

The Effect of Participating in A #CarbonNeutrality TikTok Challenge on Perception of Environmental Issues^{*}

The Interaction Effect of Environmental Involvement and Trust in Government

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As we move further into the digital age, social media is becoming an increasingly valuable platform for a range of stakeholders who seek to enhance public awareness of climate change. In this study, the impact of participating in a TikTok challenge promoting carbon neutrality on the adoption of pro-environmental attitudes among young individuals is investigated. The findings showed that participation in the TikTok challenge enhances the perception of environmental issues. Moreover, the level of trust in the government acted as a crucial moderator in how environmental involvement impacted the change of environmental perception brought about by the

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TikTok challenge. The TikTok challenge effects are discussed in the context of an active learning approach. The present study contributes to the understanding of how a form of social media participation can serve as an emerging intervention for promoting sustainable society.

KEY WORDS TikTok challenge • Active learning • Climate action • Perception of environmental issues • Social media intervention

1. Introduction

As society becomes increasingly digitalized, social media has emerged as a powerful tool for promoting sustainable actions. With the support of new media technologies, which afford bi-directional interactions among users, communication between people has become easier than ever before. Due to its entertaining and informal nature of communication, social media enables the casual dissemination of sociopolitical messages without strong ideological commitments or repercussions, which makes it easier for a wider range of population to assimilate and engage in political and social movements (Gerbaudo & Trer, 2015; Vijay & Gekker, 2021; Zeng & Abidin, 2021). As a result, researchers are exploring the potential of social media to nudge the public towards sustainable behavior, expanding our knowledge in this area.

Today, climate change is widely considered a global threat among various societal issues and is a topic that is frequently discussed in both professional and public domains (Liu, 2019). However, the general public often perceives the topic as uninteresting and distant, which can be partially attributed to unclear definitions and its perceived lack of relevance to daily life. This poses a serious problem considering the evident significance of human-caused climate change (Ho et al., 2022; Howarth & Morse-Jones, 2019; Spence et al., 2012; Zhang et al., 2022). Thus,

encouraging the adoption of environmentally responsible behaviors among the public through effective climate change communication is presently a high priority for governments and non-governmental organizations (NGOs) working to mitigate the issue. With the increasing use of social media as part of daily life, exploring this communication platform may present a viable solution for enhancing public awareness of climate change, a crucial precursor to taking climate action (Hackmann et al., 2014).

Based on the framework of active learning, this study aims to explore the potential of social media participation as a means of improving public perception of environmental issues. Specifically, we examine the impact of participating in a climate-related TikTok challenge, which was offered as a group activity during a campaign held in October 2021 designed to educate and raise awareness about climate change of young people in South Korea. The current research approaches the effect of TikTok challenge participation through the lens of active learning, a widely-discussed pedagogical methodology within the realm of education.

Active learning approach provides learners with the chance to transition from a passive position to a more engaged role in the process of acquiring knowledge (Grabinger & Dunlap, 1995). By being more actively involved with the content, learners renew their interest in the topic, engage in higher-level independent thinking, and are motivated to reflect on their personal learning experiences, which lead to better learning outcomes when compared to passive education (Ketelhut, 2007; Levi et al., 2016; Winstone & Millward, 2012). Thus, by utilizing social media activity, which has become an inseparable part of our daily lives, as a communication strategy to enhance the perception of environmental issues, it is expected that environmental communication will be more accessible, fostering increased awareness and engagement among the general population.

This study also aimed to examine how individuals' sociopolitical factors influence the effectiveness of the TikTok challenge activity on enhancing environmental perception. Factors such as personal interest and involvement in environmental matters are important to be considered, as they are closely linked to one's existing pro-environmental values, which can potentially influence how individuals respond to climate goal initiatives (Cheng et al., 2020; Lee, 2010). However, it is also crucial to consider the attainability of climate goals to ensure individuals are motivated to actively embrace and pursue the ultimate objectives inherent in climate activities (Ardoin et al., 2023; Quimby & Angelique, 2011). Climate change, like other societal issues, requires beyond individual citizens' effort and knowledge to address the issue, meaning that adequate institutional support plays a significant role in accomplishing climate goals (Niemiec et al., 2020; Quimby & Angelique, 2011; Spitzer & Fraser, 2020). In this vein, individuals' trust in government, which reflects the belief that the government will successfully execute and support the actions that are necessary for combating problematic situations (e.g., accomplishing climate goals), could be a critical factor affecting the adoption of the goal presented (Anderson et al., 2020; Han et al., 2021). Therefore, we aim to examine how individuals' environmental involvement and trust in government interact to moderate the effectiveness of the proposed environmental TikTok challenge activity as an environmental communication strategy through this case study. The outcomes will illuminate the crucial basis within individuals that might influence their openness to environmental communication.

