The impact of climate skepticism on public participation of climate photos on Instagram: An exploratory study

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Abstract

Climate change in Egypt has led to ecological homogeneity, deteriorated coral reefs, vector-borne disease infection, food insecurity, less water supplies, flooded coastal areas, demolished human habitat and community, and temperature discrepancies. This is not surprising, as carbon dioxide is primarily responsible for the earth's and air's rapid temperature rise. In order to handle probable corrosion and degradation of Alexandria, the coast, and other areas, Egypt is now working on drafting a national plan for climate change adaptation in addition to its first national strategy for climate change. Also look into other crop varieties that are resilient to harsh weather. Eventually, this article serves as a first examination of the difficulties communicators encounter when delivering their message to climate skeptics in an effort to reduce carbon radiation and air contamination. This paper collected data through a survey to test the climate skepticism among youth to determine the epistemic and response skeptics using the quantitative method. The results show that females are more response skeptics than males, and males are more epistemic skeptics than females. There is no relationship between age and being a climate skeptic. Nonetheless, communicators should address both types of skepticism differently, focusing on high public participation on social media. Considering the significance of the findings, understanding Egypt's regional circumstantial aggravation estimates is accommodating. It directs the community and residents to the administration of environment resilience.

Keywords: climate skepticism - Public engagement - Communicators - youth - digital media - climate – Instagram

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تأثير الشك المناخي على المشاركة العامة للصور المناخية على الإنستجرام: دراسة استكشافية

الملخص

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قد أدى تغير المناخ في مصر إلى التجانس الإيكولوجي، وتدهور الشعاب المرجانية، والإصابة بالأمراض المنقولة عن طريق العدوة، وانعدام الأمن الغذائي، وانخفاض إمدادات المياه، والمناطق الساحلية المغمورة بالمياه، وهدم الموائل البشرية والمجتمعات المحلية، والتفاوتات في درجات الحرارة. وهذا ليس مفاجئاً، لأن ثاني أكسيد الكربون هو المسؤول الرئيسي عن ارتفاع درجة حرارة الأرض والهواء. ولمعالجة التآكل والتردي المحتملين في الإسكندرية والسواحل والمناطق الأخرى، تعمل مصر الآن على صياغة خطة وطنية للتكيف مع تغير المناخ بالإضافة إلى استراتيجيتها الوطنية الأولى لتغير المناخ. وايضا البحث عن أصناف محاصيل أخرى تكون قادرة على مقاومة الطقس القاسي. وفي نهاية المطاف، تستخدم هذه المادة كدراسة أولى للصعوبات التي يواجهها المراسلون عند إيصال رسالتهم إلى المتشككين في المناخ في محاولة للحد من الإشعاع الكربوني وتلوث الهواء. وجمعت هذه الورقة بيانات من خلال دراسة استقصائية لاختبار الشكوك المناخية بين الشباب لتحديد المتشككين في وجود التغيرات المناخية وقدرة الانسان في الاستجابة لها باستخدام الطريقة الكمية. وتُظهر النتائج أن الإناث متشككات في قدرة الانسان في الاستجابة والتعامل مع التغيرات المناخية أكثر من الذكور، وأن الذكور متشككين أكثر في وجود تغير المناخ علميا من الإناث. وقد تبين أن ليس هناك علاقة بين العمر وكون الشخص متشكك في المناخ. ومع ذلك، ينبغي أن يعالج القائمون على الاتصال كلا النوعين من المتشككين بطريقة مختلفة، مع التركيز على المشاركة العامة العالية في شبكات التواصل الاجتماعي. وبالنظر إلى أهمية النتائج، فإن فهم تقديرات تفاقم الظروف الإقليمية في مصر أمر مناسب. إنه يوجه المجتمع والمقيمين إلى إدارة مرونة البيئة.

