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Young, sceptical, and environmentally (dis)engaged: do news habits make a difference?

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Abstract

Research shows that news consumption plays a positive role in youths' environmental engagement. This article examines if this also holds true for sceptics by comparing Swedish climate change sceptics with non-sceptical youngsters in their early and late adolescence. We conceptualise news consumption as foci of public connection and orientation rather than a source of environmental information. The results show that in their early teens, heavy news consumers among both sceptics and non-sceptics are indeed more engaged with environmental issues than their less news-oriented peers. However, in late adolescence, sceptics among news consumers show very little environmental engagement.

Keywords Environmental communication; Science and media

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Introduction

In today's media landscape, which is characterised by an endless flow of information, the news media have the ability to focus collective attention towards certain events, situations, or individuals by making them visible while rendering others invisible [Dayan, 2013]. When sharing certain scientific information about, for instance, global environmental issues, the news media also create a common access point to the world and a sense of belonging to a broader community [Schrøder, 2015]. In this way, news consumption constitutes an important means of sustaining 'public connection' [Couldry, Livingstone and Markham, 2007], that is, an orientation to a public space where global concerns that require collective action and common resolutions are, or should be, addressed. At the same time, the public world could be compared to a table that simultaneously unifies and separates people, as suggested by Arendt [1958, p. 52]. The appearance of matters of shared concern in public life also implies the existence of different opinions on these matters, and the plurality of viewpoints in the public world is both shaping and shaped by the news reporting as it focuses collective attention on a shared agenda, with all its controversies. In the case of environmental issues, even though there is strong

scientific consensus on the reality of anthropogenic climate change, people are still surrounded by controversies, not least in terms of climate change-sceptical claims.

Whether this connectivity to the public world contributes to fostering environmental engagement is not entirely clear, however. On the one hand, previous research suggests that the media in general, and the news media in particular, facilitate understanding of environmental phenomena as issues of public concern [Hansen and Cox, 2015] and that they constitute a key source of influence [Zaller, 1992] and scientific information about the environment [Olausson, 2011]. On the other hand, research also shows that there are a number of factors at play that constitute obstacles to this influence. News framings of scientific uncertainty of anthropogenic climate change, as a case in point, seem to strongly influence how people internalise information and to reduce their engagement [Kortenkamp and Basten, 2015; Morton et al., 2011]. A number of experimental studies show that when two opposing viewpoints are presented, people perceive scientific claims as less certain [Dixon and Clarke, 2013; Kortenkamp and Basten, 2015], especially when context (information about how these claims fit into previous research) is missing [Corbett and Durfee, 2004]. Furthermore, findings from experiments with information processing suggest that people with climate change-sceptical views might consume a great deal of news but interpret new information in congruence with their existing worldviews, thus displaying confirmation bias in their perception of information [Corbett and Durfee, 2004; Corner, Whitmarsh and Xenias, 2012; Marx et al., 2007]. Studies have also pointed to the relevance of people's social network for sustaining sceptical attitudes [Leombruni, 2015] as well as to the importance of demographic and political characteristics; adults — more often men than women — of lower socio-economic status who are politically conservative and hold traditional values, are prone to deny the seriousness of the climate-change threat [Poortinga et al., 2011].

Thus, as shown by the (by now quite extensive) research on the relationship between environmental engagement and the news media, being publicly connected to the outside world by means of the news media does not have the same consequences for everyone in terms of environmental (dis)engagement. In order to gain further insights into these differences, the present study turns analytical attention to people who are sceptical of the scientific conclusion of anthropogenic climate change; more precisely, it investigates how the news habits of climate-change sceptics relate to their environmental (dis)engagement in comparison with their non-sceptical peers. The bulk of research carried out on the connection between environmental engagement and news consumption has focused on adults, and the present study will therefore focus on adolescents. Adolescents present a unique group that, on the one hand, is often described as apolitical and disinterested in current affairs, and, on the other hand, has the means and determination to stand up for the environmental cause in an unexpected way — by organizing global school strikes for climate inspired by one Swedish teenager Greta Thunberg.

Previous research

Previous research on young people's engagement with the environment in relation to news consumption is far from extensive, but it has — similarly to research on adults — arrived at the conclusion that the news media might advance engagement. The empirical evidence comes from different national contexts, for instance, the United States [E. B. Lee, 2008], Norway [Fløttum, Dahl and Rivenes,

2016], and Turkey [Özdem et al., 2014]. Studies of Hong Kong and Singaporean teenagers conclude that exposure to environmental news is positively associated with environmental efficacy — a belief that their contribution matters — and with behavioural intention to engage with environmentally friendly practices [K. Lee, 2011; Lin, Li and Bautista, 2016]. Furthermore, young people's general news consumption, that is, consumption of news not only on environmental issues, seems to also be related to pro-environmental behaviour [Strandbu and Skogen, 2000] and to provide food for discussions about environmental issues with friends and family [Östman, 2014]. Drawing on political socialization theories, Östman [2014] shows that both offline and online news consumption among Swedish youth is associated with conversations about the issues, which in turn predict engagement with pro-environmental practices in everyday life.

What is less known is if news consumption makes a difference in terms of engagement among adolescents who *share* sceptical attitudes towards climate science. Similarly to what research on adults has concluded, Corner, Whitmarsh and Xenias [2012] verify confirmation bias among young people in their experiment with undergraduate students in the United Kingdom. Similarly, when interpreting conflicting information, American high school biology students (aged 14–17) reported that the most convincing position was the one that discussed consequences which were coherent with their existing beliefs, to which they could relate [Sadler, Chambers and Zeidler, 2004]. A few other studies that analysed actual news habits among young people found no connection at all between news consumption and climate-change scepticism [Ryghaug, Sørensen and Næss, 2011]. In a recent study, Nelms et al. [2017] found that only young people who identified themselves as environmentally engaged consumed a great deal of news. These findings suggest that for young people who are sceptical of climate science, the news media play no role at all simply because they do not consume news. However, to cast all sceptical adolescents as news avoiders may be misleading. In an earlier study by Ojala [2015], no association between news media use and climate-change scepticism among youth was found, and the absence of even negative association opens up the possibility that we may find frequent news consumers among sceptics too.