2. Theoretical background

1) Theoretical basis for understanding the adoption of climate goals

Despite widespread reports indicating that the public possesses a certain level of awareness and understanding regarding climate change, there remains a prevailing sentiment that the topic of climate goals remains distant and detached from immediate priorities (Ho et al., 2022; Howarth & Morse-Jones, 2019; Spence et al., 2012; Zhang et al., 2022). This can be partially attributed to unclear definitions and its perceived lack of relevance to daily life, as it is discussed mostly by professionals, who fail to make it accessible to the public (Zhang et al., 2022). Hence, individuals commonly perceive climate change risks as predominantly affecting others or future generations, resulting in a psychological distance that creates a sense of separation between themselves and the issue (Spence et al., 2012; Trope & Liberman, 2010). According to Construal Level Theory (CLT; Trope & Liberman, 2010), perceiving a greater psychological distance, whether spatial or temporal, between oneself and an event or object can lead to the issue being abstracted. Consequently, individuals face difficulties in establishing the specific mindsets needed for effectively confronting the issue, leading to a delay in immediate action. Therefore, in climate communication, it is crucial to prioritize reducing the psychological distance between oneself and climate change in order to foster a sense of personal connection and facilitate proactive engagement.

One effective approach to reducing psychological distance is by making the issue more immediate and experiential (Duan et al., 2022; Loy et al., 2020; Spence et al., 2012). Given that climate change is typically perceived as distant by the public, incorporating experiential elements into climate

education will bridge the gap between abstract understanding and personal relevance. In the education domain, this idea aligns with the concept of experiential learning theory (Kolb, 1984) and constructionism theory (Papert & Harel, 1991), both of which underscore that active engagement and hands-on experiences significantly deepen learners' understanding and internalization of the subject matter. Both theories advocate for an active learning method, an educational method developed to move away from lecture-centric teaching and learning, involving hands-on engagement, reflection, and the creation of meaningful artifacts. Active learning is known to help students forge a deeper, more personal connection to the material and increase the likelihood of adopting and applying this knowledge in the future (Campbell et al., 2022; Lee, Cha, & Kim, 2018).

Ongoing research in active learning seeks to diversify its applications, including through online immersive experiences (Lim et al., 2021), the use of media (Navio-Marco et al., 2022), and the exploration of physical space (Sitthiworachart et al., 2022).

In Korea, there have been several studies aimed at determining the effect of communication messages on improving society by adopting the active learning method. For example, these include research on political messages to stop smoking (Choi et al., 2018), COVID-19 card news for the public (Choi et al., 2022), and public campaigns on social media (Shin et al., 2021). Therefore, it is essential to prioritize the advancement of varied active learning methods, ideally with minimal effort and resources required for the sustainable implementation of this learning approach, to transform the public from passive individuals into proactive agents in climate-related subjects. By doing so, it can foster a stronger sense of responsibility and elevate the public's overall perception of environmental issues.

2) Active learning, social media engagement, and social movements

Participating in active learning, where learners actively engage in the learning process (e.g., discussions, problem-solving, role play, and creating artifacts), has been associated with several advantages in higher education. These include increased student self-confidence (Gaffney et al., 2013), greater levels of course satisfaction (Winstone & Millward, 2012), and increased student engagement (Gossman et al., 2015), which contribute to higher order thinking skills (Shin & Bolkan, 2021) and enhanced academic achievement (Chan et al., 2015). One example of an active learning approach is to generate artifacts that reflect the knowledge acquired by learners. This method offers an engaging learning experience, particularly when it involves guided questioning and writing prompts to stimulate critical thinking (Campbell & Cox, 2018). A practical illustration of this is the integration of learner-generated video assignments as active learning activities. The process of creating videos provides opportunities for learners to identify, connect, conceptualize, develop, review, reflect, and revise what they are learning with improved retention and heightened engagement (Campbell & Cox, 2018). Thus, learners are compelled to invest more intellectual effort in the learning process and engage in deeper processing of the messages for effective communication (Anas, 2019; Campbell et al., 2022, 2019; Khan et al., 2017). In light of this, we can examine the utilization of social media engagement as an effective communication strategy within the context of an active learning experience.

