# The Persuasive Effect of Social Media Engagement: Examining the Mechanisms and Effects of Action and Cues

Dissertation

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## Abstract

The goal of this study was to examine the persuasive effect of social media engagement on attitude and behavioral intention. To do so, this dissertation study proposed a conceptual framework, drawing upon theories in various areas including the theory of interactive media effects, persuasion theories, theories of social norms, and norm activation theory. The applied focus of this study was promoting collective actions for African Americans' racial justice. This study focuses on two specific types of engagement: action and cues. An online experiment using a U.S. adult sample (N = 688) was conducted to examine the respective mechanisms and relative effects of action and cues on two major persuasive outcomes (i.e., attitude and behavioral intention). Overall, the results did not support the theoretical mechanisms proposed in the conceptual framework. No differences were observed between action and cues' effects on attitude toward and behavioral intention for participation in collective actions for African Americans' racial justice. Action and cues' effects on post attitude were moderated by prior attitude such that their effects were stronger among those with a more positive prior attitude. The proposed conceptual framework adds to the theoretical literature on social media engagement effects. The findings provide implications for ongoing research for understanding the mechanisms and effects of social media effects on attitudes and behaviors.

# Dedication

To myself ten years ago who did not give up.

Acknowledgments

I would like to extend my sincere thanks to my advisor, Dr. Hyunyi Cho, for always supporting and looking out for me. She is the best advisor I could ask for. She did so much more than what she needed to do to help my dream come true. She made me a better scholar and a better person.

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# Vita

2017……...M.A., University of Georgia

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Li. W. & Cho, H. (in press). Modifiable factors associated with social media addiction: Gratifications sought, social media realism, and social network characteristics. *Communication Reports*.

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## Fields of Study

Major Field: Communication

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# Chapter 1. Introduction

Social media have been widely used as a persuasive technology in various contexts. Existing research has shown social media can influence individuals' attitudes and behaviors related to climate change (Lewandowsky et al., 2019), politics (Weeks et al., 2017), activism (Chon & Park, 2020), and health behaviors (Shi et al., 2018). The effectiveness of social media may lie in their reach and affordances (boyd & Ellison, 2007). The reach enables messages to travel to a broad audience and various affordances of social media allow users to connect to, as well as be influenced by, other users (Fox & McEwan, 2017). However, existing research of social media as a persuasive technology has mainly focused on passive use (i.e., browsing) and understudied active use of them (i.e., engagement). It remains unclear what persuasive impact social media engagement has on individuals and through what mechanisms it affects individuals' attitudes and behaviors.

Social media engagement has become a major way of social media use (Oeldorf-Hirsch, 2018). Engagement refers to the extent to which users interact with social media content (Oeldorf-Hirsch, 2018) and is enabled by the agency and interactivity affordances of social media (Sundar, 2008). On social media, there could be two types of engagement: engagement with message and engagement with other users. First, social media provide novel affordances for users to interact with relevant information and its sources (Sundar et al., 2015). Common engagement behaviors of this type include users' liking, commenting, and sharing of social media content. Second, engagement could also be with other users. Individuals can engage with other users by interacting and being

influenced by traces of engagement by others (Dvir-Gvirsman, 2019). These traces may come in various forms such as the number of views, likes, and shares which are commonly known as system-generated metrics or cues. Mounting evidence has shown that access and attention to these metrics and cues influenced individuals' engagement with online content (e.g., Messing & Westwood, 2014; Winter et al., 2016; Yang, 2016) and subsequent attitudinal and behavioral outcomes (e.g., Phua & Ahn, 2016; Li et al., 2020).

Social media engagement's impacts may operate through different mechanisms than passive exposure. As opposed to passive exposure, engagement emphasizes active interactions with content and others via social media affordances. Previous research has shown that social media engagement affected people's attitudes and behaviors through self-effects including consistency, self-concept change, etc. (Cho et al., 2018; Sude et al., 2021) and bandwagon heuristic-enabled social influence (Sundar et al., 2008; Sundar et al., 2015). However, the persuasive effect of social media engagement has been understudied and the theoretical mechanisms of the effect have not been examined. To this end, the current study attempts to address the following two significant questions.

First, what are the persuasive effects of social media engagement? Compared to passive use of social media (i.e., browsing), engagement indicates greater interest and motivation (Khan, 2017). Social media effects depend on how social media are used (Boulianne, 2019). Research shows that social media engagement can lead to a host of positive psychological and social outcomes including positive learning (Li & Cho, 2021), elevated issue involvement and importance (Oeldorf-Hirsch & Sundar, 2015), reduced

psychological reactance (Oh et al., 2021), greater openness to diverse online messages (Sude et al., 2021), and increased behavior intentions (Kang & Sundar, 2016). One, users themselves' engagement can produce a host of psychological effects which may subsequently lead to changes in cognition, attitudes, and behaviors (Pingree, 2007; Valkenburg, 2017). Two, information about other users' engagement is easily accessible in the form of system-generated metrics or cues (Dvir-Gvirsman, 2019). These metrics and cues serve as social information and heuristics for individuals to evaluate the messages and may thereby affect their attitudes and behavioral intentions. These differences point to new possible patterns in which social media engagement affects persuasion and may provide new insights into how social media can be leveraged for attitude and behavior change. It is therefore of theoretical and practical importance to study the persuasive impacts and mechanisms of social media engagement in the current media environment.

Second, what are the theoretical mechanisms of social media engagement effects? The mechanisms of social media engagement in affecting persuasion have not been clearly explained and tested. A useful theory is the theory of interaction media effects (the TIME model; Sundar et al., 2015). The TIME model has been one of the most influential theories in explaining social media effects. The model postulates that social media effects operate through the routes of actions (i.e., the use of interactive media features to perform communicative actions) and cues (i.e., the presence of social recommendation cues). The distinction between the two routes identified and their respective mechanisms explicated in the TIME model may be useful in explaining the

persuasive effects of social media engagement. However, how action and cues may help facilitate persuasive effects has not been explicated in the model. Furthermore, previous research has examined the respective impact of self-centric effects (e.g., Valkenburg, 2017) and others-centric social processes (e.g., Winter et al., 2016) in the social media context. However, their relative efficacy (i.e., the relative size of effects) in generating attitudinal and behavioral outcomes remain untheorized and untested, leaving another important question unanswered.

This dissertation aims to address the two questions above in the context of promoting collective actions for African Americans' racial justice. Police violence and hate crimes against African Americans have been familiar since the beginning of American history. The killing of George Floyd in 2020 reminded people that systemic racism against African Americans remains a core aspect of African American experience (Sullivan et al., 2021). The past few years have witnessed repeated outbreaks of large-scale social movements against dehumanization and hate crimes against African Americans with *BlackLivesMatter* (BLM) being the largest. Ranging from social media to real-world settings, the BLM movement along with other nationwide protests have increased the public's awareness of anti-Black discrimination and affected public discourse around this issue (Reny & Newman, 2021). More remains to be done, however. While this dissertation is being written, a racism-motivated mass shooting killed 10 African Americans in Buffalo, New York. Video clips of the shooting went viral across social media platforms, spurring concerns about online radicalization and extremism (Duffy & O'Sullivan, 2022). This tragedy and its concerning presence on social media

further invigorated the need for scholars to study the persuasive impacts of social media engagement in promoting positive attitude and behavior change for collective efforts for African Americans' racial justice.

To address this question, this study first outlines existing research on social media engagement and its effect. It then discusses how the TIME model can provide novel explanations for the persuasive impact of social media engagement. Based on this, the current study proposes a conceptual model (Figure 2) and a set of hypotheses for explicating the affordances-enabled mechanisms of social media engagement effects on two persuasive outcomes: attitude and behavioral intention and the relative efficacies of the two routes through action and cues. An online experiment was conducted using a general population sample in the U.S. to test the proposed conceptual model. Finally, the theoretical and practical implications and future research directions are discussed.

## Chapter 2: The Effect of Social Media Engagement on Persuasion

Social media effects on attitudes and behaviors and their mechanisms have been the focus of many computer-mediated communication (CMC) theories with the theory of interactive media effects (TIME model; Sundar et al., 2015) being one of the most influential (see Figure 1). The TIME model draws from four models of different focuses: the interactivity effects model, the agency model of customization, the motivational technology model, and the Modality-Agency-Interactivity-Navigability (MAIN) model. It explains how the use of interactive media interface features affects user psychology. Hence, it is a useful framework to explain the effect of social media engagement.

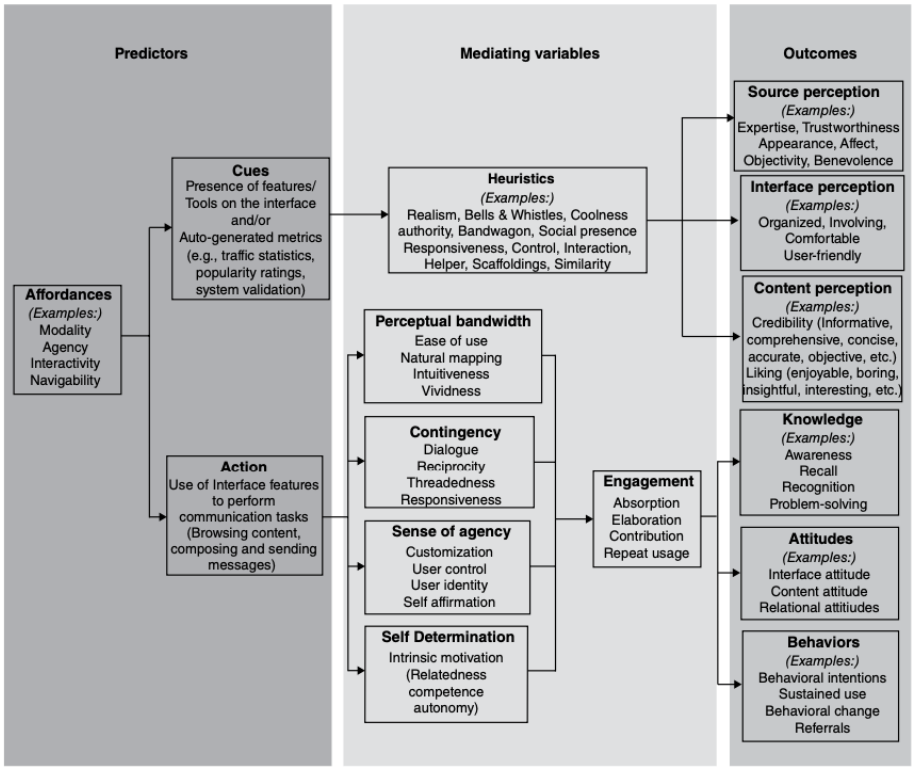


*Figure 1*. The Theory of Interactive Media Effects (the TIME model; Sundar et al., 2015)

An overarching conceptualization of the TIME model is that digital media affordances can affect users' perception, knowledge, attitudes, and behaviors through two routes: action and cues (Sundar et al., 2015). Action is the use of media interface features to perform communicative tasks such as composing and sending messages, liking/upvoting messages, and sharing content with others. Cues refer to the presence of media features/interfaces and system-generated metrics such as views, likes, comments, and shares. The TIME model predicts that action affects users' knowledge, attitudes, and behaviors through perceptual bandwidth, contingency, sense of agency, and intrinsic motivations; cues affect primarily users' perceptions through heuristics including a host of factors such as realism, bandwagon, social presence, etc. (Sundar et al., 2015). In summary, the TIME model offers a comprehensive framework for understanding interactive media effects by differentiating the two routes of actions and cues and laying out the specific mechanisms of each route. It offers useful theoretical perspectives for understanding social media engagement effects.

However, the TIME model is not without limitations when it comes to explaining the effects of social media engagement on attitude and behavior change.

First, the mechanisms of action and cues can be more theoretically elaborated. The TIME model has identified a host of variables, based on the four models, that may explain action and cues' effects. However, the theory itself does not directly address the persuasive effects of action and cues. In the current study's context, it remains unclear how exactly these variables would predict attitude and behavior change. Incorporating perspectives from persuasion theories would help further clarify the specific mechanism

of engagement's persuasive effects. The lack of clarity also has to do with the second limitation.

Second, the outcomes of the action and cues route were not consistently defined. In its current form (see Figure 1), while action may predict knowledge, attitudes, and behaviors, cues predict only perceptual outcomes. Existing research on cues has shown that system-generated cues predicted attitudinal and behavioral outcomes (details below). Hence, mounting evidence showed that cues may also predict persuasive outcomes including attitudes and behaviors. This relationship has not been explicated by the TIME model.

