

# Australian youth perspectives on the role of social media in climate action

Grace Arnot,<sup>1,\*</sup> Hannah Pitt,<sup>1</sup> Simone McCarthy,<sup>1</sup> Chloe Cordedda,<sup>1</sup> Sarah Marko,<sup>1</sup> Samantha L. Thomas<sup>1,2</sup>

<sup>1</sup>Institute for Health Transformation, Deakin University, Australia

<sup>2</sup>Curtin School of Population Health, Curtin University, Australia

Submitted: 30 May 2023; Revision requested: 10 October 2023; Accepted: 13 November 2023

## Abstract

**Objective:** The climate crisis poses a significant public health threat to current and future generations. Limited research has examined young people's perspectives about the role of social media for climate awareness, action, and policy change.

**Methods:** Qualitatively led online survey of  $n=500$  young Australians (aged 15–24). Questions focused on the effectiveness of social media platforms in communicating the need for climate action, with TikTok videos used to prompt about appeal strategies and campaigns. Data were analysed using a reflexive approach to thematic analysis.

**Results:** Participants perceived that social media platforms were a powerful and inclusive communication mechanism for climate action. Social media had the ability to reach diverse audiences and connect young people globally. Limitations included influencing key decision makers and risks associated with misinformation and disinformation. Participants supported messages that highlighted the urgent need for action, trusted celebrity and youth voices, and practical information to engage in action.

**Conclusions:** Social media presents a powerful opportunity for engaging young people in discussions and decisions made about the climate crisis.

**Implications for public health:** The public health community should be guided by young people in developing a range of social media mechanisms to empower them to have a seat at the table in public health responses to climate.

**Key words:** Climate crisis, climate change, climate justice, qualitative, social media, young people

## Introduction

The climate crisis is one of the leading public health issues of modern times,<sup>1</sup> with the World Health Organization's Director-General Dr Tedros Adhanom Ghebreyesus highlighting the disproportionate impact of the climate crisis on the health and wellbeing of communities:

*"Climate change is making millions of people sick or more vulnerable to disease all over the world and the increasing destructiveness of extreme weather events disproportionately affects poor and marginalized communities."*<sup>2</sup>

The United Nations Development Program states that *"meaningful youth participation is a pre-condition for the success of climate action while at the same time, ensuring ambitious and just climate action is an enabling condition for youth wellbeing"* [3, p. 9]. Researchers have clearly demonstrated that the climate crisis impacts on all aspects of adolescent health and wellbeing, with young people taking strong leadership in framing and communicating the climate emergency.<sup>4,5</sup>

This includes pioneering a rights-based approach to the climate crisis that is urgently needed to compel governments to act.<sup>6</sup>

Researchers have argued that the public health community could do more to engage and support young people to develop strategies and mechanisms to be included in climate decision making arenas.<sup>4,7</sup> This involves moving beyond simply facilitating a 'voice' for young people, towards advocating and implementing a range of structural changes that are needed to ensure that they have a seat at the policy decision making table.<sup>8–10</sup> This includes increased efforts to engage young people as political citizens so that their opinions and knowledge are included when decisions are made about matters that impact young people's health and wellbeing.<sup>11</sup>

The importance of youth inclusion in climate decision making has been reaffirmed through efforts to include children and young people in frameworks for climate action at both national<sup>12,13</sup> and global levels.<sup>14</sup> For example, children and young people are specifically noted in the Action for Climate Empowerment (ACE) action plan<sup>15</sup> which develops on Article 6 of the UN Framework Convention on Climate Change and

\*Correspondence to: Grace Arnot, Institute for Health Transformation, Faculty of Health, Deakin University, 1 Geringhap St, Geelong, Vic, 3220, Australia. e-mail: [g.arnot@deakin.edu.au](mailto:g.arnot@deakin.edu.au).

© 2023 The Authors. Published by Elsevier B.V. on behalf of Public Health Association of Australia. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Aust NZ J Public Health. 2024; Online; <https://doi.org/10.1016/j.anzjph.2023.100111>

Article 12 of the Paris Agreement. ACE aims to empower all citizens to become engaged in education, public awareness, training, public participation, public access to information, and international cooperation.<sup>15</sup> Researchers have noted a number of specific mechanisms that can be used to influence youth climate activism, including educational school-based initiatives,<sup>16</sup> engaging with youth-led climate<sup>17</sup> organisations, and highly visible advocacy initiatives such as climate justice protests and related protest activities.<sup>18</sup> While protests involve powerful media images of young people marching the streets to call for political and corporate action,<sup>7,19,20</sup> social media and internet-based mechanisms may provide an alternative way to engage young people.<sup>21,22</sup> Clark et al. [11, p. 617] argue that it is social media platforms and online activism that “*present catalytic opportunities to harness young people’s engagement*”.

