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Social media and collective action against climate change among Peruvian college students[1]

Redes sociales y acción colectiva contra el cambio climático en estudiantes universitarios peruanos

Redes sociais e ação coletiva contra a mudança climática em universitários peruanos

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This study aims to analyze whether Social Identity Model for Collective Action (SIMCA) variables mediate the relationship between social media use and environmental collective action. The research used a multivariate correlation design, based on the SEM (Structural Equation Modeling) analysis, with a sample of 259 Peruvian university students. Group efficacy was found to mediate the relationship between the use of social media and habits against climate change. In addition, moral convictions, anger, identification with activists, and group efficacy were found to partially mediate the relationship between the use of social media and online collective action against climate change. It is concluded that the connection between social media and collective action varies depending on the type of environmental collective action.
Keywords: Collective action, social media, climate change, Peru.

El estudio busca analizar si las variables del modelo de Identidad Social para la Acción Colectiva (SIMCA) median la relación entre el uso de las redes sociales y la acción colectiva ambiental. La investigación usó un diseño correlacional multivariado, basado en el análisis del modelo de ecuaciones estructurales (SEM), con una muestra de 259 estudiantes universitarios peruanos. Se encontró que la eficacia grupal medió la relación entre el uso de redes y los hábitos contra el cambio climático. Además, se halló que las convicciones morales, la ira, la identificación con los activistas y la eficacia grupal mediaron parcialmente la relación entre el uso de redes sociales y la acción colectiva virtual contra el cambio climático. Se concluye que la conexión entre las redes y la acción colectiva varía en función del tipo de acción colectiva ambiental.
Palabras clave: Acción colectiva, redes sociales, cambio climático, Perú.

O estudo busca analisar se as variáveis do Modelo de Identidade Social para Ação Coletiva (SIMCA) mediam a relação entre o uso das redes sociais e a ação ambiental coletiva. A pesquisa utilizou um desenho correlacional multivariado, baseado na análise do modelo de equações estruturais (SEM), com uma amostra de 259 universitários peruanos. Verificou-se que a eficácia do grupo mediou a relação entre o uso de redes e hábitos contra as mudanças climáticas. Além disso, constatou-se que o convicções morais, a raiva, a identificação com os ativistas e a eficácia do grupo mediaram parcialmente a relação entre o uso de redes sociais e a ação coletiva virtual contra as mudanças climáticas. Conclui-se que a conexão entre redes e ação coletiva varia conforme o tipo de ação coletiva ambiental.
Palavras-chave: Ação coletiva, redes sociais, mudanças climáticas, Peru.

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Introduction

Climate change is one of the principal challenges facing humanity. Heat retention due to greenhouse gasses –byproducts of the use of fossil fuels– has led to a progressive increase in the temperature of the planet with varying consequences, such as forest fires, droughts, excessive rain, and rising sea levels (Gates, 2021). An important number of actions that contribute to climate change are related to daily habits such as using a car rather than walking or using public transit, the wasteful use of electricity, and the consumption of red meat (Poore & Nemecek, 2018; Sandström et al., 2018).

Collective action can be understood as behavior undertaken by individuals who desire to achieve a common goal; it is thought that the best way to achieve the results that these initiatives seek is through organized participation (Brunsting & Postmes, 2002). One theory that effectively explains collective action is the Social Identity Model for Collective Action or SIMCA. This model argues that collective action is made up of four psychological motivators: moral conviction, emotions, social identity, and perceived group efficacy (Thomas et al., 2020; Van Zomeren, 2013). As regards environmental issues, there is evidence that variables from the SIMCA model predict action aimed at combating climate change (Bamberg et al., 2015; Van Zomeren et al., 2019). Therefore, it is important to connect collective action to the environment; given the complexity of the problem, it will require collective action to stabilize our climate (Brechin, 2016; Higham et al., 2019).