Third, the relative strength of action and cues effects has not been elucidated. While the differentiation between action and cues in the TIME model is useful for explicating interactive media effects, it remains unclear and untested which route is more efficacious in producing persuasive outcomes and influencing users' attitudes and behaviors. Addressing this question is both theoretically and empirically meaningful as it would not only add to the explanatory power of the TIME model but may also provide guidance for advancing persuasion research.

This study attempts to address the above limitations by identifying and testing the mechanisms of social media engagement's persuasive effects on attitude and behavior change. Social media engagement effects can be well explained by the TIME model as engagement is fundamentally enabled by affordances and manifest itself in the forms of action and cues. In specific, actions can be engagement behaviors such as liking, commenting, and sharing; cues can be system-generated cues such as the numbers of

likes and comments that indicate other users' engagement (Dvir-Gvirsman, 2019). In other words, action and cues are two sides of the same coin: action is self's engagement and cues are other users' engagement.

The distinction between self and others and their respective effects on social media have received much scholarly attention. Existing research along these lines primarily draws from the research of self-effects and social influence. Compared to mass media, social media effects are predicated on the "self-generated, self-directed, and self-focused character" of online social communication (Valkenburg, 2017, p. 330). Castells (2007) has pointed out that digital media create "mass self-communication" which is "self-generated in content, self-directed in emission" and can potentially reach a global audience (p. 248). This emphasis on self brings about the possibility that actions enabled by self can in turn impact the self. This does not mean that self is the only source of influence in social media. Previous research has focused on the impact of others in CMC settings. For example, a burgeoning line of research has been focused on how social cues on social media influence individuals' attitudes and behaviors (e.g., Alhabash et al., 2015; Liu & Shi, 2019; Winter et al., 2016). This line of research suggests that the actions of others can affect the self's attitude, cognition, and behaviors. Overall, previous research suggests that action can influence attitudes and behaviors through self-concept change (Bem, 1972), cognitive dissonance (Festinger, 1957), and deliberation (Pingree, 2007); cues can influence attitudes and behaviors through external social influence including social norms (Liu & Shi, 2019), social comparison (Johnson & Knobloch-Westerwick, 2014), and social identity (Winter et al., 2016).

The first question of interest in this study is whether action and cues directly influence attitude and behavior intentions. Evidence on the direct effects of action has been mixed. Action can have a direct effect on individuals' engagement with online content and attitudinal outcomes. For example, Sude et al.'s (2021) experiment found that the ability to upvote or downvote online news articles enabled them to select less attitude-consistent articles and led to less attitude reinforcement. However, other research did not find the direct effect of action. In Oh et al.'s (2021) study, participants were asked to click on the like button below an anti-smoking message on Facebook. The study found that the presence of the like button was not significantly correlated with attitude toward smoking behavior ($r$ = -.11). Similarly, in Hanus and Fox's (2017) experiment, the act of customizing an online avatar was not correlated with the liking of the product sold by the avatar ($r$ = -12). Instead, both studies found that the effects of those actions under study were mediated by a series of psychological variables. These findings suggest that action may not directly affect persuasive outcomes. Instead, its persuasive effects may be indirect and mediated by psychological variables, as persuasion theories posit, which are more predictive of attitude and behavior intention.

Similarly, cues' direct effect on attitude and behavior intentions has also been mixed in the literature. For example, Phua and Ahn's (2016) experiment found that both the overall number of likes and the number of friends' likes independently predicted positive brand attitudes and higher purchase intention. In another recent experiment, Li et al. (2020) found that bandwagon cues (e.g., numbers of likes, replies, and retweets) themselves did not significantly predict perceived persuasiveness which predicted

attitude and behavior intentions. Instead, cues in this study affected attitudes and behavior intentions indirectly through reduced emotional response (e.g., anger). Given the competing evidence regarding the direct effects of action and cues, this dissertation asks:

**RQ1a:** Does action directly predict attitude and behavior intentions?

**RQ1b:** Do cues directly predict attitude and behavior intentions?

## Chapter 3: Mechanisms and Effects of Action and Cues

The next question then is how the effects of action and cues may be mediated and moderated by psychological factors. Below, specific mechanisms of action and cues effects on attitude and behavior change are proposed by integrating the theories and evidence of interactive media effects and persuasion research. A conceptual model is proposed toward this end (see Figure 2).

### The Mechanism of Action's Effect

Action represents self's engagement. Social media provide virtually unlimited opportunities for engagement and spontaneous actions by lowering the cost of participation (e.g., liking/commenting on tweets about social issues). The initiation and performance of these engagement behaviors can induce attitude and behavior change because behavior can be a precursor of attitude and further behavior change. This relationship has long been supported by theories including the self-perception theory (Bem, 1972) and the theory of cognitive dissonance (Festinger, 1957), and widely tested in existing research (e.g., Oh et al., 2021; Sude et al., 2021). The remainder of this section will discuss how these theories and findings can help inform the specific mechanisms of action on attitude and behavior change.

The effect of action is predicated on self-effects. Self-effects were originally focused on message effects and defined as "the effects of messages on the cognitions (knowledge or belief), emotions, attitudes, and behavior of the message/creators/senders themselves" (Valkenburg, 2017; p. 478). The rationale for self-effects enabled by actions is rooted in social psychology. Two major theoretical frameworks include the self-

perception theory (Bem, 1972), and the cognitive dissonance framework (Festinger, 1957). Self-perception theory concerns the passive inference of attitudinal dispositions from behavior. This perspective argues that people are not aware of their initial attitudes, and their final attitudes represent logical deductions from observing their behaviors (Ross & Shulman, 1973). Imagine an individual has no clear stance on collective action (e.g., voting), when this individual was induced to like a YouTube video promoting the benefits of voting for democracy, he or she would derive a stance or attitude toward voting afterward by reflecting on his or her act of liking the video and this attitude is likely positive as liking indicates endorsement and support. Cognitive dissonance, on the other hand, concerns the motivation for maintaining consistency between cognitions and behaviors. From the cognitive dissonance perspective, people are motivated to resolve the dissonance between old prejudices and new behavior by revising their attitudes (Aronson, 1969). When an individual is induced to perform a counter-attitudinal action, for example, like a post about a collective action which he/she is not interested in or holds a negative attitude toward, for little compensation, he/she should experience cognitive dissonance. This dissonance will be resolved by a shift in attitudes toward that collective action. Both theoretical accounts speak to the fact that the examination of self's action leads to attitude change rather than the traditionally conceived attitude-behavior relationship.

Communication scholars have empirically examined how self-effects review themselves in social media and influence users in both online and offline contexts. On one hand, attitude-congruent online self-actions were found to reinforce pre-existing

attitudes. Cho and colleagues (2018) found that expressive actions including liking, sharing, and commenting on political content on social media reinforced expressers' pre-existing political preferences. Similarly, Sude and colleagues (2021) found in their experiment that upvoting/downvoting news articles led to attitude reinforcement. On the other hand, counter-attitudinal online self-actions were found to lead to self-persuasion effects (Aronson, 1999; Festinger & Carlsmith, 1959), i.e., more attitudinal consistency with the behavior than with the original attitude. In an experiment, participants were induced to act unfriendly towards an online partner (Walther et al., 2010). They then reported more negative perceptions about the partner and more negative attitudes towards the object they discussed. Another experiment examined how the endorsing and sharing features resembling the like button on Facebook on health message evaluations (Oh et al., 2021). They found that those who clicked on the like button experienced heightened self-as-source perceptions and reduced psychological reactance which predicted more negative attitudes toward smoking behavior.

Taken together, actions can be manipulated to generate attitude reinforcement as well as changes. When individuals are granted the freedom to act consistently with preexisting attitudes, self-reinforcement will occur. In contrast, when compliance with counter-attitudinal content is induced through manipulation, attitude change may be achieved. Both routes may hold promises for promoting attitude and behavior change. For those with a positive attitude toward a certain issue, actions will reinforce preexisting attitudes; for those with a negative attitude toward a certain issue, inducing counter-attitudinal self-actions will lead to desirable attitudes and behavior changes.

With the direction of action effects identified above, a question to be addressed concerns its underlying mechanism. A mechanism underlying self-effects in the context of pro-social collective actions for racial justice may be personal norms. Personal norm refers to perceived moral obligations to perform or refrain from certain behaviors (Schwartz & Howard, 1984). According to the norm activation model (NAM; Schwartz, 1977), personal characteristics and situational factors can activate personal norms which in turn predict pro-social intentions and behaviors. Personal norm has been used to successfully predict various pro-social behavior intentions and actual behaviors including volunteering (Schwartz & David, 1976), blood donation (Zuckerman & Reis, 1978), and environment protection (Nordlund & Garvill, 2003). Self-effects enabled by action occur primarily through the urge to be consistent with the change of self-concept, the collection of individuals' attitudes and beliefs about themselves (Valkenburg, 2017). In the context of pro-social collective actions, actions on social media may activate personal norms that represent users' self-concepts and moral values. If so, attitude and behavior change may be likely as a result of the activation of personal norms, according to the NAM. Hence, this study hypothesizes that:

**H1**: Personal norm mediates the effect of action on (a) attitudes and (b) behavior intentions.

An additional mediator of self-effects may be systematic processing. For an individual who is browsing messages about collective action on social media, the message's ability to influence this individual's attitudes and behavior intentions should be indirectly affected by the amount of attention and consideration devoted to the message

(Nekmat et al., 2019). Action motivates greater cognitive elaboration and more system processing of the message, compared to those performed no actions (Sundar et al., 2015). Converging with the elaboration likelihood model (ELM)'s (Petty & Cacioppo, 1984) perspective, after performing actions, individuals are to process the content in-depth through the central route (i.e., systematic processing), making them more susceptible to persuasion. As a result, attitude and behavior intentions will be affected. The extent of system processing individuals dedicate to the message and issue should thus positively mediate the impact of action and personal norms on attitudes and behavioral intentions.

**H2**: Systematic processing further mediates the effects of action and personal norm on (a) attitudes and (b) behavior intentions such that action and personal norm predicts higher systematic processing which in turn predicts more positive attitude and greater behavioral intentions.

**The Mechanism of Cues' Effect**

Social media message passes through complex social networks and embellishes along the way with others' engagement like recommendations and evaluations (Walther & Jang, 2012). Others' engagement comes in the form of system-generated cues (e.g., likes, sharing, views) which provide users with concrete qualitative and quantitative information about others' reactions to media content (Cho, Shen, & Peng, 2021). For example, to users, views indicate the amount of others' exposure to the content and likes represent a collective endorsement of the content among others. The abundance of such cues also provides virtually unlimited opportunities for users to interact with and be affected by those cues. This social media environment characterized by cues may have

important implications for persuasion by influencing individuals' attitudes and behavioral intentions.

A primary mechanism underlying cues' impact on attitudes and behavior intention may be social norms. Social norms are individuals' informal understandings of others' attitudes and behaviors (Lapinski & Rimal, 2005). Social norms are central in several persuasion and behavior theories including social cognitive theory (Bandura, 1986), the theory of reasoned action (Fishbein, 1979), and the theory of normative social behavior (Rimal & Real, 2005). These theories, despite varying in specific predictions, share a common postulation that perceived social approval, the popularity of behavior, and observation of others' behavior are critical precursors of individuals' attitudes and behavioral intentions. Numerous evidence has shown that social norms are powerful predictors of attitudes and behavior intentions (see van de Bongardt et al., 2015 and Sheeran et al., 2016 for two meta-analyses). Research further distinguishes between descriptive norms and injunctive norms (Cialdini, 2003). Descriptive norms refer to perceptions about the prevalence of a particular attitude or behavior in a group or society (e.g., most college students use social media), whereas injunctive norms are perceptions about social approval of a particular attitude or behavior (e.g., knowing that most college students use social media would encourage students to use social media more). Both norms are predictive of attitudes and behavior intentions (Fishbein, 1979) and effective in producing pro-social conduct (Cialdini, 2003) with evidence showing that descriptive norms were more associated with behaviors than injunctive norms (Baumgartner et al., 2011; van de Bongardt et al., 2015).

Individuals may acquire or perceive social norms by observing cues on social media. Social media provide users with access to others' opinions and behavior choices through a variety of cues (Lee & Tandoc, 2017). This access enables users to observe what other users are viewing and interacting with and how they react to relevant messages. Observations of other behaviors are critical for the emergence and formation of normative perceptions (Opp, 1982). In specific, social media cues that indicate engagement practiced by others instigate perceptions of descriptive norms as opposed to injunctive norms as they influence individuals' perceived prevalence of attitudes and behaviors (Alhabash et al., 2015; Liu & Shi, 2019) and perceived issue importance (Spartz et al., 2017). Perceived descriptive norms in turn predict attitudes and behavior intentions, as suggested by the above theories and evidence. In the context of collective actions for racial justice, cues may become influential sources of descriptive norm perceptions about others' stance toward a social issue or a specific collective action (e.g., BlackLivesMatter). Knowing that others hold positive attitudes toward the social issue should therefore lead to changes in one's attitude and behavior intentions. Hence, social norms may help explain why cues can produce attitudes and behavioral intentions.