Social media can be a powerful strategy both for health promotion and public health initiatives, but also in strengthening accountability for action.<sup>23</sup> Young people clearly value social media as an advocacy tool.<sup>19,24–26</sup> While there are growing concerns about the role of social media platforms in the spread of mis/disinformation,<sup>27,28</sup> it is also clear that such platforms have had an unprecedented impact in mobilising young people for social justice movements.<sup>25,29,30</sup> Rousell et al.<sup>31</sup> argue that the complexity of the climate crisis warrants the creative use of digital mediums to frame and discuss climate-related issues, and to reimagine a future guarded from the crisis. Researchers have started to investigate how social media may be used to facilitate local climate justice initiatives and create a global network for youth advocacy and awareness raising about climate-related issues.<sup>32–34</sup> Some platforms such as TikTok have become particularly useful mechanisms for young climate advocates to connect with other members of the climate justice movement, as well as the public and decision makers.<sup>17</sup> While there has been significant research conducted with young people who are active members of youth climate movements,<sup>17,19,32,35</sup> there has been less research with broader groups of young people about whether social media platforms can help to overcome barriers to participation and provide a pathway to engage young people in climate advocacy and decisions at a population level.

The following study aimed to develop on previous research by exploring young people’s opinions about the role that social media can play in empowering and engaging youth in climate advocacy and action. The study was guided by three questions:

1. How effective do young people think social media is in communicating information and stimulating action about the climate crisis?
2. What are the strengths and limitations of social media platforms in youth responses to the climate crisis?
3. What strategies could be used to improve the credibility and trustworthiness of messages about the climate crisis on social media platforms?

## Methods

### Approach

The data presented in this paper were part of a broader online qualitative study with  $n=500$  young Australians aged 15–24 years, which aimed to understand how young people interpreted information about climate change, considered responsibility for climate action, and

perceived their own roles as environmental citizens in responding to the climate crisis. Two other papers on young people’s perceptions of the political<sup>10</sup> and commercial<sup>36</sup> determinants of the climate crisis have been published from this data. The data presented in this paper focused on questions related to young people’s perspectives about the strengths and limitations of social media as a mechanism for engaging youth in climate action and advocacy.

The study took a critical approach to inquiry which “*places the voices of the oppressed at the centre of inquiry*” and acknowledges the role of power and inequity in health and social issues [37, p. 9]. This approach aligns with the Geneva Charter<sup>38</sup> which focuses on social justice, human rights, and equity by considering the power imbalance in decision making about climate action, particularly in relation to young people’s lack of power and influence in this process. The authors’ positionality aligned with the principles of critical approach to inquiry, for example, conceptualising the climate crisis and young people’s lack of power to engage in climate decisions as requiring solutions that involve structural rather than individual change. The authors also took a public health position that recognised the importance of policy responses and strategies to address the impact of the climate crisis on population health.<sup>39</sup> One of the authors was a young person under 25 at the time of the survey, which ensured that a young person’s perspective was present in the conceptualisation, design, and interpretation of the study.

Braun and Clarke<sup>40</sup> discuss the potential for online qualitative surveys to collect rich and in-depth data from a broad sample of participants, as well as offering benefits in terms of accessibility, time completion flexibility, and anonymity. They may be particularly useful for engaging those who feel uncomfortable participating in interviews or focus groups by helping to moderate potential perceived researcher-participant power dynamics and provide participants greater freedom to express their opinions without feeling as though they have to please the researcher.<sup>40</sup> These types of qualitative surveys have been used with a range of population groups including young people, gamblers, and broader community populations.<sup>7,10,36,41–45</sup>

### Sample and recruitment

There is limited guidance about the appropriate sample size for online qualitative surveys.<sup>40</sup> With any qualitative study, the number of participants required depends on the overarching aims and research questions and the depth of information that can be collected.<sup>46,47</sup> Because qualitative surveys collect smaller ‘chunks’ of data, a larger number of participants is needed to ensure that there is enough information to develop a conceptual analytic narrative. A sample size of  $n=500$  was chosen with an aim of collecting enough data to examine a diverse range of perspectives from young people across Australia and to provide enough qualitative insights to adequately answer the research questions. Young people were recruited between April and June 2022 via online software company Qualtrics, who were provided with demographic inclusion criteria and standard information about the study by the research team. This was used to invite participation in the study through a number of external research panel databases. A link to the survey was sent to interested individuals who could then access the Plain Language Statement which contained further details about the study. Participants then confirmed their consent before completing the survey. Screening questions (including age and whether they believed that climate change was a genuine phenomenon) were used to ensure that young

people met the eligibility criteria for the study. For young people under 18 years of age, information was provided to parents who had accounts with participating research panels. Parents were asked to speak to the young person and facilitate access to the survey. Soft quotas were used for age and gender to ensure a diversity of socio-demographic characteristics.

### Data collection

Data collection occurred simultaneously with the recruitment phase. The survey took participants approximately 15 to 20 minutes to complete. Participants were asked a set of questions regarding socio-demographic factors such as age, gender, state or territory of residence, geographical area, and highest level of education. Young people were asked about how effective they thought social media platforms were as a tool for communicating about climate change and the need for climate action. Three TikTok videos, which included different framings of the climate crisis, were then used to prompt discussion about the role of different types of social media messages in raising awareness and stimulating youth action on climate. We chose these three videos to prompt discussion based on the elements of ACE.<sup>15</sup> The first video combined climate disaster footage with dramatic music and voiceovers by notable climate activists including Greta Thunberg and Leonardo DiCaprio; the second featured a young person providing an overview of how advocacy movements create meaningful climate change action, and the third video featured a young person providing information and links to resources to help individuals act on the climate crisis. Participants were asked broad questions about their perceptions of the key messages in the videos, whether they thought the videos were effective in communicating the need for climate action, and what they thought should be included in effective social media campaigns about climate action which would specifically appeal to young people.