Aim and research questions

As shown by Ryghaug, Sørensen and Næss [2011], young people's environmental (dis)engagement is a result of multiple influences, of which climate-change scepticism is one. Everyday pro-environmental practices such as recycling, saving energy, and using public transport can be fostered by home or school routines or by public connection to broader societal values through news media. Therefore, the aim of the present study is to contribute knowledge about if and how young people who share sceptical attitudes but differ in frequency of news consumption also differ in environmental (dis)engagement, and whether these patterns change over time. To understand these differences, we will compare the level of their environmental engagement with that of non-sceptical youth.

This investigation is broken down into three research questions, each of which encompasses a comparison between teenagers in early and late adolescence. The research questions will be answered by means of quantitative data from a longitudinal programme studying young people's political development in

Sweden. In order to establish whether there are sceptical adolescents with different news habits, the first research question is the following:

RQ1: What types of adolescents — in terms of attitudes towards climate change and news habits — can be identified and distinguished?

In the second research question we focus our attention on sceptics with different news consumption patterns:

RQ2: How do the identified types of adolescents differ in their environmental (dis)engagement?

The vast majority of studies about the relationship between environmental engagement and the news media are based on cross-sectional data. The present study will take a longitudinal approach in order to also track changes in environmental (dis)engagement. The longitudinal design is particularly relevant in a study on young people since adolescence is a period of intense development and maturation, in contrast to adulthood, where beliefs and behaviours are rather stable [Flanagan, 2013]. This leads to the third research question:

RQ3: How does the environmental (dis)engagement of sceptics with various news habits change over time?

Structure

To investigate if news habits can make a difference in sceptics' environmental (dis)engagement, this study does not pursue the usual path of variable-based statistics that establishes the relationship between the characteristics in question. Instead, we focus on the adolescents themselves and classify them into different types based on their news habits and degree of scepticism towards climate change. In further analysis, we use the identified types to compare adolescents' environmental (dis)engagement. To avoid making generalizations based on one wave of cross-sectional data, we run those comparisons in two cohorts that include 13-, 14-, 16-, and 17-year-olds. To understand the dynamics of environmental (dis)engagement in adolescence, we use the identified types again in the longitudinal analysis of the behaviour change. We conclude the study with a discussion about the varying roles of news habits for sceptical youth at different ages and outline methodological insights relevant for understanding the role of news habits in adolescents' environmental engagement.

Material and method

The data used in this study are from a Swedish case, where there were never really any strong hesitations regarding the truthfulness of the greenhouse theory [Zannakis, 2009]. This public discourse is reflected in media coverage — the mainstream media depict climate change as anthropogenic in nature and established with scientific certainty [Olausson, 2009; Shehata and Hopmann, 2012].

In general, the Swedish population has been characterised by a high level of environmental awareness. Tackling climate change remained a priority in Sweden even during the global financial crisis. In early 2009, 82% of Swedes responded that climate change was the most serious problem facing the world. This can be

compared to 50% of the total EU-27 sample [European Commission, 2009]. Almost a decade later, 87% of Swedes said they separated their waste for recycling, 79% reported cutting down on use of single-use plastic bags, and for 70% ecolabels play an important role in purchasing decisions [Eurobarometer, 2017]. Only 11% of Swedes doubted or denied the climate change [European Investment Bank, 2018].

Procedure

The study uses survey data from a longitudinal programme studying young people's political development, conducted in Örebro, Sweden. The survey was filled out during school hours, and participation was voluntary. Parental consent was obtained prior to the data collection. Each class received a reward of approximately €100 for their participation. A national regional ethics board approved all procedures.

Participants

All participants in the study come from a city of 137,000 inhabitants in central Sweden. The city is representative of the country as a whole in terms of demographics and socio-economic indicators such as unemployment rate, family income, population density, and political affiliations. The proportion of young people whose parents were born outside Sweden is slightly higher than the national average (33% vs. 20%; Statistics Sweden, 2010). The sample includes two cohorts: 13-to-14-year-old students and 16-to-17-year-old students from 13 (out of 26) secondary grammar and vocational schools in the region, from a range of neighbourhoods. Most of the parents had post-secondary education and described their financial situation as favourable.

Three waves of data, collected in 2010 to 2012, were used in the study. The first two waves of data were used to identify different types of adolescents, while the third was only used to predict the changes in environmental engagement among 14-year-old and 17-year-old adolescents. Instead of following the same group of teenagers through their early to late adolescence, the study looks at two cohorts at the same point in time, during the years 2010 and 2011. This means that the cohorts were exposed to the same news content as well as to the same general public discourse on the climate issue.

Cohort 1 (13-year-olds).

- 2010: target sample = 960, N = 904 (94% response rate)
- 2011: target sample = 987, N = 883 (89% response rate)

Cohort 2 (16-year-olds).

- 2010: target sample = 1,052, N = 869 (83% response rate)
- 2011: target sample = 996, N = 807 (81% response rate)

Since the study employs two waves of data for classification, we compared if the adolescents who did not answer the questionnaire the second time differed in key characteristics from those who did answer it. We ran two logistic regressions for the two cohorts with adolescents' environmental behaviour, environmental values, environmental efficacy, scepticism, and news habits (frequency of news consumption) as independent variables. For both cohorts, one variable significantly predicted adolescents' non-participation in the survey as a whole: adolescents who infrequently consumed news participated less than frequent news consumers. Nagelkerke R^2 was low in both cohorts (.07 in the younger and .03 in the older cohort), which indicates that the two groups (those who answered and those who did not answer in the second wave) were not substantially different from each other.

Measures

The extent of *scepticism* was measured with three items that touched upon three different types of environmental scepticism, as defined by Rahmstorf [2004]: 'I doubt that there is a global warming going on' (trend scepticism), 'I doubt that climate change is as big a problem as some researchers claim' (impact scepticism), and 'I doubt that climate change is caused by human emissions' (attribution scepticism). The response options ranged from 1 = 'Does not apply at all', 2 = 'Does not apply so well', 3 = 'Kind of applies', 4 = 'Applies quite well', to 5 = 'Applies perfectly' (α = 0.79 for Cohort 1, α = 0.83 for Cohort 2).

From all individual characteristics that previous studies found relevant to the level of scepticism — age, level of education, income, political views, and gender — only gender will be used as a control variable, as the others do not apply well to adolescents. A previous study also showed that parental level of education and family background (non-EU background) did not predict environmental engagement [Östman, 2014].