**H3:** Social norms mediate the effect of cues on (a) attitudes and (b) behavior intentions such that cues predict higher social norms which in turn predict positive attitudes and greater behavioral intentions.

Systematic processing may also mediate the effects of cues and social norms on attitudes and behavioral intentions. While actions motivate greater cognitive elaboration and more systematic processing of the message, the presence of cues may distract

individuals from the message itself and attend more to cues peripheral to the message. Perceptions of social norms induced by cues provided a convenient decision-making heuristic and thus render critical thinking about the decision less necessary (Cialdini, 2001). This would result in a more superficial rather than systematic processing of the message, according to ELM's (Petty & Cacioppo, 1984) perspective. The lack of systematic processing then leads to weaker persuasive effects on attitudes and behavioral intentions. Similarly, Sundar et al. (2012) note that cues can activate heuristic for users to evaluate the content without in-depth processing. For example, high like numbers may be construed as indicators of greater endorsement by others, leading to a heuristic, "If others think that this is a good story, I should think so too" (Sundar, 2008; p. 83), which prevents systematic processing of the message. Taken together, systematic processing should negatively mediate the effects of cues and social norms on attitudes and behavioral intentions.

**H4**: Systemic processing mediates the effects of cues and social norms on (a) attitude and (b) behavior intentions such that cues and social norms predict less systematic processing which in turn predicts attitudes and behavioral intentions.

**The Relative Effect of Action and Cues**

With the mechanisms of social media engagement identified, a natural question to ask is which route of effects, i.e., action or cues, is more impactful? Existing research suggests that action may be more powerful than cues in predicting attitude and behavior outcomes.

First, the difference between the effect of action and cues first and foremost concerns the distinction between self-effects and reception effects (i.e., the effects as a result of passive viewing). Existing theories and evidence suggest that self-effects tend to generate greater effects than reception effects (Chen et al., 2015; Cho et al., 2020; Han et al., 2019). Because self-effects operate from within and enable individuals to develop greater intrinsic motivations for and commitment to the issue of interest (Han et al., 2019). In this process, individuals enjoy freedom and autonomy, and their decision-making is active and volitional (Ryan & Deci, 2000). In this situation, persuasion may be more likely to be internalized and thus be successful. In contrast, reception effects operate from outside and influence individuals through fostering extrinsic motivations and social influence. In this process, individuals are passive and controlled (Ryan & Deci, 2000). In this case, persuasive attempts may be susceptible to psychological reactance or counterarguing, leading to weak or even null effects. Research of digital media effects indeed showed that self-effects were stronger than reception effects. Across two studies, Han and colleagues (Han et al., 2011; Han et al., 2019) found that the effects of expressing health problems online (self-effects) were not just larger but also more long-lasting on the self than the effects of seeing others' posts (reception effects).

Second, action may be more impactful than cues because of their respective influence on individuals' processing of messages. ELM argues that persuasive effects depend on how messages are processed. Greater motivation enables systematic processing of the message content whereas lower motivation leads to peripheral processing. Compared to peripheral processing, systematic processing of messages leads

to stronger and more enduring persuasive effects (Petty & Cacioppo, 1986). On social media, actions are psychologically demanding and mentally clarifying processes that come with greater motivations for processing the messages (Han et al., 2019). In contrast, cues tend to be processed as cognitive shortcuts and heuristics with lower motivations (Sundar, 2008). Through the lens of ELM, upon exposure to persuasive messages, action should lead to central, systematic processing of the message and cues should lead to peripheral, superficial processing of the message, resulting in a stronger persuasive impact than cues.

Taken together, both theories and evidence support that action may be more impactful than cues in producing effects on attitudes and behavioral intentions related to collective actions for racial justice. Hence, this study hypothesizes:

**H5**: Action's effects on (a) attitude and (b) behavior intentions are greater than that of cues.

**The Moderating Role of Prior Attitude**

Prior attitude has been identified as a moderator of persuasive effects in previous research. Early studies of intergroup stereotypes (Allport, 1954) and persuasion (Cacioppo & Petty, 1979) have long found or argued the moderating role of prior attitude by showing that prior attitude influences, and even biases, the way individuals react to and process persuasive messages (Chattopadhyay & Basu, 1990). Individuals with a favorable prior attitude tend to be more receptive or less critical of persuasive attempts and therefore process the message more positively. On contrary, those with an

unfavorable prior attitude tend to be less receptive to or more critical of persuasive intents and, consequently, process the message more negatively.

Putting this proposition in this study's context, the direct effects of action and cues may be contingent on prior attitudes. Individuals with a more positive prior attitude toward racial justice are more likely to see racial justice concerning and the collective action necessary. As a result, they may actively pursue to solve the problematic social issue by developing a more positive attitude toward and participating in collective actions for racial justice. In contrast, those with a less positive prior attitude toward racial justice may be more likely to counterargue and develop psychological reactance toward the persuasive attempt. Their attitudes and behavioral intentions toward racial justice may not be less influenced by the effects of action and cues. In other words, action and cues' effects on attitudes and behavior intentions will be amplified among those with a more positive prior attitude and will be attenuated among those with a more negative attitude.

**H6:** The direct effects of (a) action and (b) cues are moderated by prior such that the effects of action and cues are stronger among those with a more, rather than less, positive prior attitude.

Prior attitude may also moderate action and cues' indirect effects by affecting the extent to which personal norm and social norms are heightened by action and cues, respectively. Action may be more likely to heighten personal norm among those with a more, compared to less, positive prior attitude toward the target issue. Personal norm may be more accessible among those with a more positive prior attitude because the action (e.g., liking a racial justice message) tends to be more attitude-consistent action. Hence,

individuals may be more receptive to the action's influence on their moral obligation to develop a favorable attitude toward and perform relevant acts (e.g., participate in collective actions for racial justice). In contrast, those with a less positive prior attitude may be psychologically reactant to the less attitude-consistent action, which may override personal norm in predicting subsequent effects. In other words, action's effect on personal norms and subsequent effects may be amplified among those with a more positive prior attitude but attenuated among those with a less positive prior attitude. Similarly, cues may be more likely to heighten individuals' perceptions of social norms among those with a more, rather than less, positive prior attitude. Specifically, prior attitude may bias how individuals interpret the meaning of cues. Those with a more positive prior attitude may be more receptive to social information in favor of something in agreement with or confirming their stance (e.g., many others have liked a racial justice message), whereas those with a less positive prior attitude may be less likely to perceive the normative influence as legit and meaningful (e.g., not so many have liked that racial justice message). Hence, cues' effect on perceptions of social norms may be amplified among those with a more positive prior attitude but attenuated among those with a less positive attitude toward collective actions.

**H7:** The indirect effects of (a) action and (b) cues through (a) personal norm and (b) social norms and systematic processing are moderated by prior attitude such that the indirect effects of action and cues through the mediators are stronger among those with a more, rather than less, positive prior attitude.

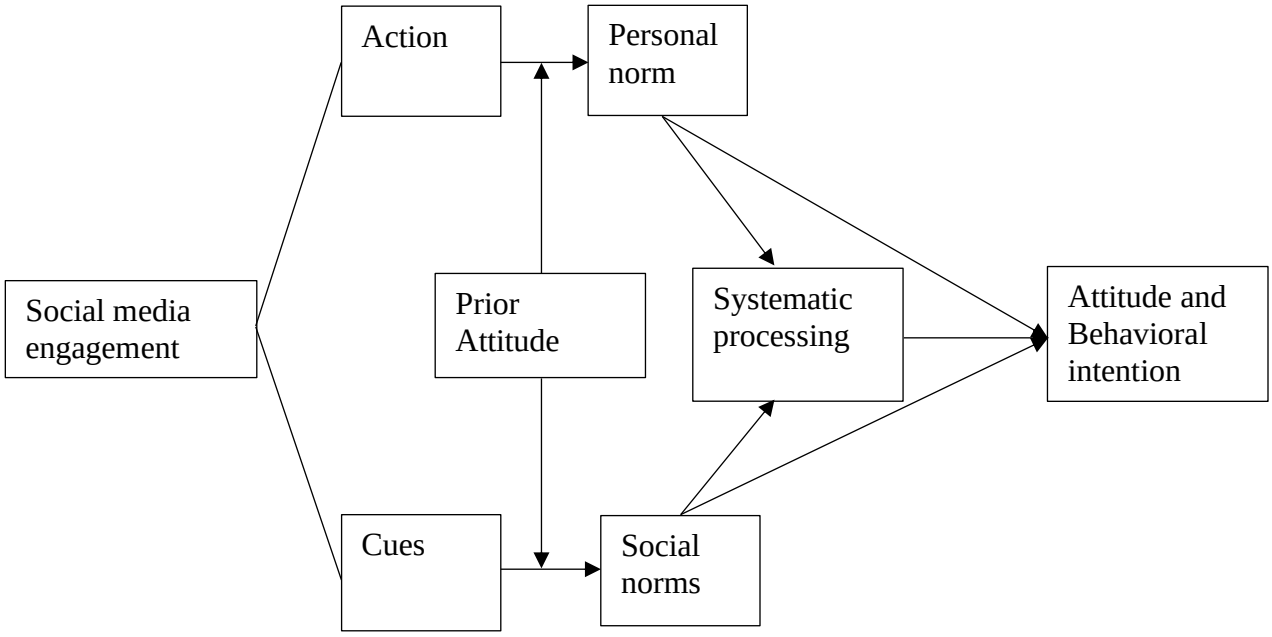


*Figure 2*. Proposed conceptual model of social media engagement effects

# Chapter 4: Method

## Overview

An online experiment consisting of three conditions with a between-subjects design investigated the impact of social media engagement on participants' attitudes and behavioral intentions related to collective actions. CloudResearch Prime Panels, an aggregate of online research panels, was used to recruit participants. Participants took part in the study for cash incentives assigned by the panel company CloudResearch.

This study was approved by the Institutional Review Board before the start of data collection. The questionnaire was hosted on the web-based survey platform Qualtrics. Participants first reported their prior attitude toward collective actions for African Americans' racial justice before they were randomly assigned to one of three conditions: Action, cues, and control. Across all conditions, participants watched a one-minute video on a mock YouTube webpage programmed for this study. After watching the video on the webpage, participants completed measures for mediators and outcome variables (details below).

In this study, the experimental conditions served as the independent variable. The mediators included personal norm, social norms, and systematic processing. The outcome variables included attitude toward working in solidarity with African Americans for racial justice and willingness to participate in collective action. The moderator was prior attitudes toward collective actions measured at the beginning of the study before the random assignment to experimental conditions.

## Participants

U.S. adults were recruited through CloudResearch Prime Panels. Research has shown that CloudResearch Prime Panels provide diverse sample composition in terms of age, education, family composition, religiosity, and political attitudes (Chandler et al., 2019) and showed high data quality (Eyal et al., 2021). The sample was drawn from the strata of the panel based on age, sex, race, and education to simulate the population characteristics per the 2010 U.S. census. Because this study focused on collective actions for racial justice for African Americans, only non-African American participants were recruited.

A power analysis using the R package *pwr* indicated that a minimum sample size of 579 is needed to detect a medium effect size ($r$ = .20). A sample size of 650 was targeted. A total of 891 non-African American participants completed the study online. After excluding those who failed both attention check questions and those who did not watch the video stimuli, a final sample of 688 was obtained and analyzed. The mean age was 48.36 ($SD$ = 17.4). 49.27% of the participants identified as female, 49.42% as male, and the rest 1.32% as non-binary. Concerning race/ethnicity, 82.61% identified as White, 7.20% Asians, 5.25% Hispanics, 0.15% Native Hawaiian or other Pacific Islander, and 3.15% Native Americans. The average education level of the sample is "Some college" and the average household income is around $60,000. All participants including those who did not click on the like button were included in all analyses.

## Procedure

Upon completion of the consent form, participants reported their attitude toward working in solidarity with African Americans for racial justice before they were randomly assigned to experimental conditions.

A mock YouTube webpage was used for stimuli and experimental manipulation across the three conditions. The mock YouTube webpage (see Figure 3-5 in Appendix A for example screenshots) was hosted on Amazon Web Services (AWS) and was professionally programmed to mimic the actual YouTube site. Participants visited the webpage opened in a separate tab by clicking on a hyperlink in Qualtrics. Video stimuli were presented on the webpage.