الكلمات المفتاحية: الشكوك المناخية- المشاركة العامة- المراسلون- الشباب- المناخ - الإعلام الرقمي - الانستجرام

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Introduction

Goal #13 on the UN's list of sustainable development objectives is climate action. Climate change is a result of the rapid growth in greenhouse gas emissions, and its repercussions are being felt globally, particularly in developing and less developed nations with low literacy rates. The symbolic nature of imagery related to climate change has received little attention in paper.

Egypt has established five distinct strategic objectives that are in line with Egypt Vision 2030, the country's plan for sustainable development. Among the five strategic objectives is climate. The United Nations Framework Convention on Climate Change (UNFCC) and the Egyptian Supreme Council for Climate Change are working together to address climate change-related issues. Egypt has already developed power generation projects using renewable energy sources, such as solar parks and wind farms. Heatwaves struck Egypt on August 2021. Additionally, the shift to natural gas-powered, more electrified, low-emission vehicles.

Importance of Research

- It guides the citizens and community towards the management of ecosystem resilience.
- It is beneficial to be aware of Egypt's local environmental stressor predictions.

Literature Review

Climate Change Visual Communication

An academic paper titled "Climate Change and Visual Imagery" examines the public's interaction with visual imagery and the expanding research area of climate change representations. It focuses on the creation, arrangement, consumption, and production of various types of climatic pictures. It processes a range of work, including the

discovery of images related to climate change from journalistic sources, NGOs, scientific sources, and artistic creations. As a means of drawing attention to climate change, Greenpeace (an NGO) heavily relies on the nature of illustrated images. Its imagery relies on visual interpretation that depicts imagined landscapes as vulnerable environments. Regarding climate science imagery, it helps define what is deemed socially, economically, and politically acceptable by visualizing historical data, making projections, and illustrating boundaries to what is considered normal. An increasing number of artistic endeavors aim to address climate change and create artwork that depicts the shifting climate. Exhibitions of art are a vital platform for artists to practice their craft and raise public awareness of climate change. An initiative called "350 Earth" uses art to promote a global climate movement. In terms of climate visualizations, many kinds of visual imagery that individuals consume or create help people grasp the future of climate change. Each of which may or may not be well-known, therefore it's important to find out which works. Each kind of imagery has a specific purpose (O'Neill & Smith, 2014).

While some artists' works at visual art can provide thrilling avenues for participation (Braasch, 2013), O'Neill and Smith (2014) suggest that certain depictions are unrealistic and could normalize the problem and discourage the public from interacting with climate change.

Concerning images showing the effects of climate change, O'Neill and Smith (2014) and Braasch (2013) are comparable in that the distant landscapes draw viewers in and suggest salience since they demonstrate how important the issue is even while they do not inspire people to take action. On the other hand, pictures of climate solutions show examples of what each person can do to start positive actions and energy choices. There aren't many pictures that can address the problem of climate change while simultaneously showing its effects.

Compared to those with low pro-environmental orientation, those with high pro-environmental orientation spent more time looking at images of climate change and other unfavorable imagery. Subjects with stronger pro-environmental dispositions generally assessed images as being more relevant to climate change (Sollberger et al., 2017; Lehman et al., 2019).

Prioritized processing is known to be associated with attentional bias. Images linked to climate change cause an attentional bias. Personal variations in ambient nature are linked to this attentional bias (Lehman et al., 2019).

The stress-inducing exercise lessens awareness of images related to climate change. Additionally, stress reduced attentional placement to images of pessimistic control and climate change, which may indicate a diminished interest in transcendental problems and/or increased effort to regulate emotions under stress (Sollberger et al., 2017). However, in order to create a database of competent climate change images that scientists, officials, and other experts can use to compile tasks related to climate adaptation and mitigation, research into the emotional aspects of the images that people find appropriate to the issue is important. According to Lehman et al. (2019), the results imply that images that are thought to be strongly associated with climate change have higher levels of negative affective reactions and emotional stimulation.