Environmental (dis)engagement was measured with two indicators: everyday pro-environmental behaviour and environmental efficacy. As adolescents live with their parents, their pro-environmental practices are strongly influenced by them, and it is reasonable to assume that even sceptics will to some extent recycle and turn off the lights if their parents do so. Therefore, to separate engagement by choice and simply habitual behaviour, a second indicator — environmental efficacy — was used. *Pro-environmental behaviour* was a composite measure that consisted of eight statements that evaluated how often young people 'help their parents to recycle', 'buy environmentally friendly products', 'bicycle or walk instead of being driven by car', 'choose to take public transportation instead of being driven by car', 'save water in the household', 'think about not buying unnecessary things that I do not really need', 'turn off the lights when leaving an empty room', and 'turn off the TV and other home electronics by unplugging them, not just pressing the stand-by button'. The items were assessed on a five-point scale, from 1 = 'Almost never' to 5 = 'Almost always' (α = 0.78 for cohort 1, α = 0.83 for cohort 2). *Environmental efficacy* was measured with four statements: 'I believe that I myself can do something to slow down climate change', 'I'm confident that I myself can do something to save the environment', 'If we all pitch in we can solve many environmental problems', and 'If we work together we can do something about climate change', which were evaluated on a scale from 1 = 'Does not apply at all' to 5 = 'Applies perfectly' (α = 0.85 for cohort 1, α = 0.87 for cohort 2).

News habits were measured according to the frequency of watching and reading traditional news. The choice of focusing on traditional news media is motivated by our conceptualisation of news consumption as a way to sustain public connection; according to Eurobarometer [2017] mainstream media maintains its position as one of the main sources of information about global issues. The measure consisted of three variables: frequency of watching TV news, reading newspapers, and reading online news — on a scale from 1 = 'Never' through 3 = '1–2 days per week' to 5 = 'At least 5 days a week'. Cronbach's alpha reliability was 0.66 for Cohort 1 and 0.62 for Cohort 2. Although it is below acceptable level, the inter-item correlations were high enough (0.39 for Cohort 1 and 0.35 for Cohort 2) to consider it a meaningful measurement.

Data analysis

Traditionally, to investigate if sceptics with various news habits differ in their engagement, a moderation analysis would be employed. However, this approach assumes linearity even when pairwise interactions are added, while in the case of adolescents, nonlinearity is expected to prevail. Although ordinary variable-based models can handle certain nonlinearities and interactions, the analysis tends to become overly complicated. A pattern-based approach, that identifies most frequently observed configurations of given variables in individuals, offers a simple and more nuanced solution [Bergman, 2001].

To answer the first research question — what types of adolescents, in terms of attitudes towards climate change and news consumption habits, can be identified and distinguished — we used a several-step procedure and identified the typical patterns for each age cohort. As we focus on individuals' trajectories of change and examine the same characteristics in the same group of adolescents over two years, we combined the data from both points in time for variables news habits and scepticism to classify adolescents into groups (Bergman [1995] called this procedure i-states as objects analysis (ISOA)). The following classification procedure was carried out separately for Cohort 1 and Cohort 2.

To determine the typical patterns, we used a two-stage cluster procedure. First, all the subjects that had missing data for news habits or scepticism at any point in time were excluded from the sample. The final sample for Cohort 1 consisted of 753 individuals. When information from two points in time was combined, it resulted in 1,506 entries. The final sample for Cohort 2 consisted of 653 individuals and contained 1,306 entries when two points in time were combined. Second, after we standardised the measures of scepticism and news habits — which included data from both points in time — and modified the outliers by replacing them with the next largest value, using Ward's method, we entered the two variables into two hierarchical cluster analyses (separately for each cohort). Third, the final clusters were identified with *K*-means clustering based on the information about the number of clusters that exceeded 67% of the total error sum of squares from the first stage. The main advantage of this classification was that it produced information about an individual's cluster membership at time 1 and time 2 using the same classification principle.

To get a more nuanced picture of the differences in environmental engagement among identified clusters, we looked at existing (dis)similarities at each point in

time and compared trajectories of change for each of the clusters. Hence, we relied on cross-sectional analysis to answer the second research question, whether or not the identified types of adolescents differ in their environmental (dis)engagement, and we employed a series of ANOVAs with multiple planned comparisons. The identified clusters were used to compare the mean levels of pro-environmental behaviour and efficacy of various groups. To determine if there were significant (dis)similarities between sceptical adolescents with different news habits as well as between non-sceptical adolescents with different news habits, we ran simple contrasts.

To answer the third question, how environmental (dis)engagement of sceptics with various news consumption habits changes over time, a longitudinal analysis was employed. We ran a series of multiple regressions with the identified clusters as the independent variable and pro-environmental behaviour and efficacy as the dependent. To incorporate a non-metric independent variable into regression, we transformed the clusters into dummy variables using indicator coding [Hair et al., 2010].

Results

To answer the first research question — what types of adolescents, in terms of attitudes towards climate change and news consumption habits, can be identified and distinguished — we first ran descriptive statistics (Table 1). The *t* tests that compared the two cohorts in 2010 and 2011 revealed that in general younger adolescents had stronger sceptical attitudes but consumed less news than their older peers. In 2011, the older cohort showed significantly higher environmental efficacy and pro-environmental behaviour than the younger cohort.

In the next step, we investigated the relationship between the degree of scepticism and news habits. Two hierarchical cluster analyses of news habits and scepticism for Cohort 1 and Cohort 2 produced a four-cluster solution that explained 67% of the error sum of squares. In the subsequent *K*-means cluster analyses, these four groups presented the following variations in both cohorts: non-sceptics with frequent news consumption, non-sceptics with infrequent news consumption, sceptics with frequent news consumption, and sceptics with infrequent news consumption (see Table 2 with the assigned cluster membership separately for each wave). The group of non-sceptics with infrequent news media use was the largest group for Cohort 1 at age 13 (34.5%) and at age 14 (33%), as well as for Cohort 2 at age 16 (34.6%). However, among 17-year-olds, non-sceptics with frequent news consumption was the largest group (35%).