Social media platforms, which are equipped with interactive technologies that assist the creation and sharing of information, interests, and ideas, have brought about a change in everyday communication (Barut & Koc, 2020; Boyd & Ellison, 2007; Lee et al., 2022). The interactive technologies foster two-way

interactions among users, allowing them to actively engage with the media content: users are not only receiving information as they do in unidirectional communication (informative use), but they are also expressing themselves, and discussing information of interest in the context of bi-directional interactions that promote deeper processing of the messages. It has been shown that deeper processing encourages attitudinal and behavioral adoption (Nekmat, 2012) as well as perceived capacity to influence the socio-political environment which increases public engagement in various societal issues (Bakker & De Vreese, 2011; Enjolras et al., 2013; Velasquez & LaRose, 2015). Thus, social media-initiated attitudes often drive important socio-political issues, such as environmental problems and political corruption, to social movements (Ball-Rokeach & DeFleur, 1976). Based on the principle of active learning approach, the participatory nature of social media, therefore, promotes the acceptance of ideas and efficacy perceptions in driving social movements, which are the key attributes for successful environmental communication.

3) TikTok challenge as an environmental communication tool

TikTok, the micro-video social media platform, has played a significant role in shaping the current trend of social media towards a greater emphasis on short-form videos (Hautea et al., 2021). While initially marketed for entertainment purposes, allowing users to upload short videos (15-60 seconds in length) of themselves performing skits or dances, or lip-synching to popular music with the assistance of an in-app interface that enables the editing of videos (Kaye et al., 2021), TikTok has also inadvertently become a platform for casual communication of sociopolitical messages due to its playful and non-serious nature (Vijay & Gekker, 2021; Zeng & Abidin, 2021). Notably, TikTok challenges – campaigns designed

with a dance, action or a specific task that is to be replicated by other users – have become an integral part of the platform's unique culture (Ng et al., 2021). These challenges can vary widely in nature and purpose. Some challenges aim to raise awareness about social issues, promote charitable causes, or encourage acts of kindness. Others may focus on entertainment, humor, or personal expression (Kaye et al., 2021; Ng et al., 2021).

Given the participatory and entertaining nature of TikTok challenges, they hold immense potential as an alternative form of active learning to increase awareness of environmental issues. Similar to learner-generated video assignments, harnessing TikTok challenges should effectively engage individuals and foster a deeper comprehension of the subject matter. Moreover, for younger generations whose social lives are tightly intertwined with social media applications, the idea of participating in a social media activity may be seen as less demanding than creating educational videos solely for class assignments (Abu Daqar et al., 2020; PrakashYadav & Rai, 2017; Vițelar, 2019), even though both activities share the same fundamental mechanism. Therefore, it is anticipated that engaging in a climate-focused TikTok can serve as an effective and convenient environmental communication strategy, enhancing the perception of environmental issues. Therefore, we propose the following hypothesis.

Hypothesis 1: Participating in the TikTok Challenge about promoting a carbon neutral policy will raise the perception of environmental issues.

4) The influence of individual differences on embracing climate messages: the interaction between environmental involvement and trust in government

Environmental involvement refers to the extent of personal engagement

and concern related to environmental protection (Lee, 2010). Past research has shown that high environmental involvement results in more environmentally-conscious behavior, especially in the public domain as opposed to private domain (Stanley et al., 1996). Moreover, environmental involvement was found to be an important variable that reduces consumers' skepticism toward green product advertisements, thereby increasing acceptance of green messages and green consumerism (Cheng et al., 2020). Thus, it is expected that individual's level of environmental involvement manifests in the impact of participating in the proposed climate-related TikTok challenge.

On another note, it is important to recognize that analyzing the impact of environmental involvement on its own within the climate change discourse may not be entirely feasible. The complexities of climate change are not solely influenced by personal involvement and actions. Instead, they are the result of a combination of factors, including governmental policies, necessary infrastructure, and the collective support from various stakeholders (Harring et al., 2021; Thaker et al., 2019). As research on climate action matured, it began to underscore the vital role of perceived collective efforts and capabilities as crucial influences in promoting climate activism at the individual level. Particularly, discussions have centered on how perceived collective efforts affect the manner in which environmental involvement encourages climate activism, such that perceived collective efforts might lead environmental involvement to either positively or negatively impact the motivation towards climate activism. For example, when individuals who are deeply engaged with environmental issues perceive a lack of adequate collective efforts to achieve climate goals, it increasingly underscores the challenges in reaching these goals, resulting in demotivation towards climate initiatives (Brown & Mikkelsen, 1990; Quimby & Angelique, 2011; Rich et al., 1995). Moreover, Quimby and Angelique

(2011) have suggested that this disempowering effect associated with a lack of perceived collective effort can be even more pronounced among individuals who are more involved in environmental issues, as they possess a heightened awareness of the pressing climate challenges that demand significant support and action. Therefore, it is expected that among individuals who perceive limited collective support, such as inadequate government policies and related infrastructure for achieving climate goals, an increase in environmental involvement could potentially lead to a decreased motivation in pursuing climate goals at the individual level. Given the view that trust in government mirrors the perception of collective support, we suggest a hypothesis concerning the relationship between environmental involvement and trust in government, and its effect on altering perceptions of environmental issues through engagement in a TikTok challenge (see Figure 1 for conceptual framework of the current hypotheses).

