Spokespersons for science : examining the attitudinal and behavioral influences of opinion leaders on YouTube

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**NANYANG
TECHNOLOGICAL
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SINGAPORE

**SPOKESPERSONS FOR SCIENCE: EXAMINING THE
ATTITUDINAL AND BEHAVIORAL INFLUENCES OF
OPINION LEADERS ON YOUTUBE**

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WEE KIM WEE SCHOOL OF COMMUNICATION AND INFORMATION

2019

**Spokespersons for science: Examining the attitudinal and behavioral influences
of opinion leaders on YouTube**

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A thesis submitted to Nanyang Technological University in fulfillment of the
requirement for the degree of Master of Communication Studies (Research)

2019

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I certify that all work submitted for this thesis is my original work. I declare that no other person's work has been used without due acknowledgement. Except where it is clearly stated that I have used some of this material elsewhere, this work has not been presented by me for assessment in any other institution or University. I certify that the data collected for this project are authentic and the investigations were conducted in accordance with the ethics policies and integrity standards of Nanyang Technological University and that the research data are presented honestly and without prejudice.

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ABSTRACT

The ease of content creation and distribution on social networking sites (SNS) has necessitated modifications to the conventional perspective of opinion leadership and spurred ordinary users to become opinion leaders, also known as social media influencers (SMIs). SMIs serve as independent endorsers that create and distribute content to an extensive network of followers on SNS. Due to the burgeoning social prominence and widespread popularity of SMIs in today's media environment, there is a resurgence of scholarly interest in opinion leadership on SNS. This study serves as the first empirical assessment of SMIs on YouTube. Guided by the social identity theory of leadership and using the contentious issue of nuclear energy development, this study examines how SMIs influence the attitudes and behaviors of their social group members. This 3 (Attitude similarity: Similar vs. mixed vs. dissimilar) x 2 (Social group status: Ordinary YouTube user vs. SMI) between-subjects factorial experiment was conducted with 251 Singapore citizens and permanent residents from an online survey panel. Attitude similarity significantly predicted participants' attitudes toward the YouTube video, their attitude strength toward nuclear energy development, and their willingness to share the YouTube video. Attitude similarity also interacted with social group status to influence participants' willingness to share the YouTube video. Theoretical and practical implications, as well as directions for future research were discussed.

Keywords: Opinion leadership, social media influencers, YouTube, social identity theory of leadership, social identification

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CHAPTER 1: INTRODUCTION

The emergence and proliferation of social networking sites (SNS) have brought about substantial changes to today's media environment. In particular, the novel affordances of SNS have radically altered information flow processes (Schäfer & Taddicken, 2015) and users' media consumption patterns (Doan, Ramakrishnan & Halevy, 2011). With conventional media, individuals were restricted to the passive role of information recipients from the mass media or opinion leaders (Weeks, Ardèol-Abreu & de Zúñiga, 2017; Zhang, Zhao & Xu, 2016). Contrastingly, SNS enable users to actively acquire, create, and distribute content (Turcotte, York, Irving, Scholl & Pingree, 2015; Zhang et al., 2016). The ease of content creation and distribution has facilitated more users to become opinion leaders on SNS (Chahal, 2016; Djafarova & Rushworth, 2017; Neubaum & Krämer, 2017). Taking the specific context into consideration, this emerging type of opinion leader is also known as a social media influencer (SMI).

In recent years, more government and nonprofit agencies in Singapore have engaged SMIs to create content and front nationwide campaigns. For instance, the Health Promotion Board (HPB) recently commissioned locally prominent SMIs to produce and host a series of YouTube videos championing healthy diet choices (Ministry of Health Singapore, n. d.). The National Trades Union Congress (NTUC) also engaged a local lifestyle and travel blogger to propagate key social and policy messages through multiple blog posts (Isabelle, 2015). Hence, this signals the burgeoning prevalence of utilizing SMIs to promulgate socially salient messages and ideas (Allué, 2013; Brown & Fiorella, 2013; Li, Lai, & Chen, 2011).

The widespread popularity and increasing societal prominence of SMIs have re-ignited academic interest in opinion leadership and how it prevails on SNS.

Specifically, scholars have sought to juxtapose conventional opinion leadership with SMIs (Turcotte et al., 2015; Weeks et al., 2017). Moreover, prior research has focused on examining the characteristics of opinion leaders (Nisbet & Kotcher, 2009; Shah & Scheufele, 2006), and the predictors of opinion leadership behaviors in political and environmental communication (Dalrymple, Shaw & Brossard, 2013; Xu, Sang, Blasiola & Park, 2014).

Despite this, there are several research gaps that have yet to be addressed. Limited research has examined the SMI's attitudinal and behavioral influences over social group members. Moreover, there are no opinion leadership studies in science communication even though scholars have emphasized the importance of cultivating public understanding and interest in science and technology (Dijkstra & Gutteling, 2012; Ho, 2016). While extant literature has examined how scientists and the mass media can inform the public about scientific advancements (Besley & Nisbet, 2011; Dijkstra & Gutteling, 2012), no studies have examined whether SMIs can serve as advocates of science and technology to influence social group members' attitudes. Furthermore, many studies have focused on analyzing the textual elements of micro-blogging SNS, such as Twitter (Park & Kaye, 2017, Xu et al., 2014) and Weibo (Zhang et al., 2016). This fails to account for the visual elements (e.g., images, gifs, and videos) that distinguish SNS from earlier digital media platforms (e.g., online forums). Micro-blogging SNS are also not representative of other socially prominent SNS frequently used by SMIs (e.g., YouTube and Instagram). Hence, the present study aims to address the aforementioned research gaps and makes distinctive contributions in the following ways.

