

Evaluation of the Documentary “A Life on Our Planet” as a Method to Influence the Attitude towards the Destruction of the Natural World

- This study measures the influence of the documentary “A Life on Our Planet” on six dimensions representing the attitude towards the destruction of the natural world.
- Schwartz norm activation model was used to create the dimensions.
- The dimensions represent hope, awareness of the consequences caused by animal agriculture, connectedness to nature, motivation to act against environmental destruction, shifting of responsibility, and helplessness.
- Significant changes were observed on all scales except shifting responsibility using paired and independent t-tests, with motivation and hope showing the highest effect sizes.
- The results show that the object under investigation has positive immediate effects on the attitude towards the destruction of the natural world.
- Since the survey was conducted as part of a master's thesis at the Cologne University of Technology, there are several limitations, such as demand characteristics and a non-representative sample.

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01/2022

DOI: 10.13140/RG.2.2.28455.42402

Introduction

Although scientists have been aware that human interaction with the natural environment needs to adapt in the long term, the transition of this knowledge to economy, politics, and society has been difficult. Human behavior and risk perception are not only determined by reason and rationale but by imagery, values, and affect (Leiserowitz, 2006). Because of these circumstances, scientists evaluate communication that does not just incorporate information but also uses imagery, narrative, and emotion to deliver information. One example is the documentary “An Inconvenient Truth”, which was found to affect psychological mood, attitudes towards climate change (Beattie et al., 2011), voluntary carbon offsets (Jacobsen, 2011), climate change knowledge and concern paired with the willingness to reduce emissions (Nolan, 2010). Further documentaries were found to affect environmental sensitivity (Barbas et al., 2009) and long-term conservation behavior (Hofman & Hughes, 2018). Significant changes in various attitudinal and behavioral categories through documentaries and films provide grounds for further research. However, the high number of evaluation objects and a lack of standardized questionnaires complicate comparability between studies.

David Attenborough is a famous narrator of nature documentaries for decades. One of his recently published documentaries called “A Life on Our Planet” emphasizes the negative impact of humanity on nature and provides possible solution approaches to reduce such a negative impact. The documentary reached 9 out of 10 stars on the popular movie database IMDb and was entitled “majestic” by the New York Times (Winkelmann, 2020). Since the documentary was only published in 2020, there is no research yet on its potential effects on the viewer.

The presented study was set out to answer the following question: Can the documentary “A Life on

Our Planet” change attitudes towards environmental destruction?

Literature Review

George Gerbner (1998) developed the cultivation theory to create a model which can display the growing influence of mass media on the human perception of the outside world. Although media consumption has increased since 1998, Bennett and Iyengar (2008) have highlighted that studying media effects on perceptions and behavior has become increasingly difficult due to the increased number of options available (Statista, 2021).

Jacobsen (2011) found that watching “An Inconvenient Truth” can increase CO2 compensation payments by 50 percent for the following two months. Hofman and Hughes (2018) identified that a documentary related to marine ecosystems can encourage intentions and behavior significantly. Sakellari (2015) identified communication based on fear as effective in the short term but preventing a behavioral change in the audience in the long run. O’Neill and Nicholson-Cole (2009) found that fearful climate change communication can lead to a refusal to deal with the topic because of its complexity and the role of the individual within this subject. Jarymowicz and Bar-Tal (2006) pointed out that fear displaces hope, underlining the risk incorporated in fearful communication. The findings demonstrate that documentaries aiming at altering attitudes and behaviors could also lead to the opposite effect.

Different theories are used to explain pro-environmental behavior and its predictors, with Ajzen’s theory of planned behavior and Schwartz’s norm activation model being two of the most prominent examples. In the past, scientists used the theories both individually and in combination to explain sustainable attitudes and behaviors. Examples are studies, which analyzed the behavior of travelers (Meng et al., 2020), the influence of pride and guilt

on sustainable consumption and traveling behavior (Onwezen et al., 2013), or waste sorting (Setiawan et al., 2020).