It is debatable whether further research is necessary to fully explore the potential for enhancing interactive elements, given that interaction is likely to influence the processes involved in meaning-making. Visualization works well in highly engaging environments to illustrate some aspects of climate change and provide a starting point for thought. Furthermore, viewers' predispositions on climate change impact how they interpret climate messaging, which could act as a barrier to climate communication. Depending on the image's

substance, images related to climate change might evoke either good or negative feelings. It is possible to identify effects on behavioral intentions, but it is yet unclear if these will result in real behavior. Experiments, Q method, or mixed technique approaches are commonly employed in research to investigate the impact of climate change pictures (Ballantyne et al., 2016; Holmes & Richardson, 2020; Kunelius et al., 2017).

Public Engagement on Climate Change

Public Engagement with Climate Imagery in a Changing Digital Landscape, an academic article focused on reviewing previous studies tackling two main scopes: how the portrayal and processing of images is growing in promptly expanding digital landscape, and the effect or possible clue on what forms public opinion for climate imagery. The paper handled precisely the relation between research and practice or knowledge translation on visual climate change communication and it provides a beneficial scheme for mirroring on the link between them. Climate visuals project, developed by Climate Outreach, is a professional concentrated drive, focusing on a list of elements for competent visual climate change communication. They are seven elements: appearance of real people and not actors, present new tales, demonstrate climate causes to an extent, climate impacts images are affectively strong, display domestic but deliberate climate impacts, be alert with oppose imagery and grasp your audience. Currently, theoretical viewpoint on efficient visual climate change communication is narrow. A mature space for theoretical extension is the progress of more directly described depth and index of persuasive climate change imagery. There is a continuous unsettled tension among emotional reactions, efficacy, and salience feedback to climate change imagery also these responses differ significantly in composition and analysis from research to another (Chapman et al., 2017).

In research titled ‘What is Climate Change Skepticism? Examination of the Concept Using a Mixed Methods Study of the UK Public’, explore to clearly comprehend the core of skepticism among public realizing climate change. Based on the cultural theory, the methodology used is multi-approach thus focus group discussions (Qualitative) and survey (Quantitative). The study’s purpose is to attain understanding around public skepticism via individual determination of the data and afterward assimilate the findings and results across the two methods to draw a comprehensive conclusion. For instance, the components arranged to test the concept ‘folk psychology’ did not element inside the response skepticism design. Though, these notion’s components got great levels of concurrence with nearly two thirds of subjects attributed to that public are self-centered to do an action for climate change (Capstick.B & Pidgeon.F, 2012). The current discoveries are attained in a UK ambience. The features of public debate about climate change in Egypt may offer distinctive traits of skepticism over here. According to Capstick.B and Pidgeon.F (2012) indicate that complications of public engagement with climate change, skepticism of reacting to climate change is extra actively related to lack of concern. It is suggested that more efforts are necessary to spot and enroll along with the public’s doubts respecting applicability and efficiency of standards employed to focus on climate change. The best suitable plan might be to accept the validity of aforesaid ambiguity told by the public, however yet this would allow the value of individual and societal act on climate change to be highlighted.

According to Nisbet et al. (2010), in “Four Cultures: New Synergies for Engaging Society on Climate Change” an academic commentary article, scientists concur that climate change is actual, is intensified by human actions and causes damage to the ecosystem. The effects of climate change are numerous such as environmental deterioration and species extinctions. If these effects continue to

escalate, without making control, eventually it will be difficult to take an appropriate act at the right time. Hence, it is essential that collaborations from different disciplines, academic and other organizations meet up to find the suitable plan to deal with climate change. The aim of such meeting is to recognize and construct teamwork in which representatives of commonly distinctive four cultures of specialty that include creative arts and professions, social sciences, environmental sciences and philosophy and religion could achieve cooperatively what no one is able to do alone. When different disciplines work together, this would bring several sources of particular knowledge and involvement to carry on communal engagement and solving environmental issues and climate change. Involving actions and distinctive types of expression which is based on accurate, attainable science, mutual values, and bearing individuality will demand partnership from the four perceptions and the explicit public engagement.

