



Young Climate Protesters' Mobilization Availability: Climate Marches and School Strikes Compared

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Although there is a developing strand of literature on young people's participation in environmental activism, there have been few systematic comparisons of their participation in different forms of environmental activism. This article compares the participation of young people and their older counterparts in climate change marches and Global Climate Strikes (GCSs). The agential and structural factors that draw people into protest participation are, in general terms, well recognized. However, it is also recognized that the factors that lead to particular types of protest on certain issues might not be the same as those that lead to different types of protest on different issues. In this article, we keep the protest issue constant (climate change), and make comparisons across different forms of climate protest (marches and school strikes). We coin the term "mobilization availability", which is a useful way to understand why young people are differentially mobilized into different types of climate change protest. Our notion of mobilization availability invites scholars to consider the importance of the interplay of the supply and demand for protest in understanding who protests and why. We analyse data collected using standardized protest survey methodology ($n = 643$). In order to account for response rate bias, which is an acute problem when studying young people's protest survey responses, we weighted the data using propensity score adjustments. We find that the youth-oriented supply of protest evoked by GCS mobilized higher numbers of young people into climate protest than did the more adult-dominated climate marches. GCS did this by providing accessible forms of protest, which reduced the degree of structural availability required to encourage young people to protest on the streets, and by emotionally engaging them. Indeed, the young people we surveyed at the GCSs were considerably more angry than their adult counterparts, and also angrier than young people on other climate protests. Our conceptual and empirical innovations make this paper an important contribution to the literature on young people's political participation.

Keywords: young people, political participation, mobilization, global climate strike, climate protest, climate marches, Greta Thunberg

INTRODUCTION

By August 2018, the Swedish teenage activist Greta Thunberg had become the world's most famous climate change activist celebrity. Her crusade to skip school on Fridays until decision-makers took the issue seriously had gathered significant attention across the world (Doherty and Saunders 2021). It had also motivated a significant global youth movement, known as Fridays for Futures, that has organised well-attended Global Climate Strikes and gained significant media coverage (not all of it positive). By the time of the September 2019 Global Climate Strike (GCS), the movement had mobilized young people to participate in 6,000 protest events in at least 185 countries. Young climate strikers took time off school and college to stress the urgent need for governments to take serious action to mitigate climate change (Wahlström et al., 2019).

Survey research (Wahlström et al., 2019) suggests that over one-third of the participants in these climate strikes were under the age of 19. It is important to note, however, that even the most systematic survey protocols under-estimate the proportion of young people on protests due to survey response bias (Walgrave et al., 2016; Saunders and Shlomo 2021). The problem is particularly acute in surveys of GCS participants in countries like the United Kingdom that, in order to be compliant with research ethics protocols, require parental consent for the survey participation of minors. It is impossible to get consent when parents do not accompany them (Saunders and Doherty 2019).

Even if the proportion of young people in GCS demonstrations is under-estimated by survey research, it is certainly the case that young people have recently been mobilized into climate action like never before. In the United Kingdom, prior to GCS, most climate change protest was heavily adult-dominated (Doherty and Saunders 2021). The recent rise in the participation of young people in climate protest presents us with a conundrum. Young people are generally considered to be more inclined to participate in alternative, informal and everyday political acts than their older counterparts (Marsh et al., 2006; Hart and Henn, 2017; Pickard, 2019), especially on more post-materialist issues like the environment (Inglehart 1977). But if this is the case, why is it that young people have been a relatively small minority of participants in climate action in the United Kingdom until recently?

Pickard (2019) argues that the GCSs "are a perfect example of youth-led DIO [Do it Ourselves] politics, sparked by young "standby citizens" (Amnå and Ekman, 2014) caring deeply about a particular issue and feeling dissatisfied [sic] with elected representatives and institutions" (p.423). But what was it about the GCSs that were more effective in mobilizing young people than previous environmental protests? We explore whether changes in the supply of environmental protest have made young people more available for climate protest. In other words, has the "Greta effect" reduced the barriers for young people to participate in a climate protest? We also explore how young people on adult dominated climate marches and youth-centred GCS protests differ from their older counterparts. Our article is an attempt to explore this phenomenon using a synthesized analytical framework and a methodologically robust approach.

Our synthesized analytical framework adapts Klandermans' (2004) model on the supply of, demand for,

and mobilization of protest to develop the concept of "mobilization availability". For us, mobilization availability is the extent to which people are available to be mobilized. It is determined by a combination of the supply of protest (in our case, youth-centred versus adult centred protest), the demand for protest (ideological and psychological dispositions), access to mobilization channels (networks and organisations) and other forms of biographical structural availability (being in the right place at the right time, such as school or college). We argue that high levels of structural availability enhance the efficacy of mobilization channels, whereas low levels constrain them. Together, mobilization (whether enhanced or constrained by factors related to structural availability), supply and demand generate mobilization availability. As we illustrate in more depth in the next section of this paper, our analytical framework allows us to merge relevant literatures on youth political participation, the social psychology of protest and drivers for political participation into a coherent framework.

Our methodologically robust approach involves analyzing protest survey data ($n = 643$) collected at two annual London-based climate change marches (2009 and 2015) and the 2019 Global Climate Strikes in Truro and Manchester. We, henceforth, refer to climate change marches as "old" climate protest, or adult-dominated protest and to the Global Climate Strikes as GCSs (plural) or as "new" or "youth-dominated" climate protest. We have weighted our survey responses to adjust the sample to balance out the high levels of response rate bias that disproportionately exclude young people. We use propensity score matching sample adjustments to weight the data in order to eliminate the under-representation of young people (Saunders and Shlomo 2021).