The use of social media for political means —also known as cyberactivism– can be understood as the use of digital platforms as ways to gain information related to different social causes, as well as participate in them (García-Galera et al., 2014). Social media also presents content that mobilizes sizable groups of people to achieve common goals (Valenzuela, 2013). This type of activism, frequently used in social media such as Twitter and Facebook, has changed the way in which collective action is coordinated and promoted (Greijdanus et al., 2020). Ample research on the connection between social media use and collective action exists (Cmeciu & Coman 2016; Gerbaudo,

2016). These studies have found that these types of digital activism, such as sharing information and expressing political views, are associated with participation in collective action, such as participating in a protest or signing an online petition (Alberici & Milesi, 2018; Barth et al., 2015; Halpern et al., 2017). Specifically, digital collective action can be understood as Internet-based proposals related to a call to authorities for attention, as well as online cooperation with organizations in order to achieve different goals (Barth et al., 2015; Landmann & Rohmann, 2020).

Regarding the use of social media in the fight against climate change, these platforms have been identified as informing users of the magnitude of the problem as well as promoting the development of environmental initiatives and the intent to maintain them over time (Anderson, 2017; Ballew et al., 2015; Liu, 2016; Şen & Şen, 2016; Wamuyu, 2018).

Studies exist that analyze the SIMCA model variables as effective mediators between social media use and collective action (Chan, 2017; Odag et al., 2016), as well as research whose objectives are to analyze the incentives behind participating in climate change collective action using the SIMCA model (Brügger et al., 2020). However, after a systematic review of databases such as SCOPUS and EBSCO, we have not identified any study to date that examines the SIMCA variables as mediators of the effect of social media use and collective action against climate change.

In view of the circumstances surrounding climate change today, research that connects collective action to climate change is necessary (Bamberg et al., 2015). Given the importance of social media as an element associated with collective action, we believe that it is important to contribute to this area of knowledge. In addition, despite Peru's high level of vulnerability to climate change (Ministerio del Ambiente, 2019), we have not identified any study to date that examines climate change collective action. We believe it is important to endeavor to fill this gap.

Given studies that demonstrate the impact of the use of social media on the SIMCA variables (Brügger et al., 2020; Chan, 2017; Odag et al., 2016; Ruiz-Dodobara et al., 2021) and their connection to collective

action (Bamberg et al., 2015; Van Zomeren et al., 2019), this study aims to analyze if the SIMCA variables can explain the relationship between the use of social media and collective action against climate change among a group of Peruvian university students. In this work, we conceptualize climate change collective action in two ways: daily habits that favor protecting the environment, and online collective action.

Due to the prevalence of their use of social media in Peru, this study focuses its analysis on university students (Instituto Nacional de Estadística e Informática, 2020). In addition, many studies indicate that young people use social media to organize, draw attention to issues, encourage participation in collective action, and the political use of these platforms tends to be a good predictor of participation in collective action (Hoffmann & Lutz, 2019; Lee et al., 2017; Ruiz-Dodobara et al., 2021).

SIMCA VARIABLES AND CLIMATE CHANGE COLLECTIVE ACTION

As regards the variables that make up the SIMCA model, there is evidence that these factors predict involvement in climate change collective action. Brügger et al. (2020), in a study of 4 057 young Swiss, found that identification with those who participated in protests and the perception of protests' efficacy to achieve results and create issue consciousness were significant predictors of the decision to take collective environmental action. In their study of MTurk users, Van Zomeren et al. (2019) found that variables connected to participation in climate change collective action were moral conviction, anger, identification with an opinion group, and the perception of participative efficacy.

A study of 562 adolescents and young adults in Germany found that the participation in the Fridays for Future environmental protests could be predicted based on identification with other environmental activists, personal value norms, the perception of friends' pro-environmental activism, and anger at government action on environmental and economic policy (Wallis & Loy 2021). Schmitt et al. (2019) carried out research on American citizens, finding that identification with climate activists predicted pro-environmental actions. Also, in studies that took

place with young people in Germany and Australia, Jugert et al. (2016) found that the manipulation of collective action had an indirect impact on pro-environmental behavior, through an increase in collective action and personal efficacy. Furlong and Vignoles (2021) in their study of 203 participants who were associated with the environmental movement "Extinction Rebellion" (XR) in the UK found that the perception of group efficacy was a significant predictor of the intent to participate in XR environmental collective action. At the same time, they found a pathway from identification with humanity to collective action and future intent to participate, via participative efficacy and identification with the "XR" movement. They also found that moral conviction had an impact on collective action, via anger and identification with the XR movement. Results also demonstrated that the perception of injustice predicted action and future intent to participate via anger and identification with the XR movement.