As for Nisbet et al. (2010) imply in case the media is practicing public communication to sell science, attempt to relabel climate debate, advocate political figures who are pro-science, or to promote climate deniers and anti-science supporters, so these media plans are most probably leading to disengagement of the audience and feed polarization. O'Neill and Smith (2014), inferred furthermore, images of politicians and celebrities are strongly weakening feelings of salience.

A new foundation for communication is required to form a societal deed towards climate change in that the audience is allowed to acquire about the social and scientific extents of climate change. The public is stimulated to have an individual liability and tend to interact effectively. The people feel excited and innovatively gets engaged in individual change and corporate actions. For this strategy to be done, teamwork among civilians, researchers, academia, science associations, media, firms, variety of communities, and stakeholders

thus the exerted work of communication for climate change is more varied, personalized, new, visionary, with participation, and appear more attractive (Nisbet et al., 2010). On the other hand, communication done through an effective state, organizational act or in a civic group is the way to deliver the knowledge in which individuals are capable to devote effort cooperatively for climate change can raise person's pro-environmental behavior intensions (Capstick.B & Pidgeon.F, 2012).

According to Williamson et al. (2018) changing behavior to stop environmental damage and slow global warming is particularly hard because of the often-distant link between distinct behaviors and challenges, many of which grow over decades as opposed to what Shank (2020) assured that is political efforts can be beneficial when making quick change with the high motivation from persons and groups to reduce overconsumption of natural resources and adopt sustainable routines that do not exceed the ecological bounds of the globe.

In relation to politics, disconnection is implanted in a generic mistrust regarding political characters and the show up impression of them being inadequate individually. Media coverage of their public scandals with the culture of acrimony can be linked with incompatible information. That is why the public finds it hard to make determined choice about reliability and truthfulness (Philo & Happer, 2016).

ClimateData.US is developed as an interactive visualization tool based on rationalized climate projection data to upsurge proximity and process climate change as salient and individually relevant. This trial assessed whether interacting with ClimateData.US affected subjects' climate change attitudes and concern and whether this impact differed as a purpose of geographic proximity. Findings suggest robust influences nonetheless of geographic proximity for interacting with the website on subjects' anticipated existence of climate change,

attitude assurance, and concern for climate change (Herring et al., 2017) In contrast with a study inferring from focus group discussions that are conducted in Germany and United Kingdom to investigate subjects' values, social views and attitudes to climate change, the outcomes are that nobody in any of the groups stated climate change as a concern instinctively instead concentrating on refugees, poverty and the cost of shelter as the most important matters of concern. The general opinion among German and UK subjects, yet, is that climate change is not a main problem in their lives or in community. Individual lives, mostly monetary issues, are seen as more serious, and climate change a largely hypothetical menace. In all focus groups, though, subjects have spoken avidly about domestic environmental topics such as the sanitation of their area, wrapping, waste or food. Enclosing discussions about climate change and energy use about 'waste' can be an active way of engaging public who may otherwise neglect a message around climate change (Climate Outreach, 2020).

Theoretical Framework

Complexity Theory:

One of the theories of digital media employed in this research is the complexity theory in new media. It is used to new media and emphasizes whether or not digital media can be reduced to a particular number of precise features that is not feasible. This idea is influenced by social determinism rather than technical determinism, which holds that social interactions and constructs—rather than media or high-tech developments—alone affect an individual's behavior (Littlejohn & Foss, 2009).

Because digital media is so heavily ingrained in our daily lives, high social interactions and conceptions regarding climate imagery have increased drastically throughout social media networks, according to this research. Social media's presence combined with the current state of climate change imagery, coupled with the image's

posting on social media platforms with communal or time-based elements, abstract nature, and lack of a physical location, have resulted in the rise of climate artists and photographers in new media journalism, the spread of participatory techniques, and the appearance of creators and influencers on platforms like Instagram. Put differently, social media caused individual behavior to shift when it came to climate-related issues.