We proceed with the paper as follows. First, we frame our argument in the context of research on young people's participation in protest. Second, we build our analytical framework, merging literatures on the supply and demand for protest, as well as the structural and agentic factors that are known to predict protest participation. In the building of our analytical framework, we contextualize these theoretical insights in relation to GCSs. This is an important step in the development of our analytical framework because notions of supply and demand of protest have been designed primarily with adult-dominated forms of protest in mind. Therefore, they do not always neatly apply to young people, and especially not to young GCS participants. We therefore suggest some modifications to the dynamics of supply and demand, which have a better fit with the more youth-dominated forms of protest represented by GCSs. Third, we introduce our methodology. After presenting our findings, we illustrate the value of the term "mobilization availability" with our analysis and discuss our broader contribution to the literature.

Framing Our Argument

There is a vast literature suggesting that young people generally prefer less formal and more post-materialistic opportunities for political participation, such as environmental protest (Norris 2002; Sloam 2007; Henn and Foard, 2012; Pickard, 2019). This

is argued to be due to generational changes in values, young people's alienation from and frustration with formal politics and their different understandings of politics (Inglehart, 1977; Henn and Weinstein, 2006; Marsh et al., 2006). However, there is some evidence in Finland suggesting that young people's engagement in protest is not mutually exclusive with a support for better functioning representative democracy (Huttunen, 2021). Inglehart (1977) famously argued that young people are more likely to engage in the environmental movement than older people because of changes in values from materialistic "bread and butter" issues to post-materialistic issues such as the environment. More recently, O'Brien et al. (2018) suggested that young people have always been involved in the environmental movement for the most obvious reason that they are the ones who will bear the brunt of the effects of the climate crisis (O'Brien et al., 2018). However, in Switzerland, Lorenzini et al. (2021) found that there is not a cleavage in pro-environmental attitudes between young and old, in fact over time each generation has become more and more pro-environment.

However, there is limited substantial empirical evidence of high rates of youth protest participation—at least not until recently. Exploring patterns of protest in Western Europe, Grasso (2016) does not find that younger people were more likely to engage in unconventional political repertoires, and especially not in demonstrations. The difference Grasso (2016) found was between baby boomers and other generations. In the United States, Caren et al. (2011) found a similar pattern; there, younger generations did not protest more than older generations and baby boomers were driving increased protest rates. They found little change in *who* participates in street protests across generations. Consequently, they argue that if there was to be a change in the composition of street protesters it is likely to happen suddenly during periods of political unrest. Other evidence suggests that findings on the rates of protest might be conditioned by the types of protest being researched. Klandermans (2016), for example, found that young people attend different demonstrations to older people. One likely reason for this is that they are mobilized in different ways and through different channels.

In our work, we bring Grasso's (2016) and Caren et al.'s (2011) analysis up to date by including protest survey analysis of demonstrations from 2009 until 2019. Moreover, we keep the protest issue constant—climate change—to avoid the "noise" of combining data on different issues to which Klandermans' (2016) work alerts us. We work on the premise of Caren et al. (2011) that GCS did radically change the demand and supply of environmental protest, which facilitated it increasing its mobilization availability for young people¹.

We use Klanderman's (2004) theory of the supply and demand of protest to argue that GCSs represent a substantial change in the supply of protest for young people. In the following sections we more deeply elucidate the concept of mobilization availability by mapping Klandermans' (2004) argument on to the GCS movement. We then move on to discuss the individual drivers

for protest participation in terms of structural and agential availability (Saunders et al., 2012). Our research questions are:

- What differences are there in the mobilization availability of young protesters at adult-dominated and youth-dominated protests? and
- Is being young a critical determinant for attending GCS protests, all other things considered?

THE CONCEPT OF MOBILIZATION AVAILABILITY

The Change of Supply in the Environmental Movement

Above, we introduced the argument that young people are at the center of the environmental movement and the debate about whether they attend protests more than older people and other generations. In general, evidence seems to be in the balance. The answer depends not only on protest issues, but also on the organization or network that is mobilizing participants. Earl et al. (2021), for example argue that, oftentimes, social movement organizations do not target young people. If young people participate in the activities of adult-centred social movement organizations on their own accord, they may feel that the adult domination of such spaces are dismissive of their concerns. As a result, young people often set up their own organizations, as a reaction to their alienation from formal politics (Furlong and Cartmel, 2012), from social movement organizations (Earl et al., 2021) or even both. We argue that the GCSs are an example of young people developing their own movement structure, and as such represent a change in supply of environmental protest opportunities for young people today. Other scholars have expressed scepticism that the GCS movement is fully youth led (Dupuis-Déri, 2021; Elsen and Ord, 2021). Regardless, it still represents a shift from an adult-dominated to a youth-dominated supply of environmental protest.

In a first step in building our analytical framework we use Klandermans' (2004) theory of demand and supply of protest participation to analyze the difference in the framing of the GCSs and how this contributed to the increased mobilization of young people to climate protests. In a second step we discuss individual drivers for protest participation, with the aim of addressing the question of the differences between young and old protesters at GCS and other climate change protests.

According to Klandermans' theory of demand and supply of protest, supply of protest participation refers to the opportunities to protest as provided by protest organizers, whether social movement organizations (SMOs) or grassroots activists. Attendance at protest is a result of the interaction between supply and demand and the process of mobilization involves matching the demand and supply. Let us first focus on how GCSs changed the supply of environmental protest before moving on to discuss the demand and mobilization.