### Data analysis

Socio-demographic characteristics were analysed and categorised using descriptive statistics. Qualitative data interpretation utilised Braun and Clarke's approach to reflexive thematic analysis which is a theoretically flexible approach to data analysis.<sup>48</sup> Reflexive thematic analysis involved six phases which sought to identify patterns and construct themes from the dataset.<sup>48</sup> Table 1 provides examples of how these steps were practically applied to the study, with a specific focus on the reflexive steps to ensure the trustworthiness and rigour of data interpretation.

## Results

### Sample characteristics

The sample characteristics of participants are provided in Table 2. A total of  $n=500$  young people participated in the study. Participants were aged between 15 and 24 years old (average age of 19.9 years). Two thirds ( $n=321$ , 64.2%) of the sample were female, and most participants resided in Australia's three most populous states of Queensland ( $n=135$ , 27.0%), Victoria ( $n=132$ , 26.4%), and New South Wales ( $n=130$ , 26.0%). Over half of the participants lived in metropolitan areas ( $n=294$ , 58.8%), and over a third ( $n=214$ , 42.8%) had completed an education level above high school, such as a university bachelor's degree, TAFE course, or diploma.

Five themes were constructed from the data. These themes and subthemes are represented in Figure 1.

### A powerful mechanism for awareness raising

Young people perceived that social media was a powerful mechanism for communicating climate information because of the global reach of different platforms. They stated that social media was something that "everyone" sees and was accessible for most individuals across the globe. Participants perceived that social media was a platform which had the ability to help share a common message "anywhere in the world" to a vast audience of "millions of people". This included a "wide audience" from different backgrounds and geographic locations, which meant that "all ages from all parts of the world" could be exposed to climate messages.

Some young people conflated the popularity of social media platforms with the level of support for the messages that were given on the platforms. For example, some participants implied that the popularity of social media meant that any video uploaded could gain the support of "millions" and become a successful advocacy initiative. Others stated that social media increased transparency because it enabled truthful information and real time footage to be communicated about climate change to a global audience. This in turn could bring people together to collectively experience, share, and advocate for change:

*"[Social media] brings people all over the world to experience the true issue of climate change"* - Female, 24, New South Wales.

Some also thought that the reach of messages was amplified because they were seen "multiple times a day". A few commented that because young people were frequent users of social media throughout the day, this contributed to an increased ability for messages to reach them. Others stated that social media platforms were the most effective mechanism for reaching and "educating the younger generation".

*"Young people are spending hours and unlimited amounts of time participating on social media platforms"* - Male, 23, Victoria.

Participants attributed the ability of social media platforms to reach young people to the accessibility of the messages that were communicated on these platforms. Accessibility was framed in several ways. First was that the format in which messages were communicated were "easy to watch", "short and catchy", "engaging", and "easy to digest". This made information particularly accessible and appealing for young people. Participants also claimed that the visual nature of the content on some platforms was a "great way to spread information" and to bring attention to climate change through imagery. Second was the temporal nature of social media platforms which allowed messages and content to be distributed instantaneously, thus spreading messages "quickly" but also "effectively":

*"It allows people to make short engaging videos that can get their opinion across effectively"* - Female, 20, Victoria.

*"A lot of people use TikTok, so it does spread awareness and is short and simple enough to digest"* - Female, 22, Victoria.

### An inclusive platform to engage diverse youth audiences

Young people commented on the inclusivity of social media platforms, stating that these could engage "all kinds of audiences". There was a strong message of civic empowerment and democracy in relation to how young people perceived that everyday people could

Table 1: Application of the six steps of reflexive thematic analysis.<sup>48</sup>