1.1. Study Aims

First, this study serves as one of the pioneering empirical assessments of opinion leadership on YouTube. Second, this study explicates opinion leadership by juxtaposing conventional opinion leaders with SMIs. Third, this study utilizes the social identity theory (SIT) of leadership to understand how SMIs assume the role of social group leaders to influence individuals' attitudes and behaviors. Using the contentious issue of nuclear energy development, this study specifically analyzes how individuals' attitude similarity with the opinions depicted on the YouTube page as well as the YouTube channel's social group status on the YouTube page (i.e., SMI vs. ordinary SNS user) influence individuals' attitudes toward the YouTube video, their attitude strength toward nuclear energy development, and their willingness to share the YouTube video.

1.2. Potential Study Implications

The findings from this study provide potential conceptual, theoretical, and practical implications. Since majority of opinion leadership research on SNS are conducted on micro-blogging platforms (e.g., Twitter, Weibo), this study contributes to opinion leadership literature on SNS by examining opinion leadership on other prominent, yet understudied SNS. As most leadership research is based on offline organizational settings, this study also provides theoretical implications by extending the SIT of leadership to SNS. This theoretical extension also addresses the caveats of an established computer-mediated communication theory, the social identification/deindividuation (SIDE) theory. As the SIDE theory accounts for the social influence mechanisms and intergroup relations on visually anonymous (Postmes, Spears, & Lea, 2002; Russell & Lea, 1992; Spears, Lea, & Lee, 1990) or visually uniform online platforms (Lee, 2004), the application of the SIT of leadership on YouTube in this

study may address the SIDE model's limitations by accounting for the social influence mechanisms in a visually-identified and diverse SNS.

Practically, the findings from this study may inform policymakers, nonprofit, and corporate entities on the effectiveness of engaging SMIs to achieve their strategic messaging goals. In particular, the results may illuminate whether SMIs are capable of generating online "buzz," as well as influencing SNS users' attitudes and behaviors. As such, the results may assist policymakers and communication practitioners in assessing the suitability of utilizing SMIs as spokespersons to front strategic messaging campaigns about scientific developments.

CHAPTER 2: LITERATURE REVIEW

2.1.Opinion Leadership

The notion of opinion leadership was first introduced by Lazarsfeld and his colleagues in the two-step flow model of communication (Lazarsfeld, Berelson & Gaudet, 1944). Based on this conventional flow of information, opinion leaders refer to a privileged minority of individuals in a society that serve as information gatekeepers (Katz & Lazarsfeld, 1955; Lazarsfeld et al., 1944). Since opinion leaders have exclusive access to information, they are able to disseminate specific content from the mass media to less-involved social group members (Katz & Lazarsfeld, 1955; Neubaum & Krämer, 2017). By directing public attention toward a particular brand, product, or issue, opinion leaders are able to drive trends for the vast majority of ordinary social group members (Schuster et al., 2006). Additionally, opinion leaders are capable of influencing the attitudes and behaviors of their followers (Hogg, Hains & Mason, 1998; Park & Kaye, 2017). Therefore, conventional opinion leaders are commonly conceptualized in terms of their ability to influence, reflect, and uphold social group norms in social interactions (Dalrymple et al., 2013; Katz & Lazarsfeld, 1955).

The attitudinal and behavioral influences of opinion leaders over social group members have been extensively studied in the pre-Internet era. Opinion leadership has also been applied to many domains of communication research (Weeks et al., 2017), including advertising and marketing research, political communication, environmental communication, and health communication. For instance, advertising and marketing research have examined how brand and product endorsements from opinion leaders, specifically market mavens, have influenced consumers' purchase decisions and brand loyalty (Carr & Hayes, 2014; Nisbet & Kotcher, 2009). Studies in political

communication have also analyzed how opinion leadership is related to media use, civic participation, and political efficacy (Shah & Scheufele 2006; Weeks et al., 2017). Moreover, environmental communication research has looked into how opinion leaders can persuade individuals to exercise environmentally-sustainable consumer choices and adopt pro-environmental behaviors (Dalrymple et al., 2013; Nisbet & Kotcher, 2009). In the domain of health communication, Schuster et al. (2006) drew upon the diffusion of innovations theory to study how media-generated interpersonal communication influence opinion leaders' adoption of preventive health behaviors. Evidently, past studies have demonstrated the attitudinal and behavioral influences of opinion leaders over social group members.

Despite this, limited research on opinion leadership has been conducted in the domain of science communication. Science communication scholars have reinforced the importance of raising public awareness and interest in science and technology (Dijkstra & Gutteling, 2012; Ho, 2016). These objectives can be attained by incorporating science as a core academic subject in formal educational settings. However, the long-term effectiveness of utilizing school-based education as a means for public communication of science and technology remains limited (Falk, Storksdieck & Dierking, 2007). Instead, informal public education plays a crucial role in sustaining public interest and informing the public about advancements in science and technology (Anderson, Lucas, Ginns & Dierking, 2000; Falk & Dierking, 2002). Although prior research has examined the roles of scientists and the mass media in educating the public about the developments in science and technology (Besley & Nisbet, 2011; Dijkstra & Gutteling, 2012), this fails to account for the emerging trends in today's media environment. In particular, past studies do not accurately reflect how the public primarily acquires information using online and social media (Brossard &

Scheufele, 2013). Past research has also not examined how opinion leaders can be mobilized to disseminate information, shape public attitudes, and drive trends for social group members (Nisbet & Scheufele, 2009). Therefore, this study intends to address the research gap by examining how opinion leaders can serve as influencers for scientific issues.

2.2. Opinion Leadership on SNS

Although extensive research has been conducted on opinion leadership in the pre-Internet era, the conventional perspective of opinion leadership is no longer valid in today's media landscape. The novel affordances of SNS have altered information-flow processes and necessitated modifications to the conventional perspective of opinion leadership. In particular, the exclusivity of accessing and distributing information in the two-step flow of communication no longer applies on SNS (Schäfer & Taddicken, 2015). Both SMIs and ordinary SNS users can passively receive information, while actively acquiring, creating, and distributing content concurrently (Turcotte et al., 2015; Zhang et al., 2016). As such, opinion leadership on SNS is not contingent on the user's abilities to exclusively access and share information. Instead, it rests upon the SMI's abilities to attract attention from SNS users and influence information flows (Xu et al., 2014). Hence, SMIs are defined as independent endorsers that create and publicize content through a combination of SNS (Allué, 2013; Cheung, Lee, & Rabjohn, 2008; Liu et al., 2015).