Different SMOs and grassroots networks attract different people depending on what kind of protest participation they

¹Propensity score matching stratifying into quintiles can reduce between 90 per cent (Cochran 1968) and 95 per cent (Rubin, 1979) of the differences between random and non-random samples in quasi-experimental research designs.

offer, how they frame issues, their ideology and what kind of collective identity they present for potential supporters to identify with. These different aspects of the supply (and the demand) of the protest Klandermans (2004) categorizes as instrumental, identity and ideological. For the supply side the instrumentality is about showing the impact of the movement. Although it is often difficult for social movements to illustrate direct or short-term impact, the GCSs quickly gained media attention and Greta Thunberg is often invited to speak in high-level forums from which young people are usually excluded (Doherty and Saunders 2021). This has illustrated to young people the potency of GCSs as a tactic as well as the potential for young people to make a difference, so increasing young people's mobilization availability. Furthermore, the strategy of a school strike made it very visible who was participating and who was not. Klandermans (2004) argues that information about other supporters' behavior is important to illustrate the impact of the issue on others. The more people that participate, the more likely it is that other individuals will participate. As such, the tactic of striking from school is not only rhetorically interesting; Thunberg argued that it was more important for her future to pressure politicians to do something about climate change than to attend school, but the absence of pupils from class will also have been very visible to other pupils.

The visibility of participation and non-participation also plays in with the identity aspect of the supply-side of movements' mobilization efforts. Movements give individuals the opportunity to act on behalf of the collective identity (Saunders 2008). Participating provides a sense of belonging, and non-participation may make non-participants feel like the odd ones out. The form of participation was heavily tailored to school pupils—striking from school was something only they could do, so they were also able to closely identify with the protest repertoire. Furthermore, and perhaps the biggest change in the supply side of GCS compared to the “old” environmental movement is that GCS is led by Greta Thunberg—herself a young person—who spoke (and continues to speak) specifically about the effects of the climate crisis on young people. Indeed, Wahlström et al. (2019) found that nearly 45% of school students at the GCS across the cities they surveyed agreed “quite” or “very much” that Thunberg affected their decision to join the climate strike, and this effect was stronger among young people than adults. It was no longer human beings who were the collective identity, but more specifically it was about young people today and their futures. The collective identity was strengthened. In this way a change in the supply-side of identity also changed the demand-side of identity.

Klandermans (2004) defines ideological aspects of supply in relation to the ways that movements position themselves ideologically to attract certain kinds of people. From this perspective, GCSs and adult-dominated climate protests attract people with similar levels of concern for the environment. Klandermans, however, considers emotions to be embedded within an affective component of the ideology of movement organizations. Movements offer their participants an opportunity to express their emotions. Thunberg has famously expressed her emotions in many speeches, and her emotional

expression has been debated and criticized. Her emotional delivery has allowed young supporters to empathize with her, triggering their own emotions.

Supply and demand, then, interact in relation to the instrumental, identity and ideology aspects of protest participation. We have illustrated the youth-oriented nature of the protest supply provided by the GCSs, which we argue made climate protest more attractive to young people. As such we expect there to be more young participants in the GCSs compared to “old” climate protest. But what we really aim to capture using the concept of mobilization availability are the differences in the *people* who have participated in the “old” and “new” climate protests, and as such we need to focus on the individual level. We now move on to discuss in more detail the individual-level characteristics of protesters. How might we expect them to vary across different climate protests and why?

Demand, Availability, and Protest Participation

Based on changes to protest supply brought about by GCSs, we expect to find differences in the types of people who participate in ‘old’ climate protests compared to GCSs. Following Saunders et al. (2012) we now introduce *agential factors* that shape protest demand—meaning the attitudes, emotions and opinions that make someone more or less likely to engage in protest; as well as *structural and biographical availability*, which refer to the personal circumstances that determine whether people are “available” for protest participation. Combined with supply, these individual level variables make up what we term mobilization availability.

Agential factors for protest participation refer to the attitudes, emotions, and opinions that influence the demand-side (Klandermans 2004) of whether someone is likely to protest or not. The agential factors interact with the availability factors; for example, someone with very strong opinions about climate change might wish to attend a climate demonstration, but factors such as a work shift or parental responsibilities might thus limit their ability to participate (Verhulst and Walgrave, 2009). Verhulst and Walgrave (2009) argue that first-time protesters have higher barriers to mobilization than more experienced protesters. This is, they suggest, because there are many thresholds that need to be overcome. To overcome these thresholds, strong grievances, emotions and collective identities are required to mobilize participation. Young people are most likely to comprise the majority of first timers, simply because their younger age will have given them fewer opportunities to participate in protest. Indeed, Wahlström et al. (2019) found a substantial number of protest newcomers at the GCS.

In relation to attitudes, Klandermans (2004) considers grievances or concerns about a certain issue, or set of interrelated issues, as central to mobilization. Such concerns are shared with others (identity-based), they identify a need for change (instrumentality-based) and interact with emotional responses to seek changes to the status quo (ideologically-based). Identity, which links potential participants to others in a movement and others who care about the issue, is thought to

help draw people into protest. Collective identity brings together those who are negatively affected by, or would benefit from, change. In the case of the environmental movement, it is clear that young people would benefit most from stopping the climate crisis for generational reasons. Verhulst and Walgrave (2009) argue that first-timers will have stronger collective identity because they are not aware of the tensions in the movement. The longer an activist remains part of a movement the more they become aware of the tensions and divisions in the movement, and this leads them to identify less with the movement as a whole, but more with a particular faction.