Hypothesis 2: Changes in perception of environmental issues through participating in the TikTok challenge will depend on the interplay between the level of environmental involvement and trust in government of participants.

Hypothesis 2a: For those who have high trust in government, there will be a positive relationship between environmental involvement and the improvement of perception of environmental issues arising from participating in the TikTok challenge.

Hypothesis 2b: For those who have low trust in government, there will be a negative relationship between environmental involvement and the improvement of perception of environmental issues arising from participating in the TikTok challenge.

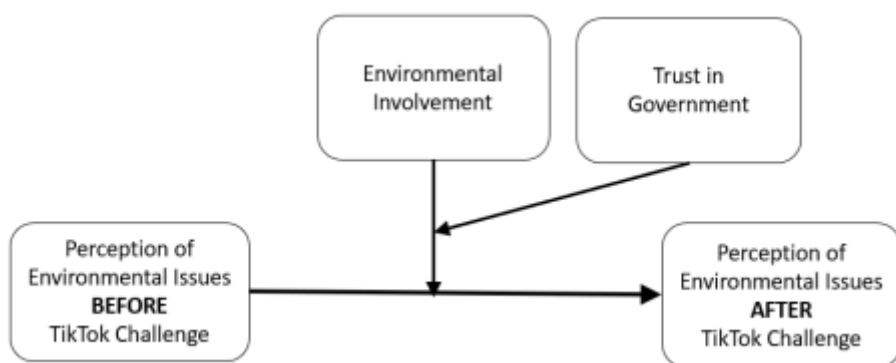


Figure 1. Conceptual Framework: The Impact of Environmental Involvement and Trust in Government on Enhancing Perception of Environmental Issues Through Participation in a TikTok Challenge

3. Study context

In October 2021, a research project was initiated in collaboration with government agencies and local authorities in South Korea as a component of climate communication through social media aimed at raising awareness of environmental issues and carbon neutrality among youth. The campaign specifically targeted youth as its audience, utilizing social media based on their well-established familiarity with and vulnerability to its influences (Hendrickse et al., 2017; Lathren et al., 2019). Scientists posit that carbon neutrality is the key to fighting climate change (Gershoff & Frels, 2015), and that carbon-neutral policies can bring about a practical change by reducing greenhouse gas emissions, which is the main cause of environmental destruction (Cramer et al., 2014). This initiative took the form of a campaign designed to educate and raise awareness among young people about carbon neutrality, along with enhancing their understanding of environmental policy literacy. During the campaign, a group activity session was introduced, utilizing social media (i.e., TikTok) to facilitate participatory and deliberative

learning for effective communication of environmental messages of the day. To enhance the external validity of the event, the TikTok platform, one of the most widely used social media platforms among Korean youth, was selected.

During this event, a survey study was carried out to assess the influence of participating in a TikTok challenge centered around carbon neutrality on the participants' perception of environmental issues, comparing the perspectives before and after their participation. The driving research questions for this study were as below:

4. Methods

1) Participants and design

In collaboration with the South Korean government and local governing bodies responsible for youth civic education, a campaign for carbon neutrality behavior change and policy literacy through social media for young people was conducted in October 2021. The campaign was advertised as "Youth Carbon Neutrality Behavior Change and Policy Literacy Education through Social Media". The targeted participants were the public members of the local civic education institutions. Advertisements through email and text messages regarding participation in the campaign were sent out a month before the event. In addition, local schools that had approved the promotion of the campaign, made direct announcement to their students. Eventually, several girls'high schools approved the promotion. Participants were provided with gift vouchers worth 30,000 Korean Won as an incentive for participation.

It was a survey study that adopted a within-subject design to test the

effect of participating in the TikTok challenge on the changes of the perception of environmental issues (before vs. after), which was offered as a learning activity during the campaign. Further, the interaction effect of trust in government and environmental involvement on the changes of the perception was observed. A total of 84 high school and college students (female = 76 [90.5%], Mage = 17.46, SDage = 2.66) were recruited to participate in the study. The study was approved by the KDI School of Public Policy and Management Ethics Committee (approval no. 202203).