RTA Step	Application of each step
1 Familiarizing yourself with the dataset	<p>The data were read through multiple times by all authors to gain an initial understanding of the responses. The first reading focused on starting to get to know the responses, with subsequent readings involving note taking and journaling to help gather thoughts about the data.</p> <p>We critically engaged with the data, often challenging and debating our own assumptions and positions within the group. We noted aspects of the data that were intriguing and discussed these at regular team meetings.</p>
2 Coding	<p>Coding of the data was led by authors one and four, with all members of the team reviewing and actively engaging in decisions that were made about the analysis.</p> <p>The data were systematically coded with an initial focus on semantic (or surface level meaning) and then moved towards latent (or deeper meaning) as we became more familiar with the patterns and nuanced meanings in the data. We noted where there were relationships between different concepts.</p> <p>We constantly revisited the literature and research questions when writing systematic notes from the data. We were not aiming for perfect codes at this stage, but rather broad ideas and insights into the data. Our analytic interests also shifted during the familiarisation with the data.</p> <p>While we were initially interested in messaging and campaign strategies, we started looking more broadly at how participants conceptualised the role of social media in responses to the climate crisis, as well as the strengths and limitations that social media posed. This led us to slightly shift our research questions to those that we eventually settled on for this paper.</p>
3 Generating initial themes	<p>When our codes reflected the diversity of meaning and different concepts, we moved to grouping different codes together to construct themes from the data. We looked for patterns of meaning that we could group together (for example, we found that there were a range of concepts that linked with the concept of 'inclusivity').</p> <p>At this point, we merged codes together to construct a first set of themes and also discarded other codes that did not fit with the overall analytical narrative relating to the research questions.</p>
4 Developing and reviewing themes	<p>This step involved ensuring that our themes were coherent and made sense in terms of our research questions and the overall 'story' that we were telling from the data. We checked that the themes were distinct from each other and had clear boundaries. To do this, we wrote short abstracts about each potential theme and listed the subthemes under each thematic heading.</p>
5 Refining, defining, and naming themes	<p>Finally (and mostly during the write up of the results section of this paper), we refined the names of our themes. We also went back to the data to ensure that our themes represented the meaning in the data. At this stage, we also developed Figure One to ensure that the themes and subthemes that we had constructed were logical and coherent.</p>
6 Writing up	<p>Writing the report itself involved more back and forth between the authors around the framing of the key points of analysis, and the selection of appropriate illustrative quotes.</p> <p>We approached the write up of the results and the discussion as a key part of the analytic process. In particular we focused on the thick description of the data. Where we were not able to provide this for certain subthemes, we removed these subthemes from the analysis at this stage.</p> <p>At this stage, we also went back to the literature review to ensure that we were fully contextualizing the different concepts that we had focused on in the write up of the analysis.</p>

engage with the messages and information about climate on social media platforms compared to those shared on traditional media sites. For example, they perceived that the interactive nature of social

media platforms meant that individuals could not only immediately share their thoughts and views about the information that was shared, but that vast numbers of people could use the platforms to advocate for action. Some stated that this could *"inspire other young people to do something about climate change"* and convince others about the need to engage with or implement action on climate:

*"The reach of the videos is substantial, and millions of people can see it and voice their opinions and convince others the need for action on climate change"* - Female, 19, Queensland.

Some social media platforms were seen as being easier and more *"fun"* for young people to engage with than others. For example, TikTok was often highlighted by participants as the social media platform that they found the most accessible and enjoyable, including as a source of education and information about various topics. A few participants directly referred to their own enjoyment of learning, stating that they *"learn most things"* from TikTok:

*"We engage with this media multiple times a day and enjoy learning from it, using platforms like TikTok is very effective and I myself enjoy learning from it"* - Female, 24, New South Wales.

Some participants perceived that social media platforms had the ability to move discussions about climate change beyond awareness raising to convince people to act on climate. There was a perception that social media platforms had the most *"influence"* on young people compared to other population groups and would be useful to *"inspire other young people to do something about climate change"*. Social media platforms were seen as being effective in stimulating action and enabling young people to collaborate and share ideas and information. For example, one participant highlighted how interactive features on social media platforms could engage young people in different types of advocacy and action beyond traditional protests. They spoke about the ability for young people to actively *"voice their opinion and exchange ideas and beliefs"*, build communities, and download videos that could be shared widely with their social networks.

### Limitations in reaching and influencing decision makers

While many young people saw the benefits of using social media, some perceived that that its effectiveness was limited. This was because it did little to reach the individuals who were responsible for making decisions about action on climate. For example, although young people had positive attitudes about the awareness raising ability of social media platforms, there were clear and repeated narratives in their responses about the power structures that ultimately controlled the climate decision making process. Some questioned whether social media would be able to influence meaningful political action from those that they ultimately held responsible for action, including *"political parties"*, *"lawmakers"*, *"higher powers"* and *"older people"*:

*"[Social media is] not reaching the audiences of people in power [that] can really make a difference"* - Female, 23, South Australia.

*"... the lawmakers are typically not on these platforms"* - Female, 20, Victoria.

Some also stated that this was because messages on social media platforms were unable to gain enough *"traction"* to demand action. A few described how social media could be used to help messages gain traction among the public, such as *"normalising taking action on climate change"*, given the influence of social media on *"daily life"*, *"trends"* and *"modern society"*. However, the majority of participants



Table 2: Sample characteristics.

Characteristics	n=500	%
<b>Age</b>		
15	21	4.2
16	47	9.4
17	41	8.2
18	68	13.6
19	39	7.8
20	46	9.2
21	55	11.0
22	72	14.4
23	56	11.2
24	55	11.0
<b>Gender</b>		
Female	321	64.2
Male	164	32.8
Non-binary	8	1.6
Prefer not to specify	5	1.0
Gender-fluid	2	0.4
<b>State or Territory of residence</b>		
Queensland	135	27.0
Victoria	132	26.4
New South Wales	130	26.0
South Australia	42	8.4
Western Australia	38	7.6
Tasmania	11	2.2
Australian Capital Territory	10	2.0
Northern Territory	2	0.4
<b>Geographical area</b>		
Metropolitan	294	58.8
Regional	158	31.6
Rural	48	9.6
<b>Highest level of education</b>		
High school up to year 12	286	57.2
University degree or diploma	135	27.0
TAFE degree or diploma	79	15.8

acknowledged the need for climate messages to reach and influence those with decision making power:

*“It is effectively spreading awareness, but I don't think they are gaining the traction they need for it to implement changes” - Female, 24, Queensland.*