Participants were randomly assigned to one of the three conditions: Action, cue, and control. Across all conditions, participants watched one of the four videos created for this study's purposes. The four video messages (two different videos with female and male voiceovers) were employed to control for message heterogeneity (see for discussion, Slater, Peter, & Valkenburg, 2015). With multiple different messages, this study was able to rule out potential confounding effects of message features. The videos featured texts and images portraying racism as a dire social issue in the U.S. and called for actions to negate racism against African Americans. The videos were randomly assigned to participants within conditions. Each video was about 70 seconds long.

In the action condition, participants were asked to click on a "like" button below the video while watching the video (Figure 4a). After watching the video, participants self-reported whether they had clicked on the like button. The like button was originally

set in gray. After being clicked on, the like button turned to blue with the number "1" showing on the right (see Figure 4b).

Of those assigned to the action condition (n = 213), 79.34% (n = 169) clicked on the like button. The current study adopted intention-to-treat principle (ITT; Gupta, 2011). ITT analysis ignores noncompliance after randomization and typically generates conservative estimate of treatment effect (Gupta, 2011). Following this principle, this study included all participants including those who did not comply (i.e., click on the like button as instructed) in the analyses.

In the cue condition, participants were asked to pay attention to the number of likes below the video while watching the video. A cue "5.2K likes" was shown below the video (Figure 5). A pilot test of the number indicated that this number presented a high level of liking. In the current study, participants in the cue condition reported the extent to which the video they watched was liked by others after watching the video. Participants reported on average "quite a bit" to "a lot" liking for the video (range = [1, 6], $M = 4.55$, $SD = 1.27$). Since the manipulation in this study varied by the attributes of messages (i.e., the number of cues), a manipulation check was unnecessary (O'Keefe, 2003) as perceptions associated with the manipulations (e.g., action and cues) can be used to evaluate the mediation processes (Tao & Bucy, 2007).

In the control condition, participants watched the video stimulus only. There was not a like button or number of likes on the webpage for this condition (Figure 6).

After viewing the video, participants returned to the Qualtrics questionnaire to complete measures assessing their perceptions and attitude toward collective actions willingness to engage in collective actions for racial justice, and demographics.

**Measures**

The descriptive statistics for all measures are reported in Table 1.

Table 1. *Descriptive statistics*

| **Variable** | **M** | **SD** | **α** |
|---|---|---|---|
| Prior attitude | 5.81 | 1.49 | .98 |
| Personal norm | 5.18 | 1.49 | .95 |
| Social norms | 5.03 | 1.26 | .92 |
| Systematic processing | 4.58 | 1.52 | .94 |
| Post attitude | 5.82 | 1.53 | .98 |
| Behavioral intention | 3.06 | 1.32 | .93 |

**Dependent variables**

This study focuses on two persuasive outcomes related to collective actions: attitude toward collective action and willingness to work in solidarity with African Americans in collective actions for racial justice.

*Attitude toward collective action.* Participants were asked to rate after experiment manipulation "Working in solidarity with African Americans for racial justice is …" on four 7-point bipolar semantic scales (1= Bad/ Undesirable/Unfavorable/Negative, 7 = Good/Desirable/Favorable/Positive). Higher scores indicated a more positive attitude toward working in solidarity with African Americans for racial justice. Scores reported by the participants were averaged for an index ($M$ = 5.82, $SD$ = 1.49, α = .98).

*Willingness to work in solidarity with African Americans in collective actions* was assessed with three items adapted from Hässler et al. (2020) on a 5-point Likert scale (1 = Not at all, 5 = Extremely). The three items were "How willing are you to cooperate with African Americans to work for justice for African Americans?" "How willing are you to protest alongside African Americans to work for justice for African Americans?" "How willing are you to unite with African Americans to work for justice for African Americans?". Scores reported by participants were averaged for an index ($M$ = 3.06, $SD$ = 1.32, $\alpha$ = .93).

**Mediators**

All measures were assessed on a 7-point Likert scale (1 = Strongly disagree, 7 = Strongly agree) unless otherwise noted.

*Personal norm* was measured by 6 items adapted from Cho and Boster (2005). Example items are "The values that are the most important to me determine the action I take to support racial justice" "My support of racial justice reflects who I am" and "My support of racial justice is based on the core principles that guide my life". Scores reported by participants were averaged for an index ($M$ = 5.18, $SD$ = 1.49, $\alpha$ = .95).

*Social norms* were measured by 5 items adapted from Park and Smith (2007). Example items are "Many people are committed to the issue of racial justice" "Many people would do what the video advocates for racial justice" and "Many people agree with what the video said about racial justice". Scores reported by participants were averaged for an index ($M$ = 5.03, $SD$ = 1.26, $\alpha$ = .92).

*Systematic processing* was measured with 5 items adapted from Neuwirth et al. (2002). Participants were asked while watching the video, the extent to which they thought about how the information in the video about racial justice relates to other things they know, they found themselves making connections between the information they get from the video about racial justice and information they get elsewhere, and they tried to relate the ideas in the video about racial justice to their own life. Scores reported by participants were averaged for an index ($M$ = 4.58, $SD$ = 1.52, $\alpha$ = .94).

**Moderators**

*Prior attitude*. Participants' prior attitude was measured by asking them "Working in solidarity with African Americans for racial justice is …" on the same scale as post attitude toward collective actions described above. Scores reported by the participants were averaged for an index ($M$ = 5.81, $SD$ = 1.49, $\alpha$ = .98).

**Covariates**

Several variables were controlled for in the analyses for conservative estimates of action and cues' persuasive effects. Demographic variables including age, gender, household income, and political orientation were controlled for in analyses. Previous research has shown that prior contact experiences moderate the media effects on people's attitude toward outgroup members (Harwood et al., 2013). Hence, direct contact measured by asking participants the number of their African American friends (Rollock & Vrana, 2005) was also controlled for in analyses.

**Data analysis strategy**

RQ1a and RQ1b were tested using an ordinary least square (OLS) regression. H1 and H3 were tested using PROCESS Macro for R Model 4 (i.e., simple mediation model; Hayes, 2018). H2 and H4 were tested using PROCESS Macro for R Model 7 (i.e., serial mediation model; Hayes, 2018). PROCESS utilizes an ordinary least squares path analytical framework to test for both direct and indirect effects (Hayes, 2018). In mediation models, 5,000 bootstrap samples and 95% bias-corrected confidence intervals to test the indirect effects. The independent variable experiment condition was entered as a multi-categorical variable in analyses using PROCESS function *mcx* such that the conditions were dummy coded. H5 was tested using an OLS regression. The marginal means were extracted using function *emmeans* in R package emmeans (Lenth, 2022). H6 was tested using OLS regressions with interaction terms which were calculated by multiplying variables of interest. Significant interaction effects were probed using the Johnson-Neyman technique in R package *interactions* (Long, 2019). H7 was tested using PROCESS Macro for R Model 83 (i.e., moderated serial mediation model). Indexes of moderated mediation and 95% confidence intervals were used to assess the moderated mediation effect. Covariates noted above were controlled for in all analyses.

# Chapter 5: Results

## Balancing test

A series of analysis of variance (ANOVA) were performed for a balancing test. The results showed that age ($F(2, 133) = .45$, $p = .64$), gender ($F(2, 132) = 1.60$, $p = .21$), household income ($F(2, 131) = 1.27$, $p = .29$), political orientation ($F(2, 133) = 1.32$, $p = .27$), or prior attitude did not differ across the three conditions ($F(2, 135) = .37$, $p = .69$), indicating a successful randomization.

## Research question and hypothesis testing

RQ1a asked whether action directly predicted attitude and behavior intentions. The results showed that action did not significantly predict more positive attitude, $b = -.071$, $p = .310$, willingness to work in solidarity with African Americans in collective actions, $b = -.038$, $p = .707$. RQ1b asked whether cues directly predicted attitude and behavior intentions. The results showed that cues did not significantly predict more positive attitude, $b = -.095$, $p = .162$, willingness to work in solidarity with African Americans in collective actions, $b = -.056$, $p = .564$.

Some covariates significantly predicted outcome variables of interest. Regarding post attitude, females reported more positive attitude toward collective actions than males, $b = .092$, $p = .263$, prior attitude significantly predicted post attitude, $b = .885$, $p < .001$. Regarding willingness to work in solidarity with African Americans in collective actions, females reported greater willingness than males ($b = .246$, $p = .002$), age ($b = -.023$, $p < .001$), previous direct contact ($b = .105$, $p < .001$), and prior attitude ($b = .454$, $p < .001$) were significant predictors.

H1 predicted that personal norm mediates the impact of action on a) attitude and b) behavioral intention.

Regarding attitude, personal norm did not mediate the effects of action, point estimate = -.020, SE = .031, 95% CI [-.083, .042]. The direct effect was not significant (*b* = -.065, *p* = .308). Regarding willingness to work in solidarity with African Americans in collective actions, personal norm did not mediate the effects of action, point estimate = -.037, SE = .056, 95% CI [-.148, .071]. The direct effect was not significant (*b* = -.053, *p* = .511).

H2 predicted that systematic processing further mediates the effects of action and personal norm on (a) attitudes and (b) behavior intention.

Regarding attitude, systematic processing did not mediate the effects of action and personal norm, point estimate = -.004, SE = .006, 95% CI [-.017, .010], with a nonsignificant direct effect, *b* = -.055, *p* = .389. Regarding willingness to work in solidarity with African Americans in collective actions, systematic processing did not mediate the effects of action and personal norm, point estimate = -.012, SE = .019, 95% CI [-.050, .024]. The direct effect was not significant, *b* = -.021, *p* = .790. H2 was not supported.

H3 predicted that social norms mediate the effects of experimental conditions on a) attitude and b) behavioral intentions.

Regarding attitude, social norms did not mediate the effects of cues (point estimate = .012, SE = .021, 95% CI [-.026, .057]). The direct effect was not significant (*b* = -.111, *p* = .087). Regarding willingness to work in solidarity with African Americans in

collective actions, social norm did not mediate the effect of cues, point estimate = .023, SE = .038, 95% CI [-.051, .099]. The direct effect was not significant, $b$ = -.100, $p$ = .247. H3 was not supported.

H4 predicted that systemic processing negatively mediates the effects of cues and social norms on (a) attitude and (b) behavior intention.

Regarding attitude, systematic processing did not mediate the effects of cues and social norms, point estimate = .005, SE = .009, 95% CI [-.012, .026], with a nonsignificant direct effect, $b$ = -.099, $p$ = .114. Regarding willingness to work in solidarity with African Americans in collective actions, systematic processing did not mediate the effect of cues and social norms, point estimate = .012, SE = .021, 95% CI [-.027, .055]. The direct effect was not significant, $b$ = -.074, $p$ = .347. H4 was not supported.

Results of mediation analyses for H1-H4 were summarized in Table 2 and Table 3. Visualizations for the tested mediation processes are provided in Figure 7-10 in Appendix A.

Table 2. *Summary of mediation processes for action*

| **Mediation Process** | **Effect** | **SE** | **95% CI** |
|---|---|---|---|
| Action → Personal norm → Attitude | -.020 | .031 | [-.083, .042] |
| Action → Personal norm → Behavioral intention | -.037 | .056 | [-.148, .071] |
| Action → Personal norm → Systematic processing → Attitude | -.004 | .006 | [-.017, .010] |
| Action → Personal norm → Systematic processing → Behavioral intention | -.012 | .019 | [-.050, .024] |

Table 3. *Summary of mediation processes for cues*

| **Mediation Process** | **Effect** | **SE** | **95% CI** |
|---|---|---|---|
| Cues → Social norms → Attitude | .012 | .021 | [-.026, .057] |
| Cues → Social norms → Work in solidarity | .023 | .038 | [-.051, .099] |
| Cues → Social norms → Systematic processing → Attitude | .005 | .009 | [-.012, .026] |
| Cues → Social norms → Systematic processing → Work in solidarity | .012 | .021 | [-.027, .055] |

H5 predicted that the effect of action on (a) attitude and (b) behavior intention is greater than that of cues. The results showed that the effect of action was not statistically different from that of cues on attitude (marginal means: 5.88 vs. 5.86; $b$ = .024, $p$ = .734), willingness to work in solidarity with African Americans in collective actions (marginal means: 3.08 vs. 3.06; $b$ = .018, $p$ = .854). H5 was not supported.

H6 predicted that the direct effects of action and cues are moderated by prior attitude toward collective actions such that the effects are stronger among those with more, rather than less, positive prior attitudes.

