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1 TITLE PAGE

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3 Adolescents' representations of climate change: exploring the self-other theme in a focus group study

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1 **Abstract**

2 Research on social representations of risks has indicated that the self-other thema underpins
3 representations of several threats. This focus group study, conducted with adolescents aged 11 to 14
4 in the UK, explored the ways in which the self and other were positioned in relation to climate change
5 causes, impacts, and solutions. We found that the self and other were constructed and deployed
6 differently, serving to present the self more positively than the other, depending on the focus of
7 discussion. Responsibility for causing climate change was placed with other countries rather than the
8 UK. The impacts of climate change were argued to be more severe for other people in other countries
9 and to threaten the far future more than the present. Others – the UK government and older
10 generations – were deemed straightforwardly responsible for resolving climate change, whilst
11 explanations and justifications for participants' own actions were more complex. We discuss the
12 implications of our findings for climate change communication.

1 Introduction

2 Scientists agree that climate change is anthropogenic (Neukom, Steiger, Gómez-Navarro, Wang, &
3 Werner, 2019), and presents a critical threat (IPCC, 2018, 2021). Limiting the global mean
4 temperature increase to 1.5°C, an aim agreed by parties to the United Nations Framework
5 Convention on Climate Change (UNFCCC), will require everyone to act to mitigate against and adapt to
6 climate change. Recognising this need, young voices are now speaking out. 'Skolstrejk för klimatet'
7 ('School strike for climate') - a movement started in 2018 by Greta Thunberg - has gathered pace,
8 with around six million taking part globally in September 2019 (Taylor, Watts, & Bartlett, 2019). The
9 movement acknowledges that young people will be more affected by future climate impacts (Warren,
10 2019), and calls for governments to listen to the scientific evidence and start behaving as though
11 climate change is a crisis. A number of scientists (e.g., Hagedorn et al., 2019) have expressed their
12 support. However, despite younger and future generations being more at risk from the future impacts
13 of climate change, there has to date been more focus on adults' climate change perceptions (e.g.,
14 Lorenzoni, Leiserowitz, De Franca Doria, Poortinga, & Pidgeon, 2006; Weber, 2010) than children and
15 adolescents'.

16 Much of the research conducted with children and adolescents seeks to understand the extent to
17 which their knowledge of climate change causes, impacts, and solutions is scientifically accurate (e.g.,
18 Hermans & Korhonen, 2017). Most of this research employs quantitative methods, particularly
19 closed-form questionnaires (Lee, Gjersoe, O'Neill, & Barnett, 2020). Children and adolescents'
20 scientifically correct knowledge about the causes and impacts of, and solutions to climate change
21 generally improves with age, although misconceptions persist across the age range (e.g., Stevenson,
22 Peterson, & Bradshaw, 2016). Some studies focus on belief and concern about climate change, and
23 whether participants are willing to take particular actions to mitigate climate change (e.g., Boyes et
24 al., 2014). Belief, concern, and willingness to act varies according to geographical location.
25 Participants in Singapore, India, or Turkey report higher levels of concern and more willingness to take
26 actions than those living in the UK or USA (Boyes et al., 2014). This could be a reflection of
27 participants' relative proximity to the tangible effects of climate change influencing the extent to
28 which they view it as a personal threat (Gubler, Brügger, & Eyer, 2019). Psychological distancing of
29 climate change – a propensity to locate the problem with other peoples and distant places – is an
30 established phenomenon in the adult climate change literature (e.g., Brügger, Dessai, Devine-Wright,
31 Morton, & Pidgeon, 2015).

32 Quantitative research – employed extensively in change research in the social sciences - has great
33 utility; it can for example, identify gaps in knowledge or measure levels of support for climate-related
34 actions. It can also facilitate comparisons across age, place, and time. However, qualitative research is
35 perhaps better placed to bring to the fore the nuances contained in peoples' responses to complex
36 issues such as climate change (Braun & Clarke, 2013). For example, qualitative studies have
37 highlighted the way people can both acknowledge and deny climate change (Norgaard, 2006), and
38 how personal responsibility for resolving climate change can be both keenly felt and eschewed (Nash
39 et al., 2019). Similarly, qualitative studies with young people demonstrate that concern about climate
40 change seems fluid and context-dependent (e.g., Line, Chatterjee, & Lyons, 2010). In this study,
41 adolescents acknowledged the impact of transport on climate change, but decisions about personal
42 transport (such as wanting to drive) were often justified by identity-related concerns. The aim of this
43 qualitative study is to examine the ways adolescents discuss and debate climate change with one
44 another to understand how they relate climate change to their own and others' lives. Given the
45 unequivocally urgent need to tackle climate change (IPCC, 2021), understanding where and how the

1 next generation of adults situate climate change in relation to themselves and others has implications
2 for climate change communication and education.

3 **Social representations and climate change**

4 One approach that facilitates a broad understanding of how people perceive scientific objects, and
5 one that is compatible with a qualitative research approach (Willig & Stainton Rogers, 2017), is Social
6 Representation Theory (SRT) (Moscovici, 1961). SRT examines the way in which scientific knowledge
7 becomes lay knowledge; how the abstract, complex, and reified world of science becomes concrete,
8 simple, and every day (Moscovici, 1961). SRT has underpinned a range of studies examining
9 participants' understandings of phenomena including blood donation (Moloney, Gamble, Hayman, &
10 Smith, 2015), hospital superbugs (Washer & Joffe, 2006), emerging infectious diseases (Idoia
11 Mondragon, Gil de Montes, & Valencia, 2017), GM food (Ribeiro, Barone, & Behrens, 2016), and
12 climate change (Wibeck, 2014). Researchers using SRT focus on the nature of peoples' thinking for its
13 own sake, rather than whether thinking is scientifically correct.