Even though SMIs are considered an emerging type of opinion leader, SMIs differ from opinion leaders in the pre-Internet era in terms of their involvement in endorsing brands, products, and campaigns. Conventional opinion leaders adhere to the two-step flow of information by framing and disseminating content from mainstream media to less active members of the public (Katz & Lazarsfeld, 1955). In

comparison, SMIs actively create, publicize, and distribute original content through their personal SNS channels (Allué, 2013). In other words, SMIs function as independent endorsers and content creators that propagate their ideas through a combination of SNS to their followers (Allué, 2013; Cheung et al., 2008; Liu et al., 2015). For instance, prominent science communicator Dianna Cowern frequently posts videos explaining physical effects on her YouTube channel—Physics Girl (Cho, 2017). As a SMI, she conceptualizes, films, and edits the YouTube videos (Cho, 2017). Cowern is also chiefly responsible for her collaborations with other science communicators. After producing the videos, she also independently distributes her videos on her blog and YouTube channel (Physics Girl, n.d.). Evidently, SMIs are more involved in the process of content creation than conventional opinion leaders.

2.3. Characteristics of Opinion Leaders

Opinion leaders possess key characteristics that distinguish them from their social group members. Although opinion leaders are capable of influencing the attitudes of their social group members, they do not necessarily occupy formal positions of power (Dalrymple et al., 2013; Katz & Lazarsfeld, 1955; Nisbet & Kotcher, 2009). Instead, opinion leaders can be found in various social, economic, or political standings (Katz, 1957; Park & Kaye, 2017; Shah & Scheufele, 2006). More importantly, opinion leaders actively exert their attitudinal influence by emphasizing their prototypicality and social attraction (Hogg, 2001; Hogg et al., 1998), which are described below.

Prototypicality. Prototypicality refers to the extent to which an individual is regarded to embody the social group identity (Cho, Keum & Shah, 2015; Hains, Hogg & Duck, 1997; Hogg et al., 1998). Opinion leaders are perceived to exhibit certain traits that are central to the social group identity (Hains et al., 1997; Hogg et al., 1998;

Neubaum & Krämer, 2017). These prototypical traits can be established or modified by the social group based on the specific context (Hogg, 2001). As the opinion leader occupies a prototypical position in the social group, social group members would align their attitudes with the opinion leader to assimilate to the social group norms.

Extant literature on conventional opinion leaders and SMIs have operationalized prototypicality differently. For instance, past studies have established extraversion as a key characteristic of conventional opinion leaders in the pre-Internet era (Cappella, 2017; Gnambs & Batinic, 2012). Offline opinion leaders are also able to utilize their extraversion and communicative abilities to express themselves and share information with social group members (Gnambs & Batinic, 2012; Hains et al., 1997; Mayer, Davis, & Schoorman, 1995). However, these personality traits are not necessarily observed among SMIs (Neubaum & Krämer, 2017), as SNS have presented new opportunities for users to disseminate viewpoints to other SNS users. Instead, SMIs assert their prototypicality by creating original content to influence information flows (Xu et al., 2014). Considering the context-driven nature of prototypicality, this study will not examine specific characteristics of opinion leaders or SMIs studied in past research. Instead, this study will adopt established self-report measures that operationalize prototypicality in terms of whether the participants felt that the opinion leader was representative of the social group (Hains et al., 1997; Hogg et al., 1998).

Social attraction. Social attraction refers to an individual's dominance and social bonds with social group members (Katz, 1957). Opinion leaders occupy a dominant position within the social group by actively influencing their ingroup members (Hogg, 2001). Opinion leaders are also perceived to possess high social attraction due to their likability and extensive social network (Katz, 1957). While

conventional opinion leaders establish, develop, and sustain their social bonds using a combination of offline communication platforms (e.g., face-to-face, print media, broadcast media; Dalrymple et al., 2013), SMIs primarily utilize online communication channels (e.g., blogs, SNS; Nisbet & Kotcher, 2009; Park & Kaye, 2017; Xu et al., 2014). Hence, the social attraction of SMIs has been operationalized in terms of aggregated user responses on SNS (e.g., likes, comments, views, and channel subscribers). Past studies have also measured the SMI's social attraction in terms of their gregariousness, their number of friends, acquaintances, and followers on SNS (Djafarova & Rushworth, 2017; Jin & Phua, 2014; Park & Kaye, 2017), as well as the intensity of online engagement (e.g., number of views, likes, comments, and shares) that the SMI can trigger (Zhang et al., 2016). An example of high online engagement can be seen on YouTube's trending videos, where the high number of views and comments elicited by these popular videos indicate the SMI's success in presenting ideas that are popular and resonate with SNS users. These videos will be displayed in a list of trending YouTube videos that will be surfaced to all users in a specific country (YouTube, 2017). SMIs also usually receive official validation from SNS in the form of a verification symbol. For example, Weibo officially verifies SMIs with a large number of followers and tweets (Zhang et al., 2016). Taking these measurements into account, this study will operationalize social group status (SMI vs. ordinary YouTube user) in terms of the number of video hits, subscribers, comments, the verification badge, and the video's trending status.

2.4. Social Identity Theory (SIT) of Leadership

This study utilizes the SIT of leadership to examine whether SMIs have greater attitudinal and behavioral influences over other social group members as compared to ordinary YouTube users. This theoretical choice is contrary to Carr and Hayes (2014)

as well as Djafarova and Rushworth (2017), who drew upon the source credibility framework to assess the influence of opinion leaders. The source credibility framework does not account for the dynamic group interactions between opinion leaders and their followers. Since opinion leadership stems from individuals' social categorization and depersonalization based on the social group's prototypes (Hogg, 2001; Hogg & van Knippenberg, 2003), the SIT of leadership is better-suited to examine the attitudinal and behavioral influences of opinion leaders on SNS. In particular, the SIT of leadership explains why individuals perceive themselves in terms of their social group affiliations, and how they categorize themselves and others into social groups. The SIT of leadership also accounts for how opinion leadership is conferred to social group members that exhibit prototypicality and social attraction.