Regarding attitude, the effects of action ($b$ = .128, $p$ = .013) and cues ($b$ = .115, $p$ = .023) were moderated by prior attitude. Specifically, both action ($b$ = -.12, $p$ = .02) and cues' ($b$ = -.13, $p$ = .01) effects on post attitude were lower than the control condition among those with less positive prior attitude and there were no differences across conditions among those with more positive attitude ($b$ = .02, $p$ = .61). A visualization of this interaction effect is provided in Figure 3. Regarding willingness to work in solidarity with African Americans in collective actions, the effect of action ($b$ = -.073, $p$ = .323) or cues ($b$ = .010, $p$ = .891) was not moderated by prior attitude. H6 was partially supported.

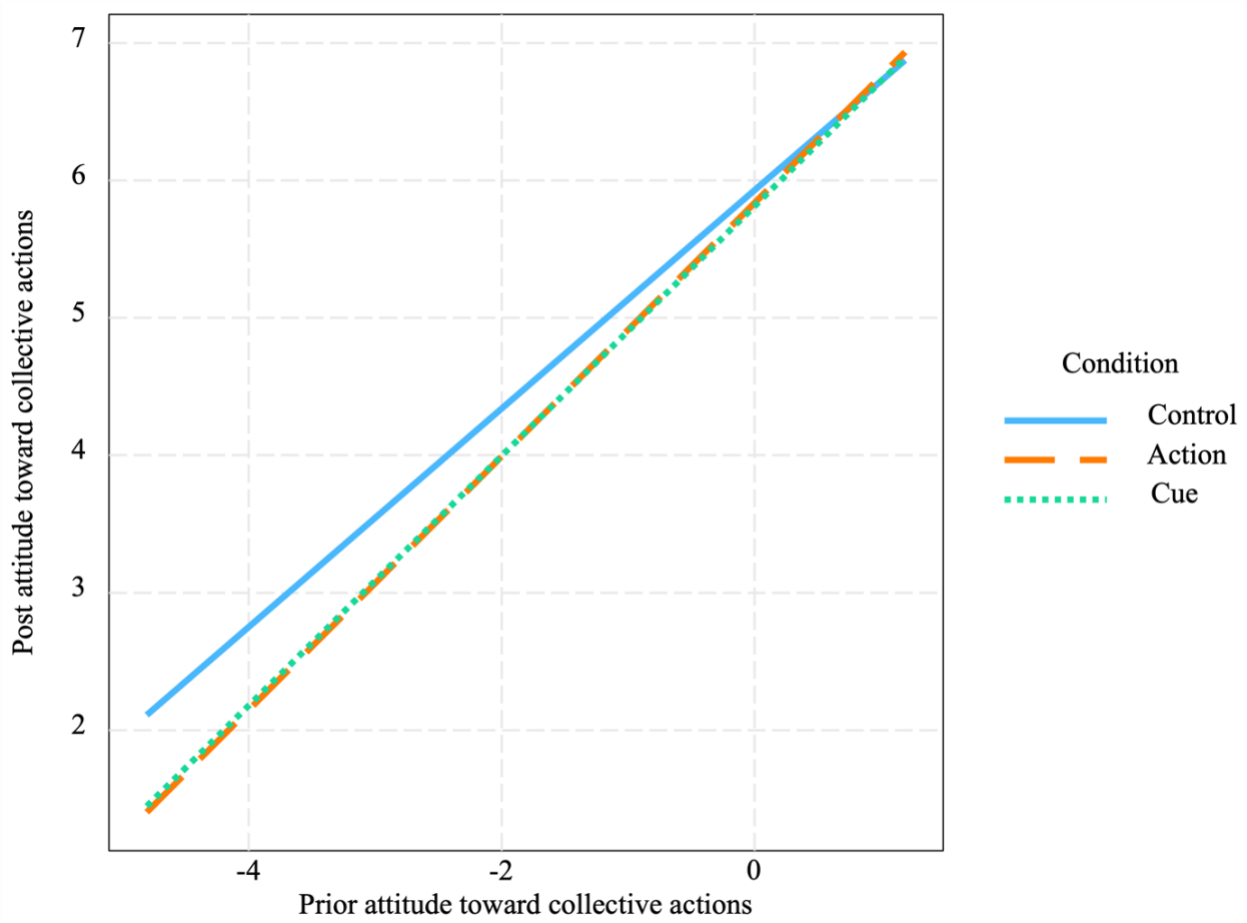


*Figure 3.* Post attitude toward collections was lower in the action and cue conditions than in the control condition when prior attitude was less positive but did not differ when prior attitude was more positive. Prior attitude toward collective action was mean-centered.

H7 predicted that the indirect effects of action and cues on attitude and behavioral intentions through personal norm, social norms, and systematic processing are moderated by prior attitude toward collective actions such that the indirect effects are stronger among those with more, rather than less, positive prior attitudes.

Action's indirect effect through personal norm and systematic processing on post attitude (index = -.0003, SE = .007, 95% CI [-.014, .013]) or willingness to work in solidarity with African Americans in collective actions (index = -.001, SE = .017, 95% CI [-.034, .033]) was not moderated by prior attitude.

Cues' indirect effect through social norms and systematic processing on post attitude (index = -.010, SE = .018, 95% CI [-.048, .026]) or willingness to work in solidarity with African Americans in collective actions (index = -.012, SE = .022, 95% CI [-.053, .033]) was not moderated by prior attitude. H7 was not supported.

# Chapter 6: Discussion and Conclusion

The goal of the current dissertation was to investigate the persuasive effect of social media engagement on attitude toward and behavioral intention in the context of promoting collective actions for African Americans' racial justice. As a major and impactful way users consume and interact with online information, social media engagement holds potential in facilitating changes in attitude and behavioral intention. However, its persuasive impact and the mechanisms of the impact remain understudied. To fill these gaps in the literature, this study focuses on two types of social media engagement: action and cues. A set of hypotheses were derived concerning the effect of action and cues on attitude toward and behavior intention for collective action, based on a conceptual model integrating the theory of interactive media effects (the TIME model) and persuasion theories including self-perception theory, cognitive dissonance, the norm activation theory, and the elaboration likelihood model. The hypotheses were tested using a between-subject experimental design. An online experiment using a U.S. national adult sample (N = 688) was conducted. Overall, this dissertation study found limited evidence regarding the effects of social media engagement, specifically, action and cues, on attitude and behavior intention. Below, each hypothesis and finding are discussed; the limitations of the current study and potential future research are discussed.

## Summary of Results

### The direct effect of action and cues

RQ1a asked about the direct effect of action on attitude and behavior intentions. Action did not significantly predict attitude or behavior intention. Action was found to

have negative effects, albeit non-significant, on the outcome variables controlling for prior attitude. This absence of significant effect of action agrees with previous research using similar designs. For example, in two experiments that investigated the impact of social media actions (e.g., Hanus & Fox, 2017; Oh et al., 2021), both studies found non-significant negative correlations between the presence of action features. Although the direct effect of action was not reported in the above two studies, the correlation findings imply that action may not have a main effect on attitude and behavior intention but, instead, their effects are mediated and moderated. As shown in Oh et al. (2021), for example, clicking on the like button predicted more negative attitudes toward smoking behaviors among smokers indirectly through enhanced self-as-source perceptions and reduced psychological reactance. The findings of this current study add to this line of evidence that social media action itself may not be powerful enough to directly generate persuasive outcomes like attitude and behavioral intention change.

It is worth noting that the lack of significant effect of action in this study may have to do with the difference between complied participants and those who did not comply. A series of post-hoc *t*-tests and chi-square tests were performed to compare the differences between the two groups on demographic variables and prior attitude. The results showed that complied participants and those who did not comply did not differ on age (47.63 (*SD* = 16.79) vs. 48.45 (*SD* = 16.57); $t(67.82) = .29$, $p = .77$), gender ($\chi^2(1) = 2.13$, $p = .14$), race ($\chi^2(1) = .04$, $p = .84$), political orientation (3.82 (*SD* = 1.80) vs. 4.25 (*SD* = 2.06); $t(61.23) = 1.28$, $p = .21$). This suggests that the two groups did not differ in terms of demographic attributes and the differences in demographic variables did not

confound action's effect. However, the two groups were significantly different on prior attitude. Specifically, those who complied ($M$ = 5.96, $SD$ = 1.45) reported higher scores on prior attitude than those who did not comply ($M$ = 4.99, $SD$ = 1.87), $t$(57.12) = -3.21, $p$ = .002. This suggests a self-confirmation bias among participants which may have confounded action's effect in this study.

RQ1b asked about the direct effect of cues on attitude and behavior intention. The results did not support this hypothesis. Cues did not significantly predict either attitude or behavior intention. This finding disagrees with previous experiments that found cues had a main effect on attitude and behavior intentions (Phua & Ahn, 2016). A possible explanation would be that the level of cue (i.e., 5.2K likes) used in this study was not high enough to make a meaningful impact. However, this explanation could be refuted by additional evidence. Note that participants in the cue condition reported the extent to which the video they watched was liked by others. On average, participants reported "quite a bit" to "a lot" liking for the video (range = [1, 6], $M$ = 4.55, $SD$ = 1.27). This indicates that the level of liking for the video stimuli was not low and should have led to a perception of high liking. Another explanation may have to do with the platform used in this study. This study used YouTube to host the manipulation of cues. Unlike Facebook where connections tend to be strong ties (e.g., friends), peers on YouTube are mostly weak ties (e.g., strangers). Liking by weak ties in this online environment may not be as effective in inducing normative influence due to social distance and low personal relevance (Phua & Ahn, 2016). More research is needed here to disentangle the platform differences in cues' effect.

**The mediating role of personal norm and social norms**

H1 was focused on the mediating role of personal norms in the effect of action. The result did not support this hypothesis. Participants in the action condition, compared to those in the control condition, did not report higher personal norms, although personal norms indeed significantly predicted higher scores on attitude and behavioral intention. This suggests that action, operationalized as clicking on a like button, did not heighten the sense of personal norms which are the perceived moral obligation to perform a pro-social behavior. This finding disagrees with previous findings on action's effect. As discussed above, Oh et al.'s (2021) experiment found that clicking on a like button on Facebook led to a heightened perception of self-as-source, implying that action would render self-concepts and values more accessible. However, this effect was not observed in the current study. The reason is not clear here. A possible explanation may be that the manipulation of clicking on a like button study is too brief and subtle to induce perceptions about self's moral obligations. Future research may consider using more intense manipulation (e.g., repeated liking) to further test the relationship between action and personal norm. Another possibility is that action's effect on personal norms may be further indirectly mediated by other variables. More research is needed to identify other potential mediators here.

H3 predicted that social norms would mediate the effect of cues. The result did not support this hypothesis either. Like H3, although social norms significantly predicted a more positive attitude and greater behavior intentions, participants in the cue condition did not report higher scores on social norms than those in the control condition. As

discussed above, participants' scores on the degree of liking for the videos indicate that participants felt that the video was much liked. However, the fact that exposure to cues did not heighten social norms suggests that the liking did not translate into social norm perceptions. The reason is not clear in the current study. One possibility may have to do with the social media platform used in the study. As discussed above, YouTube differs from other social media platforms that are more strong ties focused like Facebook. How social media cues may induce perceptions of social norms and how those normative perceptions affect persuasive outcomes may vary by platform. Future research needs to consider the differences between platforms and their impacts.

**The mediating role of systematic processing**

H2 and H4 hypothesized that systematic processing would serve as an additional mediator in the persuasive effects of action and cues. The results did not support these hypotheses either. Neither did action and cues significantly predict systematic processing indirectly through personal norms or social norms nor did they directly predict systematic processing. Again, the reason might be the brief and subtle manipulations of action and cues. However, cues indeed predicted lower systematic processing albeit the effect was non-significant. This is consistent with the ELM perspectives. Furthermore, personal norms and social norms both predicted higher systematic processing which then predicted persuasive outcomes. This finding is consistent with previous persuasion research in that systematic processing indeed was a powerful predictor of attitudes and behavioral

intentions. Overall, the findings still provide useful insights into the mediating role of systematic processing in persuasion about collective actions.

**The relative strength of action and cues' effects**

This dissertation aimed to fill a gap in the literature by examining the relative efficacy of action and cues' persuasive effects, as proposed in H5. Overall, no evidence was found regarding the differing effects of action and cues. Action and cues' effects were not significantly different on attitude and behavior intention, providing no support to the hypothesis. This finding suggests that self-effects may not necessarily be more persuasive than social influence. However, it may be premature to assume that the finding is conclusive. Previous research has found significant effects on attitude and behavioral intentions in various contexts through action (e.g., Cho et al., 2018; Oh et al., 2021) and cues (Sundar et al., 2008; Xu, 2013). Yet, in the current study, the effect and action and cues were not significantly different from zero, providing no meaningful effect to compare to begin with. The lack of significant effects may be due to conceptual and methodological limitations of this study (details below). With these issues addressed in future research, it may be possible to compare how action and cues differ in predicting persuasive effects and under what circumstances the difference can be observed.