Instrumental drivers are related to the desire of individuals to change things, often stemming from a sense of deprivation or injustice. Most aspects of individuals' demands are similar for GCSs and "older" climate protests: both address the same grievance among (young) people regarding the need for action to stop climate change, they both appeal to people who will suffer because of the climate crisis, and they appeal to the moral obligation to do something about it.

Ideology-based agential factors that motivate protest participation relate to the feeling of something being unjust or something requiring change. Verhulst and Walgrave (2009) argue that the stronger someone feels that something is unjust and the angrier they are about it the more likely they are to cross the threshold to participate in protest. The ideological motivations interact with the instrumental motivations, because people participate if they think that they can achieve or change something by participating. That is, they participate if they consider themselves, their actions or their group to have political efficacy.

We predict that the dynamics between the 'old' climate protests and GCSs will be slightly different, because of the change in supply that GCSs represent. We argue that young people who turned up to adult-dominated climate marches would have required stronger motivation, or agential availability, than their older counterparts because young people were not the mobilization target. In contrast, the GCSs were specifically aimed at young people and therefore it was easier for young people to be mobilized and turn up to them, and as such they need to be less motivated, or agentially available, than their older counterparts at the GCS. In other words, we argue that the mobilization availability of young people was constrained by the adult-dominated framing and nature climate marches, but that young people have more mobilization availability for the GCS protests, that specifically targeted them.

Overall, our analytical framework thus far suggests that mobilization availability is determined heavily by the supply of protest and demand for it (agential factors). We have also shown that supply influences demand (and vice versa). Mobilization availability is further shaped by biographical and structural availability, as we now explore.

Structural and Biographical Availability for Protest Participation

Structural availability refers to the positioning of individuals in networks that make them likely to be mobilized to participate in a protest. We refer to it as being in the right place at the right time.

Typical places of mobilization are university campuses (Earl et al., 2021), being members of organizations (Klandermans, 2016) and workplaces (Beyerlein and Hipp, 2006; Saunders et al., 2012). However, Klandermans (2016), when comparing young and old protesters, found that young people have different mobilization networks. They are less likely to be embedded in those formal places for mobilization, and be more likely to be mobilized through informal networks like friends and school. For the GCSs 'school friends' were the main mobilization channel for young people, which was a structural change to the mobilization patterns from other protests and older people at the same protest (Wahlström et al., 2019). Indeed, Dupuis-Déri, (2021) illustrates how pupils encouraged their peers to attend the Friday strikes by holding assembly, banging on lockers or standing on chairs in the lobby.

There is a large literature on biographical availability, a concept that McAdam (1986) coined to refer to the absence of personal constraints that can hinder protest participation. Biographic availability can impact protest willingness and actual protest participation. Beyerlein and Hipp (2006), for example, illustrate that biographical unavailability affects whether someone is willing to participate in protest rather than whether they actually do. However, the main characteristics generally thought to make people unavailable for protest—such as marriage, being in full-time work and having children—mostly do not apply to young people. Moreover, the variable age, often used as an indicator of availability to protest, does not neatly apply when we focus specifically on young people. Thus, we are making a further contribution to the social movement literature by critically exploring and applying the importance of biographical availability in contributing to mobilization availability in relation to young people compared to older people.

Many studies have shown that students are more likely to engage in protest activities, due to the flexible schedule that students have in comparison to people in full-time work (Olcese et al., 2014). The age of compulsory education has steadily been rising in the United Kingdom as young people now have to 'earn or learn' until they are 18. School is thus compulsory and students under the age of 18 can get in to trouble by not being in school. Thus, for students under the age of 18, the cost of protest participation during the school week is very high. As reported by Dupuis-Déri, (2021), some students at the Montreal school strikes were punished by their school. However, as discussed above, the school strikes are distinct because they are making the act of skipping school a key feature of the act of protest.

The account of structural availability needs refining for young people in other ways, too. Young people face different challenges in terms of the accessibility of protest. First, they face greater logistical challenges in getting themselves to large-scale protests that are staged in a capital city or in a city centre than their older counterparts. Organizations staging the demonstration may provide transport to get to the location, but as discussed above, young people are less likely to be members of organizations and thus not only less likely to be targeted for mobilization, but also to be unaware of the collective transport.

The school strikes were different, they were happening more locally, thus it was much easier for young people to make it to the location (Wahlström et al., 2019). Second, there is a lot of protection in place for young people from parents or other adults in their networks, who may block their participation in protest for their safety. There are always risks of protests becoming violent. But there are also lesser risks such as small people getting lost or feeling intimidated in a large crowd of adults. The school strikes were different here again because they were organized and dominated by young people, and the devolved nature of them to the local communities meant that they were sometimes small demonstrations and oftentimes had notable participation of young people. Overall, because of the nature of the GCSs, young people attending them would have fewer structural barriers to participation, which also contributes to their mobilization availability, already enhanced by favourable supply and demand factors. This leads us to our hypotheses:

Hypotheses

H1: *Young people on adult-dominated climate change demonstrations have more structural and agentic availability than their older counterparts.*

We expect young people on adult-dominated climate change demonstrations to have more structural and agentic availability than their older counterparts because they have more barriers to cross to join an adult-dominated protest than older people. They will have participated in these protests despite their generation not being specifically targeted by the mobilization efforts. However, the supply of protest and mobilization strategies for the GCSs were very different. The GCSs had a young person spearheading them (Greta Thunberg) and were especially targeted at young people. Anecdotal evidence as well as existing survey evidence finds that young people are at the centre-stage of the framing and the action. Thus, the framing and strategies of GCSs (to strike from school) are perhaps more appealing to young people. For this reason, we might expect there to be fewer structural and agentic factors drawing them into protest. In other words, we consider that their mobilization availability weakens the need for additional motivational factors. This leads us to our second hypothesis:

H2: *Young people on youth-driven GCS demonstrations have less structural and agentic availability than young people on climate change marches.*

Literature somewhat takes for granted the youth-driven nature of GCS, but does not fully test this systematically. The question of whether being young is the main predictor of attending a GCS rather than a climate march therefore remains untested and unanswered. Given the youth-centric focus of its framing and leadership, we expect being young to be a significant predictor of participation in GCS even when we control for other factors. However, for participation in a climate march that lacks the youth leadership and focus, we do not expect youth to be the main predictor, when other variables are controlled for. Therefore our third hypothesis is:

H3: *Being young is the main predictor of participating in a GCS demonstration but this is not the case for a climate change march.*

DATA AND METHODOLOGY

Data

The data we analyse was collected using the state-of-the-art protest survey methodology developed by Klandermans et al. (2009) at London-based climate change marches in 2009 ($n = 243$) and 2015 ($n = 280$) and the Global Climate Strike (GCS) demonstrations in Manchester and Truro in 2019 ($n = 120$). This methodology has systematic procedures for collecting data randomly and reducing selection bias. The method uses “pointers” who select who is to be interviewed, while an interviewer conducts the interview. The “pointers” select one demonstrator every “ n ” rows, depending on the estimated size of the demonstration. The aspiration is to achieve equal distribution of surveys/interviewees throughout the protest. This process helps to reduce selection bias.

Another innovation of the protest survey methodology is that it combines a mail-back questionnaire (which was adapted to leaflets with a QR code and website link to an online survey for the 2019 GCSs) with face-to-face interviews. One in every five of the one-thousand mail-back (or online) surveys has a face-to-face interview accompanying it. Given that response rates for the face-to-face interview are approximately 95% (compared to only 12% for our online GCS survey, and 24 and 28%, respectively, for the 2009 and 2015 mailed-back surveys) this allows us to approximate response rate bias. Our assumption is that those who answer the interview are a more representative sample of those on the demonstration than those who complete the longer mail-back or online survey. We assume this because only a small minority refuse to participate in the face-to-face interview. There are a set factors by now well known to influence response rates to the mail-back or online version of the questionnaire: those who are more politically interested, are better educated and are older generally have a greater propensity to respond, although this varies across depending on the issues at stake and the location of a protest (Walgrave et al., 2016).

Usually, projects based on protest survey methodology report on response rate bias, but do little to correct it. Given that the present study is specifically motivated to explore one of the variables known to be affected by response rate bias (age), we adapted the propensity score adjustment survey weighting process used by Saunders and Schlomo (2021) to adjust the sample to approximate randomization. For this, we combined the face-to-face and mail back/online data separately for each demonstration, and used a logistic regression model to predict which cases are in the face-to-face sample. For this regression model, we used as predictors the small selection of variables that are common across the interview and mail back/online survey (gender, age, when a firm decision was made to attend the demonstration, the number of demonstrations attended, satisfaction with democracy, extent of political interest and highest educational qualification obtained). We then sorted the estimated propensities from this regression model into quintiles.¹ Each of the quintiles is then given a design weight as follows:

$$d_i^{*q} = \left[\frac{\sum_{ieq} d_i^{orig}}{n_{ecc}^q} \right]$$

where the numerator is the sum of the original d_i^{orig} from face-to-face respondents in strata q and the denominator n_{ecc}^q is the number of mail back or online respondents in strata q .

Prior to weighting, the three regression models (one for each of the 2009, 2015, and 2019 data) consistently indicated that, compared to the more random face-to-face sample, young people were significantly less likely to return the mail-back questionnaire or complete the online survey. In our data, other significant predictors of returning a completed mail back or online questionnaire were being: less well educated (2015 and 2019); more politically interested (2015); female (2015); and less active in demonstrations in the past (2019). The weights for the face-to-face data were then applied, but weights for the face-to-face data were maintained at a value of 1. The same regression model on the variables shared across the face-to-face and mail-back/online questionnaires with weights applied results in there being no identifiable statistically significant differences between the face-to-face and mail-back/online weighted samples. We are therefore confident to have approximated a reasonably random sample by applying these stratified propensity score weights.

Analysis Techniques

We have two forms of analysis in this paper. The first is a presentation of frequency data for key indicators of structural and attitudinal/psychological availability to protest. Data are presented for six sub-samples: young people (30 years or younger) and older people (31 years or older) for each of the 2009 and 2015 climate change marches and the 2019 GCSs. The upper age for being young may seem generous, but there is a large debate regarding the age span, characteristics and appropriate denomination of the term “young people” (Pickard, 2019). We have two reasons for selecting this age range. First, a practical reason; due to our compliance with ethical procedures of not surveying young people under the age of 16 without parental consent, we simply have not “caught” that many younger people. The expanded age range combined with our weighting allows us to do more sophisticated analysis. Second, an empirical reason; transitions into adulthood are delayed, prolonged and reversible for the current generation of young people (Roberts, 2007; Heinz 2009). There is research suggesting that young people in their late 20s are still economically reliant on their parents, either by “boomeranging” back to the family home, or by getting help paying rent (Walther, 2006; Swartz and O’Brien, 2009; Rainsford and Wambach, 2021). Therefore, the age when young people reach independent adulthood is increasing, and we reflect this reality in our age range. Of course, the GCSs were targeted at school pupils who will not be aged up to 30 years old. But the key factor here is the life stage of protesters and we wanted to allow our age range to capture all young people who would be living with the consequences of climate change in the future, not just school children. We do fully acknowledge that not everyone under 30 will be the same or have the same experiences (see Pickard, 2019 for a discussion). For both of the climate marches, the proportion of young people was 33 per cent, whereas the proportion of young people at the GCSs was 76 per cent.