Given these prior studies, we propose the following general hypothesis:

- The relationship between social media use and collective action against climate change is mediated by the variables in the SIMCA model.

More specifically:

- Social media use and the variables from the SIMCA model are significant predictors of habits aimed at combating climate change.
- Social media use and the variables from the SIMCA model are significant predictors of collective digital action against climate change.

METHODOLOGY

Design

This study uses a correlational multivariate design using multivariate structural equation modeling, as we worked with both observed and latent variables (Preacher & Hayesal, 2004). This work is cross-sectional as data collection took place over one specific time frame (Baltes et al., 1981): from October to December 2021. The goal of

this study is to analyze if the SIMCA factors mediate the relationship between social media use and collective action against climate change. Data was obtained using surveys of university students that were conducted online and individually. This study received ethical approval from the Ethics Committee at the Institute of Scientific Research at the University of Lima.

Participants and Procedures

In order to determine the sample size for the structural equation model, we used Soper's (2022) calculator, version 4.0. According to the calculation, 246 students were needed for a sample with a statistical power of 0.80 and a moderate effect size of 0.25. Participants were recruited using intentional sampling; those who were between the ages of 18 and 35 years old and were registered university students at the time of the study were included in the final sample.

An online survey was used to capture the experience of university students at different higher education institutions in Lima, Peru. This survey was promoted online through social network groups that were made up of students at these different institutions. Before the instrument was applied, participants were informed of the objectives of the research study and they were asked to provide their informed, written consent to participate in the study. Initially, 285 students completed the survey, but 26 cases were later discarded due to incomplete data, or for not fulfilling the requirements listed above. The final sample was made up of 259 university students whose ages ranged from 18 to 35 years old (M = 20.85, DE = 2.55), with 153 female students and 106 male students.

Measures

The survey used in this study was based on the relevant literature and was evaluated by a group of specialists in Psychology and Political Science, whose recommendations were incorporated into the final design. A pilot survey was conducted with ten university students, who demonstrated a good level of understanding and completed the survey on average between 8 and 15 minutes. Participants in the pilot survey were not included in the final dataset. Based on the data obtained

from final dataset, the reliability of each scale was calculated using McDonald's Omega (Ω), as the Omega model is based on psychometric characteristics that are less restrictive than in the case of Cronbach's Alpha (Revelle & Condon 2018; Viladrich et al., 2017).

The variables that were evaluated in the study are as follows:

*Social media use (*Ω = .87): In order to measure online activism against climate change, we built a scale of six items with the following dimensions: sharing content (e.g., "I use digital social media to share content on climate change), participation in discussions (e.g., "I participate in discussions regarding climate change on social media"), and organization of collective action (e.g., "I try to organize action online against climate change").

Habits combating climate change (Ω = 0.68): In order to measure daily habits to mitigate climate change, we developed a 4-item scale (e.g., "I use household appliances moderately to save electricity," "I avoid consuming meat to support the fight against climate change"). In order to measure the two prior variables, we used a 5-point Likert scale with responses ranging from 1 = Never to 5 = Always.

Anger (Ω = .83): With the aim of measuring anger stemming from the perception of injustice, we selected certain items based on the work of Brügger et al. (2020). We also created other items in order to establish a 6-item scale (e.g. "I get angry that adequate measures have not been taken to prevent and control climate change").

Moral Convictions (Ω = .76): moral conviction, understood as absolute positions regarding moral issues, were examined using a 9-item scale; six items were adapted from the work of Van Zomeren et al. (2011) while the remaining three correspond to Brügger et al. (2020) (e.g., "I believe that my opinion about how to act in the face of climate change has a moral component," "My opinion about how to act in the face of climate change has a universal moral value and should be applied around the world").

Identification with victims of climate change (Ω = 0.76): In order to measure the identification with a group of climate change victims, we created a 3-item scale based on the work of Drury et al. (2016) (e.g., "I identify with people who have been impacted by climate change", "I feel connected to people who suffer from climate change").

Identification with activists (Ω = 0.78*):* Identification with climate change activists was measured using a 4-item scale derived from the work of Brügge et al. (2020) (e.g., "I identify with people who protest against climate change," "I consider myself to be part of the movement against climate change").