**The moderating role of prior attitude**

H6 and H7 concerned the moderating role of prior attitude in the direct and indirect effect of action and cues on persuasive outcomes related to collective actions. The results show that prior attitude did not moderate the direct or indirect effects of action and cues on most outcome variables except one. Specifically, the direct effects of

action and cues on post attitude were moderated by prior attitude. In this study, action and cues' effects on post attitude were lower than the control condition's effect among those with a less positive prior attitude but there were no differences among those with a more positive prior attitude. Among those with a less positive prior attitude, it could be the case that action induced psychological reactance which led to a less positive post attitude. This is consistent with previous findings that expressing political opinions online led to a reinforcement of prior political preference (Cho et al., 2018). The finding that such a reinforcing effect was also observed in the cue condition implies that participants may have used that social information from cues to confirm their prior stance, demonstrating a potential confirmation bias effect as observed in previous studies (Messing & Westwood, 2014). This finding lends support to the initial speculation that prior attitude may moderate social media engagement effects on attitude and behavior intentions about collective actions. On the other hand, this finding also adds to our understanding of social media engagement's unintended effects. Scholars have identified the unintended effects of media campaigns (Cho & Salmon, 2007). This study contributes to that line of research by showing that social media engagement may lead to a boomerang effect which is the opposite of what was expected.

**Limitations**

Before delving into this study's implications, it is worth discussing its limitations first. This study has several limitations. Below I discuss limitations in the conceptualization of social media effects in the current literature and methods.

Regarding theory, the lack of significant effect of action and cues observed in the current study may reflect the conceptual limitations of the current literature. One, the conceptualization of social media effects in the extant literature may be limited. Existing literature posits that technological affordances alone could affect various psychosocial outcomes. This postulation may not accurately or adequately explain social media engagement's effect for its technological determinism assumptions and over-optimism about the "powerful" effects of social media. As observed in this study, no significant effects of action and cues were detected on psychological, attitudinal, or behavioral intention outcomes, even though action and cues were cleanly and consistently manipulated controlling for message effects (i.e., same messages were used across conditions). It may be true that action and cues alone are limited in affecting persuasion. Instead, their effects may be contingent upon various factors such as message features, social contexts, and predispositions (e.g., prior attitude as shown in the current study). Two, the non-significant direct and mediation processes in this study may have to do with the lack of clarity and consistency in the extant literature. It is currently thought that action and cues can impact knowledge, perception, attitude, and behaviors by influencing various psychological factors (e.g., Sundar et al., 2015). To advance the existing literature on persuasive effects of social media and this line of research, future research can provide clearer conceptualizations and operationalizations for action and cues. Research would also benefit from specifying what exact effect could occur on what type of outcomes by influencing what psychological factors.

This study also has some limitations in methods. First, the manipulation of action and cues in this dissertation study did not successfully induce greater personal norm and social norm perceptions. As discussed above, there could be many possible reasons. One, relying on brief action and cues afforded solely by social media's technological features, may not be adequate to induce meaningful persuasive effects. Repeated, prolonged action or cues may be needed for desired effects on attitude and behaviors. Two, the video message may have distracted participants and washed out the effect of manipulations. Three, the use of a YouTube webpage may not be "social" enough to elicit anticipated effects as shown in previous research (Halpern & Gibbs, 2013). Future research needs to address these potential concerns (see further discussion below). Second, this study is focused on only one type of social media engagement liking and likes. Social media offer various features for engagement via various types of action and cues including commenting vs. comments, sharing vs. shares (e.g., retweets). Different types of engagement may have differential persuasive impacts through different mechanisms (Dvir-Gvirsman, 2019). Focusing on only one type of engagement has limited the generalizability of the findings to other types of engagement. Third, the two experimental conditions, i.e., action and cues, each examined the effects of a single type of engagement (i.e., action or cues). How the two interplay to influence persuasive outcomes was not tested. This has limited the study's external validity as in an actual social media environment in which actions and cues are usually present at the same time. Lastly, related to the first limitation, the manipulation of action could be further improved for higher compliance rates. The current compliance rate (i.e., percentage of participants who

did what was requested for experimental manipulation) was about 80%, meaning that at least one-fifth of the participants in the action condition did not like the video as instructed. This could have impacted detecting the effects of action. Future studies may come up with more effective manipulations for greater engagement among the participants so that action effects may be more accurately detected.

**Theoretical implications**

Despite the limitations, this study is among the first efforts to investigate the effects of social media engagement on persuasive outcomes related to collective actions to the author's knowledge. This study and its findings still provide some valuable theoretical implications. First, this study puts forth a conceptual model integrating the TIME model and persuasion theories. This model, even though not supported by the results in general, extended the TIME model by specifying social media engagement's persuasive effects and testing action and cues' respective mechanisms of effects on attitudinal and behavioral intention outcomes. Second, this study extended the TIME model by comparing the relative efficacies of action and cues. Previous research has focused on either action or cues. Rarely have studies compared which type of engagement is more effective than the other in influencing individuals' attitudes and behavioral intentions. Although no significant differences were found between action and cues' effect, the finding shed light on our understanding of self-effects and social influence in social media and laid the foundation for future research on how they may or may not vary in predicting persuasive outcomes related to pro-social collective actions.

With the above theoretical contributions, the current study also points to directions for future research. First, this study shed lights on advancing the research of social media effects. As discussed earlier, the impact of social media affordances may not be as straightforward as the current literature predicted. The current literature postulates that digital media affordances alone drive various psychological and behavioral effects. This study did not find evidence in support of this postulation. It is likely that social media affordances and engagement's effect may be contingent upon the context of exposure and engagement. Some possible contextual factors include, for example, message features (e.g., narratives), platform (e.g., Facebook vs. YouTube), and the type of outcome variables (e.g., preventive vs. promotive). More research is needed to theorize and investigate whether and under what circumstances affordances can independently affect persuasive outcomes and how they may interact with the contexts of social media exposure and engagement in affecting persuasive outcomes.

Second, the persuasive effect of social media engagement warrants further investigation with more effective manipulations. Specifically, future research may explore other methods to manipulate the effect of action and cues. One, more sophisticated and prolonged manipulations could be used and tested. For example, participants could be asked to like multiple messages rather than just one or watch multiple video messages with likes. Two, text messages instead of video messages may be used, considering that Oh et al. (2021) successfully detected the effect of actions in their experiment using text messages. For another example, a different social media platform may be utilized. Social media platforms differ in terms of the activities, features,

affordances, and social networks they have to offer (Rhee et al., 2021). Engagement on YouTube may affect individuals' psychological states differently than engagement on Facebook and Twitter due to these differences (Halpern & Gibbs, 2013).

Third, future research will benefit from examining and comparing psychological processes enabled by diverse types of social media engagement and how they affect persuasive outcomes. For example, studies may investigate if and how the persuasive effects of likes, comments, and shares differ from one another and what the underlying mechanisms are. Doing so will provide a more nuanced conceptual understanding of various social media engagement but also practical guidance for the use of engagement in real-world settings such as public health promotion, campaigning, civil activities, etc.

Fourth, as discussed above, future research needs to investigate the combined effects of action and cues. Some research questions of interest include whether they together generate cumulative persuasive effects or compete instead. Testing an experimental condition in which action and cues coexist will add to our knowledge of social media engagement's persuasive effects.

Lastly, future research may also benefit from examining the interplay between engagement and content. As discussed earlier, social media engagement occurs only if content or message is available. It is likely the extent to which individuals engage with certain content and the extent to which they are affected by the engagement are contingent upon the characteristics of the content or message. Hence, it is theoretically and practically interesting to investigate how social media engagement interacts with social media content/message to influence attitude and behavior change.

## Practical implications

The study offers two useful practical implications. One, the moderating role of prior attitude needs to be considered when it comes to mobilizing collective actions using social media. On social media, individuals' prior attitude influences not only how they engage with the content but also the extent to which they are affected by the engagement. The findings of this study showed that engagement led to less positive among those with a less positive prior attitude than among those with a more positive prior attitude. Practitioners and stakeholders of collective actions need to attend to this potential unintended effect. Two, the mediators identified in the current study provide some useful practical guidance for collective actions. Personal norms, social norms, and systematic processing all have been shown to predict more positive attitudes toward and greater behavior intentions for collective actions. Practitioners and stakeholders may take advantage of their effects for fostering a positive attitude toward collective actions and enabling mass mobilizations. Third, the findings that action and cues led to a less positive post attitude toward collective action among those with a less positive prior attitude demonstrated unintended effects of social media engagement. Practical efforts need to consider and curb potential unintended effects like boomerang effects when planning and executing for mobilizing participation in collective actions.

## Conclusion

As an active form of social media use, engagement may hold promise in fostering desirable attitude and behavior change. Identifying and examining engagement's persuasive effect and its mechanisms are of both theoretical and practical importance in

the current media environment. This present study investigated the impact of two types of social media engagement, i.e., action and cues, in facilitating attitude and behavior change related to pro-social collective actions against racial injustice for African Americans. The findings did not lend support to the proposed theoretical framework but showed that action and cues' persuasive effects were moderated by prior attitude. Future studies should continue examining the moderating role of pre-existing attitudes in influencing social media engagement's persuasive effects in facilitating participation in collective actions. Future research should also test additional theoretical mechanisms through action and cues to inform future efforts of theory construction and real-world practice.

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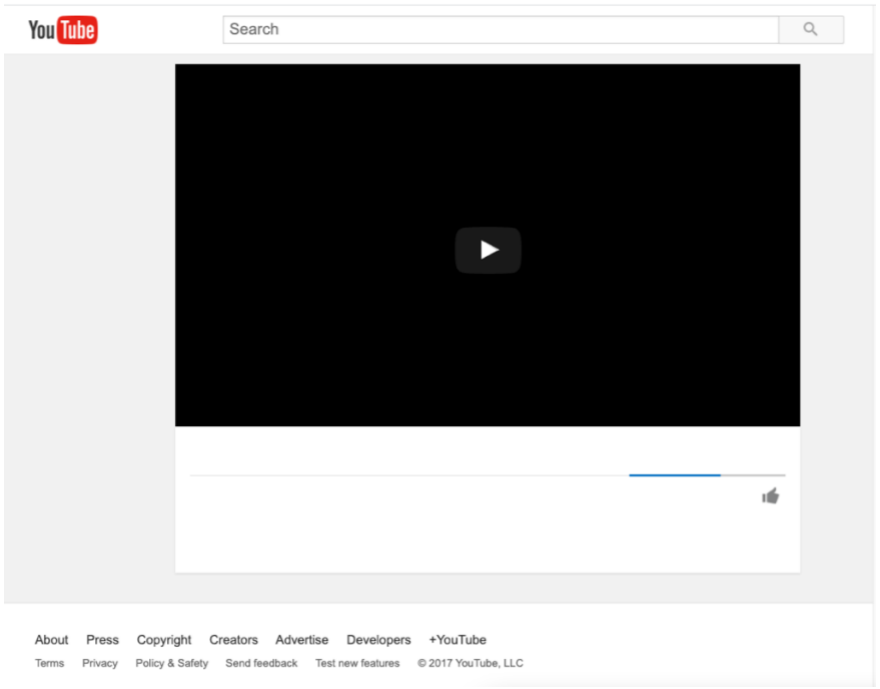
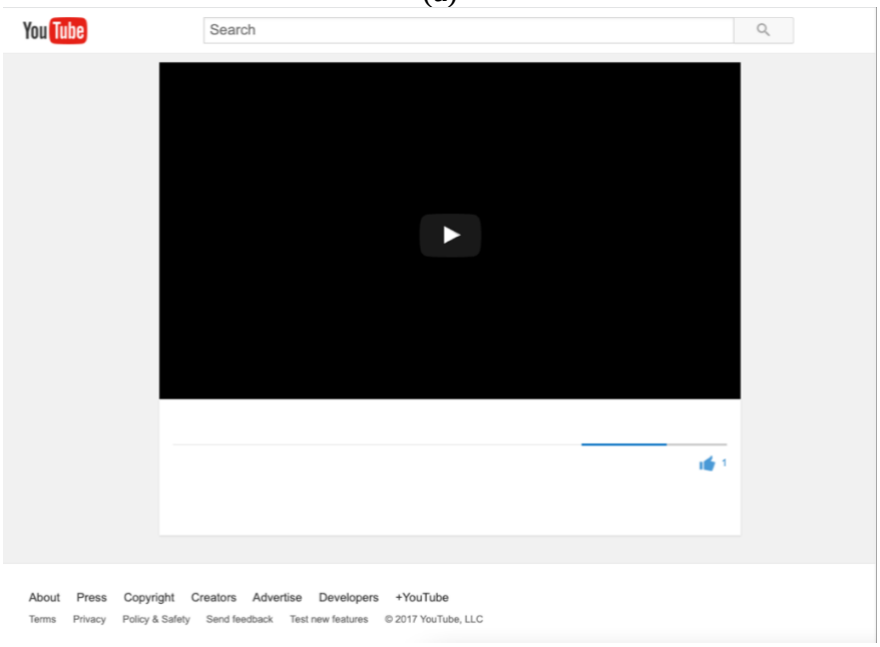
Appendix A: Figures