Salomon et al. (2017) analyzed climate change helplessness, Ojala (2012) investigated the influence of hope on behavior and Punzo et al. (2019) researched the influence of responsibility on pro-environmental behavior. According to Schwartz (1977) helplessness and a lack of hope or responsibility can prevent altruistic behavior. These are examples of studies that found specific steps incorporated in the norm activation model to be predictors of pro-environmental behavior. Therefore, Schwartz's model is used as a theoretical framework for explaining the underlying processes of attitudinal change.

Impact Model

Although the impact of humans on nature is well documented and researched, European households were found to have high carbon footprints in many regions (Ivanova et al., 2017). The literature provides multiple reasons for this inadequacy, ranging from a lack of responsibility or awareness to fatalistic beliefs or a lack of connectedness to nature (Punzo et al., 2019; Sanchez-Sabate and Sabaté, 2019; Mayer & Smith, 2019; Otto & Pensini, 2017; Whitburn et al., 2020). This is the initial situation. By changing the way of thinking toward the destruction of nature, the chance to behave in an environmentally friendly way should be increased and the above-mentioned inadequacies should be reduced. This is the target situation.

First, the documentary illustrates the extent of the destruction by showing the human-caused decline of wilderness. The subsequent devastating view of the future shown in the documentary risks leading to more helplessness (Hughes et al., 2020, 00:49). However, by demonstrating the seriousness in the first 50 minutes and the solution approaches in the last 30 minutes, lost hope should be restored at the end of the film (Hughes et al., 2020). "All we

need is the will to do so" (Hughes et al., 2020, 01:16). With the almost last sentence, the narrator addresses the audience directly, which builds trust and should reduce the audience's rejection of responsibility and motivate for action (Schwartz, 1977, p. 249). In addition, two short sequences illustrate that eating meat demands high amounts of space, which results in huge farmlands that replace the natural world (Hughes et al., 2020, 01:06). Mayer (2009) found that being exposed to nature virtually increases the connectedness to nature. This effect is stronger when being exposed to real nature. These are just a few excerpts from all parts of the documentary that should influence the attitude of the viewers. The following hypotheses are formed based on the initial situation and the imagery and narrative of the documentary.

Figure 1 illustrates the impact model.

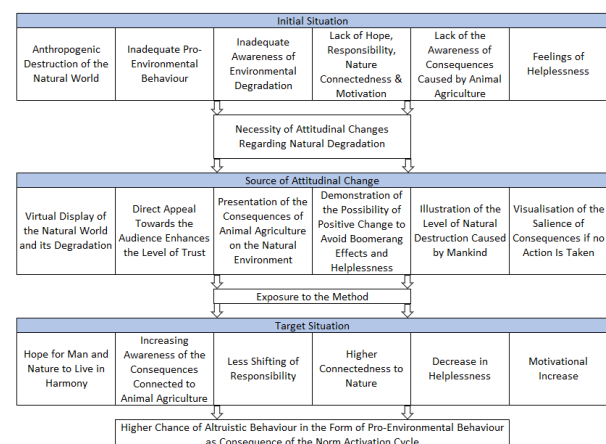


Figure 1: Impact Model for Changes in the Attitude Towards the Destruction of the Natural World (Own Representation)

Hypotheses

The participants exposed to the method will have significantly higher hope, awareness of the consequences caused by animal agriculture, connectedness to nature, and motivation and show a significantly lower shifting of responsibility and helplessness than the participants in the control group.

Methodology

To test the hypotheses, psychometric question bundles were created with the help of the literature as well as the content and narrative of the object under investigation. A pre-test post-test control group design was chosen to evaluate the documentary's influence on a participant's attitudes. While the experimental group was exposed to "A Life on Our Planet", the control group viewed the documentary "Smart Kids – Children and Digital Media", which was expected not to influence the attitude towards the destruction of the natural world. Although a random separation of participants into groups would be preferable, limited access to video-on-demand services providing the documentaries made a randomized study unfeasible. Participants were allocated based on their individual access to the video-on-demand services Amazon Prime (Smart Kids – Children and Digital Media) and Netflix (A Life on Our Planet).