Group efficacy (Ω = 0.74)*:* In order to measure the perception of group efficacy in the fight against climate change, we constructed a 5-item scale based on the work of Van Zomeren et al. (2012), Brügger et al. (2020) y Swim et al. (2019) (e.g., "I think that we as citizens, together, can participate in the fight against climate change," "I believe that as citizens we can achieve the common goal of controlling climate change").

Online collective action against climate change (Ω = 0.90): Online collective action was measured using a 6-item scale based on the adaptation of items from the work of Barth et al. (2015), y Landman and Rothman (2020) (e.g.: "I would like to protest online in order to achieve justice in climate change areas," "I would sign online petitions to support fairer laws related to climate change").

In order to measure the variables of anger, moral conviction, identification, perception of group efficacy, and online collective action a five-point Likert response scale was used, with options ranging from: 1 = Totally disagree to 5 = Totally agree.

Analytical Plan

The Spearman correlation matrix was calculated using the variables described above. We then developed four multiple regression models, which had social media use and the SIMCA model variables as independent variables, with collective action against climate change. Models differed based on the type of identity that was analyzed (identification with victims or activists) and the dependent variable (habits or online collective action against climate change).

For the multiple mediation study, we used four models in which only one variable was the independent variable (social media use), four mediating variables that stem from the SIMCA model, and collective action against climate change as the dependent variable. Similarly to the multiple regression models, the multiple mediation models differ regarding the type of identity that was analyzed as well as the dependent

variable (Figures 1 to 4).

Finally, we tested the goodness of fit for each multiple mediational model using the Chi squared and Chi ratio indexes, squared degrees of freedom, the CFI, TLI, RMSEA and SRMR. For the multiple mediation study, we used a structural equation model using the AMOS v 26 program (Arbuckle, 2019; Preacher & Hayes, 2004).

Results

We found statistically significant correlations between social media use and the SIMCA variables of anger ($r = .43$, $p < .001$), moral conviction ($r = .40$, $p < .001$), identification with victims ($r = .26$, $p < .001$), identification with activists ($r = .34$, $p < .001$) and group efficacy ($r = .15$, $p < .05$). We also found a significant relationship regarding social media use and habits combating climate change ($r = .29$, $p < .001$) and online collective action against climate change ($r = .50$, $p < .001$). In addition, we found that both variables related to collective action (habits and online collective action) were statistically significant with each of the mediating variables.

We then examined four possible regression models using habits to combat climate change and online collective action against climate change as dependent variables. In all models we controlled for sex and age. We did not observe multicollinearity between the variables in any of the models.

In Model 1 (Table 1), one can see that only social media use and group efficacy were significant predictors of habits to combat climate change. This model explains (R^2) 18% of the variance in the habits to combat climate change. While in Model 2, only group efficacy predicted the dependent variable. Both models explained (R^2) 18% of the variance of the habits against climate change.

Regarding Model 3, one can see that all variables except identification with victims were significant predictors of online collective action against climate change (Table 1). This model explains (R^2) 43% of the variance in digital collective action.

Finally, Model 4 demonstrates that, with the exception of moral conviction, all variables are significant predictors of online collective action against climate change. This model explains (R^2) 47% of the variance of this variable.

TABLE 1
MULTIPLE REGRESSION MODELS PREDICTING HABITS AND ONLINE COLLECTIVE ACTION AGAINST CLIMATE CHANGE

	DV: Habits combating climate change		DV: Digital Collective Action	
	Model 1	Model 2	Model 3	Model 4
Control Variables				
Sex	.319***	.319 ***	.391 ***	.391 ***
Age	-.125*	-.125 *	-.086	-.086
ΔR^2	.120***	.120 ***	.162 ***	.162 ***
Independent Variables				
Social Media Use	.136*	.123	.201 *	.140 **
Moral convictions	.031	.039	.140 *	.079
Anger	.131	.135	.325 ***	.254 ***
Identification with Victims	.087		-.004	
Identification with Activists		.076		.277 ***
Group Efficacy	.215 **	.216 ***	.222 ***	.222 ***
ΔR^2	.181***	.179 **	.425 ***	.466 ***
R^2	.301 ***	.299 ***	.588 ***	628 ***

$N = 259$
* $p < .05$ ** $p < .01$ *** $p < .001$
Source: The Authors.