Our second form of analysis consists of a 2-stage binary logistic regression model, for which the dependent variable is participation in new forms of youth protest (thus, GCS = 1 and climate marches = 0). In step 1, we included variables measuring structural availability. In step 2, we additionally add agentic

predictors. The structural variables included in the model are participating with known others, hearing about the demonstration online, being in part-time work and being a student (each of which have a positive relationship in a univariate model to predict the dependent variable); as well as previous participation in demonstrations, being a member of an organization and being in full-time work (each of which have a negative relationship to the dependent variable in a univariate model).

The agentic and psychological variables included in the regression also have a significant relationship with the dependent variable in univariate models. Those with a significant positive relationship are anger, fear, participating to protest self-interests and participating due to a moral obligation. Those with a significant negative relationship are identification with organizations staging the demonstration and political interest.

Gender and left-right self-placement (the latter is almost statistically significant in a univariate model) are also included in the analysis. For a full list of variables and their measurement, please see the appendix.

RESULTS

Structural Availability

Table 1 presents frequencies for indicators of structural availability across the three different datasets. We can see that young climate protesters are considerably more likely to hear about the demonstrations they attended through online social networks (e.g., Facebook, Twitter and the like) than older people. They are notably more likely to attend with friends. Moreover, they are marginally more likely to attend the demonstration in the company of others that they know, with the highest percentage doing so being among young people at GCSs. On climate marches, the young protesters are less likely to have been protest stalwarts, but on GCSs they are more likely to be so than their older counterparts, even if the GCSs have, on balance, many more inexperienced protesters. Young climate protesters are more likely to be in full-time study than their older counterparts, but this is only marginally so for GCSs where—given the nature of the demonstration, which was to take time off school or college—there were similar proportions of older students. Full-time work is rare among young GCS protesters, but ranges from around one-third to nearly half of all the other groups (by age and climate march). Membership of an environmental organization is lower for young protesters in 2009 and at the 2019 GCS than for older protesters, but higher for young protesters in 2015 than for older protesters. On several indicators, young climate protesters appear to be more structurally available for protest than their older counterparts, but their mobilization does not seem to be straightforwardly related to conventional mobilization channels (i.e., environmental organization membership and previous demonstration participation).

Attitudinal and psychological determinants of protest are remarkably similar across the three protests and the two age groups (**Table 2**). However, young protesters do seem to be more angry (in 2009 and 2019), more worried (in 2009 and 2019), more fearful (2015 and 2019) and to be markedly more frustrated (for all three demonstrations). Anger, frustration and fear are notably

TABLE 1 | Key indicators of structural availability.

	Climate marches				GCS	
	2009 young people <31%	2009 older people%	2015 young people <31%	2015 older people%	2019 young people <31%	2019 older people%
Is female	61	58	55	44	68	66
Protested with others	85	83	82	75	91	81
Heard about demo thru online social media	33	6	74	35	66	68
Asked by friends to attend	33	18	24	14	-	-
Is a member of an environmental organisation	58	64	83	64	27	64
Past participation in demos >5	39	53	44	64	19	17
In full time study	36	5	27	2	31	30
In part time work	9	23	18	14	20	29
In full time work	39	38	46	35	2	30

Note: percentages are presented in columns. Some variables are not present in the GCS dataset. Their absence is marked with a hyphen.

TABLE 2 | Key indicators of attitudinal/psychological disposition to protest.

	Climate marches				GCS	
	2009 young people <31%	2009 older people%	2015 young people <31%	2015 older people%	2019 young people <31%	2019 older people%
Identifies with other participants quite or more	67	85	88	80	78	84
Identifies with orgs staging demo quite or more	63	79	71	79	62	73
Feels very angry	36	29	41	46	78	56
Feels very worried	38	48	66	53	67	49
Feels very fearful	25	32	39	31	51	22
Feels very frustrated	64	58	73	69	79	57
Participated to defend interests (agree +)	55	54	59	56	70	51
Participated to express views (agree)	97	92	95	92	92	92
Participated to pressure politicians (agree +)	94	98	95	98	97	95
Participated to raise awareness (agree +)	94	95	97	98	98	97
Participated to express solidarity (agree +)	94	90	93	92	87	100
Participated for a moral obligation (agree +)	66	82	84	81	88	80
Voting is useless (agree +)	13	6	14	19	-	-
Individual efficacy (agree +)	85	83	85	80	-	-
Group efficacy (agree +)	84	89	89	88	-	-
LRSP (mean)	3.0 (sd 2.3)	3.1 (sd 2.1)	1.7 (sd 1.6)	2.2 (sd 1.7)	2.2 (sd 1.8)	1.8 (sd 1.3)
Political interest (mean 1–5 score)	3.6 (sd 0.6)	3.5 (sd 0.6)	3.6 (sd 0.6)	3.6 (sd 0.6)	3.5 (sd 0.7)	3.3 (sd 0.8)
Talks politics (mean 1–4 score)	3.7 (sd 0.8)	3.7 (sd 0.8)	4.1 (sd 0.9)	3.7 (sd 0.8)	4.0 (sd 0.8)	3.9 (sd 0.9)

Note: Percentages are presented in columns. Some variables are not present in the GCS dataset; their absence is marked with a hyphen.

higher for 2019 (GCS) than for the climate marches, which might be an outcome of the framing of GCS, and Greta Thunberg's own, barely concealed, anger, and frustration.