To answer the second research question — whether the identified types of adolescents differ in their environmental (dis)engagement — we conducted a series of one-way ANOVAs and followed them up with planned comparison. As assessed with the Shapiro-Wilk test ($p > 0.05$), for Cohort 1 pro-environmental behaviour scores were normally distributed for all but sceptics with low media use at age 13; the data for the cohort at age 14 was normally distributed only for sceptics with high media use. The assumption of normality for 'efficacy' was not satisfied for any of the groups at any point in time. For Cohort 2, behaviour scores were normally distributed for sceptical groups but not for non-sceptical ones. The decision to carry out ANOVA nevertheless was made since one-way ANOVA is fairly robust for measuring deviations from normality, the sample sizes were not too small, and the groups were all negatively skewed [Sawilowsky and Blair, 1992]. The

Table 1. Descriptive statistic for the key measurements (mean values for scales from 1 to 5) and t-test comparing means between two cohorts.

	Pro-environmental behaviour, M (SD)	Environmental efficacy, M (SD)	Frequency of news consumption, M (SD)	Scepticism, M (SD)
13 yo (2010) cohort 1	3.00 (0.83)	3.53 (0.95)	2.63 (0.90)	2.32 (1.02)
14 yo (2011) cohort 1	2.93 (0.83)	3.45 (0.96)	2.72 (0.89)	2.24 (0.99)
16 yo (2010) cohort 2	3.04 (0.87)	3.60 (0.94)	3.01 (0.88)	2.07 (1.01)
17 yo (2011) cohort 2	3.04 (0.87)	3.65 (0.92)	3.15 (0.86)	1.94 (0.96)
t-test (difference between 13 yo and 16 yo in 2010)	0.05 ($p = 0.96$)	-1.07 ($p = 0.28$)	8.11 ($p < 0.001$)	4.30 ($p < 0.001$)
t-test (difference between 14 yo and 17 yo in 2011)	-1.89 ($p = 0.06$)	-3.39 ($p = 0.001$)	-9.51 ($p < 0.001$)	6.07 ($p < 0.001$)

Table 2. Cluster solutions after K-Means Cluster Analysis using adolescents' news consumption and scepticism.

		Non-sceptical infrequent news consumers	Non-sceptical frequent news consumers	Sceptical frequent news consumers	Sceptical infrequent news consumers
Cohort 1 (N=753)	News	-.71	.91	1.01	-.63
	Scepticism	-.69	-.73	1.02	.97
13 yo	N	260	180	124	189
14 yo	N	247	194	128	184
Cohort 2 (N=653)	News	-.73	.90	.54	-1.06
	Scepticism	-.66	-.59	1.13	1.01
16 yo	Total N	226	173	148	106
17 yo	Total N	204	230	133	86

assumption of homogeneity of variances, as assessed by Levene's test for equality of variances, was violated only for 'efficacy' at the ages of 14 and 16, and therefore Welch's *F* are reported.

Table 3. Standardized mean values of pro-environmental behaviour for the four clusters across all ages with planned comparisons.

	Non-sceptical frequent news consumers, M (SD)	Non-sceptical infrequent news consumers, M (SD)	Contrast estimate (95% CI)	Sceptical frequent news consumers, M (SD)	Sceptical infrequent news consumers, M (SD)	Contrast estimate (95% CI)	F-value	Eta square
13 yo	0.40 (0.87)	-0.10 (0.96)	0.50 (0.31 to 0.68), p<0.001	0.06 (1.01)	-0.30 (1.09) (0.15 to 0.59), p=0.001	0.36	17.59***	0.07
14 yo	0.26 (0.97)	-0.09 (1.03)	0.36 (0.17 to 0.54), p<0.001	0.17 (0.94)	-0.27 (0.95) (0.21 to 0.66), p<0.001	0.44	11.16***	0.04
16 yo	0.34 (0.95)	0.04 (0.96)	0.3 (0.11 to 0.49), p=0.002	-0.25 (0.94)	-0.29 (1.07) (-0.28 to 0.20), p = 0.74	-0.04	13.92***	0.06
17 yo	0.32[a] (0.91)	0.03[b] (0.95)	0.29 (0.11 to 0.47), p = 0.002	-0.34[c] (1.03)	-0.38[c] (1.02) (-0.30 to 0.22), p=0.74	-0.04	18.46***	0.08

Table 4. Standardized mean values of environmental efficacy for the four clusters across all ages with planned comparisons.

	Non-sceptical frequent news consumers, M (SD)	Non-sceptical infrequent news consumers, M (SD)	Contrast estimate (95% CI), p value	Sceptical frequent news consumers, M (SD)	Sceptical infrequent news consumers, M (SD)	Contrast estimate (95% CI), p value	F-value	Eta square
13 yo	0.29 (0.97)	-0.02 (1.06)	0.31 (0.12 to 0.50), p=0.001	0.03 (0.91)	-0.27 (0.93) (0.08 to 0.52), p=0.008	0.30	10.37***	0.04
14 yo	0.30 (0.97)	-0.01 (1.10)	0.28 (-), p=0.005	0.05 (0.86)	-0.37 (0.87) (-), p<0.001	0.42	16.99***	0.06
16 yo	0.39 (0.81)	0.09 (1.01)	0.29 (-) p= 0.001	-0.27 (1.00)	-0.46 (0.98) (-) p = 0.12	-0.20	24.94***	0.009
17 yo	0.25 (0.86)	0.19 (1.00)	0.06 (-0.12 to 0.24), p=0.50	-0.40 (1.02)	-0.50 (0.92) (-0.36 to 0.16), p=0.46	-0.10	24.00***	0.10

The results show that differences in pro-environmental behaviour (Table 3) and environmental efficacy (Table 4) were statistically significant among the four clusters across all ages. The non-sceptical adolescents with frequent news consumption were the most environmentally engaged, while the sceptics with infrequent news consumption showed the weakest engagement with the environment. However, there was a difference in how younger and older sceptics with frequent news consumption engaged with the environment. At the ages of 13 and 14, such sceptics showed the second highest level of engagement (both behaviour and efficacy) after non-sceptics with the same news habits, that is, a stronger environmental engagement than the non-sceptical adolescents with infrequent news consumption. Thus, among the younger teenagers, those who consumed a lot of news were more engaged than their peers with infrequent news consumption regardless of sceptical attitudes, whereas among the older ones, the non-sceptical groups were more engaged than sceptics, regardless of their news habits.