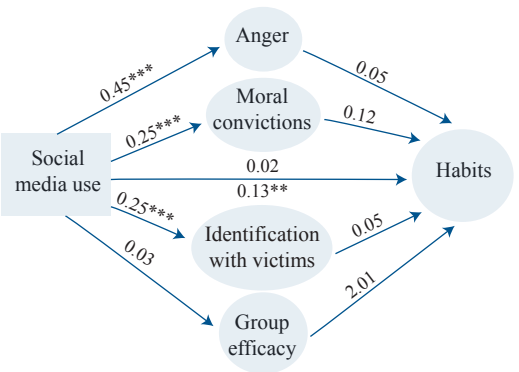
MEDIATIONAL ANALYSIS

As with the regression analysis, in the mediational analysis we controlled for both sex and age. First, in Model 1 (β = .056, *SE* = .039, 95% CI [.017, .157] y 2 (β = .061, *SE* = .040, 95% CI [.020, .182]) we find that group efficacy totally mediates the relationship between social media use and habits against climate change (Figures 1 and 2). Both Model 1 ($\chi 2$ = 1 486.34; $\chi 2$/GL = 2.71; CFI = 0.93; TLI = 0.90; RMSEA = 0.05; SRMR = 0.07) and Model 2 ($\chi 2$ = 1 691.12; $\chi 2$/GL = 2.74; CFI = 0.94; TLI = 0.92; RMSEA = 0.05; SRMR = 0.08) present acceptable goodness of fit measures.

As regards Model 3, we find that moral convictions (β = .128, *SE* = .278, 95% CI [.030, .219]; anger (β = .128, *SE* = .085, 95% CI [.048, .204]) and group efficacy (β = .062, *SE* = .049, 95% CI [.021, .124]) partially mediate the relationship between social media use media and online collective action. Model 3 also has an acceptable goodness of fit (χ2 = 1 694.14; χ2/GL = 2.74; CFI = 0.93; TLI = 0.916; RMSEA = 0.08; SRMR = 0.07).

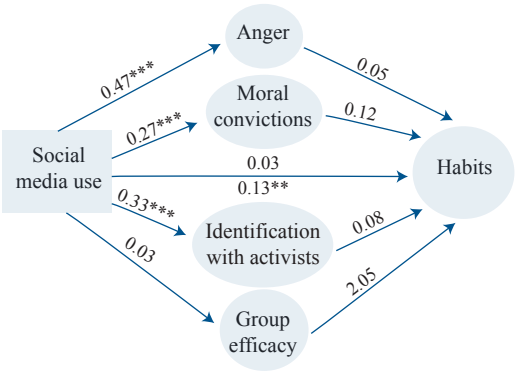
On the other hand, we observed in Model 4 that anger (β = .097, *SE* = .060, 95% CI [.001, .186]), identification with activists, (β = .184, *SE* = .062, 95% CI [.079, .324]) and group efficacy (β = .056, *SE* = .035, 95% CI [.007, .131]) partially mediate the relationship between social media use and online collective action. It is important to highlight that this model presents the best goodness of fit of all models (χ2 = 1 678.37; χ2/GL = 2.57; CFI = 0.93; TLI = 0.92; RMSEA= 0.06; SRMR = 0.07) (Figure 4).

FIGURE 1



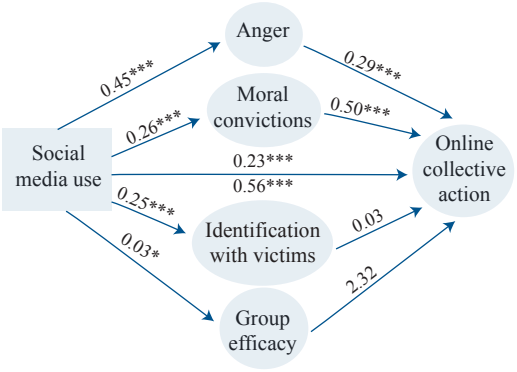
Mediational Model 1. IV: Social media use, DV: Habits combatting climate change. Mediational Variables: Anger, moral convictions, identification with victims and group efficacy. The upper side of the direct line between social media use and habits indicates the direct effect and the lower side of the line shows the total effect. The results correspond to non - standarized estimates.
** p < 0.1, *** p < 0.001.
Source: Created by the authors.