(a)




(b)

*Figure 4.* Action condition manipulation featuring a like button before (a) and after (b) being clicked on below the video stimuli

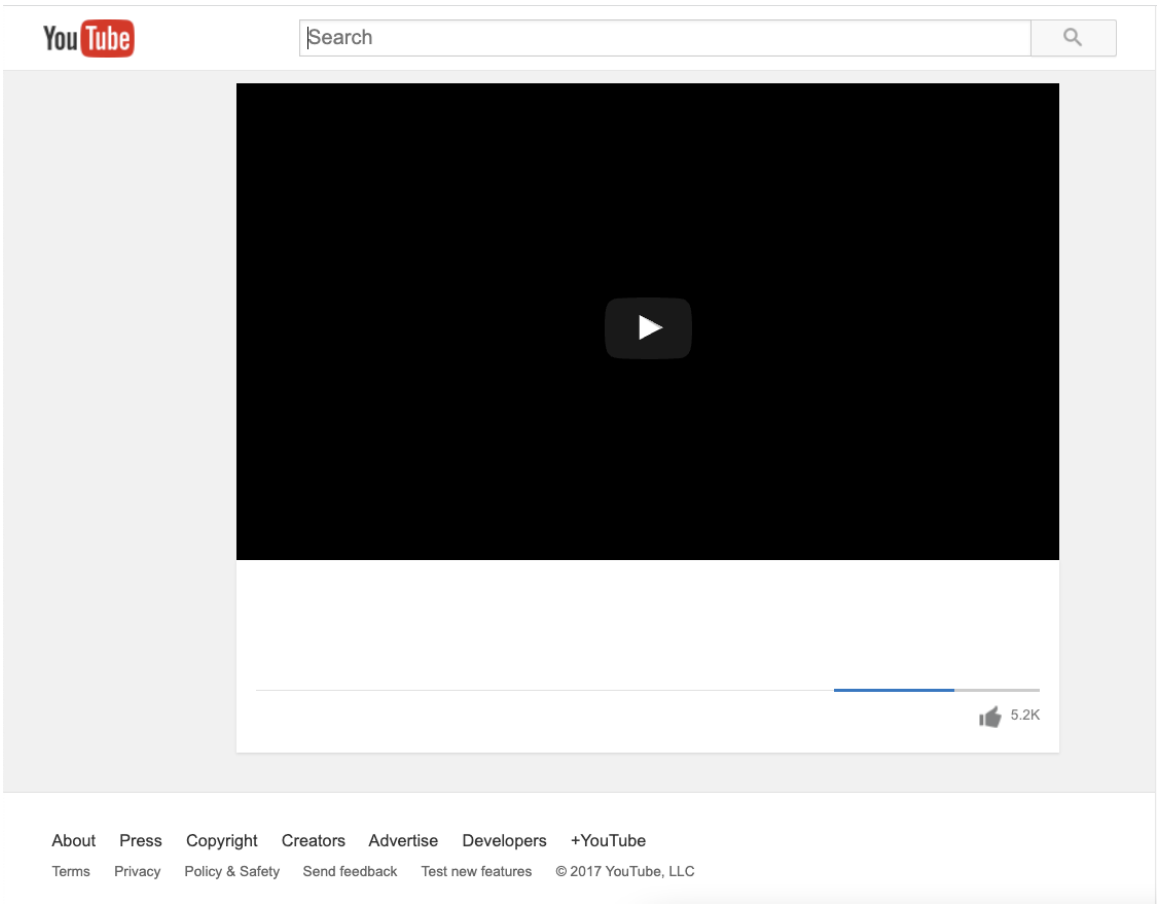



*Figure 5*. Cue condition manipulation featuring cues (i.e., the number of likes) below the video stimulus

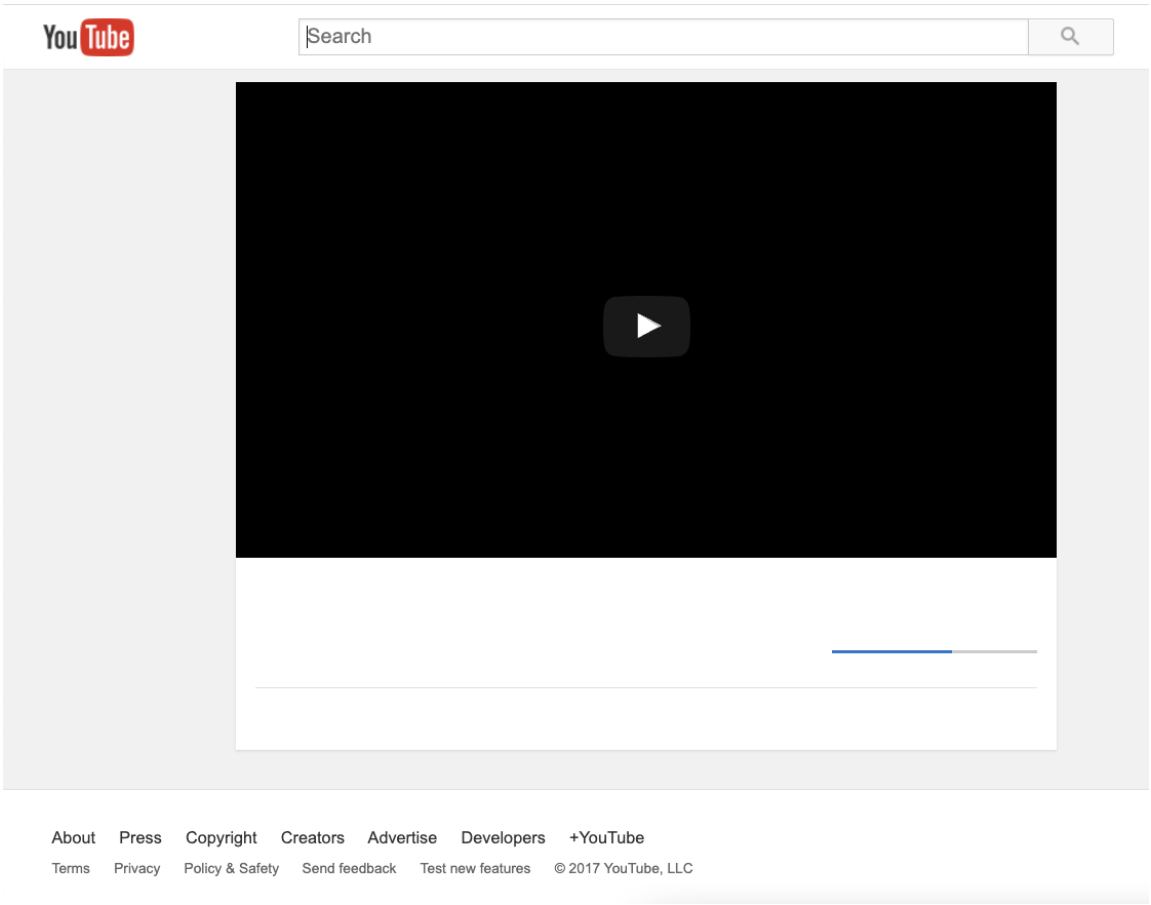
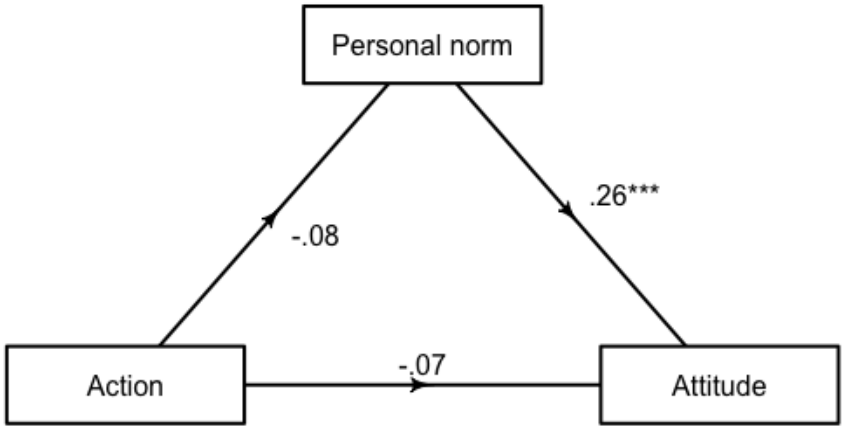
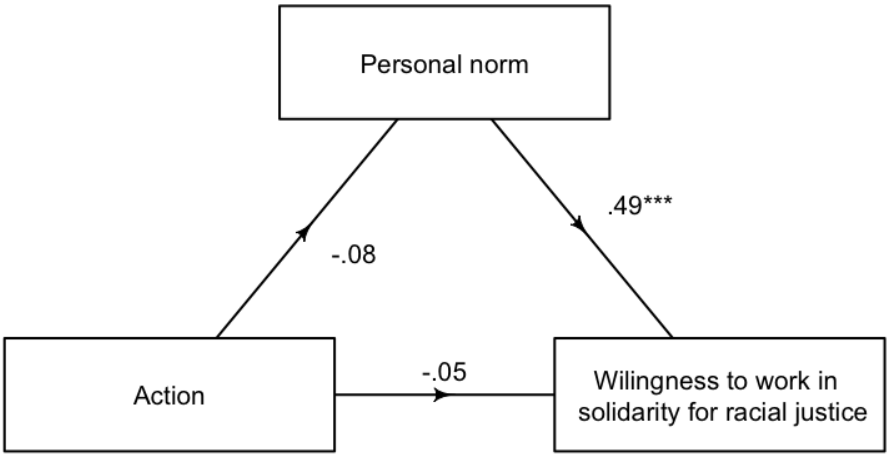



*Figure 6*. Control condition manipulation featuring no like buttons or numbers of likes

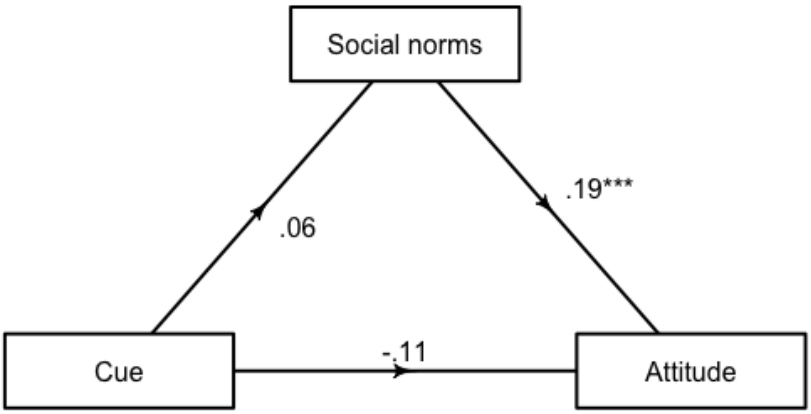



(a)

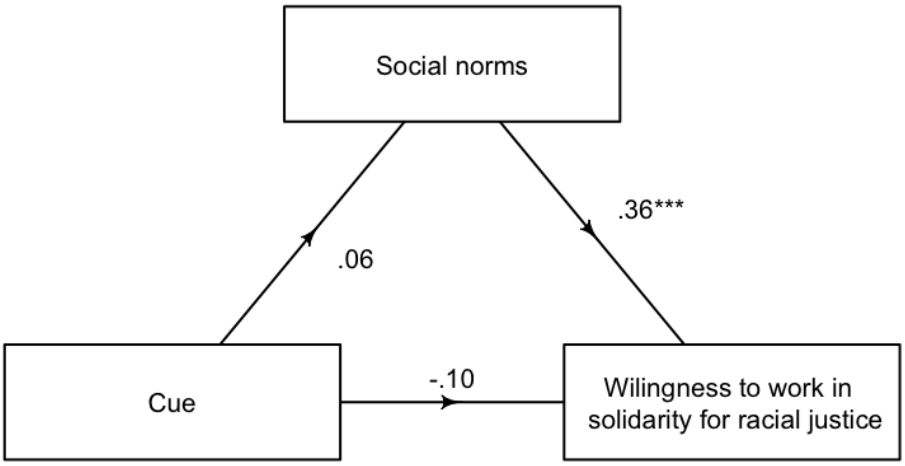



(b)

*Figure 7*. Personal norm did not mediate the effect of action on attitude or behavior intention. Coefficients are unstandardized. *$p$< .05, **$p$< .01, ***$p$<.001.