Does Being Young Predict Participation in GCS?

Do we find that being young is an overriding predictor of participation in new youth-led forms of climate activism (i.e., the

GCS)? The results of our binary logistic regression are shown in **Table 3**. Step 1, which includes structural availability only, finds that being young and being a student are significant predictors of participation in GCS over participation in climate change marches. This hardly seems surprising given the framing of GCS. Social media is very important for mobilizing people into GCS. Membership of environmental organizations, past participation in demonstrations and working full time are negative predictors: put differently, people who are not members of environmental

TABLE 3 | Binary logistic regression predicting participation in new forms of climate activism.

	Step 1		Step 2	
	B (SD)	Exp(B)	B	Exp(B)
Structural availability				
Young people	0.83 (0.31) **	2.29	0.41 (0.36)	1.50
Gender (male)	0.01 (0.03)	1.01	-0.10 (0.42)	0.99
Attended with company	0.27 (0.39)	1.31	0.20 (0.43)	1.22
Member of environmental organisation	-0.14 (0.18)*	0.66	-0.35 (0.19)	0.70
Heard about the demo through online social media	1.31 (0.30)***	3.71	1.14 (0.33)**	3.14
Past demo participation	-0.36 (0.14)**	0.70	-0.37 (0.15)*	0.69
Is a student	0.80 (0.36)*	2.21	0.75 (0.40)	2.12
Is in part time work	0.49 (0.35)	1.63	0.40 (0.39)	1.50
Is in full time work	-1.14 (0.39)***	0.24	-1.74 (0.45)***	0.18
Constant	-0.91 (0.55)	0.40	—	—
Psychological/attitudinal				
Identifies with org staging demo	—	—	-0.58 (0.18)**	0.56
Anger	—	—	1.17 (0.24)***	3.05
Fear	—	—	-0.04 (0.18)	0.97
Participated to defend interests	—	—	0.28 (0.15)	1.32
Participated for moral obligation	—	—	0.31 (0.18)	1.37
Political interest	—	—	-0.39 (0.30)	0.68
Left-right self-placement	—	—	-0.11 (0.10)	0.90
Constant	—	—	-3.68 (0.10)	0.90
Nagelkerke R2		0.30		0.52
N		351		351

organizations, who are not stalwart protesters and not in full-time work are more likely to participate in GCSs than climate marches.

When we add Step 2, we see a slightly different pattern emerging. With attitudinal and psychological factors included, the importance of being young as a predictor of participation in GCS drops away, as does being a student. The other structural variables remain important (hearing online about the demonstration, not being a stalwart protester and not having full time work). In Step 2, anger and not identifying with the organization staging the demonstration are significant predictors.

DISCUSSION AND CONCLUSION

Our analysis shows some support for each of our hypotheses, even if we are not able to straightforwardly or unequivocally confirm them. This is because of nuances in the mobilization availability of older and young people, which we believe is partially dependent on the supply of protest, its frames and mobilization strategies, and how these factors are intertwined with protest demand. Overall, it seems clear that young people appear to have different sets of structural factors that give them mobilization availability compared to their older counterparts, while agentic factors are less discerning except for emotions.

Our first hypotheses anticipated young people having more structural and agentic availability than their older counterparts on older forms of climate protest (annual marches) because of the difficulties of young people connecting with adult-centric forms of climate protest. Young people on the adult-dominated climate marches were, indeed, more likely to participate with other people and more of them were asked by friends to participate compared to older protest participants, suggestive of a sense of identity. They were also more likely to be in full-time education than their older

counterparts. At the 2009 march, they were markedly less likely to be members of environmental organizations, perhaps because they find such adult-focused and -dominated organizations somewhat alienating as we posited when laying out our analytical framework. Agentic factors seem less able to distinguish young and older climate change marchers, although young people were, on aggregate, slightly more likely to be motivated to protest in order to protect their interests. In other words, they had instrumental motivations. Moreover, as we had presupposed, young people were, in some years, more emotive about climate change. Young people were, in general, more frustrated than older people, they were more angry in 2009, and more worried and fearful in 2015 than older climate marchers. They were also, on aggregate, slightly more left-wing than older demonstrators. This indicates the importance of ideological factors in motivating young people to participate in adult-dominated forms of climate protest.

Did we find support for our second hypothesis, which posited that the supply of protest—tailored to young people and led by a young climate celebrity—would reduce the barriers to the participation of young people in protest? We therefore hypothesized that young people on GCSs would not need such high levels of structural and agentic availability as young people on adult-dominated climate change marches. Mobilization availability here is enhanced by the supply of protest perhaps more so than through agentic factors related to identity, instrumentality or ideology. Indeed, the nature of the GCSs themselves reduced some structural barriers: they were localized and the school- or college-based level of mobilization provided natural structural availability while also fostering a contagion effect. We find some evidence to support this hypothesis in relation to structural factors: social media as a mobilizing tool seems less important than it did for young people at climate marches, they had markedly fewer memberships in environmental organizations, were novices and were much less likely to be in work.

However, we also find that young people on GCSs, compared to young people at climate marches, are markedly more emotional about the issues: they are angrier, more worried, more fearful and more frustrated. They are also more likely to participate in order to protect their own interests. To explain this nuance, we turn back to consider the supply of protest and the way in which the GCSs actions were framed. It is entirely plausible that there has been a 'Greta Effect' on mobilizing emotions, which has encouraged GCSers to turn out on the streets. Take, for instance, the tone of Thunberg's 2018 speech to the United Nations Framework Convention on Climate Change, which invites an emotive response:

Until you start focusing on what needs to be done rather than what is politically possible, there is no hope. We can't solve a crisis without treating it as a crisis. We need to keep the fossil fuels in the ground, and we need to focus on equity. And if solutions within the system are so impossible to find, maybe we should change the system itself. We have not come here to beg world leaders to care. You have ignored us in the past and you will ignore us again. We have run out of excuses and we are running out of time. We have come here to let you know that change is coming, whether you like it or not. The real power belongs to the people. Thank you.