However, some believed that social media could still be used to influence political spheres, including the ability of social media to influence young people's political decisions which then have wider resonating impacts. Others identified the need for educational social media campaigns to ensure that young people were equipped to make informed political decisions that best served their goals for climate policy action:

*“Educate on voting and how this influences climate change and which political parties are doing what and how this addresses or fails to address climate change” - Female, 22, Tasmania*

### **Building a sense of urgency and accountability**

Participants reflected on a range of messages that could be used on social media to appeal to and engage young people in climate action and advocacy. Many stated that emotive techniques such as shock tactics and confrontational imagery such as extreme flooding and

fires created a “sense of urgency” and depicted the “severity” of the issue. Participants perceived that confronting viewers with these climate impacts would be effective in eliciting a greater emotional response. Shock tactics were commonly described as “frightening” and “scary” but also were believed to prompt action:

*“It gives a sense of urgency to start making changes” - Female, 19, South Australia.*

*“It could scare people into realising how important it is to take action” - Female, 24, South Australia.*

While some stated that these types of messaging strategies would inspire young people to take action, others stressed the importance of following up such messages with practical ways that young people could engage in action. These calls to action would then aim to reduce young people's feelings of anxiousness, concernedness, or helplessness. Many participants perceived that informative videos which included a “practical solution” would be most useful in climate advocacy as they could provide a sense of action and hope moving forward. Young people described the need for information that provided “ways we can all help”, education to aid people to “realise ways to help are closer than they think, easier than they think”, and actions that could be incorporated “day-to-day”. Participants also suggested providing links to resources that would enable them to take direct action. Examples included links to websites where young people could learn more about youth-led climate action, sign a petition, or join a collective. Participants also commented that messaging strategies needed to engage and appeal to young people. Some stated that informational videos provided important information and facts about the climate crisis but were unlikely to cut through amongst the hundreds of social media videos that young people saw on a daily basis. Some participants also stated that, while informative, such videos might make young people “keep scrolling as it was boring”.

### **Utilising trusted voices to counter misinformation and disinformation**

Young people were cautious about misinformation and disinformation on social media platforms. A key concern expressed by a few participants was the potential for social media platforms to “spread false information” about climate change. For example, they were particularly sceptical as to whether TikTok was the best platform to spread informative and factual messages. Some perceived that there were limited restrictions on what could be posted and where “any information is fair game”, with one participant stating that “TikTok is good; however, it is full of misinformation”. Existing mechanisms to ensure factual information on social media were not always evident or perceived as effective, with some participants stating that social media platforms had “no fact check” mechanisms to ensure that credible scientific information was disseminated. Many young people said that a way to increase the perceived credibility of messages about climate action on social media was to include “influential” celebrities and public figures who young people respected. When identifying public figures who successfully appealed to and lent credibility to the climate crisis and climate action for young people, participants commonly mentioned Greta Thunberg, Leonardo DiCaprio, and David Attenborough. While participants responses may have been influenced by viewing these public figures in the TikTok video prompts, they also described that these figures were “well known” and generally liked among the public. David

Figure 1: Australian youth perspectives on the role of social media in climate action.



Attenborough was described as the most influential due to his reputation as a “favourable” figure and credential as a biologist:

“David Attenborough’s footage is also beneficial as he is highly respected and credited and a well-known biologist” - Female, 18, New South Wales.

However, a few young people stated that the most powerful communicators of climate information were young people themselves, arguing that campaigns should be “social media based using young people to share messages and [be] engaging” or have climate social media campaigns endorsed by “a compilation of young famous people”.

## Discussion

This study aimed to qualitatively explore young Australians’ perceptions about the role of social media in responses to the climate crisis. The findings from this study raise a number of points in relation to young people’s perceptions of the strength and limitations of social media; the strategies that can be used to increase the trustworthiness of messages about the climate crisis on social media, and the lessons for public health in engaging young people in climate discussions and decisions in a meaningful way.

Young people in this study described social media as a powerful tool for climate advocacy and action due to its global reach, its ability to engage a diversity of young people across a range of demographics, and being an inclusive space. While Hilder and Collin [17, p. 804] state that climate engagement strategies should recognise that young

people “live, learn, and hang out” in non-online contexts including schools and other public spaces, researchers have also shown that climate activities in these environments can be difficult for some young people to engage in.<sup>7</sup> Young people in this study described social media as an inclusive platform for facilitating public advocacy and action. While researchers have typically focused on young people with an existing interest in or engagement with climate initiatives,<sup>19,32,35,49</sup> the broader population focus of this study provides essential information in meeting the aims of the ACE framework to engage *all* citizens in climate information and action.<sup>15</sup> Given the broad support for climate information and action on social media platforms, further research could explore mechanisms for using social media to facilitate the aims of the ACE framework and encouraging population-level youth engagement. Such an approach may also facilitate diversity and inclusivity of youth perspectives and knowledge.