(a)




(b)

*Figure 8*. Social norms did not mediate the effect of cue on attitude or behavior intention. Coefficients are unstandardized. **p*< .05, ***p*< .01, ****p*<.001.

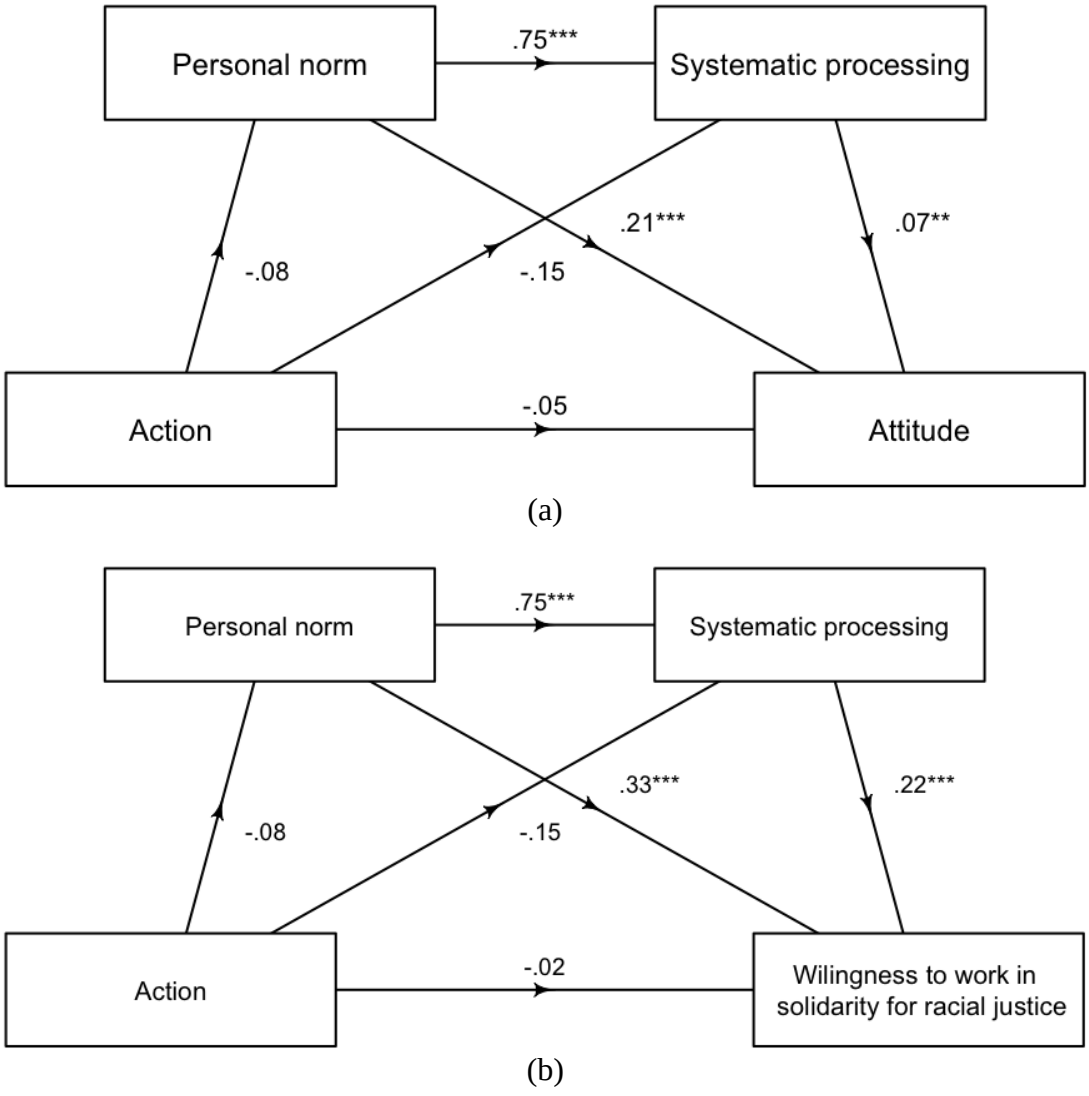
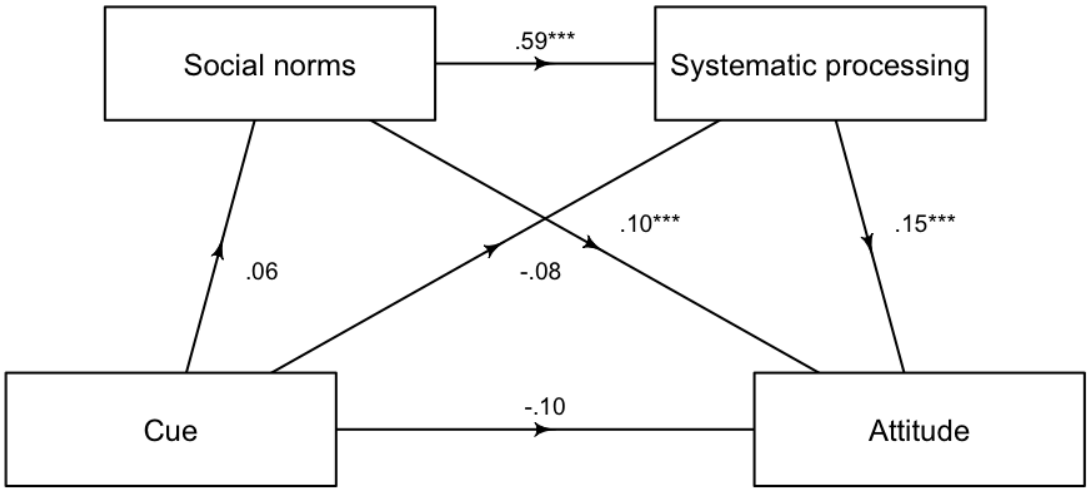
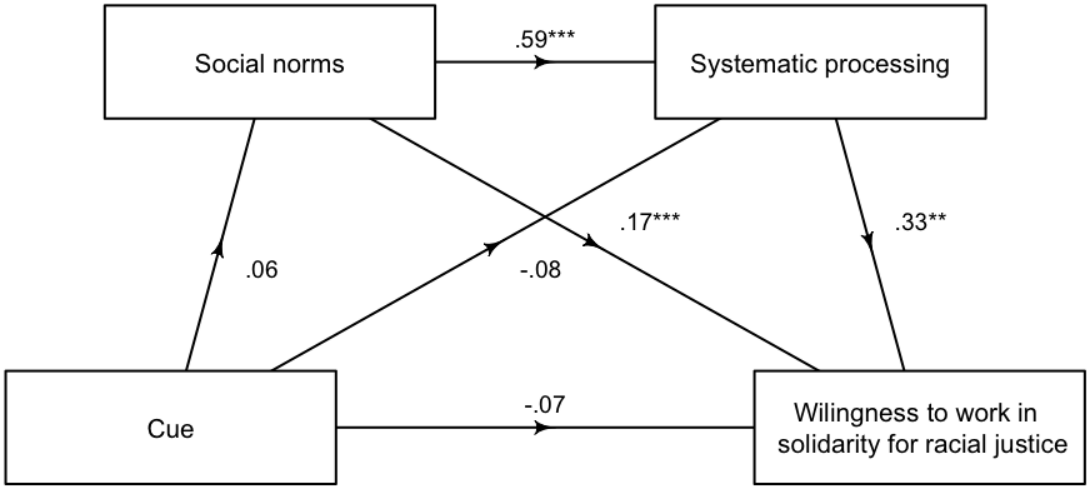



*Figure 9*. Personal norm and systematic processing did not mediate the effect of action on attitude or behavior intention. Coefficients are unstandardized. *$p$< .05, **$p$< .01, ***$p$<.001.




(a)




(b)

*Figure 10*. Social norms and systematic processing did not mediate the effect of cue on attitude or behavior intention. Coefficients are unstandardized. *$p$< .05, **$p$< .01, ***$p$<.001.

Appendix B: Questionnaire

Welcome to Social Media Use and Perceptions study!

Racism has been a major issue in the U.S. Next, you'll be asked a few questions about your feelings about racial issues in this country.

Please be assured that there are no right or wrong answers to the questions. Your honest answers are the most important and valuable!

**Prior Attitude toward Collective Action**

Working in solidarity with African Americans for racial justice is:

1. Bad ……. Good
2. Undesirable ……. Desirable
3. Unfavorable …….. Favorable
4. Negative …… Positive

**Experimental manipulation**

***Condition: Action***

Imagine that while surfing the web, you came to see a YouTube page such as the one below. We ask you to (1) take a look at the YouTube page, (2) watch the video on it, and (3) let us know what you think.

Make sure to leave this window open so that you can come back to this survey page.

Turn up your volume so that you can hear the audio.

Please make sure to click on the like button below the video to show your support of racial justice (see below). You must hit the like button to continue.

This is a simulated, not actual, YouTube webpage designed for this study. It's NOT connected to actual YouTube servers. You don't need to log in to hit the like button.

YouTube Page (Please click on the link above to go to the YouTube page.)

You will be able to proceed to the next page after 1 minute.

***Condition: Cues***

Imagine that while surfing the web, you came to see a YouTube page such as the one below. We ask you to (1) take a look at the YouTube page, (2) watch the video on it, and (3) let us know what you think.

Make sure to leave this window open so that you can come back to this survey page.

Turn up your volume so that you can hear the audio.

Please make sure to look at the number of likes below the video to see how many people have demonstrated support of racial justice.

YouTube Page (Please click on the link above to go to the YouTube page.)

You will be able to proceed to the next page after 1 minute.

***Condition: Control***

Imagine that while surfing the web, you came to see a YouTube page such as the one below. We ask you to (1) take a look at the YouTube page, (2) watch the video on it, and (3) let us know what you think.

Make sure to leave this window open so that you can come back to this survey page.

Turn up your volume so that you can hear the audio.

YouTube Page (Please click on the link above to go to the YouTube page.)

You will be able to proceed to the next page after 1 minute.

**Personal Norm**

We are now interested in your feeling toward racial justice based on the video you just watched. Please indicate your degree of agreement or disagreement to the following statements (1 = Strongly disagree, 7 = Strongly agree).

1. The values that are the most important to me determine my support of racial justice.
2. My support of racial justice reflects who I am.
3. Knowing that I support racial justice is central to understanding the kind of person I am.
4. My support of racial justice is based on the values with which I try to conduct my life.
5. My support of racial justice is based on the core principles that guide my life.
6. My beliefs about how I should live my life determine my support of racial justice.

**Social Norms**

Now we're interested in how you see others' reaction toward racial justice based on the video you just watched. Please indicate your degree of agreement or disagreement to the following statements (1 = Strongly disagree, 7 = Strongly agree).

1. Many people are committed to the issue of racial justice.
2. Many people have done something, even if it is small, for racial justice.

3. Many people would do what the video advocates for racial justice.
4. Many people would agree with what the video said about racial justice.
5. Many people have demonstrated their support for racial justice.

**Systematic Processing**

Please indicate your degree of agreement or disagreement to the following statements (1 = Strongly disagree, 7 = Strongly agree).

While watching the video ...

1. ... I thought about how the information in the video about racial justice relates to other things I know.
2. ... I found myself making connections between the information I was getting from the video about racial justice and information I get elsewhere.
3. ... I tried to relate the ideas in the video about racial justice issue to my own life.
4. ...I thought about what actions should be taken by policy-makers.
5. ... I tried to think of the practical applications of the information from the video.

**Post Attitude toward Collective Actions**

Working in solidarity with African Americans for racial justice is:

1. Bad ……. Good
2. Undesirable ……. Desirable
3. Unfavorable …….. Favorable
4. Negative …… Positive

**Willingness to Work in Solidarity in Collective Actions for Racial Justice**

How willing are you to ... (1 = Not at all, 5 = Extremely)

1. ... cooperate with African Americans to work for racial justice?
2. ... protest alongside African Americans to work for racial justice?
3. ... unite with African Americans to work for racial justice?