2) Measurement

(1) Perception of environmental issues

To assess the perception of environmental issues, 11 survey items were developed based on the previous studies (Habib et al., 2021; White et al., 2019), which investigated perceptions of climate change and sustainability issues. The items asked about participant's interest in and concern for climate change and environmental actions (e.g. Global warming and climate change are important issues worldwide). Participants answered on a five-point scale (Before participating in the TikTok challenge, Cronbach's $\alpha = .849$; After participating in the TikTok challenge, Cronbach's $\alpha = .862$).

(2) Environmental involvement

To measure involvement of environmental issues, 10 survey items were developed based on the methodology proposed by Zaichkowsky (1985) for constructing involvement measure. The items probed the degree of participation in pro-environmental activities, which reflected individuals' perceived importance and relevance of environmental issues (e.g. I have experience participating in meetings and gatherings hosted by environmental groups) (Lee, 2010). Participants answered on a five-point scale (Cronbach's $\alpha = .876$).

(3) Trust in government

The scale measure for trust in government used by Lee et al., (2019) was employed to measure the degree of public trust in government (e.g. I believe that the government conducts its business with honesty and integrity). It consisted of a total of 11 items and was measured on a five-point scale (Cronbach's $\alpha = .929$).

3) Study procedure: public education program and TikTok challenge participation

The entire campaign program was scheduled to take eight hours and thirty minutes to complete, including a one-hour lunch break. The program included a series of lectures and interactive sessions, including the TikTok challenge participation, that covered a range of topics concerning public communication, social media, and carbon neutrality. These sessions were led by experts in each field. Participants were cordially invited to come to a classroom at the advertised location to participate in this study. Before the program began, all participants provided written informed consent for taking part in the study.

A series of lectures on "data-base service design", "understanding of social media and content", and "media content creation techniques" were delivered for the first two hours. (see Figure 2 for the field photographs during the seminar series).

After lunch there was a thirty-minute lecture on carbon neutrality (and related policies and action plans), followed by a thirty-minute interactive session on analyzing carbon neutrality-related social data, and a thirty-minute introduction to the TikTok platform and its characteristics. The perception of environmental issues questionnaire was then administered to determine a baseline measure.

This was followed by a three-hour participatory session in which groups of three or four students created the TikTok challenge content on the topic of carbon neutrality with three hashtags in the caption: #CarbonNeutrality, #Tiktokforgood, and the school they represent to verify the participation (see Figure 3 for the captured images of the published TikTok challenge content). During these three hours participants created, uploaded, and shared the challenge content on TikTok.

Lastly, an hour was dedicated to evaluating the overall seminar series in discussion groups, and completing the same questionnaire on perception of environmental issues (administered earlier), and two additional questionnaires on trust in government, and environmental involvement.



Note, Figure 2(a) shows the classroom during one of the teaching seminars and (b) shows students having a group discussion for creating a TikTok challenge content.

Figure 2. (a) & (b). Field Photographs of the Classroom Environment During the Seminar Series



Note, Figure 3(a) was created under the TikTok ID hyemi_in and 3(b) under suyeon26050. Figure 3. (a) & (b). Captures of the TikTok Challenge Content Posted by Participants

5. Results

1) Descriptive statistics and correlation analyses

The correlational analyses showed that the perception of environmental issues before and after participating in the TikTok challenge were positively correlated ($r = .522, p < .001$; see Table 1). Results also demonstrated that ,although the perception of environmental issues and trust in government were not correlated with the perception of environmental issues before the participation in the TikTok challenge ($rs < .17, ns$), both environmental involvement ($r = .225, p = .039$) and trust in government ($r = .279, p = .015$) were positively correlated with the perception of environmental issues after the participation. Further, we conducted Harmon’s single-factor test (Podsakoff & Organ, 1986) to check for the possibility of common method bias, which could have arisen due to the repeated use of the same measurement method for assessing several distinct variables, resulting in problems with measurement validity. If the explanatory amount of a single factor exceeds 50%, it means that the measurement may not have sufficient validity. The results showed that the explanatory power of a single factor was found to be 21.6%, which was satisfactory. Moreover, the internal reliability of all the measurements were greater than .80 (Nunnally & Bernstein, 1978), which indicated that there were no validity issues with the measurement tools used in the study.