Between 06 of December 2020 and 24 of January 2021, 116 datasets were collected. Subjects were recruited through direct contact within the social surroundings of the author, including co-workers, friends, family members, and social media. It was beyond the scope of this study to recruit a representative sample. After the collection of data was completed, invalid datasets were excluded. Reasons for exclusion of datasets were an early termination of the questionnaire (n=15) or an inadequate amount of time between the pre- and the post-questionnaire revealing that the participants were not exposed to the method (n=23). Table 1 shows the sociodemographic characteristics of the sample.

Baseline Characteristic	Experimental group		Control Group		Full Sample	
	n	%	n	%	n	%
Gender						
Female	17	44.7	19	47.5	36	46.2
Male	21	55.3	21	52.5	42	53.8
Age (in years)						
18-25 Years	12	31.6	12	30	24	30.8
26-32 Years	16	42.1	14	35	30	38.5
33-55 Years	6	15.8	8	20	14	17.9
>55 Years	4	10.5	6	15	10	12.8
Living Area						
Rural	7	18.4	2	5	9	11.5
Suburban	6	15.8	16	40	22	28.2
Urban	17	44.7	8	20	25	32.1
Major City	8	21.1	14	35	22	28.2

Table 1: Sociodemographic Characteristics of Participants at Baseline

Analysis & Results

After cleaning up the datasets, various calculations were computed with SPSS Statistics to test if all assumptions were met and whether the hypotheses can be confirmed. Cronbach's alpha was computed for the pre- as well as post-test responses. All Alpha values were within an acceptable range, with pre-test scores of responsibilities ($\alpha = 0.62$) and helplessness ($\alpha = 0.63$) showing the lowest values.

Paired t-tests were computed to show changes from pre-test to post-test scores within the control and experimental group. The paired t-test was limited to compare pre-test to post-test scores within and not between groups. Therefore, the pre-test scores were subtracted from the post-test scores to calculate the difference. This difference was then used as input for an independent t-test, which directly compared the experimental group with the control group. All assumptions, including metric scaled variables and normal distribution, were verified. Table 2 demonstrates the results of a paired t-test with one-sided p-values computed with data of the experimental group.

Scale	Pre-test		Post-test		t(37)	p	Cohen's d
	M	SD	M	SD			
Nature Connectedness	78.89	11.27	82.65	10.7	-1.99	.027	0.32
Hope	2.9	0.66	3.27	0.7	-4.93	<.001	0.8
Motivation	4.02	0.7	4.3	0.68	-3.58	<.001	0.58
Shifting Responsibility	2.32	0.67	2.07	0.63	2.79	.004	-0.45
Helplessness	2.71	0.58	2.42	0.68	3.97	<.001	-0.64
Animal Agriculture	4.03	0.77	4.37	0.66	-3.82	<.001	0.62

Table 2: Paired t-Test Results of the Experimental Group

Table 3 presents the results of the paired t-test, including the one-sided p-value for the control group.

Scale	Pre-test		Post-test		t(39)	p	Cohen's d
	M	SD	M	SD			
Nature Connectedness	73.58	17.96	72.59	17.76	1.12	.136	-0.18
Hope	2.88	0.82	3.02	0.84	-2.33	.013	0.37
Motivation	3.79	0.84	3.74	0.85	1.64	.054	-0.26
Responsibility	2.45	0.8	2.36	0.79	1.99	.027	-0.31
Helplessness	2.75	0.65	2.63	0.68	2.21	.017	-0.35
Animal Agriculture	3.76	1.08	3.85	1.04	-1.82	.039	0.29

Table 3: Paired t-Test Results of the Control Group

Table 4 shows the results of the independent t-test. The development of hope and helplessness were measured by the student t-test and the rest of the scales with the Welch test as indicated by the adjusted degrees of freedom. The p-values are one-sided.