The SIT of leadership extends Turner, Hogg, Oakes, Reicher, and Wetherell's (1987) self-categorization theory (SCT) and Tajfel and Turner's (1979) social identity theory (SIT) to examine the social influence mechanisms between social group leaders and members. Specifically, the SIT of leadership draws upon the SIT's social identity aspects as well as the SCT's cognitive and interactive social processes (Hogg, 2001). According to the SIT and the SCT, an individual's self-concept encompasses both the personal and social identities (Tajfel & Turner, 1979). In certain social settings, people perceive themselves as independent individuals and evaluate interpersonal interactions based on their personal preferences and characteristics (Tajfel, 1974). However, in many social situations, individuals perceive themselves as part of a social group (Tajfel, 1974). In other words, an individual's social identity is based on his or her perceived identification and associations to social categories (Reicher, Spears & Postmes, 1995; Tajfel & Turner, 1979). These social categories are delineated by context-specific stereotypes of group attitudes and behaviors (Hogg, 2001), as well as

group-specific cues such as nationality and ethnicity (Tajfel & Turner, 1979).

Therefore, opinion leaders such as SMIs will be conferred a prototypical position in the social group based on their representativeness of group attitudes, behaviors, or group-specific cues.

Based on the prototypes of a social group, individuals then categorize themselves and collections of people into ingroups and outgroups. This process of categorizing the self and others emphasizes the prototypical similarities among members from the same social group. This categorization process also simultaneously accentuates the differences of outgroup members from different social groups (Hogg, Terry, & White, 1995). These social group memberships then describe and determine how ingroup members should feel, think, or act (Hogg et al., 1995; Tajfel & Turner, 1979).

When the social group's identity is salient, ingroup members cognitively assimilate themselves to the social group norms (Turner et al., 1987). Drawing from the referent informational influence theory, individuals only concur with people who belong to the same social group under the aforementioned conditions (Turner et al., 1987). In other words, social group members polarize their attitudes toward the prevailing group norms with heightened attitude strength (Hogg, 1996; Sechrist & Young, 1996). A salient social group identity would also heighten the intensities of individuals' likelihood of behavioral performance in accordance with the prevailing group norms (Turner et al., 1987).

In this study, participants' social identity will be established by their attitudes toward nuclear energy development. According to Zhang, Jiang, and Carroll (2010), social identities can be established and emphasized on CMC platforms. For instance, several cues on SNS (e.g., video content and comments) may indicate the prototypical

attitudes and behaviors of social group leaders and members (Barker, 2008; Zhang et al., 2010). As such, this study will establish participants' social identity by asking them about their pre-existing attitudes toward nuclear energy development. Subsequently, this study will demarcate the social group attitudes in the experimental stimuli in terms of the valence of the YouTube video and the comments on the YouTube page. Participants' ingroup or outgroup status with the YouTube user's channel and the commenters will be delineated based on their attitude similarity with the YouTube video and comments on the YouTube page. That is, participants' attitude similarity will be manipulated by matching their pre-existing attitudes toward nuclear energy development with the valence of the YouTube video and comments on the YouTube page. To enhance ecological validity, this study will not only include experimental conditions featuring a YouTube page with mostly pro-nuclear energy or mostly anti-nuclear energy attitudes, but also feature experimental conditions with a YouTube video and comments that convey an equivalent proportion of similar and dissimilar attitudes to the participants' pre-existing attitudes toward nuclear energy development (Gan, Looi, Leong, & Chua, 2017). Hence, the participants will either share similar attitudes, dissimilar attitudes, or mixed attitude similarity with the video and comments on the YouTube page.

When the participants' social group identity is highlighted in the YouTube page, their pre-existing attitudes toward nuclear energy development would influence their attitudes toward the YouTube video. In other words, participants' perception of the YouTube video would depend on whether the opinion conveyed in the YouTube video and comments are similar to the participants' pre-existing attitudes toward nuclear energy development. For instance, participants would categorize themselves as ingroup members with the YouTube users in the experimental stimuli due to their

similar attitudes toward nuclear energy development. Conversely, participants would categorize themselves as outgroup members with the YouTube users in the experimental stimuli if their attitudes toward nuclear energy are dissimilar. As such, participants would regard the YouTube video more positively if it depicted similar attitudes with the participants toward nuclear energy development, than if the YouTube video depicted dissimilar attitudes from the participants toward nuclear energy development. Similarly, participants would perceive the YouTube video more favorably if it shared similar attitudes with the participants toward nuclear energy development, as compared to the participants exposed to a YouTube video conveying both similar and dissimilar sentiments toward nuclear energy development. Moreover, participants' attitude strength toward nuclear energy development would intensify as they cognitively assimilate toward the prevailing ingroup norms. Participants would also be more willing to share the YouTube video as a form of self-categorization. Specifically, participants may share the YouTube video to assert their social group membership and reiterate their differences with outgroup members from other social groups. As such, participants' willingness to share the YouTube video can be perceived as an endorsement of the prototypical attitudes and the issues conveyed in the YouTube video. Therefore, this study postulates that:

H1: Participants exposed to a YouTube page with similar attitudes toward nuclear energy development will (a) perceive the YouTube video more positively, (b) possess greater attitude strength toward nuclear energy development, and (c) be more willing to share the YouTube video, as compared to participants exposed to a YouTube page with dissimilar attitudes toward nuclear energy development.

H2: Participants exposed to a YouTube page with similar attitudes toward nuclear energy development will (a) perceive the YouTube video more positively, (b)

possess greater attitude strength toward nuclear energy development, and (c) be more willing to share the YouTube video, as compared to participants exposed to a YouTube page with mixed attitudes toward nuclear energy.

