth Institute–Columbia University* <http://csas.ei.columbia.edu/2018/12/18/climate-change-in-a-nutshell-the-gathering-storm-2>.
- Hornsey, M. J., Blackwood, L., Louis, W., Fielding, K., Mavor, K., Morton, T., . . . White, K. M. (2006). Why do people engage in collective action? Revisiting the role of perceived effectiveness. *Journal of Applied Social Psychology*, 36(7), 1701-1722.
- Hornsey, M. J., Harris, E. A., Bain, P. G., & Fielding, K. S. (2016). Meta-analyses of the determinants and outcomes of belief in climate change. *Nature climate change*, 6(6), 622-626.
- Horwitz, W. A. (1996). Developmental origins of environmental ethics: The life experiences of activists. *Ethics & Behavior*, 6(1), 29-53. doi:DOI 10.1207/s15327019eb0601_3
- Jost, J. T., & Banaji, M. R. (1994). The role of stereotyping in system-justification and the production of false consciousness. *British journal of social psychology*, 33(1), 1-27.
- Klein, N. (2015). *This changes everything: Capitalism vs. the climate*: Simon and Schuster.

- Larsen, S. C. (2008). Place making, grassroots organizing, and rural protest: A case study of Anahim Lake, British Columbia. *Journal of Rural Studies*, 24(2), 172-181.
- Lorenzoni, I., Nicholson-Cole, S., & Whitmarsh, L. (2007). Barriers perceived to engaging with climate change among the UK public and their policy implications. *Global environmental change*, 17(3-4), 445-459.
- Lubell, M. (2002). Environmental activism as collective action. *Environment and Behavior*, 34(4), 431-454. doi:Doi 10.1177/00116502034004002
- Lubell, M., Vedlitz, A., Zahran, S., & Alston, L. T. (2006). Collective action, environmental activism, and air quality policy. *Political Research Quarterly*, 59(1), 149-160.
- Manstead, A. S., & Parker, D. (1995). Evaluating and extending the theory of planned behaviour. *European review of social psychology*, 6(1), 69-95.
- Matsuba, M. K., & Pratt, M. W. (2013). The Making of an Environmental Activist: A Developmental Psychological Perspective. *Exemplar Methods and Research: Strategies for Investigation*, 142, 59-74. doi:10.1002/cad.20049
- Matsuba, M. K., Pratt, M. W., Norris, J. E., Mohle, E., Alisat, S., & McAdams, D. P. (2012). Environmentalism as a Context for Expressing Identity and Generativity: Patterns Among Activists and Uninvolved Youth and Midlife Adults. *Journal of Personality*, 80(4), 1091-1115. doi:10.1111/j.1467-6494.2012.00765.x
- Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of environmental psychology*, 24(4), 503-515.
- McAdam, D. (2017). Social movement theory and the prospects for climate change activism in the United States. *Annual Review of Political Science*, 20, 189-208.
- Mihaylov, N. L., & Perkins, D. D. (2015). Local environmental grassroots activism: contributions from environmental psychology, sociology and politics. *Behavioral Sciences*, 5(1), 121-153.
- Milfont, T. L., & Duckitt, J. (2010). The environmental attitudes inventory: A valid and reliable measure to assess the structure of environmental attitudes. *Journal of environmental psychology*, 30(1), 80-94.

- Milfont, T. L., Richter, I., Sibley, C. G., Wilson, M. S., & Fischer, R. (2013). Environmental consequences of the desire to dominate and be superior. *Personality and Social Psychology Bulletin*, 39(9), 1127-1138.
- Milfont, T. L., & Sibley, C. G. (2014). The hierarchy enforcement hypothesis of environmental exploitation: A social dominance perspective. *Journal of Experimental Social Psychology*, 55, 188-193.
- Norgaard, K. M. (2018). The sociological imagination in a time of climate change. *Global and Planetary Change*, 163, 171-176.
- Ockwell, D., Whitmarsh, L., & O'Neill, S. (2009). Reorienting Climate Change Communication for Effective Mitigation Forcing People to be Green or Fostering Grass-Roots Engagement? *Science Communication*, 30(3), 305-327. doi:10.1177/1075547008328969
- Oreskes, N., & Conway, E. M. (2011). *Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*: Bloomsbury Publishing USA.
- Rees, J. H., & Bamberg, S. (2014). Climate protection needs societal change: Determinants of intention to participate in collective climate action. *European Journal of Social Psychology*, 44(5), 466-473.
- Roser-Renouf, C., Maibach, E. W., Leiserowitz, A., & Zhao, X. Q. (2014). The genesis of climate change activism: from key beliefs to political action. *Climatic Change*, 125(2), 163-178. doi:10.1007/s10584-014-1173-5
- Schmitt, M. T., Mackay, C. M., Droogendyk, L. M., & Payne, D. (2019). What predicts environmental activism? The roles of identification with nature and politicized environmental identity. *Journal of Environmental Psychology*, 61, 20-29.
- Seguin, C., Pelletier, L. G., & Hunsley, J. (1998). Toward a model of environmental activism. *Environment and Behavior*, 30(5), 628-652.
- Sheeran, P. (2002). Intention—behavior relations: a conceptual and empirical review. *European review of social psychology*, 12(1), 1-36.
- Sparks, P., & Shepherd, R. (1992). Self-identity and the theory of planned behavior: Assessing the role of identification with "green consumerism". *Social psychology quarterly*, 388-399.
- Stern, P. C., Kalof, L., Dietz, T., & Guagnano, G. A. (1995). Values, beliefs, and proenvironmental action: Attitude formation toward emergent attitude objects 1. *Journal of applied social psychology*, 25(18), 1611-1636.

- Sussman, R., & Gifford, R. (2019). Causality in the theory of planned behavior. *Personality and Social Psychology Bulletin*, 45(6), 920-933.
- Sutton, S. (1998). Predicting and explaining intentions and behavior: How well are we doing? *Journal of applied social psychology*, 28(15), 1317-1338.
- Tajfel, H., & Turner, J. (1986). The social identity theory of intergroup behaviour. u: Worchel S. i Austin WG (ur.) Psychology of intergroup relations. *Chicago: Nelson Hall*, 7-24.
- Thoits, P. A. (1995). Social psychology: The interplay between sociology and psychology. *Social Forces*, 73(4), 1231-1243.
- Tindall, D. B. (2002). Social networks, identification and participation in an environmental movement: low-medium cost activism within the British Columbia wilderness preservation movement. *Canadian Review of Sociology/Revue canadienne de sociologie*, 39(4), 413-452.
- Valinas, M. S., Molina, L. M., Addino, M., Montemayor, D. I., Acha, E. M., & Iribarne, O. O. (2012). Biotic and environmental factors affect Southwest Atlantic saltmarsh use by juvenile fishes. *Journal of Sea Research*, 68, 49-56. doi:10.1016/j.seares.2011.12.001
- Van Stekelenburg, J., & Klandermans, B. (2013). The social psychology of protest. *Current Sociology*, 61(5-6), 886-905.
- Van Zomeren, M., Postmes, T., & Spears, R. (2008). Toward an integrative social identity model of collective action: A quantitative research synthesis of three socio-psychological perspectives. *Psychological bulletin*, 134(4), 504.
- Weber, E. U. (2006). Experience-based and description-based perceptions of long-term risk: Why global warming does not scare us (yet). *Climatic Change*, 77(1-2), 103-120. doi:10.1007/s10584-006-9060-3