To understand if the groups that shared attitudes towards climate science but had different news habits significantly differed in their environmental engagement, that is, if news consumption mattered for environmental engagement, we ran two planned comparisons. To correct for these multiple comparisons, we applied Bonferroni adjustment to the level at which statistical significance was accepted, lowering it from 0.05 to 0.025. The findings for non-sceptics showed that frequent news consumers at all ages scored significantly higher on environmental engagement (both behaviour and efficacy) than infrequent news consumers (with one exception: there was no difference in the sense of environmental efficacy among 17-year-olds). As for sceptics, the younger teenagers with frequent news consumption showed a significantly higher level of environmental engagement (both behaviour and efficacy) than those with infrequent news consumption. However, this difference disappeared among older adolescents, where sceptics showed similar degrees of environmental engagement regardless of news habits. Thus, 13- and 14-year-old news consumers exhibited significantly higher levels of environmental engagement regardless of their degree of scepticism. Among older teenagers, however, only non-sceptics with frequent news consumption scored significantly higher on efficacy and were more committed to pro-environmental behaviour.

To address the third research question — how environmental (dis)engagement of sceptics with various news consumption habits changes over time — we ran multiple regressions with behaviour and efficacy at time 2 as the dependent variable controlling for the values of the dependent variable at time 1 and gender. Sceptics with infrequent news consumption were chosen as a reference group. Since the focus lies on their future behaviour when Cohort 1 turned 14 (wave 1) and 15 (turned 2) and Cohort 2 turned 17 (wave 1) and 18 (wave 2), we further refer to them with their age at time 2 (Table 5). For all regressions, there was independence of residuals, as assessed by the Durbin-Watson statistic (values varied from 1.79 to 2.06). Visual examination of scatter plots showed that linear relationships between the dependent variables and all independent variables existed. There was homoscedasticity, as assessed by visual inspection of a plot of studentised residuals versus unstandardised predicted values. As assessed with P-P plot, residuals were normally distributed. As tolerance values ranged from 0.416 to 0.952, they did not present serious concerns for multicollinearity effects. Comparison between R^2 values and adjusted R^2 values revealed no significant loss in predictive power.

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Table 5. Changes in pro-environmental behaviour and efficacy one year later, sceptical infrequent news consumers as a reference group.

	Type N-S	14 yo (2011)			15 yo (2012)			17 yo (2011)			18 yo (2012)		
Pro-environmental behaviour		Beta	95% CI	P value	Beta	95% CI	P value	Beta	95% CI	P value	Beta	95% CI	P value
	Gender	-0.08	-0.22 to -0.04	0.007	-0.16	-0.38 to -0.18	<0.001	-0.09	-0.25 to -0.05	0.002	-0.09	-0.27 to -0.04	0.008
	Pro-env. behaviour (time 1)	0.61	0.55 to 0.67	<0.001	0.59	0.57 to 0.69	<0.001	0.66	0.60 to 0.71	<0.001	0.61	0.53 to 0.67	<0.001
	Non-sceptical infrequent news consumers	0.05	-0.03 to 0.22	0.124	0.07	-0.01 to 0.26	0.066	0.06	-0.04 to 0.25	0.148	0.04	-0.11 to 0.25	0.44
	Non-sceptical frequent news consumers	0.07	0.01 to 0.28	0.037	0.14	0.13 to 0.43	<0.001	0.14	0.12 to 0.42	<0.001	0.05	-0.09 to 0.26	0.34
	Sceptical frequent news consumers	0.06	-0.02 to 0.27	0.095	0.01	-0.13 to 0.19	0.710	0.04	-0.07 to 0.23	0.310	-0.05	-0.29 to 0.09	0.31
	Adjusted R^2	0.40			0.43				0.51		0.43		
	N	751			662			653			522		
Efficacy	Gender	-0.09	-0.30 to -0.07	0.002	-0.04	-0.21 to 0.05	0.236	-0.08	-0.27 to -0.05	0.005	-0.14	-0.42 to -0.12	<0.001
	Efficacy (time1)	0.55	0.50 to 0.62	<0.001	0.58	0.58 to 0.72	<0.001	0.59	0.51 to 0.63	<0.001	0.43	0.37 to 0.54	<0.001
	Non-sceptical infrequent news consumers	0.08	0.02 to 0.31	0.029	0.09	0.03 to 0.38	0.020	0.14	0.10 to 0.43	0.002	0.10	-0.03 to 0.45	0.084
	Non-sceptical frequent news consumers	0.13	0.13 to 0.45	<0.001	0.07	-0.001 to 0.37	0.059	0.14	0.12 to 0.47	0.001	0.06	-0.10 to 0.36	0.0269
	Sceptical frequent news consumers	-0.00	-0.18 to 0.18	0.976	-0.04	-0.31 to 0.10	0.32	0.01	-0.17 to 0.20	0.765	0.02	-0.20 to 0.31	0.666
	Adjusted R^2	0.36			0.38			0.44			0.26		
	N	753			663			653			521		

The results show that the sense of environmental efficacy significantly increased among non-sceptical adolescents one year later, regardless of their news habits (not significant only for 18-year-old non-sceptics with low news consumption). However, there were no statistically significant changes in efficacy among sceptical heavy news consumers. In other words, sceptics who kept themselves informed did not boost their self-beliefs of efficacy more than sceptics uninterested in news.

Pro-environmental behaviour significantly increased only among non-sceptics who frequently consumed news (except for 18-year-old members of this group). There were no statistically significant differences in how pro-environmental behaviour changed over a span of one year between sceptics with frequent and infrequent news consumption.

In sum, one year later, the sceptics with various news consumption habits showed no significant difference in how their engagement had changed.

Discussion

The purpose of this study was to contribute knowledge about if and how young people who share sceptical attitudes but differ in their news habits also differ in environmental (dis)engagement, and whether these patterns change over time. To gain an understanding of the relationship between environmental engagement and news habits among sceptical adolescents in real-life settings, the news media were conceptualised as providing a public space through which connectivity to the surrounding world is sustained [Couldry, Livingstone and Markham, 2007]. Starting from this theoretical foundation, the study went beyond the question 'what is in the message' to the broader question of 'what does it mean to consume news', and shifted analytical focus from a model of influence and effects of particular environmental information in the news media — which is difficult to control outside the experiment — to a model of the news media as a common access point to the world with the potential of creating a sense of belonging to a broader community [Schrøder, 2015].

To begin with, the study confirms that frequent news consumers exist among sceptics too, contrary to the findings of some previous research [Nelms et al., 2017]. Even though the number of sceptics who frequently consumed news was rather low in the sample (between 17% and 22% in four waves of data), this nonetheless means that not all of them are isolated from the public world or uninformed about current affairs.