Scale	Exp. Group		Control Group		t	df	p	D
	M	SD	M	SD				
Nature Con. (Pre)	78.89	11.27	73.58	17.96	2.28	52.76	.013	0.52
Nature Con. (Post)	82.65	10.70	72.59	17.76				
Hope (Pre)	2.90	0.66	2.88	0.82	2.43	76	.009	0.55
Hope (Post)	3.27	0.70	3.02	0.84				
Motivation (Pre)	4.02	0.70	3.79	0.84	3.94	50.39	<.001	0.91
Motivation (Post)	4.30	0.68	3.74	0.85				
Responsibility (Pre)	2.32	0.67	2.45	0.80	-1.58	55.21	.060	-0.36
Responsibility (Post)	2.07	0.63	2.36	0.79				
Helplessness (Pre)	2.71	0.58	2.75	0.65	-1.79	76	.040	-0.41
Helplessness (Post)	2.42	0.68	2.63	0.68				
Animal Agri. (Pre)	4.03	0.77	3.76	1.08	2.46	58	.008	0.57
Animal Agri. (Post)	4.37	0.66	3.85	1.04				

Table 4: Independent t-Test Results

Table 5 outlines the interpretation of Cohen's effect size with p-values for the paired t-test of the experimental group (EG) and the control group (CG) as well as the independent t-tests (Cohen, 1992, p. 157). It summarizes the variables that are important for hypothesis testing.

Scale	Paired t-test (EG)	Paired t-test (CG)	Independent t-test
Nature Con.	Small Increase*	Small Decrease	Moderate Increase*
Hope	Large Increase***	Small Increase*	Moderate Increase**
Motivation	Moderate Increase***	Small Decrease	Large Increase***
Responsibility	Small Decrease**	Small Decrease*	Small Decrease
Helplessness	Moderate Decrease***	Small Decrease*	Small Decrease*
Animal Agri.	Moderate Increase***	Small Increase*	Moderate Increase**

Table 5: Overview of Results (* $p < .05$ ** $p < .01$ *** $p < .001$)

Discussion & Conclusions

The present study used a web-based survey to examine immediate attitudinal effects caused by the documentary "A Life on Our Planet", which emphasizes the impact of humans on the natural environment. Significant changes in the attitudes of participants were observed for all scales, i.e., nature connectedness, hope, motivation, responsibility, helplessness, and animal agriculture awareness with the help of a paired t-test.

The highest effect size was observed for the change in motivation, with a moderate and large increase in the paired and independent t-test, respectively, both accompanied by a p-value of less than .001. First, it is noticeable that the independent t-test effect is enhanced by the decreasing motivation score in the control group. Second, motivation differs from the other scales because, according to motivational internalism, it emerges with a moral obligation that is the center of Schwartz's norm activation theory (Buckwalter & Turri, 2017, p. 434; Schwartz, 1977). The results could be interpreted in such a way that all scales enhance motivation as an outcome. Increased hope, awareness, or responsibility in this case would all lead to higher motivation. Another interpretation is that the effect on motivation would not be stronger than the effect on the rest of the scales, but the change in motivation was the easiest for the subjects to perceive. This goes back to Schwartz (1977), who included the possibility that individuals pass through the stages without being self-conscious of the process (p. 241). The interpretations are not mutually exclusive. A combination of both is likely to explain the strong positive

effect size of motivation. It is important to note that the pre-test values of motivation and animal agriculture awareness were already above 4 out of 5, showing high receptivity for the topic. Lower pre-test scores offer more room for changes but also increase the chance for denial or even abortion of the experiment.

Hope showed the largest effect size on the paired t-test, represented by a p-value below .001, and moderate effect sizes on the independent t-test. It was hypothesized that the documentary uses the first part to uncover the damage that humankind has already done to nature. Next, the second part gives hope and creates trust by presenting positive changes happening already. The increase in hope suggests that participants being exposed to the method gained the feeling that solutions to the ecological degradation exist (Schwartz, 1977, p. 241). The moderate positive change on the hope scale indicates that although the documentary showed not only humankind's impact on the nature of the past but also the potential destruction if it continues, hope was restored towards the end of the documentary. Boomerang effects, which could have been caused by the presentation of the future predicted by scientists, did not occur. Sakelari (2015) stated that fearful communication promotes short-term effects but prevents long-term changes, and according to Jarymowicz and Bar-Tal (2006) the presence of fear overrules hope, which at least indicates that hope prevailed over fear. Mills (1997) described the dilemma of whether films should show the destruction of nature and risk losing the audience or present untouched nature and display a wrong image. Presenting both in the right proportion with positive pictures towards the end could be a way to bypass this dilemma.