FIGURA 2



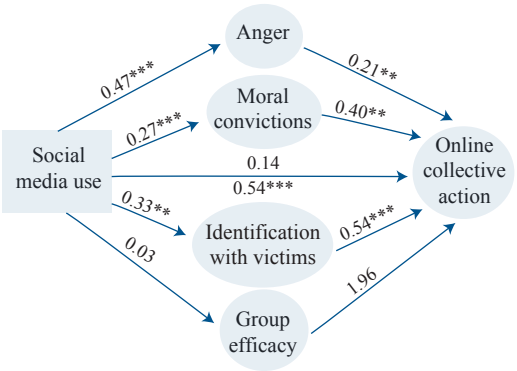
Mediational Model 2. IV: Social media use, DV: Habits combatting climate change. Mediational Variables: Anger, moral convictions, identification with activists and group efficacy. The upper side of the direct line between social media use and habits indicates the direct effect and the lower side of the line depicts the total effect. The results correspond to non - standarized estimates.
** p < 0.1, *** p < 0.001.
Source: Created by the authors.

FIGURA 3



Mediational Model 3. IV: Social media use, DV: Online collective action against climate change. Mediational Variables: Anger, moral convictions, identification with victims and group efficacy. The upper side of the direct line between social media use and online collective action indicates the direct effect and the lower side of the line depicts the total effect. The results correspond to non - standarized estimates.
** p < 0.1, *** p < 0.001.
Source: Created by the authors.

FIGURA 4



Mediational Model 4. IV: Social media use, DV: Online collective action against climate change. Mediational Variables: Anger, moral convictions, identification with activists and group efficacy. The upper side of the direct line between social media use and online collective action indicates the direct effect and the lower side of the line depicts the total effect. The results correspond to non - standarized estimates.

** $p < 0.1$, *** $p < 0.001$.

Source: Created by the authors.

DISCUSSION AND CONCLUSION

This study found that social media use, with the exception of Model 2 which had a marginal level of significance ($p = 0.052$), was a significant predictor of climate change collective action both as regards habits and online collective action (Table 1). This finding coincides with many studies that find a relationship between online activism and collective action linked to political issues (Alberici & Milesi, 2018; Cmeciu, 2016; Gerbaudo, 2016). The possible explanation for this link lies in the exposure to political stances in social media such as Twitter and Facebook, which can lead to involvement in public collective action (Halpern et al., 2017). According to Wamuyu (2018) the use of social media as a way to take care of the environment could impact community involvement and intentions to perform pro-environmental

online activism. In addition, our findings coincide with other studies that identify a relationship between the use of social media for political activism among young people and participation in collective action (Hoffmann & Lutz, 2019; Lee et al., 2017; Valenzuela et al., 2013).

Regarding moral convictions, we found that they were only significant predictors of digital collective action against climate change when the regression model (Model 3) included identification with those impacted by climate change (Table 1). These results align with those of Van Zomeren et al. (2019), who found that moral conviction predicted participation in climate change collective action. This in turn is related to mediational Model 3, in which moral convictions mediates social media use and online climate change collective action. This suggests that an online discussion that promotes reflection would activate moral norms, which could lead to participation in collective action (Alberici & Milesi, 2018), in this case against climate change.

As regards anger derived from the perception of injustice, we found that this was a good predictor of digital collective action (Table 1). Results coincide with Van Zomeren et al.'s (2019) findings, where they found that anger predicted collective action in defense of the environment. The explanation for the mobilizing impact of anger is due to frustration many feel in the face of government environmental policy, such as described in the studies of Furlong and Vinogles (2021) y Wallis and Loy (2021). These studies find that this emotion plays a significant role in participation in collective action.

We also found that anger mediated the relationship between social media use and digital collective action against climate change (Mediation Models 3 and 4). These findings could be due to the fact that much of the content that is shared regarding environmental issues on social media entails descriptions of events and/or practices that impact climate negatively (Cody et al., 2015; Mavrodieva et al., 2019); therefore, these events activate emotions such as anger, contributing to an impact on participation in collective action. At the same time, we must acknowledge that social media can create polarization, as these networks tend to show users information that is consistent with their opinions as well as individuals who think like them (Törnberg, 2018; Yarchi et al., 2021). Therefore, the use of social media could radicalize

postures that were initially indignation in the face of weak support for climate protections. In turn, this indignation could unleash a wave of emotions such as anger and the subsequent desire to participate in climate change collective action.