14 Objects in the natural sciences – like climate change – are monological, but social representations of
15 climate change – objects in the social sciences – are dialogical (Liu, 2004), they are co-created and
16 shared in context. A representation is not a reproduction of an object, but a re-presentation of it
17 (Markova 2000). Climate change studies underpinned by a knowledge-deficit approach seem
18 concerned with participants' knowledge about the monological, whereas studies underpinned by SRT
19 are concerned with the dialogical meanings people make of climate change. Social representations
20 are multiple and not necessarily consensual (Rose et al., 1995). In the case of climate change, that
21 climate change is wholly anthropogenic, natural, or both (Olausson, 2011). Nor are representations
22 static as people can, and do, deploy different, contradictory representations (Rogers, Stenner, &
23 Gleeson, 1995); a social representation does as well as is. This accounts for why groups in different
24 parts of the world represent the same object in different ways, as their representations are influenced
25 by and reflective of cultural needs. For example, representations of AIDS in Zambia (Joffe & Bettega,
26 2003) and the USA (Joffe, 2002) serve to place responsibility and vulnerability elsewhere. Similarly,
27 the way in which some cultures embrace certain technologies, such as nuclear power or GM foods,
28 whilst others reject it (Jasanoff, 2010), is reflective of culturally-specific influences on social
29 representations of these technologies.

30 According to Marková (2003), themata are the latent structures that structure dialogical social
31 representations. Themata were described as the dyadic oppositions – such as stability/change – that
32 underpin all scientific thinking (Holton, 1975). These were introduced into SRT as elements
33 underpinning common-sense thinking (Moscovici, 1993). Themata are comprised of antithetical poles
34 that enable people to orient themselves with, deploy, and understand a range of positions on a
35 particular issue (Smith, O'Connor, & Joffe, 2015). Social representations of organ donation are
36 underpinned by themata such as life/death (Moloney et al., 2015). Representations of climate change
37 by themata such as natural/unnatural (Smith & Joffe, 2013). A key function of a representation is to
38 defend against threat to the self or the in-group (Moscovici, 1976), they are shaped by a kind of social
39 evolution that enables communication and co-operation to protect survival (Lahlou, 2001). Themata
40 afford protection to an individual and their group when positive valence is attributed to the pole more
41 associated with the self, and negative valence to the pole more associated with the other (Markova
42 2015). Smith et al. (2015) suggest that all themata are underpinned by a core thema of self/other that
43 works to protect an individual and their group's identity, an 'epistemological thema' (Marková, 2017).
44 The functional nature of the self/other thema is apparent in early representations of AIDS, where the
45 spread and impact of the disease were associated with less moral or upstanding others, rendering the
46 self less to blame and at risk (Smith et al., 2015). This is also evident in studies examining

1 representations of emerging infectious diseases such as Bird Flu (Joffe & Lee, 2004), and more
2 recently, COVID-19 (de Rosa & Mannarini, 2020), that highlight the way that self/other attributions
3 seem associated with protecting the self. Identity-protective self/other attributions matter for risk
4 communication, in terms of understanding which areas to focus on to reduce peoples' withdrawal
5 from threat (Smith et al., 2015).

6 **The present study**

7 This study took place in the UK, where the government has taken a relatively progressive stance on
8 climate change compared to other countries, introducing legislation around reducing greenhouse
9 gases over a decade ago (Climate Change Act, 2008). More recently - in response to the school
10 climate strikes and the Extinction Rebellion movement – it declared a climate emergency in 2019
11 (Commons Select Committee, 2019). However, the ongoing debates around issues that are at odds
12 with the objectives outlined in legislation - such as airport expansion (HM Government, 2019) -
13 demonstrate less wholehearted commitment. In the UK, climate change is not formally on the
14 curricula until pupils are in their second or third year of secondary school (Department for Education,
15 2014). This also seems at odds with climate change being an emergency, an argument made by the
16 official opposition party (The Labour Party, 2019).

17 The study seeks to identify whether and how the self/other thema underpins adolescents'
18 representations of climate change. The study employs a focus group design. Focus groups are
19 appropriate for studying social representations because they provide an environment for the co-
20 creation, expression, and negotiation of representations (Wibeck, 2014). They are a relatively more
21 naturalistic means of collecting data (Wellings, Branigan, & Mitchell, 2000), useful for understanding
22 the way participants understand an issue as – even if follow a topic guide – they do not prescribe
23 responses (Braun & Clarke, 2013). Their interactive nature enables the production of shared and
24 differentiated understandings, for meaning to be negotiated by and between participants (Kitzinger,
25 1994). The aim of the study is to examine the ways in which the self/other thema is constructed and
26 deployed by participants in group discussions about climate change.

27 **Method**

28 *Design*

29 The study employed a qualitative cross-sectional focus group design, receiving ethical approval from
30 the University of Bath in February 2019.