While young people were supportive of social media platforms for raising awareness and action on climate, they were also aware of the potential for misinformation and disinformation. Researchers have highlighted the range of ways that climate disinformation may be spread, including by those with vested interests and politicians,<sup>50,51</sup> and particularly via social media platforms.<sup>52</sup> Young people recognised the importance of countering misinformation and disinformation on social media, utilising credible sources including trusted celebrities, scientists, environmental activities, and young people themselves. One role for public health and health promotion organisations might be to work with young people to develop critical literacy skills to help them to navigate climate misinformation, particularly from various political

parties and climate industries. Groups such as Bite Back<sup>53</sup> and the Truth Initiative<sup>54</sup> have developed powerful youth engagement programs to counter industry misinformation and influence. With the increased public health focus on Commercial Determinants of Health, there is a clear role for the public health community to utilise their knowledge of political and corporate misinformation and disinformation tactics, and to work with young people to raise awareness about the corporate strategies that may contribute to misinformation and disinformation. This should include working with young people to develop campaigns which not only give impactful and trustworthy messages about the climate crisis but that also provides solution-based information to engage young people, provide them with a sense of hope, and to motivate them to take action.<sup>55,56</sup>

Despite having “soft power” to influence climate decisions [57, p. 1], the biggest criticism of social media platforms by young people in this study was that these still did not help young people to reach key decision makers. Here we issue a call to the public health community who has vast networks and links with decision makers at local, national, and international levels to help youth overcome the structural and institutional barriers that prevent them from participating in responses to the climate crisis.<sup>58</sup> We have also observed an ongoing and noticeable lack of young people provided with platforms to speak at public health and planetary health conferences, with engagement at best tokenistic, and at worst completely absent. This should be of particular concern to those working in the commercial and political determinants of health. While young people may find it difficult to travel to such conferences due to schooling or other commitments, social media platforms can be used to instantaneously integrate them into all levels of public health decision making, raising the visibility of their perspectives, and allowing them to share their lived experiences and suggestions for action.<sup>58</sup> The strengths of social media described by young people provide a potential solution to these logistical barriers. The public health community regularly hosts discussions and dialogues with decisions makers about a range of health and social issues. Hosting online forums or question and answer events between decision makers and young people may help to overcome some of the structural issues that young people say prohibit them from reaching decision makers with their views and opinions. Further, online and digital platforms have been used to develop relationships between young people and stakeholders.<sup>59</sup> This aligns with the goals of the Geneva Charter, which highlights an important role of technology in public health for “new opportunities for connection” [38, p. 4].

## Limitations

There are some challenges associated with online qualitative surveys, including that data are often less detailed than researchers may be able to collect in qualitative interviews. Future research should also consider that while conducting technology-based studies might help increase accessibility to research opportunities, it may present a barrier to those without access to the required technology.

## Conclusion

There are a range of barriers that prevent young people from meaningfully engaging in climate discussions and decision making. While there are flaws associated with social media, it can provide a powerful tool for climate advocacy and action at a population-level.

Public health and health promotion organisations must partner with young people to develop a range of inclusive social media strategies and mechanisms that reach a diverse community of young people with varied knowledge and experiences. Social media presents an extraordinary opportunity to engage young people in initiatives to drive climate action, including facilitating remote participation in discussions and decisions about the climate crisis.

## Funding

This project was funded via a research support account held by ST. GA is funded by an Australian Government Research Training Program Scholarship. HP is a recipient of a VicHealth Early Career Research Fellowship.

## Ethics disclosure

This study required the participation of human subjects. Ethical approval was granted by Deakin University’s Human Ethics Advisory Group for the Faculty of Health HEAG-H 162\_2021.

## Conflicts of interest

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

## Author ORCIDs

Grace Arnot  <https://orcid.org/0000-0002-5646-6366>

Hannah Pitt  <https://orcid.org/0000-0002-4259-6186>

Simone McCarthy  <https://orcid.org/0000-0003-2671-3511>

Chloe Cordedda  <https://orcid.org/0009-0007-2071-0164>

Sarah Marko  <https://orcid.org/0000-0002-1388-3944>

## References

- Romanello M, Di Napoli C, Drummond P, Green C, Kennard H, Lampard P, et al. The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels. *Lancet* 2022;**400**(10363):1619–54.
- [press release] *Health must be front and centre in the COP27 climate change negotiations*, 2022, [28 May 2023], Switzerland and Sharm El-Sheik; Geneva, Egypt. Available from: <https://www.who.int/news/item/06-11-2022-health-must-be-front-and-centre-in-the-cop27-climate-change-negotiations>
- Ingaruca M., Richard N., Carman R., Savarala S., Jacovella G., Baumgartner L., et al., Aiming higher: elevating meaningful youth engagement for climate action, 2022, [28 May 2023], United Nations; New York City, New York, United States. Available from: <https://chrome-extension://efaidnbmnnnibpcajpcglclefndmkaj/https://www.undp.org/sites/g/files/zskgk326/files/2022-05/UNDP-Elevating-Meaningful-Youth-Engagement-for-Climate-Action-2.pdf>
- McGushin A, Gasparri G, Graef V, Ngendahayo C, Timilsina S, Bustreo F, et al. Adolescent wellbeing and climate crisis: adolescents are responding, what about health professionals? *BMJ* 2022;379.
- Eide E, Kunelius R. Voices of a generation the communicative power of youth activism. *Climatic Change* 2021;**169**(1–2):6.
- Gasparri G, Imbago-Jácome D, Lakhani H, Yeung W, El Omrani O. Adolescents and youth are prioritising human rights in the climate change agenda. *BMJ* 2022;379:o2401.
- Arnot G, Thomas S, Pitt H, Warner E. “It shows we are serious”: young people in Australia discuss climate justice protests as a mechanism for climate change advocacy and action. *Aust N Z J Publ Health* 2023;**47**(3):100048.
- Kosciulek D. *Strengthening youth participation in climate-related policymaking*. 2020 [8 June 2023]. Available from:
- Keech E. Youth in a climate crisis: improving how the Victorian government engages with young people on climate change. *Aust J Environ Educ* 2022;**38**(1):119–20.
- Arnot G, Thomas S, Pitt H, Warner E. Australian young people’s perspectives about the political determinants of the climate crisis. *Health Promo J Aust* 2023. <https://doi.org/10.1002/hpja.734>. Online ahead of print.
- Clark H, Coll-Seck AM, Banerjee A, Peterson S, Dalglis SL, Ameratunga S, et al. A future for the world’s children? A WHO–UNICEF–Lancet Commission. *Lancet* 2020;**395**(10224):605–58.