The answer to the main question of the study — if and how young people who share sceptical attitudes but differ in their news habits also differ in environmental (dis)engagement — is not a straightforward one. News consumers among non-sceptics showed significantly higher engagement in pro-environmental practices in everyday life and significantly stronger conviction that their actions could make a difference than their non-sceptic peers uninterested in following news. However, among sceptics, a similar difference was observed only among 13- and 14-year-olds, while older sceptics had a similar extent of engagement regardless of their news habits. A number of studies suggest that adults' pro-environmental behaviour is associated with awareness of one's interdependence with other people and species with whom we share the planet [Bamberg and Möser, 2007], as well as with conscious preoccupation with the

well-being of future generations [Matsuba et al., 2012]. Flanagan and Gallay [2014] arrived at a similar conclusion about adolescents: their pro-environmental concern is tied to the degree to which they define themselves as interdependent with other people and all living things, and when they feel that their fate is intertwined with that of a group, young people prepare to assume responsibility for the welfare of the group [Brown, 1988]. Thus, one explanation for why consuming a lot of news plays a minor role for sceptical adolescents as compared with non-sceptical ones might be that for these teenagers, the public connection provided by the news media did not succeed in sustaining the sense of belonging to something bigger than themselves, which seems to be crucial for environmental engagement. As noted by Flanagan, Byington et al. [2016], when adolescents lack understanding of our interdependency with other persons and species, it can be an important reason for moral standards not informing their behaviour.

Yet, the results show an interesting paradox: 13- and 14-year-old sceptics with frequent news consumption were significantly more engaged than both sceptics *and* non-sceptics who infrequently consumed news. The older sceptics showed no significant differences in environmental engagement, regardless of news habits. At the same time, on average, younger adolescents showed significantly higher levels of climate-change scepticism than their older peers. This result raises an important question: what do sceptical attitudes actually mean for adolescents? Although they are measured as sceptical attitudes towards scientific claims about the anthropogenic nature of climate change, they might also be a coping mechanism in the face of this large-scale problem. As Morton [2018, p. xxxix] argues, as we are bombarded by environmental information and the urgency of the issue, if we think about it too hard we can get deeply depressed and become 'curled up in denial like a hedgehog'. Research indicates that learning about environmental problems can trigger feelings of anxiety and helplessness [e.g. Searle and Gow, 2010], and in this case, being connected to the public world through the news can lead to negative emotions that need to be coped with. Thus, rather than representing one's rational disagreement with climate science, denying man-made climate change could be a way to decrease emotional discomfort.

Furthermore, in a study about the development of environmental moral identity, Kahn and Peter [2003] conclude that children might hold contradictory beliefs about environmental issues. Younger people's beliefs are also less stable, and early adolescents are therefore more susceptible to others' influence [Hess, 1994]. According to Flanagan [2013], young people's views of the political realm vary in their early- and late-adolescent years. As they accumulate experience and knowledge about society, they also learn to see different perspectives on an issue and to understand the complexity of social and political phenomena. It does not necessarily mean that they will have different opinions about an issue, but their convictions can become weaker or stronger. Age in this case serves as a proxy for accumulated experience and increased cognitive capacity to make abstractions. As preteens mature and their reasoning shifts from hedonistic (orientation to personal gain) to prosocial (orientation to reciprocity in society, to improving the society or community and preventing injustices), their prosocial acts become intrinsically motivated by internalised values and goals rather than by external forces, such as news media in our case [Mussen and Eisenberg, 2001]. Moreover, the advances in perspective-taking skills that occur throughout the adolescent years are believed to contribute to the ability to experience sympathy and to a higher level of moral

reasoning [Eisenberg, 2014]. To comprehend the planetary consequences of man-induced climate change requires a quite high level of abstraction and different moral reasoning, and therefore young adolescents' sceptical attitudes may have a very different meaning and durability than those of older adolescents. More research is needed to understand if sceptical sentiments among youth differ in meaning from the same attitudes in adults.

Finally, although the cross-sectional analysis of this study reveals that adolescents' environmental engagement differs between frequent and infrequent news consumers, the longitudinal analysis shows that over a span of one year, among sceptics there were no statistically significant differences in changes in environmental engagement between frequent and infrequent news consumers. Consequently, even though among sceptical 13- and 14-year-olds, heavy news media users were significantly more engaged than non-users, they did not become more engaged with the environment one year later. These findings have important implications on how the role of the news media is theorised in the field. News consumption may be a part of the identity of environmentally engaged youth, as Nelms et al. [2017] showed in their study, but it is not necessarily the *reason* why they become more (dis)engaged than others. News media may reinforce the engagement of those already committed but have less power to act as a proxy for environmental engagement for the sceptical youth. Young people who recognise their interdependence with other people and species on the planet are also more interested in staying informed about current affairs and therefore consume more news. Thus, news consumption may be simply a means to sustain this public connection and not the driving force of environmentalism. This discrepancy between cross-sectional and longitudinal analyses highlights the necessity to treat knowledge derived from cross-sectional studies with some caution.

A few words about the limitations of the study are necessary. Although we compared the findings across two cohorts, we never directly tested those differences across age. To cross-verify our conclusions, we ran the same tests using later waves of data from the first cohort when our adolescents turned 16 and 17 (years 2013 and 2014) and found patterns similar to those found with adolescents from Cohort 2. When choosing what tests to report, we decided it was important to use the data from the same years — 2010 and 2011 — to make sure that the adolescents had been exposed to similar news content through traditional news channels. Although two cohorts were not tested in one statistical model, we argue that the findings nevertheless suggest that it is necessary to take into account the developmental differences of early and late adolescence and avoid samples with a wide age range.

The data that we employed in this study were collected in 2010 and 2011. As we conceptualised news consumption as public connection and were not interested in the content of the news, the data did not lose relevance for studying adolescents' behaviour. Moreover, as we got similar results for older adolescents in 2010–2011 and 2013–2014, it suggested that the time factor was of minor importance here.