31 *Procedure*

32 The study was advertised through local on and offline message boards. After obtaining parental
33 consent, focus groups were organised so that the participants in each group were of a similar age
34 and/or knew one another. The aim was to recruit groups of four or five participants (Morgan, Gibbs,
35 Maxwell, & Britten, 2002). Groups were conducted in March and April 2019. At the start of each
36 group, participants read an information sheet and were given the opportunity to ask questions,
37 before providing assent. The information sheet was administrative, explaining that the topic of
38 conversation was climate change, reassuring participants that there were no right or wrong answers,
39 covering practical matters such as the likely length of the focus group, and ethical issues relating to
40 the right to withdraw and maintaining anonymity. A semi-structured topic guide was followed. This
41 included topics such as the nature of climate change, its cause, impacts and solutions. Questions
42 included: 'What would you say are some of the causes of climate change?'; 'What do you think are
43 some of the impacts of climate change?'; and 'What do you think can be done about climate

1 change?'. These questions did not focus on or allude to the self/other explicitly. At the end of each
2 group, participants read a debriefing sheet. They were given a £10 voucher to thank them for taking
3 part.

4 **Participants**

5 In total, 22 participants were allocated into five focus groups. All of the participants lived in a city in
6 the south west of England with a population relatively more affluent than the UK average (National
7 Statistics, 2019). All attended state secondary schools in the local area and were aged between 11
8 and 14.

9 Focus groups can be conducted with groups of friends or strangers and there are merits and
10 disadvantages to both approaches (Braun & Clarke, 2013). Some argue that familiar groups could lead
11 to the suppression of dissenting views because of the existing familiarity between group members
12 (Leask, Hawe, & Chapman, 2001). Others that they lead to more elaborate and complex data
13 (Liamputtong, 2011), more akin to naturally occurring data (Kitzinger, 1995). In addition to
14 considering the merits of these respective arguments, we were attuned to the need to ensure that
15 the young participants felt as at ease as possible in what would likely be an unfamiliar and potentially
16 uncomfortable situation. Further, some parents' consent was based upon their child being in a group
17 with a friend or friends rather than strangers. Therefore, participant groupings were formed of
18 friendship, sibling, or school year groups, whereby every participant was familiar with at least one
19 other person in their group. A summary of groups is shown in table 1.

20 **Table 1: Summary of participants – Sex, Year group (Age)**

FG1	FG2	FG3	FG4	FG5
Male, Y9 (14)	Female, Y8 (13)	Female, Y7 (12)	Female, Y9 (14)	Male, Y9 (14)
Male, Y9 (14)	Female, Y8 (12)	Female, Y7 (12)	Female, Y9 (14)	Male, Y9 (14)
Male, Y8 (12)	Female, Y7 (12)	Female, Y7 (12)	Female, Y7 (12)	Male, Y9 (14)
Female, Y7 (12)	Female, Y7 (12)	Female, Y7 (11)	Female, Y7 (11)	Male, Y9 (14)
Female, Y7 (11)	Female, Y7 (11)			

21

22 **Analysis**

23 The focus groups were audio recorded and transcribed verbatim. An integrated deductive-inductive
24 approach was employed (Fereday & Muir-Cochrane, 2006). The concept of the self-other thema
25 provided a deductive framework, an inductive, bottom-up approach was taken towards the data
26 itself. The data were analysed using thematic analysis in order to identify patterns of meaning,
27 similarities and differences across the dataset (Braun & Clarke, 2006). Data were coded, codes were
28 grouped, then brought together into themes. Attention was paid to the way that participants aligned
29 their views with others and negotiated differences of opinion.

30 **Results**

31 The self-other thema structured participants' representations of climate change. However, self and
32 the other were constructed and deployed differently, depending on whether discussions were
33 focused on causes, consequences, or solutions. The results are organised into three sections that
34 explore the nature and positioning of the self and the other in relation to these three phenomena.
35 The first section, 'The variable other causes climate change', relates to the way that participants
36 depicted multiple others as responsible for causing climate change –blame was not allocated equally

1 to these others - with little responsibility attributed to the self. The second, 'Protecting the self from
2 the Impacts of climate change', outlines the way participants attempted to place the more severe
3 impacts of climate change with the other rather than the self. The last, 'The complex self, the simple
4 other: solutions to climate change', relates to the contrast between sometimes contradictory
5 positions taken in relation to actions of the self, and more straightforward discussions about the
6 actions of others.

7 ***The variable other causes climate change***

8 When discussing causes of climate change, participants began by talking about what is responsible,
9 referring to pollutants and their source: factories, flying, and meat production. After discussing *what*
10 is responsible, they quickly turned to *who* is responsible. The self was not prominent in these
11 discussions, present only as an upstanding foil to more blame-worthy others. There were several
12 others, but China was polluter-in-chief. To a lesser degree, America and nameless 'poor countries'
13 were held responsible for causing climate change, but the judgements made of them were less
14 definitive. The participants articulated three ways in which others were responsible. First, because
15 they prioritised economic growth over climate protection. In this extract from Group 1, they discuss
16 how economic development in China and wealth preservation in the USA are responsible for causing
17 climate change:

18 *I: What do you think is the biggest cause of climate change?*

19 *C: Um, low income countries just like soaring up and developing quickly and not like learning*
20 *properly how to take care of the environment. Like China for example hasn't learnt completely*
21 *how to um, like not just use fossil fuels and (pause)*

22 *I: Do you think that, cos that's kind of quite a complicated moral thing isn't it, because I*
23 *suppose we've burnt loads of fossil fuels haven't we? So, in a way, is it okay for us to tell China*
24 *that they need to do it differently?*

25 *C: Um, we should like let them know how to do it, um, because when we were developing, um*
26 *we did the same thing, it took us some time to switch to renewables, um. But we just should*
27 *let them know.*

28 *B: Well there's an agreement between all the major countries to reduce their um, CO²*
29 *emissions but America, they've somehow, I think they said oh, yeah it's the, the agreement is*
30 *out of date so now' they can produce as much as they like.*