Moreover, the notion that the future belongs to young people is one heavily stressed in Fridays for Future, and is even evident in its name. This might explain why young people on GCSs were more likely to claim to have participated for their self-interest than young people on other demonstrations.

Finally, did we find support for our third hypothesis, where we expected that being young is a key determinant of who turns out at GCS compared to a climate march? We found that youth is, indeed, important at predicting GCS participation, but primarily because of its association with anger (78 per cent of those 30 and under compared to 56 per cent of those over 30 were "very angry") (Table 2). Young people are angrier about climate change, perhaps as a trait of youthfulness (Olcese et al., 2014), but also as a consequence of being the generation that will feel the brunt of changes to the world's climate.

Overall, our work provides illuminating data on the factors that motivate young people to participate in conventional (marches) and less conventional (school strikes) forms of climate change protest. It also makes a useful contribution to the literature on the drivers for protest more generally. In particular, we illustrate the danger of aggregating data across different issues and across different age groups of protesters. The factors that pull people into a climate protest are very likely different from those that pull people into protest on other issues, just as the factors that lead people in different age groups into protest vary considerably and also over time. To help interpret nuances across demonstration issues and sub-groups of demonstrators, we have coined the useful term "mobilization availability". This term is useful because invites scholars not just to look at the individual-level structural and agentic factors that motivate people into protest, but to view these as interacting with the supply of protest and the mobilization and framing strategies deployed. In this way, it allows us to take into account the context of contestation in a way that cross-national survey data analysis of homogenous groups of protesters cannot.

One downside of our work is the relatively small sample sizes that we have, and our United Kingdom-centric focus. We suggest that

existing cross-national survey managers and panels consider adding to their questionnaires new questions about the protest or protest issue in which respondents participated. Doubtless, different findings in extant studies on the drivers for protest participation come from different data, which leads us to suspect that some research findings are an artefact of the sample. This explains why Caren et al.'s (2011) findings differ from Saunders et al.'s (2012). Asking about protest issues or protest events will help nuance the findings from larger-n surveys to make it possible to talk about the *mobilization availability* of subgroups of protesters, which, as we have shown shapes the extent to which structural and agentic factors matter to different subgroups of protesters. It would also be a useful exercise to make comparisons of United Kingdom data with other country cases. Doubtless, the political opportunity structure of different countries also impacts upon young people's mobilization availability.

DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repositories. The names of the repository/repository and accession number(s) can be found below: The 2009 climate march data used for this study can be found on the Data Archiving and Networked services website, available at: <https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:110989>. The GCS data is available on request from the corresponding author.

ETHICS STATEMENT

The research involving human participants was reviewed and approved by the College of Social Sciences and International Studies Research Ethics Committee, University of Exeter. For Global Climate Strike participants under the age of 16, informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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APPENDIX

Variable codings.

Variable	Questionnaire question	Coding
Structural availability Young people	In what year were you born?	30 or younger = 1 31 or older = 0
Gender (male)	Are you ...	1 = male 2 = female
Attended with company	Did you participate in the demonstration alone, or with people you personally know?	1 = with people personally known 0 = alone
Member of environmental organization	If you have been involved in any of the following types of organizations in the past 12 months, please indicate whether you are a passive member or an active member? If you are a member of several organizations of the same type, tick the highest or most 'active' category.	0 = not a member 1 = passive member/donor 2 = active member
Heard about the demo through online social media	How did you find out about the demonstration? (on-line social networks)	0 = no 1 = yes
Past demo participation	How many times have you, in the past, taken part in a demonstration?	1 = never 2 = 0–5 times 3 = 6–10 times 4 = 10–20 times 5 = 21 + times
Is a student	What is your employment situation? I study full-time	0 = no 1 = yes
Is in part time work	What is your employment situation? I work part-time	0 = no 1 = yes
Is in full time work	What is your employment situation? I work full-time	0 = no 1 = yes
Identifies with org staging demo	To what extent do you identify with any organization staging the demonstration?	1 = not at all 2 = not very much 3 = somewhat 4 = quite 5 = very much
Anger	Thinking about climate change makes me feel ... Angry	1 = not at all 2 = not very much 3 = somewhat 4 = quite 5 = very much
Fear	Thinking about climate change makes me feel ... Fearful	1 = not at all 2 = not very much 3 = somewhat 4 = quite 5 = very much
Participated to defend interests	Please indicate to what extent you agree or disagree with the following statements? I participated in the demonstration in order to ... Defend my interests	1 = strongly disagree 2 = disagree 3 = neither 4 = agree 5 = strongly agree
Participated for moral obligation	Please indicate to what extent you agree or disagree with the following statements? I participated in the demonstration in order to ... Because I felt morally obliged to do so.	1 = strongly disagree 2 = disagree 3 = neither 4 = agree 5 = strongly agree
Political interest	How interested are you in politics?	1 = not at all 2 = not very 3 = quite 4 = very
Left-right self-placement	In politics people sometimes talk of "left" and "right". Where would you place yourself on this scale, where 0 means the left and 10 means the right?	Scale from 0 (left) to 10 (right)