Seeing Is Believing: The Psychology Behind Climate Change Denial

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I have neither given nor received help on this work, nor am I aware of any infraction of the Honor Code.

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Climate change is one of the most urgent environmental issues of modern time. Since the dawn of industrial growth, atmospheric carbon dioxide has exponentially increased its concentration, therefore causing a greenhouse effect (Swim et al., 2011). Not only are global average temperatures increasing due to climate change, but other natural systems are being disrupted on a large scale. For example, sea level rise, species extinction, and extreme weather patterns are contributed by climate change and are costly to human societies (Coumou & Rahmstorf, 2012; Perch-Nielson et al., 2008; Dale et al., 2001).

While climate change remains a daunting reality, it is still a polarizing and controversial topic within society (Hulme, 2009). The purpose of this review is to evaluate factors that explain why people deny the occurrence of climate change and identify trends in groups who historically deny climate change. The evidence will provide suggestions to continue climate change mitigation with a targeted approach to increase education.

Many psychological factors play a role in climate change denial. The complexity of the issue is challenging for the mind to comprehend, the spatial and temporal distances may cause disconnection, and the methods the media chooses to deliver climate change information may be ineffective (Webber, 2011; Swim et al., 2009; Arlt et al., 2011).It is important to identify these psychological barriers between society and their understanding of the severity of climate change. By understanding psychological reasons behind climate change denial, it can be used to properly increase understanding and mitigate this crisis for future generations.

**Background**

Climate change is one of the most pressing environmental crises the world is facing today (Swim et al., 2011). Climate change refers to anomalies in average global temperatures. Historically, it is normal for global temperatures to fluctuate. Many natural influences can cause global temperatures to rise or fall, such as plate tectonics, volcanic activity, the orbit of the earth, and sunspots. Since the beginning of the 20th century, global temperatures have been exponentially and rapidly increasing due to the Industrial Revolution, use of automobiles, deforestation, and high demands for goods. Temperatures are rising due to the combustion of fossil fuels, which release carbon dioxide and other greenhouse gases, which trap heat in the atmosphere (Swim et al., 2011). Since the Industrial revolution, the Earth has warmed approximately 1℃. While 1℃ may not appear alarming, it has caused a severe climate divergence that Earth has not had in the last 10,000 years (Intergovernmental Panel on Climate Change, 2007).

Although used synonymously, global warming is merely an effect of climate change. While average global temperatures are increasing, there are countless other effects of climate change. For example, climate change has caused increases in severe weather, land loss, polar ice melting, sea level rise, droughts, disease distribution, animal migration, wildfires, and more (Coumou & Rahmstorf, 2012; Farbotko 2010;; Dyurgerov & Meier, 2000; Paz 2019; Perch-Nielson et al., 2008, Dale et al., 2001).

Despite the overwhelming scientific evidence, climate change has become a polarized and taboo topic (Weber & Stern, 2011). Climate change denial has increased in the general U.S. public between 2001 and 2010 (Newport, 2010). While the scientific evidence is substantial, climate change remains to be a social, political, and cultural commotion that is challenging the way societies are thinking about its long-term impacts (Hulme, 2009). People are continuing to question the occurrence of climate change and the source of the issue.

**Psychological Reasons for Denial**

Climate change perception is caused by several psychological factors as suggested in the literature, but three factors have been continuously reported. First, events caused by climate change and their anthropogenic causes and consequences can be difficult to understand due to its complexity (Weber, 2011). This is not the first time that modern society has been faced with a large-scale environmental issue. In 1985, it was first discovered that the ozone layer was being depleted using aerosol products containing chlorofluorocarbons (Stolarski, 1988; Stern, 1992). Unlike climate change, the source of the issue was direct, and it was easy to change consumer habits to combat this issue. Also, people could understand the idea that the ozone layer protects humans from the direct harm of skin cancer. Unfortunately, climate change is difficult to conceptualize, and it does not come from one single source or cause one hazard. The burning of fossil fuels leads to multiple hazards, which leads to underestimating the threats they pose (Weber, 2011). Also, experiential learning shapes how a person may view climate change. For a person living in a first world country and not working in a career that depends on weather or climate, such as fishing or farming, they may not ever be personally affected by climate change in any perception of their life. Therefore, it can be challenging to convince people that climate change exists if people have not been affected by their personal experience (Weber, 2011).

Second, the effects of climate change are usually distantly occurring not only in time, but in space. For people in the United States, disasters caused by climate change, such as extreme flooding or polar ice melting, occurs in another part of the world. This can make the impacts feel geographically distant, which can cause disengagement from the issue. This distance can cause people to reduce their risk perception and lead them to believe that it is not their problem to deal with (Swim et al., 2009).

A third reason for climate change denial would relate to how society is receiving information on climate change. A significant amount of news sources reports the effect of climate change using “doom and gloom” delivery, which presents the negative and devastating effects of climate change. The portrayal of climate change in the media does not always have an awareness-heightening or motivating effect (Arlt et al., 2011). While portraying accurate information, the message can be lost due to eliciting depressive emotions such as fear or guilt, which can cause avoidance (Chapman et al., 2017). In humans, emotions play a large role in behavior. Specifically, fear is an installed survival mechanism to avoid danger or the unknown (Beaumiester et al., 2007). Therefore, climate change denial is a subconscious mechanism for a fear-avoidance strategy (Stoknes, 2014).

**Target Demographics**

It has been found that trends of climate change denial can be found in certain groups of people.It has been established that political conservatives and males are more likely to deny

climate change, especially regarding human involvement. This is called the “conservative male effect” (Jylhä et al., 2016). This can be found in conservative Republican politicians, fossil fuel CEOs, conservative media and conservative think tanks, which are white and male dominated fields. Since the 1980’s, these powerful groups have challenged climate science and policy, and white males in the public are very receptive to their actions. Among the American public, adults who are white, conservative, and male are more likely to be climate change deniers. Those who reported to be well educated on climate change display a greater degree of climate change denial, which is termed identity-protective cognition (McCright & Dunlap, 2011).

**Conclusions and Suggestions**

 Climate change denial is a deeply psychological mindset and can be caused by psychological phenomena such as experiential learning and fear-avoidance. Specifically, it has been found that climate change denial occurs within social groups such as political conservatives and males, because of the conservative male effect. Current research on the psychology of climate change denial can help with future approaches to increase education and mitigation for climate change. A suggested approach could be incentivizing certain behaviors. In a study done in 2015, researchers were looking to reduce electricity use in an apartment complex. It was found that presenting information on environment and health-based externalities of increasing fossil fuel use decreased electricity consumption (Asencio & Delmas, 2015). This motivated people to control their electricity consumption and empowered them to make small changes in their lifestyle. This incentivizing could help the media move away from overwhelmingly negative portrayals of climate change and relay relatable information that could empower people to change their behaviors.

While psychology has demonstrated its radical role in climate change denial, it is essential to use psychology as a tool to increase understanding and motivate change, especially in groups who are difficult to target. No matter the quantity or quality of cutting-edge climate change research, it is not useful if psychological barriers prevent societal understanding. In order to be successful, scientists should work together with psychologists to achieve this goal and increase climate change awareness and global management strategies.

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