31 *I: Yeah*

32 *B: But that's since Donald Trump's been elected because he just wants to make more money*
33 *so, they've um kind of pulled out of that agreement so that was one way of everybody*
34 *reducing it but people are going up against it.*

35 *C: Yeah and Donald Trump's like friends with some big oil companies so he's trying to keep*
36 *them alive so that they pay him, and he gets more money.*

37 The language C uses positions China as irresponsible because it prioritises growth and has not 'learnt'
38 (a word he uses twice) to care for the environment. A lack of learning may suggest ignorance,
39 although if this is what C means, he does not indicate whether this is wilful. 'Soaring' connotes
40 rapidity and scale and seems used here to imply that the scope of China's development is neither
41 appropriate nor responsible. Later, he responds to the question of whether it is morally acceptable to
42 pass judgement on China by positioning 'us' as teacher and China as student. In so doing, and with his

1 claim that we have now switched to renewables, he elevates 'us' to a more virtuous and learned
2 position than 'them'. B shifts the conversation to America pulling out of the Paris Climate Agreement.
3 He attributes this to the desire to make more money and names Donald Trump specifically,
4 suggesting the withdrawal was financially motivated. C supports this by suggesting that Trump is
5 'friends' with oil companies for financial gain. There is an interesting contrast in the way that the two
6 antagonists are positioned. When the other is America, it is personified by Donald Trump. He, rather
7 than America per se, is the problem. In contrast, there is a homogenous 'China'.

8 Second, large populations were said to cause climate change, as evidenced in this extract from Group
9 2:

10 *I: And do you think, in terms of parts of the world, do you think there are some countries that*
11 *are causing more of the problem than others, and if so, which ones?*

12
13 *B: I think the countries with more cities are causing more of the climate change because they*
14 *are doing more, there is more population and I sometimes think China is causing more*
15 *pollution because it has the biggest population on earth*

16
17 *I: Yeah*

18
19 *D: It's where a lot of the factories are, to make things*

20 This argument is based in the logic that larger populations equate to more pollution. It does not
21 consider whether consumers in other countries may be driving demand for production in the Chinese
22 factories. The argument that blame can be indirect was made in relation to other countries, but not
23 China. For example, one group discussed the concept in relation to Brazil, who are sometimes said to
24 be causing climate change because they produce large quantities of meat. However, because most of
25 this meat is exported to richer countries, it is they rather than Brazil who bear the 'true' responsibility.
26 Here they defined two, not equally responsible, others.

27 Last, the other's incorrect practices were claimed to cause climate change. This is from group 4:

28 *B: I feel like, if you don't recycle then it's bad but then also like for example, our country is*
29 *quite good at recycling but places like China, they don't really care and they like throw*
30 *everything in like rivers and then it like pollutes and then it like spreads to Earth and it like*
31 *affects us as well as them.*

32 *D: Yeah, but, yeah, and industrial, cos they're way bigger, like factories, all the fuels that they*
33 *are using can create loads of air pollution and stuff.*

34 *Some lines later:*

35 *I: And do you think, when you think of parts of the world, you've mentioned China, but do you*
36 *think that are certain areas of the world that are more kind of responsible for causing climate*
37 *change than others?*

38 *Multiple: Yeah*

39 *C: Big cities*

40 *B: I feel like, yeah, like less developed countries don't really have the like, the like, like I don't*
41 *know, like..*

1 *D: The equipment?*

2 *B: Yeah, they don't have the resources to like properly recycle, and realise, I think*

3 In this extract, both China and 'less developed countries' are the other. B begins by stating that
4 China's environmental practices are poor because it doesn't care. She makes an explicit link between
5 China's irresponsible actions and a negative impact on a more virtuous self, because unlike China, 'our
6 country is quite good at recycling'. It is interesting that she uses the personal pronoun 'they' to refer
7 to China, she applies this judgement to China as a unit. D reinforces B, referring to them producing on
8 a grand scale. In this discussion, China is not positioned as a 'developing country'. They seem to
9 occupy a special place between a more moral and learned 'us', and unnamed 'developing countries'
10 who are worthy of being attributed extenuating circumstances. There is more leeway extended to
11 these countries, as evidenced in B and D's final comments, which imply that their ignorance ('they do
12 not realise') may be explained by a lack of knowledge, equipment, or resources, rather than, in the
13 case of China, something akin to recklessness. Although largely absent from these discussions, where
14 present, the self is positioned simply, as more correct than the other. The other is differentiated in
15 that whilst there is a blanket depersonalised allocation of blame to an immoral or unethical China,
16 attributions of blame to the different others are complex and render them less 'blameworthy'. In the
17 case of the USA, a greedy Donald Trump is responsible. In the case of poor or developing countries,
18 they bear less responsibility because they are exploited by others or have inadequate resources.

19 ***Protecting the self from the impacts of climate change***

20 When talking about the impacts of climate change, many participants situated impacts at a distance,
21 although there was some debate. Impacts on the self and other were located in relation to
22 psychological distance (Trope & Liberman, 2010): temporal, spatial, or social. All of the groups
23 referred to '12 years', gleaned from detail contained in the widely publicised 2018 IPCC (2018) report.
24 They did not always seem sure about the precise implications of '12 years' but seemed to recognise
25 that it represented a clarion call to action, probably because by its very nature, '12 years' is a point in
26 time occurring well within their lifetimes. Nonetheless, there was some debate about how far in the
27 future climate change impacts would be felt, where impacts would be located, and who would be
28 affected. In this extract from Group 3, participants are negotiating the spatial and temporal locations
29 of future impacts of climate change:

30 *I: Um, and what, what do you think are some of the things that are going to happen in the*
31 *future then? Like here and in the rest of the world?*

32 *B: It's gonna get warmer*

33 *C: But like it's gonna get warmer here but the actual effects are like will be we might not be*
34 *able to grow like food and stuff*

35 *D: Yeah, we might not be able to survive and then everything will die and then the world will*
36 *explode. Well, it won't explode, but...*

37 *A: I think it will affect poorer countries more because they might not have much money to*
38 *support themselves*

39 *I: (To A) Say that again, what did you just say?*

40 *A: Oh, that poorer countries, they don't have as much money to support themselves*

41 *B: Like India*

- 1 *I: Yeah*
- 2 *D: In the very, very, very far future things will probably um, everything will probably die*
- 3 *A: That's not the VERY far future*
- 4 *D: Yeah, it's probably, like...*
- 5 *A: In our lifetime things will go downhill*
- 6 *I: Do you think so?*
- 7 *A: Uh-huh*
- 8 *B: But Sydney isn't going to be able to live where they are living 'cos it's gonna get too warm*

9 During this exchange, the temporal and spatial location of the future impacts of climate change are in
10 flux. The future impacts of climate change are positioned and repositioned in relation to the self and
11 the other. Impacts are located spatially close, then distant, temporally distant then close, finally
12 spatially distant again. C responds to the initial question about potential future impacts by stating that
13 it is going to get warmer 'here' and consequently, 'we' won't be able to grow food. D adds that 'we'
14 might not be able to survive. Up to this point, use of these words position the effects of climate
15 change as impacting - or potentially impacting – the self. D goes in a different direction, stating that in
16 the future everything will die, and the world will explode. In evoking something so extreme, she
17 places the impacts at a distance. A maintains spatial distance by adding that it will be poorer countries
18 who will be more affected, B supports this by giving a concrete example of such a 'poor' (and distant)
19 country. D revisits her earlier point about everything dying, describing this as taking place in the 'very,
20 very, very far future', her repetition of 'very' ensuring that these impacts are placed into the distant
21 future and well away from the self. A contradicts D by positioning the impacts as something that will
22 happen 'in our lifetime', bringing it closer to them again. Finally, B makes a tangential point about
23 future impacts in Sydney – about as spatially distant from 'us' as it is possible to be – placing
24 devastating future impacts at a distance and with the other once again. Here, B and D seem
25 determined to resist the attempts by C and A to locate any impacts of climate change with the self,
26 deflecting them each time to the other.

27 Participants sometimes spoke about how the UK is or will be impacted by climate change. These
28 impacts were typically spoken about in quite positive terms, such as eating lunch outside or wearing
29 shorts in February. In this extract from group 3, the impacts in the UK are being discussed:

- 30 *C: Well I don't really know, what, er so far I don't think it's affected our lives but it's obviously,*
31 *you hear about it on the news and it's obviously affected like...*
- 32 *B: Other people*
- 33 *C: Other..*
- 34 *D: Yeah, but in the near future..*
- 35 *A: We're just having warmer summers and stuff*
- 36 *D: Yeah*
- 37 *B: That's quite nice!*
- 38 *C: And colder winters*

1 A: Nice but bad

2 D: Yeah

3 B: Get the water slide out!

4 C: But I don't really know, like what the actual effects will come to for our country

5 There is a contrast between the way the participants talk about impacts the self and the other. In the
6 above extract, B and C explicitly state that climate change has impacted 'other' people, which
7 contrasts with minimised - even welcomed - impacts on the self. C admits she isn't sure about impacts
8 in the UK. A is more measured, acknowledging that these positively perceived impacts are in fact,
9 'bad'. However, although she suggests something ominous for the self, she is not specific.

10 ***The complex self, the simple other: solutions to climate change***

11 This section relates to the interplay between the self and other in relation to climate change solutions
12 and is broken into three sub-sections. The first, 'The powerful other, the powerless self', relates to a
13 more powerful other – the government – and a powerless self. The second, 'The inattentive other,
14 the attentive self', relates to a second other – the older generation – that does too little, despite
15 being more able to act on climate change than the self. The last, 'The self without the other' relates to
16 more complex justifications of their own behaviours, in the absence of the other.

17 ***The powerful other, the powerless self***

18 The participants identified specific solutions to climate change, such as switching to green energy and
19 reducing factory pollution. These potential solutions were situated within systems of unequal power.
20 Participants positioned powerful governments as most able to carry out or enforce much of the
21 needed action, by creating infrastructure or regulating companies. Occasionally, they asserted the
22 importance of their own actions by outlining the practices they can take, such as recycling. However,
23 these were often set in the context of larger-scale actions being more meaningful, which seemed to
24 reinforce their powerless status. This extract is from Group 2:

25 I: Okay, so what do you think um, can be done about climate change?

26 B: I think the government needs to do something about it because the government is in charge
27 of everything and the people can't really do stuff without the government's permission. And if
28 the government is like the head of the country and if we don't take action then some bad
29 things will start happening

30 E: I think everyone needs to do some little things as well because like some people think that
31 'oh well, it's just, I can't really do this because I'm just one person' but if every single person
32 does little things then it adds up to quite a big help

33 D: The government could make more laws about like cars and...

34 C: They could produce electricity in different ways like using solar power because you won't
35 have to burn fossil fuels

36 In this extract, B positions the government as all-powerful, claiming that nothing is possible without
37 governmental involvement. In arguing that people cannot act without the government's permission,
38 she places all responsibility for acting on climate change with the government and none with the self.
39 In response to this, E asserts that little things add up, individuals have and can take responsibility.
40 However, D immediately returns responsibility to the government and C outlines the greener energy

