



Beware of climate change skeptic films



Tobias Greitemeyer*

University of Innsbruck, Department of Psychology, Innrain 52, A - 6020 Innsbruck, Austria

ARTICLE INFO

Article history:

Available online 18 June 2013

Keywords:

Climate change
Attitude toward the environment
Consideration of future consequences
Media effects

ABSTRACT

Although there is broad scientific consensus that global warming is happening and that it is human-caused, these issues are denied by climate change skeptics. The present two studies examined to what extent (and why) climate change affirming and climate change skeptic films are successful in affecting people's environmental concern. Relative to a neutral film condition, watching a climate change skeptic film decreased environmental concern, whereas watching a climate change affirming film did not affect participant's concern. Mediation analyses showed that watching a climate change skeptic film decreased participants' consideration of future consequences, which in turn decreased their environmental concern. Possible reasons why climate change affirming films did not affect participant's environmental concern are discussed.

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1. Introduction

Temperature records show that the global surface air temperature is on the rise. From 1880 through 2011, nine of the ten warmest years are in the 21st century, with the only exception being 1998. This trend appears to be caused mainly by increased anthropogenic emissions of greenhouse gases (Oreskes, 2004). Although there is broad scientific consensus that global warming is happening and that it is human-caused, these issues are questioned by climate change skeptics. Both climate change advocates and climate change skeptics aim to shape people's environmental concern. For instance, there are climate change affirming films that describe the fatal consequences of global climate change if humans do not reduce emissions of greenhouse gases. In contrast, climate change skeptic films question the scientific consensus on global warming and its anthropogenic causes.

In fact, people appear to get much of their information about global warming from media reports (Stamm, Clark, & Eblacas, 2000). It is noteworthy that beliefs in global warming are influenced by (relatively) stable factors, such as sex, political attitudes, and race, with males, Republicans, and Caucasians endorsing lower beliefs that global warming is occurring (e.g., Feygina, Jost, & Goldsmith, 2010), but also by situational factors. For instance, individuals showed elevated levels of belief in global warming when they perceived the local temperature of the day to be warmer than usual. Likewise, they were less likely to believe in global warming when they perceived the temperature to be colder than usual

(Li, Johnson, & Zaval, 2011). Other research (Joireman, Truelove, & Duell, 2010) has found that completing a simple word search puzzle that contained words related to heat increases people's belief in global warming.

The present two studies empirically addressed to what extent watching brief films that either aimed to make aware or question the problem of global warming affects a concept that is only indirectly linked with the media content. Concretely, it was examined whether participant's environmental concern may be susceptible to watching climate change films. The use of environmental concern as the dependent variable as opposed to global climate change attitudes more specifically enables a more conservative test of the notion that media exposure may affect people's attitude toward the environment. In addition, Study 2 tested why film exposure would affect environmental concern. As will be reasoned below, it was expected that differences in consideration of future consequences would underlie the effect.

Global climate change poses one of the greatest challenges that humans are facing nowadays (Swim et al., 2011). Human household actions have a considerable impact on global warming (Dietz, Gardner, Gilligan, Stern, & Vandenbergh, 2009), so individuals can worsen but also help to mitigate the severity of the problem. Thus, the extent to which climate change affirming and climate change skeptic films are successful in shaping people's environmental concern may have far-reaching implications.

2. The present research

Two studies examine the hypotheses that (relative to a neutral film condition) (a) watching a climate change affirming film leads

* Tel.: +43 (0)51250737452; fax: +43 (0)5125072835.

E-mail addresses: Tobias.Greitemeyer@uibk.ac.at, tobias.greitemeyer@uibk.ac.at.

to more environmental concern and (b) watching a climate change skeptic film leads to less environmental concern. Study 2 also provides a test of a possible underlying mechanism (i.e., consideration of future consequences). Studies 1 and 2 employed different films and different scales to measure environmental concern (Study 1: attitudes toward the environment; Study 2: apathy about the environment). On the one hand, this diminishes the ability to compare the two studies' findings. On the other hand, this allows drawing more general conclusions. I will return to this point in the General Discussion. Because mood has been shown to affect how the content of persuasive messages is processed (Wood, 2000), in both studies I controlled for participant's mood.

3. Study 1

Study 1 provides a first test of the hypothesis that participant's environmental concern is affected by media exposure. Concretely, it was expected that (relative to watching a neutral film) watching a climate change affirming film would lead to positive attitudes toward the environment, whereas watching a climate change skeptic film would lead to negative attitudes toward the environment.

3.1. Method

Participants were 97 students from the University of Innsbruck (Austria) who participated for course credit. Among all participants two prizes of 25 Euros were also raffled. All participants were randomly assigned to one of three film conditions (climate change affirming vs. climate change skeptic vs. neutral). There were 33 participants in the climate change affirming condition, 36 participants in the climate change skeptic condition, and 28 participants in the neutral condition.