Approach of Climate Skepticism

Climate skeptics are ambiguous people, occasionally called deniers, they discredit part of the common scientific aspect of international climate change in other words, sometimes, distrust that perspective thoroughly. They don't engage with climate related matters. The common is that Earth's temperature is increasing, greenhouse gases caused by human leading to global warming. The complications of global warming are destructive. Some other skeptics argue whether the constant increase of Earth's temperature is really so catastrophic and if really the damage of global warming is higher than the price of diminishing emissions or not (Plumer, 2015). On the other hand, non-climate skeptics assure the existence of climate change and believe in the issue. They are keen to spread awareness, try to provide solutions and support the environment. They conceive that in the coming future, climate change can be affected by human activities for example, producing less greenhouse gases.

A scale or survey would be used to test types of climate skepticism (epistemic skeptic and response skeptic people) as conducted by Capstick & Pidgeon 2012. For an approachable sample, a countrywide representative by age and gender, an allocated sample of the Egyptian population would be recruited (date) to complete the survey. The items used in the instrument is a fragment of a greater survey measuring perceptions on climate change. Items are put haphazardly in broader examination using a software to prevent

ordering effects. The items are dealings of climate change skepticism, cultural worldviews, socio-demographics, pro-environmental identity, self-reported knowledge, self-identifying skepticism and climate change concern.

Research Problem

According to recent studies, the way that climate change imagery is now portrayed in public perception is that it lacks human characteristics and is psychologically remote, which prevents the public from actually getting involved. As of yet, there is no established methodology or procedure for making effective use of climate change imagery to ensure public participation. The problem is severe since, according to Knoema, Egypt's CO2 emissions in 2021 will be 259.3 million tons, and the country's CO2 emissions per person will be 2.48 metric tons, increasing at an average yearly rate of 2.61%.

The use of climate change imagery by communicators on social media, including civil foundations, photojournalists, and science journalists, presents a research challenge because some platforms rely heavily on visuals to communicate science and encourage public participation especially the engagement of epistemic skeptics and response skeptics. In light of this conundrum, the paper aims to explore the concept of climate skepticism and understanding the two types of climate skepticism.

The Objectives

1. Recognize the effective method for achieving public engagement through the use of imagery related to climate change.
2. Describe fresh experiences that researchers should take into account for further studies.

Hypotheses

1. There are significant differences between males and females in being climate skeptic.
2. There is a correlation between age and being climate skeptic.

Research Question

- What are the characteristics of epistemic and response skeptics?

Methodology

Quantitative Approach

Method: Survey

Suspecting that a subject's type of climate skepticism has an impact on how this subject is responding to climate change. A scale or test of climate skepticism is conducted to 120 subjects and calculate their scores. The scale used by Capstick & Pidgeon 2012. The subject is either be epistemic or response skepticism. Non-climate skeptics are excluded and only climate skeptics are included.

Sample

Subjects will be recruited from MSA university students with age range (18-25). Social media networks are mostly and widely used by young people. According to Capmas 2021, out of the total of Egyptian Internet users, 98.3% are youth with age range (18-29) who use social media thus university students are part of them which is an indication that they are heavy social media users. Audience responds mainly to climate change issue according to their concern, skepticism and political affiliation. Skepticism and level of concern are tackled in this paper. Type of sampling is non-random sampling – available sample thus 120 students.

Results of the Climate Skepticism Scale

Descriptive Statistics

Table (1): Frequency table for demographics

	Categories	Frequency	Percentage
Gender	Female	60	50%
	Male	60	50%
Age	18-20	83	69%
	21-23	32	27%
	24-26	5	4%
Being environmentally friendly is an important part of who I am	Strongly Disagree	6	5%
	Disagree	3	3%
	Neutral	30	25%
	Agree	44	37%
	Strongly Agree	37	30%
I am well informed about climate change	Strongly Disagree	1	1%
	Disagree	5	4%
	Neutral	53	44%
	Agree	36	30%
	Strongly Agree	25	21%
I am concerned about climate change	Strongly Disagree	1	1%
	Disagree	6	5%
	Neutral	47	39%
	Agree	47	39%
	Strongly Agree	19	16%

Source: Calculations done using SPSS 26 based on 120 sampled students from MSA University

The sample included 60 individuals from each gender. The majority of the sample aged from 18-20 years old (83). While those aged older than 21 years old, (37) presented only 31% of the sample. Most of the sample agreed that being environmentally friendly is an important part of who they are (81), presenting around 67% of the sample. It seems around half the sample are neutral in terms of being well informed about climate change (53). In terms of being concerned about climate change there were equal number of individuals who

agreed and who were neutral (47), while only 16% claimed they strongly agreed (19) about the matter.