H3: Participants exposed to a YouTube page with mixed attitudes toward nuclear energy will (a) perceive the YouTube video more positively, (b) possess greater attitude strength toward nuclear energy development, and (c) be more willing to share the YouTube video, as compared to participants exposed to a YouTube page with dissimilar attitudes toward nuclear energy.

The SIT of leadership's central tenet is that prototypical group leaders are perceived as influential, legitimate, and attractive by social group members, particularly when group norms are salient (Hogg, 2001; Hogg & van Knippenberg, 2003). Social group leaders who exhibit prototypical traits also receive more trust and support from ingroup members (Fielding & Hogg, 1997; Hogg, 2001). As such, social group leaders exert greater attitudinal and behavioral influences on ingroup members than ordinary social group members. Since SMIs occupy a prototypical position within the social group, individuals would identify with the SMIs to a larger extent than ordinary ingroup YouTube users. Individuals would also draw upon the referent informational influence of SMIs to determine how they should feel, think, and behave, more than that of ordinary ingroup YouTube users. Relating this to the present study, individuals' attitudes toward the YouTube video and the issue of nuclear energy development would shift toward the stance of ordinary ingroup YouTube users. However, participants' attitudes would be more intense if they were exposed to the SMI's YouTube video, than if they were exposed to an ordinary ingroup YouTube user's video. In order to reinforce their social group affiliation, individuals would also

be more willing to support the SMI by sharing the YouTube video. Therefore, this study posits the following:

H4: Participants exposed to a YouTube video endorsed by a SMI will (a) perceive the YouTube video more positively, (b) possess greater attitude strength toward nuclear energy development, and (c) be more willing to share the YouTube video, as compared to participants exposed to a YouTube video endorsed by an ordinary ingroup user.

H5: The social group status of the user's YouTube channel and participants' perceived attitude similarity with the opinions on the YouTube page will interact, such that the increased effects on participants' (a) attitudes toward the YouTube video, (b) attitude strength toward nuclear energy, and (c) their willingness to share the YouTube video will be observed among participants exposed to a SMI's YouTube channel; the interaction effects will be negligible for participants exposed to an ordinary social group member's YouTube channel.

2.5. Attitudes

Attitudes are defined as the extent to which an individual perceives an entity favorably or unfavorably (Eagly & Chaiken, 1998). Apart from the positive and negative valence of attitudes, Breckler (1984) explicated attitudes into the affective, behavioral, and cognitive components. Since individuals' attitudes may be represented by one or all of the components in Breckler's (1984) tripartite model of attitudes (Eagly & Chaiken, 1998), this study will focus on analyzing the affective, behavioral, and cognitive components of attitudes to address its research objectives.

Affective attitudes refer to an individual's sentiments and intuitions toward an attitude object, such as feelings or moods (Breckler, 1984). In prior research, affective attitudes were measured using self-reports of positive affect (e.g., happy, pleasant),

negative affect (e.g., angry, unpleasant; Hagger & Chatzisarantis, 2005; Nowlis, 1965), and physiological measures (e.g., heart rate; Breckler, 1984). To address the research objectives, this study will measure participants' affective attitudes toward the YouTube video and the issue portrayed in the YouTube video—nuclear energy development—using the participants' self-reports of positive and negative affect.

The behavioral component is defined as an individual's behaviors when exposed to an attitude object. In Breckler's (1984) tripartite model of attitudes, behavioral attitudes were operationalized using self-reports of behavioral intentions, behavioral performances, and the participants' preferred physical distance with the attitude object. To analyze the behavioral influence of SMIs, this study will measure the participants' behavioral component of attitudes in terms of their willingness to share the YouTube video on their personal SNS channels.

Meanwhile, the cognitive component pertains to individuals' thoughts and beliefs toward an attitude object (Breckler, 1984). This study focuses on analyzing one dimension of cognitive attitudes: instrumental attitudes. By adopting established measures from extant literature (Hagger & Chatzisarantis, 2005; Kang, Cappella & Fishbein, 2006), instrumental attitudes will be measured in this study by asking participants how informative and useful they perceive the YouTube video and nuclear energy development.

Attitude strength. Attitude strength refers to the intensity of an individual's emotional response toward an attitude object (Krosnick et al., 1993; Petty & Krosnick, 1995). An individual's attitude strength is typically influenced by their knowledge and perceived personal relevance of the attitude object (Krosnick et al., 1993; Petty & Krosnick, 1995). Individuals who know more about an attitude object will be more interested and have stronger attitudes toward it. Moreover, individuals who perceive

an attitude object as interesting, valuable, and relatable would possess stronger attitudes toward it (Krosnick et al., 1993; Petty & Krosnick, 1995). Conventionally, attitude strength is assessed using self-reports of the participants' intensity of feelings toward the attitude object (Krosnick & Schumann, 1988). In recent literature, opinion leadership research operationalized the attitudinal influence of opinion leaders by analyzing whether the opinion leader significantly improved the participants' perceptions toward a particular product (Carr & Hayes, 2014; Bansal & Voyer, 2000). Drawing upon the established measures from prior opinion leadership research, this study assesses the attitudinal influence of SMIs by examining the strength of participants' attitudes toward nuclear energy development in the post-stimuli measures. In particular, this study will analyze the participants' instrumental and affective attitude strength toward nuclear energy development after viewing a YouTube video from an ordinary YouTube user or a SMI.