Conclusion

In sum, the results suggest that the news media have the potential to advance environmental engagement among those young people who are already engaged, but not to the same extent among those sceptical of anthropogenic climate change, at least not the older ones. If, as theorised in this study, the news media potentially function as a common point of access to the world, connecting their audience with the public realm and infusing a sense of belonging, why does not this work for sceptics? How might the news media contribute to also making these adolescents feel more connected? Obviously, the reasons for these adolescents' climate-change scepticism become crucial for understanding this question. If, as suggested above, their scepticism in fact functions as a coping mechanism, solely reporting more scientific information about climate change will not reduce this scepticism. Instead, the news might focus on bridging the 'hope gap' that previous research has revealed [Roser-Renouf et al., 2016] and also attempt to 'domesticate' climate change, that is, to provide it with local features to create a sense of proximity, which research has shown is pivotal for fostering environmental engagement [Olausson, 2011]. However, for the creation of *global* connectivity, which is necessary for environmental issues of global scope, such as climate change, this domestication needs to take the shape of extroverted ones [Olausson, 2014], in which climate science becomes embedded in a context of *interconnections* between the global and the local. This is a type of global journalism [Berglez, 2008; Olausson, 2013] that captures and constructs the relevant connections between the local, national, and global scales. This could be particularly relevant for the younger generation who might not simply receive news as (scientific) information but rather as inspiration, imparting a sense of belonging and meaning to their life [Costera Meijer, 2007].

References

Arendt, H. (1958). The human condition. Chicago, IL, U.S.A.: University of Chicago.

Bamberg, S. and Möser, G. (2007). 'Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour'. *Journal of Environmental Psychology* 27 (1), pp. 14–25. https://doi.org/10.1016/j.jenvp.2006.12.002.

Berglez, P. (2008). 'What is global journalism? Theoretical and empirical conceptualisations'. *Journalism Studies* 9 (6), pp. 845–858. https://doi.org/10.1080/14616700802337727.

Bergman, L. R. (1995). *Describing individual development using i-states as objects analysis (ISOA)*. Stockholm, Sweden.

Bergman, L. R. (2001). 'A person approach in research on adolescence: some methodological challenges'. *Journal of Adolescent Research* 16 (1), pp. 28–53. https://doi.org/10.1177/0743558401161004.

Brown, R. (1988). Group processes: dynamics within and between groups. U.K.: Basil Blackwell.

Corbett, J. B. and Durfee, J. L. (2004). 'Testing public (un)certainty of science media representations of global warming'. *Science Communication* 26 (2), pp. 129–151. https://doi.org/10.1177/1075547004270234.

Corner, A., Whitmarsh, L. and Xenias, D. (2012). 'Uncertainty, scepticism and attitudes towards climate change: biased assimilation and attitude polarisation'. *Climatic Change* 114 (3-4), pp. 463–478. https://doi.org/10.1007/s10584-012-0424-6.

Costera Meijer, I. (2007). 'The paradox of popularity: how young people experience the news'. *Journalism Studies* 8 (1), pp. 96–116. https://doi.org/10.1080/14616700601056874.

Couldry, N., Livingstone, S. M. and Markham, T. (2007). Media consumption and public engagement: beyond the presumption of attention. Basingstoke, U.K.: Palgrave Macmillan.

Dayan, D. (2013). 'Conquering visibility, conferring visibility: visibility seekers and media performance'. *International Journal of Communication* 7, pp. 137–153. URL: https://ijoc.org/index.php/ijoc/article/view/1966.

Dixon, G. N. and Clarke, C. E. (2013). 'Heightening Uncertainty Around Certain Science: Media coverage, false balance, and the autism vaccine controversy'. *Science Communication* 35 (3), pp. 358–382. https://doi.org/10.1177/1075547012458290.

Eisenberg, N. (2014). Altruistic emotion, cognition and behavior (PLE: Emotion). London, U.K.: Psychology Press. https://doi.org/10.4324/9781315746135.

Eurobarometer (2017). *Special Eurobarometer 468: Attitudes of European citizens towards the environment*.

European Commission (2009). *Europeans' attitudes toward climate change*. URL: http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_313_en.pdf.

European Investment Bank (2018). *EIB climate survey*. Luxembourg. URL: https://www.eib.org/en/surveys/index.htm.

Flanagan, C. A. (2013). Teenage citizens: the political theories of the young. U.S.A.: Harvard University Press.

Flanagan, C. A., Byington, R., Gallay, E. and Sambo, A. (2016). 'Social justice and the environmental commons'. In: Advances in child development and behavior. Vol. 51. The Netherlands: Elsevier, pp. 203–230. https://doi.org/10.1016/bs.acdb.2016.04.005.

Flanagan, C. and Gallay, E. (2014). 'Adolescents' theories of the commons'. In: Advances in child development and behavior. Vol. 46. The Netherlands: Elsevier, pp. 33–55. https://doi.org/10.1016/b978-0-12-800285-8.00002-9.

Fløttum, K., Dahl, T. and Rivenes, V. (2016). 'Young Norwegians and their views on climate change and the future: findings from a climate concerned and oil-rich nation'. *Journal of Youth Studies* 19 (8), pp. 1128–1143. https://doi.org/10.1080/13676261.2016.1145633.

Hair, J. F., Anderson, R. E., Babin, B. J. and Black, W. C. (2010). Multivariate data analysis: a global perspective. Vol. 7. Upper Saddle River, NJ, U.S.A.: Pearson.

Hansen, A. and Cox, R., eds. (2015). The Routledge Handbook of Environment and Communication. Abingdon, London and New York: Routledge.

Hess, T. M. (1994). 'Social cognition in adulthood: aging-related changes in knowledge and processing mechanisms'. *Developmental Review* 14 (4), pp. 373–412. https://doi.org/10.1006/drev.1994.1015.

Kahn, P. H. and Peter, H. (2003). 'The development of environmental moral identity'. In: Identity and the natural environment. The MIT Press, pp. 113–134. https://doi.org/10.7551/mitpress/3644.003.0008.

Kortenkamp, K. V. and Basten, B. (2015). 'Environmental science in the media: effects of opposing viewpoints on risk and uncertainty perceptions'. *Science Communication* 37 (3), pp. 287–313. https://doi.org/10.1177/1075547015574016.

Lee, E. B. (2008). 'Environmental attitudes and information sources among african american college students'. *The Journal of Environmental Education* 40 (1), pp. 29–42. https://doi.org/10.3200/joee.40.1.29-42.

Lee, K. (2011). 'Understanding Hong Kong adolescents' environmental intention: the roles of media exposure, subjective norm and perceived behavioral control'. *Applied Environmental Education & Communication* 10 (2), pp. 116–125. https://doi.org/10.1080/1533015x.2011.575733.