1 production possibilities 'they' could pursue. Although D and C do not explicitly disagree with E here, in
2 returning the focus to governmental actions rather than engaging with her directly, they seem to
3 indicate they disagree that the actions of the self are important. Some participants expressed
4 dissatisfaction with the UK government for prioritising other less important issues, even suggesting
5 that this may be deliberate. This extract is from group 1:

6 *D: I feel like the government should stop fussing about things that don't, that not, like doesn't*
7 *really matter as much as our earth*

8 *I: Yeah? And what sort of things are they fussing about?*

9 *D: Brexit, yeah. And um, all this, it's basically just bickering about this small, you might call it a*
10 *small thing, I'd say it was a small thing, this small thing that doesn't matter, like it's not, it's,*
11 *we've got other priorities at the moment and Brexit is not one of them, for me, that's what I*
12 *think*

13 *C: I've just thought about this now but I think that one of the reasons that they keep*
14 *rescheduling Brexit might be so um, for climate change they don't really want to get into the*
15 *subject so they might be wanting to go and just stick with Brexit and so, like people just get*
16 *bored, and then...*

17 *I: Do you think so? So actively trying to...*

18 *C: Avoid it*

19 C suggesting that the government may be deliberately focusing on other matters in order to avoid
20 tackling climate change reinforces the other's power to set the agenda it chooses, in contrast to
21 limited opportunities for the powerless self.

22 ***The inattentive other, the attentive self***

23 Other actors - to blame for causing climate change - were deemed to be shirking responsibility for
24 resolving it. Participants described climate change as a problem inflicted upon them by older
25 generations. As such, they argued that they should take responsibility for resolving it but wouldn't
26 because they would be old, dead, or 'in a home' by the time climate change impacts mattered. Some
27 participants mentioned an older person who did care, such as a 93-year old man who was repeatedly
28 arrested whilst protesting with Extinction Rebellion, but this was set in the context of caring for his
29 children and grandchildren's futures, reinforcing the idea that it will not affect the older generation
30 directly. This created a tension between an inattentive, but more powerful other and a more
31 vulnerable self that lacked power. This extract is from group 4:

32 *B: Yeah, like they think 'oh, it's not in our generation', like 'it won't affect us'*

33 *A: Nothing bad's gonna happen*

34 *B: But like, it will. It's like, within the next 12 years like bad things will start to happen if we*
35 *don't take action now and then it will like, erm, the next generation will suffer*

36 *I: Yep*

37 *D: Yeah, like our generation, like the adults, like our parents, like when things start to get bad,*
38 *they'll be like, I dunno, sixty or something and then we'll be around, like, I don't know, 20, and*
39 *they won't really do anything to stop it because they think it's not in their generation*

1 This sense of unfair power distribution was apparent in participants' desire to vote on environmental
2 and other issues affecting their future. Several participants observed parallels with the EU
3 referendum and climate change, with outcomes of both having a far greater impact on them than
4 those voting, examples of being 'overpowered' by adults. This extract about voting is from group 3:

5 *D: No, but let um, let children um, over the age of 12 allowed to vote for environmental things!*

6 *B: (To D, because she is 11) You're not allowed to then! You're not allowed to!*

7 *D: Yeah, I know. But...*

8 *I: Okay, but why 12?*

9 *D: Well if you're like younger than 12 you're probably haven't been like educated enough*

10 *A: I don't think you should be 12, I think you should be...*

11 *(inaudible)*

12 *D: Yeah, but if you're in year 7 and above and like...*

13 *I: Secondary school?*

14 *D: Yeah*

15 *A: I think you should be 15 to be able to vote for the environment cos then you're a bit more*
16 *mature*

17 *I: Okay, and what about, about older people who ARE voting then, do you think they should*
18 *still be allowed to vote?*

19 *C: But that's why... When we were walking down here, we were talking a bit about it, cos like a*
20 *bit like when there was the vote to leave the EU I wanted like, children to be able to vote,*
21 *because...*

22 *A: We're the ones who it will affect us*

23 *C: If, I don't know, if the amount of people meaning that the 90-year old plus people are like*
24 *tipping over to another thing then they're not be the ones growing up in that world and...*

25 *A: I think if you are over 80*

26 *D: (Interrupting) I know some people...*

27 *A: You shouldn't be eligible*

28 *D: I know some people who have let their grandchildren decide like, what to vote.*

29 There is some debate about the right voting age, and it is interesting that they do not reach a
30 consensus. However, they do agree that at some point in early to mid-adolescence, teenagers should
31 be able to vote on issues that affect their future. Some participants went further and suggested, as A
32 does, that passed a certain age, 'old' people should not be able to vote.