In the context of Schwartz's norm activation process, the findings could be interpreted as follows. High motivation indicates the rise of a moral obligation and with it a completed activation phase. This is supported by high values in hope referring

to a solution being available and animal agriculture awareness referring to the individual being part of the solution (Schwartz, 1977, p. 241). However, no sense of responsibility could be observed. The inaccessibility of responsibility for a problem as abstract as the destruction of the natural world could provide a reason for the rise of the moral obligation despite no significant change on the shifting responsibility scale if Schwartz's model is followed meticulously. This is also supported by the low values for Cronbach's Alpha. According to Schwartz (1977), the rise of a moral obligation is followed by the defense steps in which the individual can overcome the moral obligation using various mechanisms. The low changes on the shifting responsibility and helplessness scale on the independent t-test indicate possible ways for the individual to overcome the moral obligation. This is only the case if the low values are not caused by the difficult accessibility to subconscious processes.

Since Schwartz (1977) describes the norm activation process as a cycle that is run through repeatedly the results indicate that at least in the short-term, exposure to the method influences the cycle positively leading towards altruistic or in this study pro-environmental behavior.

If scientists can confirm the findings of this study for a representative sample, both public and private institutions can utilize and support documentaries emphasizing major challenges of humanity. Governments that intend to initiate steps towards a more sustainable society and economy can use documentaries to prepare the population for change and convince people of the need for a transformation. Companies distributing sustainable products can support the production of documentaries not just to increase their market share, but also to increase the overall market size. In an era of climate change misinformation and fake news, proper means of communication are essential. Simply communicating information without narrative and imagery poses the risk of losing the

competition for attention and, as consequence, not submitting the desired information. Although documentaries using the power of storytelling, imagery, and narrative cannot overcome the attitudinal and behavioral gap between a sustainable and unsustainable society, they can function as a component of the solution. Based on these conclusions, practitioners should consider creating compositions of attitude and behavior-influencing methods to transfer the scientific consensus to the broad population.

Limitations and Further Research

A non-representative sample, various biases, and overall confined resources limit the generalizability of the results. The author collected data in the immediate social environment. Increased knowledge and interest in sustainability issues were expected from this environment, which is reflected in the high animal agriculture awareness and motivation or low shifting responsibility pre-test scores. This is reinforced by the self-selection bias and the high non-response rate, considering that out of 116 original participants, only 78 datasets could be utilized. Studying groups with various sociodemographic variables and groups that are especially critical regarding topics of climate change, biodiversity loss, ecological degradation or sustainability should provide profound insights into differences in perception and receptivity. Another distortion with considerable impact on the results of this experiment is the demand characteristics (Orne, 1962). The study design could not conceal that the aim was to measure the change caused by the documentary “A Life on Our Planet” and the intention of the movie was clearly apparent. That a major part of the data collection process happened in the social environment of the author gave participants an additional incentive to answer according to the anticipated goals of the researcher.

An individual’s attitude towards a certain behavior or the destruction of the natural world, in general,

might lay in the unconscious, which poses a barrier to self-reported questionnaires (Schwartz, 1977). Therefore, it is suggested to study and evaluate ways to bypass the difficulty of measuring processes that might lie within the subconscious. Measuring direct behavior change can be a solution. An example is the measurement of voluntary carbon offsets by Jacobsen (2019). In addition, further research should address the gap in standardized measurement instruments that would ensure comparability between different documentaries. Gollwitzer and Jäger (2014) pointed out that the measurement must be in symmetry with the object of evaluation, making a standardized measurement instrument seem misplaced. However, the creation of multiple question bundles could allow researchers to assemble an individual questionnaire that fits the evaluation object and provides comparability at the same time.

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