Table (2): Chi square test of independence

Variables	Chi Square test statistic	DF	P-value
Gender & Personality	8.000	1	.005
Age & Personality	9.007	8	.342

Source: Calculations done using SPSS 26 based on 120 sampled students from MSA University

At 99% confidence level, gender and personality (being climate skeptic) were significantly dependent. However, there was no enough evidence that, personality is dependent on age.

Note: none of the subjects is non climate skeptic.

Add-on

		personality		Total
		Epistemic	Response	
Gender	f	15	45	60
	m	30	30	60
Total		45	75	120

		personality		Total
		Epistemic	Response	
Age	18	3	1	4
	19	5	9	14
	20	20	45	65
	21	6	8	14
	22	4	6	10
	23	3	5	8
	24	1	1	2
	25	2	0	2
	26	1	0	1
Total		45	75	120

H1: There are significant differences between males and females in being climate skeptic.

Well, it turns out that females are more response skeptics than males in which 45 females versus 30 males. Whereas, males are more epistemic skeptics than females so that 30 males against 15 females.

H2: There is a correlation between age and being climate skeptic.

As for age, outcomes demonstrate that there is no statistically significant difference between age and personality (being climate skeptic).

RQ: What are the characteristics of epistemic and response skeptics?

Conferring to the measures of climate change skepticism, the features of the climate epistemic skeptic is that his/her uncertainties are revolving around the physical presence and harshness of climate change. Looking at the skepticism items, this type of personality's thinking is not based on scientific foundations once it comes to climate change and does not resort to science when researching or verifying information. Epistemic skeptics think that climate change is fake, senseless and do not trust climate scientists. For them, there are lot of conflicting statements about climate change, not clear which one is correct. They see untrustworthy proof for climate change. It is a natural pattern and human can deal with it.

Concerning the features of response skeptic, his/her way of thinking is built upon doubts around the efficiency of reacting, and readiness and capability to behave to climate change at the individual, partisan and social level. Response skeptics see environmentalists as heroes since they are adopting the cause. They follow media to get knowledge and information about climate change issue. They believe that the acts of one person do not make any change in handling climate change. It is pointless to do anything as nobody else does. For them, few number of climate negotiators and decision makers can do something about the matter because climate change is too complex.

Discussion

According to the determinants of skepticism types, results show that 75 students out of 120 are response skeptic and this means that most of them do not believe in human's ability or power to stand against climate change. They think that the impacts of climate change are far greater than human capacity in which it is drastic and nothing can be done about it. 45 students are epistemic skeptic in which they do not have faith that climate change exists scientifically. They refuse to accept its science. Moreover, more than half of the students (67%) agreed that being environmentally friendly is an important part of who they are, this implies that part of youth s' principles and values is to preserve nature and to be responsible towards the environment. Near half of the students (44%) are neutral for being well informed about climate change, this indicates that they cannot quite assure their knowledge around climate change. Obviously, climate change is still new and mysterious topic despite of Sharm el-Sheikh COP 27 and the huge media coverage of the event and its dependencies. Regarding the level of concern, a considerable equal percentage of students (39%) who agreed and being neutral to "I am concerned about climate change", suggesting a sign of hope in which youth care and want to learn and understand more round climate change although a same percentage of them (39%) are fair-minded or undecided.