33 ***The self without the other***

34 Where the other is concerned, responsibility for resolving climate change is presented as clear-cut.
35 Where discussion turned to personal responsibility, participants spoke of the helpful actions they
36 took, such as recycling, or walking to school. There was a sense in this kind of talk that they were

1 presenting the ways in which they were 'doing their bit'. These claims were made categorically, there
2 was no questioning their effectiveness. Of perhaps more interest, were the resources participants
3 used to defend some behaviours they had identified as causing climate change. Although they may
4 not have complete autonomy (they may be over-ruled by their parents or they wanted to become
5 vegetarian, for example), their defence of some personal actions was vociferous. In this extract from
6 group 1, participants respond to a question about vegetarianism. They had earlier categorically
7 identified meat farming as a major contributor to climate change:

8 *I: Do you think being vegetarian is something we should all be doing?*

9 *Several: No*

10 *D: No, no, because we need that meat inside us. We need it to make, it helps us be like human*
11 *and stuff but if we all just do it, I don't know...*

12 *B: Well my argument is that it's the main source of protein and me, I'm type 1 diabetic and*
13 *without meat, um, it would be much harder to, er, manage. Because, er, it's a lot to get your*
14 *head around diabetes but there are an increased amount and protein is what can help, protein*
15 *basically just helps them with their life. Like I couldn't become a vegetarian because I'd*
16 *probably just get ill because, just eating vegetables and carbohydrates, but, it's like vegans as*
17 *well, cos that's when I think for me it's just, it's just too extreme cos you're getting rid of things*
18 *that your body really genuinely needs to sustain itself. I don't think being vegetarian, yeah, it*
19 *would help but then I don't think it would help people, it might just make their diets worse if*
20 *they don't have, um, something to fill them up they'll probably end up just eating more. So...*

21 *I: (To others) What do you guys think?*

22 *C: Um, yeah, I think the same. I think vegans are like a bit extreme, vegetarians are okay if you*
23 *are like conservative and still eat some proteins, um, cos like if we have everyone was vegan or*
24 *vegetarian then there wouldn't be much plants left*

25 The claim that meat-eating is essential for human health was articulated by other groups, with others
26 also stating that veganism was 'extreme'. Participants positioned meat protein as vital to human
27 health. In the above extract, D reifies meat as something we need, and if taken at face value, suggests
28 that not eating meat might make us less human. B acknowledges that not eating meat might help the
29 planet but that it would be unhelpful for human health because giving up meat would result in a
30 deficient diet. C reinforces B, saying that veganism is too extreme. Their discourse around meat-
31 eating appears contradictory when considering their position on meat production being a cause of
32 climate change. However, these two arguments co-exist but do not co-occur and each is made of its
33 own logic: meat-eating is bad for the planet because it causes climate change and good for humans
34 because it provides them with nutrients that maintain health. Similar arguments were made about
35 flying, which participants had identified as a cause of climate change. Where attention turned to their
36 own flying, they positioned other issues, such as driving or factory pollution, as more problematic
37 than aviation. When it came to the potentially controversial actions taken by the self, participants
38 made justifications based on minimisation or necessity. They do not – as could be expected – recruit
39 the other in their arguments (e.g., my parents won't let me be vegetarian), but defended actions on
40 their own terms. In so doing, they give themselves an autonomy and a range of possible positions
41 they did not afford themselves in the other sub-themes.

42 **Discussion**

1 This study analysed the talk produced in five focus groups with 22 adolescents aged 11 to 14. It
2 identified three ways in which the self-other thema structured participants' representations of
3 climate change. First, they positioned the other as uncomplicatedly responsible for causing climate
4 change. Second, they located the more severe impacts of climate change with the other more than
5 the self. Finally, others' responsibility for resolving climate change was presented as straightforward,
6 compared to equivocal positions on individual actions. What constituted the self and the other
7 differed according to whether the talk was focused on causes, consequences, or solutions, but in each
8 case the talk functioned to position the self positively (Smith et al., 2015). The self was the collective
9 UK in the case of causes, where our more wholesome practices were contrasted with those of less
10 learned or responsible others. The self was also the collective UK in relation to the impacts of climate
11 change. The impacts were more often attributed to other people and other places and whilst some
12 participants acknowledged impacts in the UK, they tended to be depicted as less serious. When talk
13 related to solutions to climate change, the self was the participants and their peers. The self was
14 positioned positively when participants talked about their own climate-friendly actions. This positive
15 valence was maintained when they argued that certain actions they took were essential, or less
16 harmful than other actions. The self was positioned positively when they attributed responsibility to
17 others, who were not bearing their responsibilities appropriately.

18 *Implications for climate change communication*

19 Here we discuss the implications of our findings for climate change communication, whether informal
20 – such as social media or television – or in a more formal educational setting. The mobile positionings
21 of the self and other presented here facilitate withdrawal from the threat presented by the particular
22 facet of climate change under consideration (Smith et al., 2015); there is not one self and one other in
23 relation to climate change, but many selves and others. According to Joffe (1999), assuming self-other
24 positions in the face of risk is driven by the need for a safe and ordered world; people are inherently
25 motivated to downplay their own guilt or vulnerability. Communication about climate change can
26 address threat-withdrawal by emphasising issues relating to the self as well as the other (Moloney et
27 al., 2015). In general terms, climate communication should inform adolescents about climate change
28 and encourage dialogue around those positions which default to self-other constructions that
29 unproblematically legitimise threat-withdrawal. Communication should convey the seriousness of
30 climate change; it should not be presented as having positive consequences (as was until recently the
31 case on one prominent UK secondary school revision website (Wadhwa, 2021)), but nor should it be
32 presented as a completely insurmountable problem (Ojala, Cunsolo, Ogunbode, & Middleton, 2021).
33 Ways that communication could address the more specific self-other positions of causes, impacts,
34 and solutions to climate change highlighted in this study are discussed below.