12. Government of Canada. *Pan-Canadian framework on clean growth and climate change*. 2023 [19 May 2023]. Available from: <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/climate-change-plan.html>.
13. New Zealand Ministry of Foreign Affairs and Trade. *Updating Aotearoa New Zealand's approach to international climate change negotiations*. 2023 [18 May 2023]. Available from: <https://www.mfat.govt.nz/en/media-and-resources/mfat-launches-consultation-on-international-climate-negotiations/?m=44266#search:XBkYXRpbmcgYW90ZWYyb2E=>.
14. *United Nations, Youth and climate change*. 2023 [18 May 2023]. Available from: <https://unfccc.int/ace>.
15. United Nations. *Action for climate empowerment*. 2023 [21 February 2023]. Available from: <https://unfccc.int/ace>.
16. Cutter-Mackenzie A, Rouseil D. Education for what? Shaping the field of climate change education with children and young people as co-researchers. *Child Geogr* 2019;**17**(1):90–104.
17. Hilder C, Collin P. The role of youth-led activist organisations for contemporary climate activism: the case of the Australian Youth Climate Coalition. *J Youth Stud* 2022;**25**(6):793–811.
18. Bugden D. Does climate protest work? Partisanship, protest, and sentiment pools. *Socius* 2020;**6**:2378023120925949.
19. Boulianne S, Lalancette M, Ilkiw D. "School strike 4 climate": social media and the international youth protest on climate change. *Media Commun* 2020;**8**(2):208–18.
20. Rainsford E, Saunders C. Young climate protesters' mobilization availability: climate marches and school strikes compared. *Front. Polit. Sci.* 2021;**96**. <https://doi.org/10.3389/fpos.2021.713340>.
21. Fullam J. Becoming a youth activist in the internet age: a case study on social media activism and identity development. *Int J Qual Stud Educ* 2017;**30**(4):406–22.
22. Parry S, McCarthy SR, Clark J. Young people's engagement with climate change issues through digital media—a content analysis. *Child Adolesc Ment Health* 2022;**27**(1):30–8.
23. Kickbusch I, Piselli D, Agrawal A, Balicer R, Banner O, Adelhardt M, et al. The Lancet and Financial Times Commission on governing health futures 2030: growing up in a digital world. *Lancet* 2021;**398**(10312):1727–76.
24. Ida R, Saud M, Mi Mashud. An empirical analysis of social media usage, political learning and participation among youth: a comparative study of Indonesia and Pakistan. *Qual Quantity* 2020;**54**:1285–97.
25. Jackson M, Brennan L, Parker L. The public health community's use of social media for policy advocacy: a scoping review and suggestions to advance the field. *Publ Health* 2021;**198**:146–55.
26. Basch CH, Yalamanchili B, Fera J. # Climate change on TikTok: a content analysis of videos. *J Community Health* 2022;**1**–5.
27. Boatman DD, Eason S, Conn ME, Kennedy-Rea SK. Human papillomavirus vaccine messaging on TikTok: social media content analysis. *Health Promot Pract* 2022;**23**(3):382–7.
28. Campbell E, Uppalapati SS, Kotcher J, Maibach E. Communication research to improve engagement with climate change and human health: a review. *Front Public Health* 2022;**10**.
29. Ciszek EL. Advocacy communication and social identity: an exploration of social media outreach. *J Homosex* 2017;**64**(14):1993–2010.
30. Figenschou TU, Fredheim NA. Interest groups on social media: four forms of networked advocacy. *J Publ Aff* 2020;**20**(2):e2012.
31. Rouseil D, Wijesinghe T, Cutter-Mackenzie-Knowles A, Osborn M. Digital media, political affect, and a youth to come: rethinking climate change education through Deleuzian dramatisation. *Educ Rev* 2023;**75**(1):33–53.
32. Haugstad CA, Skauge AD, Kunst JR, Power SA. Why do youth participate in climate activism? A mixed-methods investigation of the # FridaysForFuture climate protests. *J Environ Psychol* 2021;**76**:101647.
33. Huttunen J, Albrecht E. The framing of environmental citizenship and youth participation in the Fridays for Future Movement in Finland. *Fennia* 2021;**199**(1).
34. Lee K, O'Neill S, Blackwood L, Barnett J. Perspectives of UK adolescents on the youth climate strikes. *Nat Clim Change* 2022;**12**(6):528–31.
35. Della Porta D, Portos M. Rich kids of Europe? Social basis and strategic choices in the climate activism of Fridays for Future. *Italian Political Science Review/Rivista Italiana di Scienza Politica*. 2023;**53**(1):24–49.