Leombruni, L. V. (2015). 'How you talk about climate change matters: a communication network perspective on epistemic skepticism and belief strength'. *Global Environmental Change* 35, pp. 148–161. https://doi.org/10.1016/j.gloenvcha.2015.08.006.

Lin, T. T. C., Li, L. and Bautista, J. R. (2016). 'Examining how communication and knowledge relate to Singaporean youths' perceived risk of haze and intentions to take preventive behaviors'. *Health Communication* 32 (6), pp. 749–758. https://doi.org/10.1080/10410236.2016.1172288.

Marx, S. M., Weber, E. U., Orlove, B. S., Leiserowitz, A., Krantz, D. H., Roncoli, C. and Phillips, J. (2007). 'Communication and mental processes: Experiential and analytic processing of uncertain climate information'. *Global Environmental Change* 17 (1), pp. 47–58. https://doi.org/10.1016/j.gloenvcha.2006.10.004.

Matsuba, M. K., Pratt, M. W., Norris, J. E., Mohle, E., Alisat, S. and McAdams, D. P. (2012). 'Environmentalism as a context for expressing identity and generativity: patterns among activists and uninvolved youth and midlife adults'. *Journal of Personality* 80 (4), pp. 1091–1115. https://doi.org/10.1111/j.1467-6494.2012.00765.x.

Morton, T. (2018). Being ecological. U.S.A.: MIT Press.

Morton, T. A., Rabinovich, A., Marshall, D. and Bretschneider, P. (2011). 'The future that may (or may not) come: How framing changes responses to uncertainty in climate change communications'. *Global Environmental Change* 21 (1), pp. 103–109. https://doi.org/10.1016/j.gloenvcha.2010.09.013.

Mussen, P. and Eisenberg, N. (2001). 'Prosocial development in context'. In: Constructive & destructive behavior: implications for family, school, & society. Ed. by A. C. Bohart and D. J. Stipek. Washington, DC, U.S.A.: American Psychological Association, pp. 103–126. https://doi.org/10.1037/10433-005.

Nelms, C., Allen, M. W., Craig, C. A. and Riggs, S. (2017). 'Who is the adolescent environmentalist? Environmental attitudes, identity, media usage and communication orientation'. *Environmental Communication* 11 (4), pp. 537–553. https://doi.org/10.1080/17524032.2016.1275733.

Ojala, M. (2015). 'Climate change skepticism among adolescents'. *Journal of Youth Studies* 18 (9), pp. 1135–1153. https://doi.org/10.1080/13676261.2015.1020927.

Olausson, U. (2013). 'Theorizing global media as global discourse'. *International Journal of Communication* 7, pp. 1281–1297.

Olausson, U. (2009). 'Global warming-global responsibility? Media frames of collective action and scientific certainty'. *Public Understanding of Science* 18 (4), pp. 421–436. https://doi.org/10.1177/0963662507081242.
— (2011). '"We're the ones to blame": citizens' representations of climate change and the role of the media'. *Environmental Communication* 5 (3), pp. 281–299. https://doi.org/10.1080/17524032.2011.585026.
— (2014). 'The diversified nature of "domesticated" news discourse'. *Journalism Studies* 15 (6), pp. 711–725. https://doi.org/10.1080/1461670x.2013.837253.
Östman, J. (2014). 'The influence of media use on environmental engagement: a political socialization approach'. *Environmental Communication* 8 (1), pp. 92–109. https://doi.org/10.1080/17524032.2013.846271.
Özdem, Y., Dal, B., Öztürk, N., Sönmez, D. and Alper, U. (2014). 'What is that thing called climate change? An investigation into the understanding of climate change by seventh-grade students'. *International Research in Geographical and Environmental Education* 23 (4), pp. 294–313. https://doi.org/10.1080/10382046.2014.946323.
Poortinga, W., Spence, A., Whitmarsh, L., Capstick, S. and Pidgeon, N. F. (2011). 'Uncertain climate: An investigation into public scepticism about anthropogenic climate change'. *Global Environmental Change* 21 (3), pp. 1015–1024. https://doi.org/10.1016/j.gloenvcha.2011.03.001.
Rahmstorf, S. (2004). 'The climate sceptics'. In: Weather Catastrophes and Climate Change. Ed. by Münchner-RE. München, Germany: PG Verlag, pp. 76–83.
Roser-Renouf, C., Maibach, E., Leiserowitz, A. and Rosenthal, S. (2016). *Global warming's six Americas and the election, 2016*. New Haven, CT, U.S.A.
Ryghaug, M., Sørensen, K. H. and Næss, R. (2011). 'Making sense of global warming: Norwegians appropriating knowledge of anthropogenic climate change'. *Public Understanding of Science* 20 (6), pp. 778–795. https://doi.org/10.1177/0963662510362657.
Sadler, T. D., Chambers, F. W. and Zeidler, D. L. (2004). 'Student conceptualizations of the nature of science in response to a socioscientific issue'. *International Journal of Science Education* 26 (4), pp. 387–409. https://doi.org/10.1080/0950069032000119456.
Sawilowsky, S. S. and Blair, R. C. (1992). 'A more realistic look at the robustness and type II error properties of the t test to departures from population normality'. *Psychological Bulletin* 111 (2), pp. 352–360. https://doi.org/10.1037/0033-2909.111.2.352.
Schrøder, K. C. (2015). 'News media old and new: fluctuating audiences, news repertoires and locations of consumption'. *Journalism Studies* 16 (1), pp. 60–78. https://doi.org/10.1080/1461670x.2014.890332.
Searle, K. and Gow, K. (2010). 'Do concerns about climate change lead to distress?' *International Journal of Climate Change Strategies and Management* 2 (4), pp. 362–379. https://doi.org/10.1108/17568691011089891.
Shehata, A. and Hopmann, D. N. (2012). 'Framing climate change'. *Journalism Studies* 13 (2), pp. 175–192. https://doi.org/10.1080/1461670x.2011.646396.
Strandbu, Å. and Skogen, K. (2000). 'Environmentalism among Norwegian youth: different paths to attitudes and action?' *Journal of Youth Studies* 3 (2), pp. 189–209. https://doi.org/10.1080/713684371.

Zaller, J. (1992). The nature and origins of mass opinion. Cambridge, U.K.: Cambridge University Press.
Zannakis, M. (2009). Climate policy as a window of opportunity. Sweden and global climate change. Sweden: Department of Political Science, Statsvetenskapliga institutionen.

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