35 The positioning of China as overwhelmingly responsible for causing climate change demonstrated
36 here is likely unhelpful if it means the actions of the UK are considered beyond reproach and that it
37 bears little responsibility. It risks stigmatising China, who became the world's biggest CO₂ emitter in
38 2015 (Zhang et al., 2017), but produce less CO₂ per capita than many oil-producing countries, or
39 countries with high overall emissions, such as Australia (Ritchie & Roser, 2020). It obscures the picture
40 in relation to cumulative emissions, where the USA and the EU-28 have still contributed the most
41 (Ritchie & Roser, 2020). In a similar vein, attributing responsibility to 'poor' and 'developing' countries
42 may also be unhelpful without considering the inequity between emissions and vulnerability to
43 climate change impacts (Althor, Watson, & Fuller, 2016). Communication should highlight that
44 responsibility for causing climate change cannot be distilled to simplistic attributions of blame.
45 Cumulative, per capita, and current emissions; current and future vulnerability to impacts; historic
46 and current governance; and economic and societal infrastructure and preparedness are all important

1 considerations. More specifically, in a school setting, formal climate change education in the UK is
2 confined to Geography and Science lessons and does not typically begin in earnest until pupils are
3 well into their secondary school years (Department for Education, 2014). Teaching about climate
4 change largely relates therefore to its scientific – and inherently abstract – facets, which may serve to
5 reinforce and maintain distance from the self. Relating climate change to other areas of the curricula
6 such as the humanities, might help adolescents to think critically (O'Brien, Selboe, & Hayward, 2018;
7 Power, 2020) about the way that historical and current power inequity relate to responsibility for
8 causing climate change.

9 The way that participants in this study placed the self and other in relation to the impacts of climate
10 change suggests that these UK adolescents, like adults, have a tendency place impacts of climate
11 change at a psychological distance (Spence, Poortinga, & Pidgeon, 2012). In the same way that placing
12 responsibility with others may reduce willingness to take action, so too might viewing impacts as
13 psychologically distant (Uzzell, 2000), although the link between psychological distance and action is
14 not completely straightforward (Brügger et al., 2015) and addressing distancing does not necessarily
15 address the fundamental motivation for distancing. However, considering climate change to be
16 personally relevant seems to impact responses to climate change communication (Ojala & Lakew,
17 2017). For example, one study found that youth who considered climate change do be personally
18 relevant were more attentive and motivated to share information about climate change (Yang, Kahlor,
19 & Griffin, 2014). Visual imagery exerts a strong influence on perceptions of climate change (e.g.,
20 O'Neill, Boykoff, Niemeyer, & Day, 2013) and could help to address psychological distance, or the
21 unaffected self, by depicting serious local impacts (Wang, Corner, Chapman, & Markowitz, 2018).
22 Similarly, education strategies that frame the threat of climate change as more local and personally
23 relevant, rather than focusing on the abstract and distant, may be helpful in reducing psychological
24 distance (Monroe, Plate, Oxarart, Bowers, & Chaves, 2017).

25 The participants in this study both placed responsibility with others for resolving climate change and
26 found ways to absolve their own responsibility. In so doing, they may be minimising the importance of
27 individual or collective action (Fielding & Head, 2012). Further their demonization of older
28 generations – whilst understandable - overlooks the fact that many adults are actively engaged in
29 trying to address climate change; this perspective may be counter-productive if it disincentivises
30 inter-generational co-operation. Communication should highlight what young people can do to help
31 resolve climate change, giving information about both personal behaviours and ways to pressure
32 politicians, policymakers and organisations (Ojala et al., 2021). Again, the use of visual imagery could
33 be an effective way of communicating concrete and useful behavioural actions (O'Neill et al., 2013;
34 Wang et al., 2018).

35 ***Reflections on conducting focus groups***

36 Focus groups provide a means to explore the active ways that social representations are shared and
37 the self-other are positioned in dialogue (Marková, Linell, Grossen, & Salazar Orvig, 2007). The use of
38 focus groups enabled us to understand some of the factors that shape adolescents' representations
39 of climate change and areas of agreement and contestation. Whereas closed-form questionnaire
40 studies prescribe answers to questions, the direction of discussion here – though guided – was not
41 constrained, and participants were able to express a variety of sometimes contradictory arguments.
42 One might have inferred that if participants view meat farming as a major contributor to climate
43 change then they would take the position that they should not eat meat. Or that if they defend of
44 meat-eating, they will downplay its role in causing climate change. Using focus groups allows us to see
45 these contradictory positions and the nuances of the arguments underpinning each. Discussions in
46 groups where participants were all known to each other flowed more easily. These groups talked and

1 talked with one another more, with less input from the moderator. However, they were sometimes
2 harder to follow as they more frequently went off topic.

3 *Limitations and implications for future research*

4 This was a small study with five focus groups. Participants were children of families living in the same
5 local (economically advantaged) area. Participants were recruited via their parental gatekeepers who
6 had to give their consent before their child could take part in the research, a requirement of research
7 conducted with minors. We cannot and do not claim that these findings are representative of the
8 wider UK adolescent population. This research took place in early 2019. Since then, the youth climate
9 strikes have gained momentum. It would be interesting to examine how the positioning of the self
10 and the other is impacted by the strikes, in individuals who have and have not participated. It may be
11 that the strikes empower the self, imbuing young people with a sense that they can make a difference
12 when it comes to resolving climate change. Further, to explore the function of representations –
13 acknowledged to be related to group processes (Moscovici, 1981)) – in more detail, to understand
14 how the individual and collective self is served by the deployment of particular representations and
15 self-other positions.

16 *Conclusion*

17 In contrast to much of the literature relating to adolescents and climate change, the approach
18 employed in this study has focused on adolescents' sense-making about climate change for its own
19 sake. Exploring the way that self and the other are constructed in dialogue has shown the flexible and
20 sometimes contradictory resources that are brought to bear to construct a positive self. It highlights
21 the work required to do this, and the active and mobile nature of self-other positions. These findings
22 have implications for the communication of climate change to young people and future research.

23

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