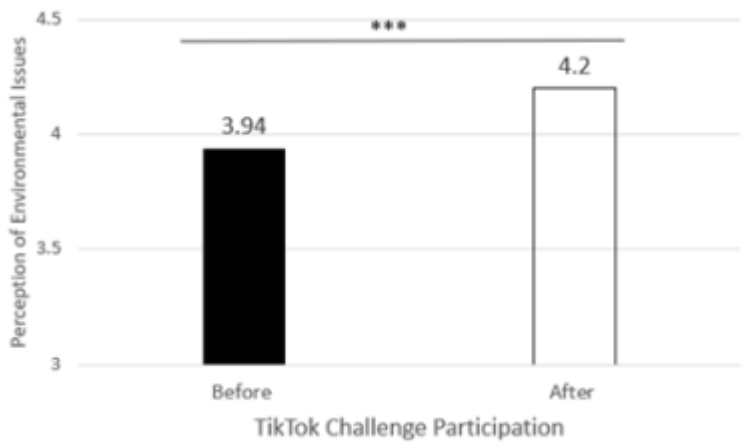
Table 1. Correlations

	N = 84	Mean	SD	1	2	3
1. Perception of Environmental Issues (Before the TikTok challenge)	3,94	0,44		–		
2. Perception of Environmental Issues (After the TikTok challenge)	4,20	0,42		.522***	–	
3. Environmental Involvement	3,01	0,80		.151	.225*	–
4. Trust in Government	3,14	0,60		.162	.279*	.263*

* $p < .05$, *** $p < .001$

2) Changes in perception of environmental issues before and after participation in the TikTok challenge

To test whether participation in the TikTok challenge enhanced the perception of environmental issues, which is the main hypothesis of this study, we conducted a paired samples t-test. The results demonstrated that the perception of environmental issues significantly improved after participation in the TikTok challenge (Before: $M = 3.94$, $SD = 0.44$ vs. After: $M = 4.20$, $SD = 0.2$; see Figure 4), $t(83) = 5.67$, $p < .001$, confirming Hypothesis 1.



Note. A bar chart showing the changes in the perception of environmental issues before vs. after the participation in the TikTok challenge.

Figure 4. Changes in Perception of Environmental Issues as a Function of TikTok Challenge Participation

3) The interaction effect of government trust and environmental involvement on changes in the perception of environmental issues

First, we calculated the changes in the perception of environmental issues by subtracting the before-participation score of the perception of

environmental issues from the after-participation score. Using the change score as a dependent variable, environmental involvement as an independent variable, and trust in government as a moderator, we conducted a moderation analysis using PROCESS macro (Hayes, 2017; Model 1) on SPSS. The results showed that the interaction effect of environmental involvement and trust in government on the changes of the perception of environmental issues was statistically significant ($b = .37$, $t = 4.73$, $p < .001$; see Table 2 and Figure 5). Specifically, when trust in government was low ($-1SD$), environmental involvement had a negative relationship with the changes in the perception of environmental issues ($b = -.25$, $t = -3.21$, $p = .002$). However, when trust in government was high ($+1SD$), environmental involvement had a positive relationship with changes in perception ($b = .19$, $t = 2.94$, $p = .004$; see Table 3). These results indicate that having high environmental involvement alone does not make the TikTok challenge participation effective in improving the perception of environmental issues, but that it needs to be supported by trust in government.

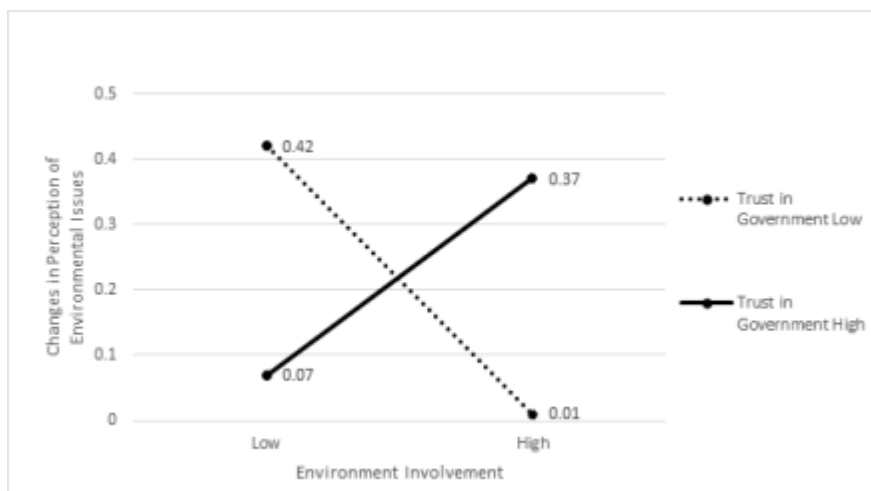
Table 2. Interaction Effect of Environmental Involvement and Trust in Government

	coeff	se	t	p	LLCI	ULCI
Constant	3,761	0,836	4,498	<.001	2,097	5,425
Environmental Involvement	-1,180	0,260	-4,545	<.001	-1,696	-0,663
Trust in Government	-1,098	0,257	-4,276	<.001	-1,609	-0,587
Environmental Involvement x Trust in Government	0,365	0,077	4,733	<.001	0,212	0,519

Note. The table shows the results of the moderation analysis, which was conducted to verify the effect of interaction between environmental involvement and trust in government on the changes in the perception of environmental issues incurred by the TikTok challenge participation.