It is important to highlight that anger did not mediate the relationship between the social media use and habits to combat climate change (Mediation Models 1 and 2). Anger, when associated with the consumption of information on social media, does not result in daily routines such as saving energy and reducing the consumption of meat; however, it does have an impact regarding the intent to participate in collective action online (Mediation Models 3 and 4). Thus, as regards habits for protecting the environment, we do not find emotional involvement to be a significant predictor of action; the opposite is true when individuals express their frustration with politicians (Wallis & Loy, 2021), experience indignation due to climate change, or participate in protests (Furlong & Vignoles, 2021).

In relation to identity, we found that identification with activists (Regression Model 4) was the only significant predictor of collective online action. This finding aligns with those of other studies that find identification with individuals who protest against climate change predicts participation in collective action (Brügger et al., 2020; Van Zomeren et al., 2019; Wallis & Loy, 2021). At the same time, we found that this type of identity was a significant mediator of social media use and collective digital action against climate change (Mediational Model 4). On social media, people often associate themselves with individuals and/or groups who have similar interests and political positions (Yarchi et al., 2021).

We also found that digital spaces to exchange information, debate, etc. could have an impact on the political identity of users and might even result in the intent to participate in collective action (Alberici & Milesi, 2018). As regards this study, since climate change is intricately linked to the political world, the use of social media should reinforce political identification with activists, which might in turn impact participation in collective action.

Identification with those impacted by climate change did not predict either habits or online collective action (Table 1), nor did it mediate

the relationship between social media use and both types of climate change collective action (Mediation models 1 and 3). These findings are interesting as information about victims of climate change are often shared online (Mavrodieva et al., 2019), which could foster empathy. In addition, other studies have found that in the face of disasters, those who identify with the out-group are often those mobilized to help (Vezzali et al., 2015). Drury et al. (2019) argues that in the presence of a common disaster, individuals experience what they call a perception of a "shared destiny," which impacts identification with victims of the event and fosters helping others. Based on our findings, despite the fact that climate change can be conceptualized as an event that will have a disastrous impact on all of humanity, this is not related to the perception of a shared destiny that would lead individuals to closely identify with those who are most impacted by climate change.

Regarding group efficacy, we find that in all regression models this variable is a good predictor of habits and online collective action against climate change. These findings are consistent with prior studies (Brügger et al, 2020; Furlong & Vignoles, 2021; Jugert et al., 2016; Van Zomeren et al., 2019;). We also find that in all mediation models efficacy mediates the relationship between social media use and both dependent variables.

As we've mentioned previously, on social media individuals tend to connect with those individuals or groups with whom they have a shared affinity (Yarchi, 2020); if social media users observe that users who are similar to them use these platforms to achieve success with certain initiatives (such as habits or digital collective action) against climate change, with a base in vicarious learning (Bandura, 2002), we can infer that this information would impact the efficacy of these individuals and lead them to perform collective action.

Another possible explanation is that the high number of online discussion leads to collective efficacy (Alberici & Milesi 2013) and makes it more likely that individuals will participate in digital or in-person political activities (Vaccari et al., 2015). Therefore, higher use of social media as a way to debate and exchange information regarding climate change may impact the belief in individual efficacy in participating in political processes. In turn, this higher efficacy may lead individuals to engage in collective action.

In conclusion, the principal contribution of this study is that it explains the relationship between the use of social media and collective action through various SIMCA model variables, such as group efficacy in the case of habits for combating climate change, as well as nearly all the SIMCA variables regarding online collective action. We found that the mediators and predictors of both dependent variables were different, which indicates that a differential focus at the moment of promoting both types of collective action will be necessary. We also found that the use of identification with climate change victims might not be an effective strategy for the promotion of environmental action, as compared to identification with individuals who actively take action against climate change. Future studies should continue to investigate this area.

This study is not without limitations. It was based on a cross-sectional design using a sample of university students, which limits our conclusions in terms of causality as well as to this specific population.

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