36. Arnot G, Thomas S, Pitt H, Warner E. Australian young people's perceptions of the commercial determinants of the climate crisis. *Health Promot Int* 2023;**38**:daad058.
37. Denzin NK. Critical qualitative inquiry. *Qual Inq* 2017;**23**(1):8–16.
38. World Health Organization. *The Geneva Charter for Well-Being*. 2021 [25 May 2021]. Available from: <https://www.who.int/publications/m/item/the-geneva-charter-for-well-being>.
39. Fox M, Zuidema C, Bauman B, Burke T, Sheehan M. Integrating public health into climate change policy and planning: state of practice update. *Int J Environ Res Publ Health* 2019;**16**(18):3232.
40. Braun V, Clarke V. To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health* 2021;**13**(2):201–16.
41. Pitt H, McCarthy S, Rintoul A, and Thomas S. The receptivity of young people to gambling marketing strategies on social media platforms, 2022, [10 October 2023], Victorian Responsible Gambling Foundation; Melbourne. Available from: <https://responsiblegambling.vic.gov.au/resources/publications/the-receptivity-of-young-people-to-gambling-marketing-strategies-on-social-media-platforms-1155/#:~:text=One%2Din%2Dfive%20of%20all,marketing%20strategies%20for%20young%20people>.
42. Marko S, Thomas S, Pitt H, Daube M. "Aussies love a bet": gamblers discuss the social acceptance and cultural accommodation of gambling in Australia. *Aust N Z J Publ Health* 2022;**46**(6):829–34.
43. Thomas SL, Randle M, Bestman A, Pitt H, Bowe SJ, Cowlishaw S, et al. Public attitudes towards gambling product harm and harm reduction strategies: an online study of 16–88 year olds in Victoria, Australia. *Harm Reduct J* 2017;**14**:1–11.
44. McCarthy S, Thomas SL, Pitt H, Warner E, Roderique-Davies G, Rintoul A, et al. "They loved gambling more than me." Women's experiences of gambling-related harm as an affected other. *Health Promot J Aust* 2023;**34**(2):284–93.
45. McCarthy S, Thomas SL, Randle M, Bestman A, Pitt H, Cowlishaw S, et al. Women's gambling behaviour, product preferences, and perceptions of product harm: differences by age and gambling risk status. *Harm Reduct J* 2018;**15**:1–12.
46. Fusch P, Ness L. Are we there yet? Data saturation in qualitative research. *Qual Rep* 2015;**20**(9):1408–16. 2015.
47. Malterud K, Siersma VD, Guassora AD. Sample size in qualitative interview studies: guided by information power. *Qual Health Res* 2015;**26**(13):1753–60.
48. Braun V, Clarke V. *Thematic Analysis: A Practical Guide*. Newbury Park, California, United States: SAGE Publications Ltd; 2021.
49. Hilder C, Collin P. The role of youth-led activist organisations for contemporary climate activism: the case of the Australian Youth Climate Coalition. *J Youth Stud* 2022;**1**–19.
50. Hassan I, Musa RM, Latiff Azmi MN, Razali Abdullah M, Yusoff SZ. Analysis of climate change disinformation across types, agents and media platforms. *Inf Dev* 2023;**29**:5406–14.
51. Lewandowsky S. Climate change disinformation and how to combat it. *Annu Rev Publ Health* 2021;**42**:1–21.
52. Allgaier J. Science and environmental communication on YouTube: strategically distorted communications in online videos on climate change and climate engineering. *Frontiers in Communication* 2019:36.
53. Bite Back. *Bite Back*. Available from: <https://www.biteback2030.com/>; 2023.
54. Truth Initiative. *Truth initiative*. 2023, [25 May 2023]. Available from: <https://truthinitiative.org/>.
55. Tayne K, Littrell MK, Okochi C, Gold AU, Leckey E. Framing action in a youth climate change filmmaking program: hope, agency, and action across scales. *Environ Educ Res* 2020;**1**–21.
56. Kotcher J, Feldman L, Luong KT, Wyatt J, Maibach E. Advocacy messages about climate and health are more effective when they include information about risks, solutions, and a normative appeal: evidence from a conjoint experiment. *The Journal of Climate Change and Health* 2021;**3**:100030.
57. Mavrodieva AV, Rachman OK, Harahap VB, Shaw R. Role of social media as a soft power tool in raising public awareness and engagement in addressing climate change. *Climate* 2019;**7**(10):122.
58. Arora R, Spikes ET, Waxman-Lee CF, Arora R. Platforming youth voices in planetary health leadership and advocacy: an untapped reservoir for changemaking. *Lancet Planet Health* 2022;**6**(2):e78–80.
59. KIDSforSDGs. *KIDSforSDGs. A global youth movement* [25 May 2023]. Available from: <https://www.kidsforsdgs.org/>; 2023.