2.6. Study Context: Nuclear Energy Development

In light of the lack of opinion leadership research in science communication, this study addresses the research gap by examining whether SMIs can function as advocates or critics for scientific developments. In particular, this study utilizes nuclear energy development as the study context due to its social salience. Over the past decades, nuclear energy development remains one of the most controversial energy-related issues that has consistently received extensive media coverage (Ho, Leong, Looi & Chuah, 2019a). Nuclear energy development has also continually polarized public opinion (Ho, 2016), which are reflected in the national energy plans of different countries (Ho, Leong, Looi, Chen, Pang & Tandoc, 2018a). For example, some countries (e.g., Austria, Belgium, Germany, Switzerland) have planned to discontinue using nuclear energy. These countries have planned to focus on investing

in renewable energy and enhancing energy efficiency instead (Ho, 2016; Mah, Hills & Tao, 2014). Contrastingly, other countries (e.g., United States, United Kingdom, France) have drawn up ambitious plans to construct more nuclear power plants (CNN, 2017; Ho, Looi, Chuah, Leong & Pang, 2018b). Such differing attitudes toward nuclear energy development are also reflected in Asia. For instance, countries in East (e.g., China, India) and Southeast Asia (e.g., Indonesia, Thailand) intend to incorporate nuclear energy into their national energy mix in the near future (Ho et al., 2019b; International Atomic Energy Agency [IAEA], 2018; World Nuclear News, 2017; World Nuclear News, 2018). In comparison, Vietnam recently postponed its nuclear development plans indefinitely due to its prevailing economic conditions and safety concerns (Ho et al., 2018b; Ngyuen & Ho, 2016).

Polarized attitudes regarding nuclear energy development are also observed within countries (Ho et al., 2018a). Nuclear energy development is widely regarded as an emotionally and morally loaded topic that is similar to other controversial scientific developments (World Nuclear Association, 2015), such as genetically-modified food or embryonic stem cell research. For instance, detractors of nuclear energy have often expressed concern over the development and proliferation of nuclear weapons, the improper disposal of radioactive waste, as well as the potential occurrence of nuclear accidents (Ho et al., 2018b; IAEA, 2014). On the contrary, advocates for nuclear energy have often highlighted its benefits as an environmentally-sustainable energy source, as well as a stable and efficient energy source for electrical generation (Ertör-Akyazı et al., 2012; Ho et al., 2018b; IAEA, 2014). Since science issues are often presented in an emotionally and morally loaded manner (Nisbet & Lewenstein, 2002), individuals will look toward opinion leaders or their prevailing social group norms to inform their attitudes and behaviors toward it. Therefore, the controversial issue of

nuclear energy development is well-suited to examine the social influences and unequal relations between social group leaders and members.

CHAPTER 3: METHOD

3.1. Research Design

This study utilized a 3 (Attitude similarity: Similar vs. mixed vs. dissimilar) x 2 (Social group status: Ordinary YouTube user vs. SMI) between-subjects factorial experiment. An experiment (embedded in the form of an online survey) was conducted so that participants can respond under the naturalistic settings of web browsing. This research design enhanced the study's internal validity by providing safeguards against experimenter expectancies and bias in controlled, laboratory settings. Moreover, this research design mitigated the lack of external validity for experiments conducted in laboratory settings by ensuring ecological validity.

3.2. Participant recruitment

Participants were recruited using convenience sampling from an online survey panel managed by Research Now SSI, a leading research company. Only Singapore citizens and permanent residents aged 21 and above were eligible for this study. Participants were also required to have prior YouTube use, so that they would be familiar with the YouTube interface. Even though the participants were recruited using non-probability sampling, this sample of participants represents the general populace of SNS users more accurately as compared to a convenience sample of undergraduates. To minimize the lack of generalizability in utilizing an online survey panel, racial quotas were imposed on the sample. This approach ensured that the sample population reflected the demographics of the Singapore's population. An equivalent proportion of male and female participants were also recruited to prevent gender bias.

Participants who failed the attention checks or who provided responses that are

outliers¹ were filtered out of this study. A total of 251 participants were retained in the sample, which constituted 90.8% Chinese, 6.4% Malay, 2.4% Indian, and 0.4% Eurasian. The respondents comprised of 47.4% male and 52.6% females, while participants' ages ranged from 21 to 63 ($M = 38.4$, $SD = 11.3$). Upon completion of the study, the participants were remunerated with points, which could be exchanged for research incentives from Research Now SSI.

3.3. Experimental procedure

Prior to data collection, informed consent was obtained from the participants (refer to Appendix A). Thereafter, the participants were randomly assigned to one of the six experimental conditions. Following this, the participants provided their pre-existing attitudes toward nuclear energy development in an online questionnaire. After answering the pre-test questionnaire, the participants were exposed to the experimental stimuli, where they were provided with five minutes to observe all the elements on a YouTube mock-up page. Finally, the participants answered an online questionnaire in the posttest, which contains the dependent measures and demographics.

3.4. Experimental stimuli

Six different YouTube mock-up pages were created to reflect each experimental condition. Each YouTube mock-up page included the channel information (e.g., number of channel subscribers, video hits, the YouTube verification badge, and the YouTube video's trending status), video, and comments by other ordinary YouTube users. The channel information, valence of the YouTube video, and the valence of comments by other YouTube users within the participants' social group

¹ Multivariate outliers were determined by calculating the Mahalanobis distances of each particular case from the means of all other cases for all the variables of interest. Cases whereby the Mahalanobis distance exceeded the chi-square critical value were excluded from the analysis.

were manipulated as independent variables to test the hypotheses stipulated in the literature review (refer to Appendix B for the YouTube mock-up pages).

Meanwhile, other elements of the YouTube mock-up page (e.g., related videos, username, and profile picture of the commenters) were kept constant across the experimental conditions to prevent confounds from arising. The usernames of the YouTube commenters were sourced from actual YouTube accounts to ensure ecological validity. In addition, the profile pictures of the commenters were obtained from publicly available images. To enhance the experimental stimuli's ecological validity, a mixture of visual cues (e.g., alphabetical icons based on the commenter's username, landscape photos, memes, and informal photographs) were chosen to represent the commenters' profile pictures. To prevent potential confounds from the profile picture's physical attractiveness, a pilot test was conducted to select profile pictures with neutral attractiveness. The pilot test participants rated the perceived attractiveness of the profile pictures on a 7-point scale (1= *very unattractive* to 7= *very attractive*). Based on the responses from the pilot test, 4 profile pictures which yielded a mean score closest to the neutral point (i.e., a mean score closest to 4 out of a scale from 1 to 7) were selected for the final experimental stimuli (refer to Appendix C).