Table 3. Conditional Effects of Environmental Involvement at Values of Trust in Government

Trust in Government	Effect	se	t	p	LLCI	ULCI
Low($-1SD$)	-0,254	0,079	-3,212	0,002	-0,412	-0,097
High($+1SD$)	0,187	0,064	2,938	0,004	0,060	0,313



Note. The y-axis represents the changes of the perception of environmental issues from before participating in the TikTok challenge to after participating in the TikTok challenge

Figure 5. The Interaction Effect of Environmental Involvement and Trust in Government on Changes in the Perception of Environmental Issues

6. Discussion

The present case study investigated the effect of participating in a TikTok challenge on the public's enhancement of the perception of environmental issues during a public climate action campaign held in South Korea. In addition, the role of individuals' environmental involvement and trust in government on how people responded to social media-based environmental initiatives were examined in the context of environmental perceptual improvement. The findings indicate that participating in the TikTok challenge promoting carbon neutral polices had a positive impact on raising environmental perception (Hypothesis 1). Further, it was demonstrated that trust in government moderated the influence of environmental involvement on the response to the TikTok challenge participation so that, for people

with high trust in government, environmental involvement augmented the degree of improvement in the perception of environmental issues, but for those with low trust in the government, environmental involvement reduced the degree of improvement in the perception of environmental issues (Hypothesis 2, 2a and 2b).

1) Theoretical and practical implications

From a theoretical standpoint, issues related to climate change are currently perceived distant and abstract, which points to the need of bridging the divide between the actuality of climate change and individuals' perceptions of it for immediate actions. Hence, environmental communication should particularly focus on bringing this subject closer to the general public's comprehension, encouraging them to contemplate the matter deeply. In this study, it was shown that integrating social media as an active learning tool could be an effective way of enhancing the approachability of environmental messaging, thereby facilitating the engagement of the broader public in comprehending and engaging with these critical societal issues. The current research extends social media research by practically validating a strategy for effectively communicating critical societal issues with the public to promote a sustainable society.

The present study investigated the impact of individual differences (environmental involvement and trust in government) on people's responses to participation in the TikTok challenge. Specifically, the moderating role of trust in government on the relationship between environmental involvement and changes in environmental perception as a result of TikTok challenge participation supports the existing argument that perceived collective support is critical in motivating the adoption of climate initiatives among individuals, in conjunction with environmental involvement (Ardoin et al., 2023; Quimby

& Angelique, 2011). The findings indicate that trust in government acts as a vital resource that enables citizens to engage in climate change initiatives, while its absence may lead to a scenario where environmental involvement adversely affects the improvement in environmental perception via participation in TikTok challenges, owing to reduced motivation driven by an increased understanding of the necessity for government support in achieving these aims. Thus, from a national perspective, it is vital for governments to focus on building and maintaining trust to empower citizen engagement in climate action, suggesting that transparent, equitable policies and open communication are essential for fostering environmental stewardship (Kulin & Johansson Sevä, 2021). Consequently, this study underscores the importance of enhancing trust in government and nurturing environmental involvement, as these elements not only foster individual participation in initiatives like the TikTok challenge but also mirror the increasing commitment of the private sector to climate adaptation efforts, which provide significant public and private benefits (Vandenbergh & Johnson, 2021).

Participating in the TikTok challenge entails more than just creating content; it also involves taking into account the opinions of the social group that views and supports the challenge videos. This is meaningful from the perspective of environmental communication because the literature on pro-environment behavior has posited that environmental actions are not simply driven by achievement goals and personal well-being, but convey an underlying social goal (Minton et al., 2012). Thus, the experience of sharing the content in a complex social environment of TikTok could have further contributed to enhancing the social goal of promoting climate action in our research (Thaker et al., 2019).

Furthermore, a central aspect of utilizing social media is that the content individuals upload is preserved within their accounts, allowing the

original poster to view it whenever desired. This feature is particularly valuable since the primary aim of social media users typically involves communication and the observation of others' reactions to their posts (Lee & Lee, 2021). Consequently, irrespective of the motive for revisiting the TikTok challenge post, repeatedly observing one's environmental activism through revisits might further enrich our participants' perception of environmental issues in future. In addition, by having a climate change-focused TikTok challenge shared in the social media community, we can anticipate its positive impact resonating with other social media users (Häussler, 2021; Ho & Chuah, 2022; Zeng & Abidin, 2021). Thus, exploring further into the ways various types of social media activities impact civic attitudes and behaviors could be extremely valuable for developing different social media-based interventions for fostering a sustainable society in future.