Participants in the climate change affirming condition watched "Children of the flood." The film is set in the year 2032 and features the fictitious fate of three families from different parts of the world that are afflicted by permanent flooding caused by melting icebergs. Participants in the climate change skeptic condition watched "The great global warming swindle," in which scientists dispute that global warming is caused by anthropogenic production of carbon dioxide. Participants in the neutral condition watched "Forgotten country in the Mekong Region." The film is about life in Laos, without any reference to climate change. The length of both the climate change affirming film and the neutral film was 15 min. The length of the climate change skeptic film was 41 min. However, participants watched only the first 15 min. Watching the first 15 min was sufficient for participants to receive the message of the climate change skeptic film, as perceived by the current researchers.

Afterward, participants responded to two questions measuring their liking of the film and two questions measuring how convincing the film was. To measure mood, participants completed the Positive and Negative Affect Scales (PANAS, Watson, Clark, & Tellegen, 1988). Then, participants responded to the New Ecological Paradigm (Dunlap, Van Liere, Mertig, & Jones, 2000), which is a frequently used measure of attitudes toward the environment. The scale comprises 15 items. Sample item: "When humans interfere with nature it often produces disastrous consequences." All items were assessed on a scale from 1 to 5. For all scales, items were averaged using the mean. Finally, participants were thanked, received their course credit, and were fully debriefed.

3.2. Results

All means and standard deviations are reported in Table 1. As predicted, there was a significant effect of type of film on

Table 1

Means and standard deviations (in parentheses) for dependent measures as a function of type of film.

	Type of film		
	Climate change affirming	Climate change skeptic	Neutral
Study 1			
Attitude toward the environment	3.86 (0.47)	3.59 (0.33)	3.98 (0.39)
Positive mood	2.19 (0.54)	2.44 (0.63)	2.70 (0.70)
Negative mood	2.21 (0.77)	1.56 (0.44)	1.35 (0.41)
Liking of film	3.27 (0.92)	3.26 (1.04)	3.82 (0.60)
How convincing was the film	4.67 (0.43)	4.42 (0.59)	4.07 (0.80)
Study 2			
Apathy about the environment	2.01 (0.55)	2.50 (0.58)	2.03 (0.57)
Consideration of future consequences	3.70 (0.63)	3.36 (0.61)	3.83 (0.50)
Mood	0.66 (1.47)	1.17 (1.15)	1.55 (0.89)
Arousal	−0.65 (1.18)	−0.49 (1.02)	−0.02 (0.93)

environmental attitudes, $F(2, 94) = 8.39, p < .001$. Planned contrasts revealed that participants in the climate change skeptic condition reported more negative attitudes toward the environment than participants in the climate change affirming condition, $t(94) = 2.85, p < .01$, and participants in the neutral condition, $t(94) = 3.92, p < .001$. Unexpectedly, reported attitudes did not differ between the climate change affirming and the neutral condition, $t(94) = 1.17, p = .25$.

For both positive, $F(2, 94) = 5.01, p < .01$, and negative mood, $F(2, 94) = 19.36, p < .001$, mood reports significantly differed among experimental conditions. Post hoc tests revealed that participants in the climate change affirming condition experienced less positive mood and more negative mood than participants in the neutral condition. They also experienced more negative mood than participants in the climate change skeptic condition. Liking, $F(2, 94) = 3.85, p < .05$, as well as how convincing the film was, $F(2, 94) = 7.13, p < .01$, also significantly differed across experimental conditions. Post hoc tests revealed that liking of the neutral film was greater than liking of the other films, whereas the neutral film was perceived as less convincing than the climate change affirming film. However, when controlling for positive, negative mood, liking, how convincing the film was, and participant sex, the effect of type of film on environmental attitudes remained significant, $F(2, 89) = 13.49, p < .001$.

3.3. Discussion

Study 1 provides partial support for the hypotheses. As expected, watching a climate change skeptic film led to negative environmental attitudes. Unexpectedly, watching a climate change affirming film did not lead to positive attitudes. I will return to this point in the General Discussion. Moreover, these findings were neither due to differences in liking, how convincing the films were perceived to be, nor reported mood.

Why does watching a climate change skeptic film decreases environmental concern? Previous research has shown that individuals who consider the future implications of their activities are more likely to behave sustainable (Joireman, Van Lange, & Van Vugt, 2004). Climate change skeptics argue that global warming (if it occurs at all) is hardly affected by human behavior. It is thus reasoned that watching a climate change skeptic film decreases the likelihood that people take in the potential future outcomes of their activities into account, which in turn negatively affects their

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