YouTube channel information. The experimental stimulus features the YouTube channel of a fictitious user. The fictitious YouTube user's social group status (i.e., SMI vs. ordinary YouTube user) was represented by the amount of channel subscribers, number of video hits, the YouTube verification badge, and the YouTube video's trending status. A SMI's YouTube channel depicted a high number of subscribers, video hits, a YouTube verification badge, and the YouTube video's trending status. Meanwhile, an ordinary social group member's YouTube channel

featured a low number of subscribers, video hits, no YouTube verification badge, and no trending status for the YouTube video.

The YouTube channel's username and profile picture were kept constant across all experimental conditions to prevent confounds from arising. To ensure ecological validity, the YouTube channel username was obtained from actual YouTube accounts. The YouTube channel's profile image was also sourced from publicly available stock images. Profile pictures of 6 male and 6 female profile pictures within the same age group were selected to ensure that age does not confound the findings. To prevent the physical attractiveness of the profile picture from confounding the results, a pilot test was also conducted to select a profile image with neutral attractiveness. Twenty Singaporeans rated the physical attractiveness of 6 male and 6 female profile pictures on a 7-point scale of (1 = *very unattractive* to 7 = *very attractive*). The profile picture which yielded a mean score closest to the neutral point (i.e., a mean score closest to 4 out of a 7-point scale) was selected for the final experimental stimuli (refer to Appendix C).

YouTube video. The YouTube video was created by editing existing videos to resemble video listicles (e.g., 3 Reasons why I support/ oppose nuclear energy), which are widely utilized by SMIs. After which, the video was embedded into the YouTube mock-up page. Three equivalent versions of the YouTube video were created, and participants were exposed to a YouTube video conveying either pro-nuclear, anti-nuclear, or a combination of pro- and anti-nuclear arguments. In addition, the duration of the YouTube videos was kept constant to prevent confounds from arising. To enhance the experimental manipulation, the valence of the YouTube video was reiterated in the YouTube video description and a comment pinned on top of the comment thread. A pilot test was conducted to ensure that the valence of the YouTube

video, the video description, and the pinned comment are balanced and equivalent. The valence of the YouTube video was also matched with the valence of the comments by other users.

YouTube comments. The social group's opinion toward nuclear energy were not only represented by the valence of the YouTube video, but also by the comments from ordinary YouTube users. Participants were exposed to a YouTube page that either contains mostly pro-nuclear comments, mostly anti-nuclear comments, or an equal amount of both pro- and anti-nuclear comments. To ensure ecological validity, these comments were obtained from actual social media posts or comments that are publicly available. The word count of the comments was kept constant to prevent confounds from arising. The comments were then categorized according to their positive or negative attitudes toward nuclear energy.

A pilot test was administered to 20 Singaporeans to select balanced and equivalent pro-nuclear and anti-nuclear comments. The pilot test participants evaluated 7 pro-nuclear and 7 anti-nuclear comments based on the following criteria: Standard of comprehension, emotive, informative, and supportive on a 7-point scale of (1 = *strongly disagree* to 7 = *strongly agree*). Responses were collected to select 4 pro-nuclear and 4-anti-nuclear comments. An example of the pro-nuclear comments includes "I am all for nuclear energy. Why would you be against it, it produces way more energy and takes up way less space. With a few easy innovations, the waste problem wouldn't be a big issue, and the disasters are nothing compared to the benefits provided by a nuclear plant." Meanwhile, one instance of the anti-nuclear comments includes "NEVER should we say YES as any leakage is simply too much to bear. We cant even afford any leak. We must find and use alternative power source as we cannot

take a risk to put ourselves in danger because of the goodness of NPP. We should never underestimate it.” (See Appendix D for the selected comments).

3.5. Measurements

Pre-existing attitudes toward nuclear energy development. Participants’ pre-existing attitudes toward nuclear energy development were measured using two items on a 6-point Likert scale (1 = strongly oppose, 6 = strongly support) adapted from Ho and McLeod (2008). There was no neutral point as the intention was to exclude respondents who are fence-sitters. The items include, “In general, how much do you support/ oppose nuclear energy development?” and “How much do you support/ oppose nuclear energy development in Singapore?” The items were averaged to form a composite variable ($M = 3.04$, $SD = 1.40$) and yielded a highly reliable score (Pearson’s $r = .86$, $p < .001$).

Attitudes toward the YouTube video. Participants’ attitudes toward the YouTube video were measured in terms of instrumental and affective attitudes. Instrumental attitudes were measured using 4 items on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) adapted from past studies (Hagger & Chatzisarantis, 2005; Kang et al., 2006). An example of the items includes, “Overall, I find the arguments raised in the YouTube video to be ‘Uninformative–Informative’”. The items were averaged to form a composite scale ($M = 5.45$, $SD = .91$) and yielded an excellent reliability score (Cronbach’s $\alpha = .93$). Meanwhile, affective attitudes were measured using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) based on four items adapted from Hagger and Chatzisarantis (2005). An example of the items includes, “Overall, I find the YouTube video to be ‘Unenjoyable–Enjoyable.’” The composite index ($M = 5.34$, $SD = .97$) obtained an excellent reliability of Cronbach’s $\alpha = .93$ (See full list of items in Appendix E).