The findings of this study suggest potential applications in several domains. Firstly, the verified effectiveness of using TikTok for social media campaigns in enhancing understanding and interest in campaign-related topics indicates that similar approaches could be explored for future eco-friendly initiatives and other public policy areas. Reference to the campaign and video production procedures from this study could be instrumental in amplifying this effect. Additionally, since this study confirmed that trust in the government plays a crucial role, beyond mere participation in programs, it reaffirms that public communication and trust are vital keys to successful campaigns from a policy implementation perspective. Therefore, it is anticipated that the effects of social media campaign participation identified in this research will lead to various practical activities and further research outcomes for more effective campaign dissemination strategies.

2) Limitations and future research

There are some limitations with the study. As with other survey studies utilizing self-report measures, it is important to consider the potential for response bias when interpreting the current results. Although the results of this study indicated significant improvement in people's perception regarding environmental issues, their actual consumption or participation in environmental movements (i.e., the behavioral aspect) were not observed. While it is generally thought that attitudes will be reflected in behavior, there are cases in which this is not the case, due to various psychological and external factors (Ajzen, 1991; Lee et al., 2020). Therefore, it is important to confirm the results by conducting either a longitudinal study or experimental study to verify whether people's behavioral changes after participating in the social media challenge are consistent with their changed perceptions.

The current study had a relatively high proportion of female participants. Existing literature on social media posits that there may be gender differences in the motivation to continue using social media. Typically, women tend to use social media for maintaining close social connections and accessing information, while men predominantly utilize it for general information (Krasnova et al., 2017). Nevertheless, the literature consistently supports the effectiveness of active learning methods for both genders, which had been proposed as the primary mechanism underpinning the impact of the current social media challenge on perception of environmental issues. Therefore, while exercising caution in generalizing the present findings, there is no strong rationale to doubt their applicability to a broader population. Future research should consider examining a sample with better gender balance to enhance the robustness of the current assertion.

Lastly, considering the specific nature of case studies, which are conducted during particular occasions, it is important to acknowledge that the generalizability of the current findings is limited. As a next step, conducting an experimental study with a control condition for comparison, in which a group does not participate in the TikTok challenge learning activity, would be informative. This study design will contribute to establishing the causal effect of the TikTok challenge on enhancing the perception of environmental issues.

In summary, this study unveils an innovative strategy for harnessing social media as an active learning tool, engaging the public through social media challenges to cultivate pro-environmental mindsets. These findings hold significant importance as they underscore the potential of social media, an integral part of younger generations' daily lives, as a powerful and accessible avenue for addressing pressing societal concerns and enhancing public sentiments. Additionally, our research underscores the pivotal role of government trust in shaping public responses to climate communication. These insights offer valuable guidance for governments and stakeholders alike, seeking to harness social media's potential to effectively reshape public attitudes and behaviors in the pursuit of meaningful climate action and the creation of a sustainable society.

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탄소 중립 틱톡 챌린지 참여가 환경 문제 인식에 미치는 영향*

환경 관여도와 정부 신뢰의 상호작용 효과

이태준 KDI 국제정책대학원 교수**

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디지털 시대로 접어들면서 소셜 미디어는 기후 변화에 대한 대중의 인식을 제고하고자 하는 다양한 이해관계자들에게 점점 더 중요한 플랫폼이 되고 있다. 이 연구에서는 탄소 중립을 장려하는 틱톡 챌린지 참여가 젊은 층의 친환경 태도 채택에 미치는 영향을 조사했다. 연구 결과, 틱톡 챌린지에 참여하면 환경 문제에 대한 인식이 향상되는 것으로 나타났다. 또한 정부 신뢰 수준이 틱톡 챌린지가 가져온 환경 인식 변화에 영향을 미치는 데 중요한 역할을 했다. 틱톡 챌린지 참여 효과는 능동적으로 학습하려는 사람들의 의지와 정부신뢰에 따라 결정된다는 것을 연구결과에서 확인할 수 있었다. 본 연구를 통해 확인한 결과는 소셜 미디어 참여의 한 형태가 지속 가능한 사회를 촉진하기 위한 새로운 개입으로 어떻게 작용할 수 있는지에 대한 이해에 기여할 수 있을 것이다.

KEY WORDS 틱톡 챌린지 • 능동적 학습 • 기후 행동 • 환경 문제 인식 • 소셜 미디어 개입

* 본 연구에 재정적 후원을 해주신 KDI국제정책대학원에게 감사를 표합니다. 또한 본 연구에 도움을 주신 틱톡 코리아 공공정책팀에게 감사의 말씀을 드립니다.

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