Now after comprehending the characteristics of the epistemic and response skeptics, communicators will be able to know how to address epistemic skeptic and response skeptic differently, in which they should take into consideration a number of standards while targeting both types of climate skepticism since they are a part of the public whom need to be addressed. The communicators need to observe a high public participation towards climate change especially from climate skeptics on social media. The approach to engage epistemic skeptic is to post climate related topics displaying the consequences of climate change in practical experiences and the way to manage these

ramifications on ground with tangible and visible events which can be associated to climate adaptation and mitigation. It is effective to engage them more by inviting them to do a climate action. It is preferable to stay away from reports and scientific visual, not all visuals.

It is better to post climate data to engage response skeptic but simplified data. Science communicators can clarify scientific info to easily communicate science to the public. It cannot be denied that using images to convey information is the most brilliant choice. However, it needs cleverness and so the use of climate change imagery is great to grab the attention of climate skeptics particularly response skeptics.

Conclusion

The paper reveals that 75 out of 120 students are response skeptics, believing that human capacity is insufficient to combat climate change. 45 students are epistemic skeptics, refusing to accept its scientific existence. Over half of the students (67%) consider environmental friendliness an important part of their values, indicating a commitment to environmental preservation. Nearly half (44%) are neutral about their knowledge of climate change, indicating a lack of assurance. Despite the media coverage of COP 27 and its implications, 39% of students are still concerned about climate change, indicating a desire for more understanding.

Communicators should address both types of skepticism differently, focusing on high public participation on social media. To engage epistemic skeptics, communicators should post climate-related topics showcasing practical experiences and ways to manage climate change's ramifications. Engaging them more by inviting them to take action is also recommended. Posting simplified climate data is better for response skeptics, and using images to convey information is a brilliant choice. Ultimately, understanding the characteristics of these

skeptics can help communicators effectively engage and educate the public on climate change.

This paper's limitation is that it was limited to research done in Cairo, Egypt. Because the sample is not randomly selected, generalization of the findings is not possible. The dearth of scholarly studies in Arabic on climate skepticism or climate change and its relationship to public engagement is another flaw in this paper.

In future research, the outcome of the relationship between gender and personality is a casual remark that requires further research in the psychological aspect of females and males to produce a clear understanding of the reasons behind this difference.

Additionally, it is suggested that the sample can be larger in size and/or cover different geographic locations perhaps rural or coastal areas in which it can show extra statistically significant differences. Moreover, audiences' cultural world sights are influential forecasters of skepticism around the physical and scientific elements and social and behavioral elements of climate change. This can be another perspective that can be taken into account.

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Name: Mobile Number:

Age: Gender: male / female

*Being environmentally friendly is an important part of who I am.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

*I am well informed about climate change.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

*I am concerned about climate change.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

Scientific/Physical skepticism measures

1. There is too much conflicting evidence about climate change to know whether it is actually happening.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

2. Current climate change is part of a pattern that has been going on for millions of years.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

3. Climate change is just a natural fluctuation in Earth's temperatures, even if we do experience some consequences from climate change, we will be able to cope with them.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

4. The effects of climate change are likely to be catastrophic.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

5. The evidence for climate change is unreliable.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

6. There are a lot of very different theories about climate change, & little agreement about which is right.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

7. Scientists have in the past changed their results to make climate change appear worse than it is.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

8. Scientists have hidden research that shows climate change is not serious.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

9. Climate change is a scam.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

Social/Behavioral skepticism measures

10. Climate change is so complicated that there are very little politicians can do about it.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

11. There is no point in me doing anything about climate change because no one else is.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

12. The actions of a single person don't make any difference in tackling climate change.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

13. People are too selfish to do anything about climate change.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

14. Not much will be done about climate change, because it is not in human nature to respond to problems that won't happen for many years.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

15. It is already too late to do anything about climate change.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

16. The media is often too alarmist about climate change.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

17. Environmentalists do their best to emphasize the worst possible effects of climate change.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

18. Climate change has now become a bit of an outdated issue.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5

19. Whether it is important or not on a day-to-day basis, I am bored of hearing about climate change.

Strongly disagree - disagree – neutral – agree – strongly agree

1 2 3 4 5