Attitude strength toward nuclear energy development. Participants' attitude strength toward nuclear energy development were measured in terms of their instrumental attitudes and affective attitudes. First, participants' instrumental attitudes were measured using four items based on a 7-point semantic differential scale adapted from past studies (Mehling, 1959; Neuwirth & Frederick, 2004). An example of the items includes, "I feel that nuclear energy development is 'bad–good.'" The items were averaged to form a composite scale ($M = 4.51$, $SD = 1.66$) and yielded a highly reliable score (Cronbach's $\alpha = .97$). Second, participants' affective attitudes were assessed with three items using a 7-point semantic differential scale adapted from past research (Hagger & Chatzisarantis, 2005; Kang et al., 2006). An example of the items includes, "I feel that nuclear energy development is 'useless–useful'". The composite index ($M = 4.00$, $SD = 1.75$) yielded a highly reliable Cronbach's $\alpha = .97$. (See full list of items in Appendix E). These measures were then recoded into a scale ranging from 0 (*low attitude strength*) to 3 (*extremely high attitude strength*). Specifically, the "neither agree nor disagree" option was recoded into 0 (*low attitude strength*), the "somewhat agree" and "somewhat disagree" options were collapsed into 1 (*moderate attitude strength*), the "agree" and "disagree" options were recoded into 2 (*high attitude strength*), while the "extremely agree" and "extremely disagree" options were recoded into 3 (*extremely high attitude strength*).

Willingness to share the YouTube video. Participants' willingness to share the YouTube video were measured with two items using a 7-point Likert scale (1 = *highly unlikely*, 7 = *highly likely*). The measure was adapted from Pang et al. (2016) and the composite index ($M = 4.52$, $SD = 1.58$) was supported by a good reliability score of Pearson's $r = .75$, $p < .001$. An instance of the items includes, "How likely are you to click "share" on the YouTube video?" (See full list of items in Appendix E).

Manipulation checks. Participants' perceived similarity and ingroup ties with the YouTube user's channel and other commenters on the YouTube page were assessed to determine if social group identity was successfully demarcated based on participants' attitude similarity toward nuclear energy development. Participants' perceived similarity was assessed with four items adapted from previous studies (Cameron, 2004; Doosje, Ellemers & Spears, 1995) using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). An example of the items includes, "I have a lot in common with the YouTube users featured in this YouTube page." Participants' ingroup ties were measured using four items from past studies (Cameron, 2004; Doosje, Haslam, Spears, Oakes & Koomen, 1998; Ellemers, Kortekaas & Ouwerkerk, 1999) using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). An example of the items includes, "I feel strong ties to the YouTube users featured in this YouTube page." (refer to the full list of measurement items in Appendix E)

A series of manipulation checks were also carried out to determine if the independent variables were successfully manipulated. A single-item measure using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) was utilized to determine if the participants accurately assessed the social group status of the fictitious user's YouTube channel. The question stem read, "The YouTube user's channel was influential." Since YouTube users are required to utilize their personal Google accounts to create a YouTube channel (Google, 2019), the user's YouTube channel is an extension of the user's social network profiles. To ascertain if the participants correctly identified the valence of the YouTube video, participants were asked to respond whether the YouTube video contained arguments that were either mostly supportive, mostly unsupportive, or both supportive and unsupportive of nuclear energy development. The participants were also asked to identify whether the

YouTube comments were either mostly supportive, mostly unsupportive, or both supportive and unsupportive of nuclear energy development to determine if the participants read and accurately interpreted the valence of comments (refer to the items for the manipulation checks in Appendix E).

Attention checks. Attention check questions were utilized to identify participants that did not pay attention to the measurement items in the online questionnaire. Participants were asked to select “strongly agree” or “highly likely” for the attention check questions. Data from the participants that indicated other options apart from “strongly agree” or “highly likely” were excluded from analysis.

3.6. Analytical Approach

The measurement items were adapted from established scales to fit the study’s objectives. To ensure reliability, Pearson’s correlation was computed for measures with two items, while Cronbach’s alpha was computed for the measures with three or more items. The item scores obtained were then averaged to create composite indices for further analysis. Data was analyzed using *SPSS* statistics software. The participants’ attitude similarity with the opinions conveyed in the YouTube page and the fictitious user’s social group status were analyzed as independent variables. Meanwhile, participants’ attitudes toward the YouTube video (e.g., instrumental attitudes, affective attitudes), their attitude strength toward nuclear energy development, and their willingness to share the YouTube video were analyzed as dependent variables.

Attitudes toward the YouTube video. While this study examined participants’ instrumental attitudes and affective attitudes toward the YouTube video, the aforementioned attitude dimensions were highly correlated (Pearson’s $r = .86$, $p < .001$). As such, the assumption of multicollinearity required for conducting a two-way

MANOVA was violated. Adhering to Pallant's (2005) guidelines, instrumental attitudes and affective attitudes were collapsed into a single variable: attitudes toward the YouTube video. After eliminating data outliers, a two-way ANOVA was conducted to test for the main effects and interaction effects of the independent variables on participants' attitudes toward the YouTube video.

Attitude strength toward nuclear energy development. This study also assessed participants' instrumental and affective attitude strength toward nuclear energy development. However, these variables yielded a high correlation score of Pearson's $r = .82$, $p < .001$, thus violating the assumption of multicollinearity required for conducting a two-way MANOVA. Guided by Pallant's analytical procedure (2005), instrumental and affective attitude strength toward nuclear energy development were combined into a single variable: attitude strength toward nuclear energy development. Upon removing data outliers, a two-way ANOVA was conducted to determine the main effects and interaction effects of the independent variables on participants' attitude strength toward nuclear energy development.

Willingness to share the YouTube video. A two-way ANOVA was also conducted to test the main effects and interaction effects of the independent variables on participants' willingness to share the YouTube video.

These analytical procedures are well-suited to test the hypotheses stipulated in the literature review for the following reasons: First, the independent variables in this study consist of at least two independent, categorical groups. Second, the data were independently collected from different experimental conditions. Third, the dependent variables in this study were measured on a continuous level using an interval scale.

To accurately and appropriately analyze the data using multiple ANOVAs, the Shapiro-Wilk test was conducted to determine if the dependent variables in this study

followed a normal distribution. Multivariate data outliers were also excluded from further analysis if the Mahalanobis distance exceeded the chi-square critical value. Moreover, the Levene's test for equality of variances was conducted to verify the assumption for homogeneity of variances (Levene, 1960). Specifically, the Levene's test determined if the participants across the six experimental conditions differed statistically from one another in terms of the variance (Levene, 1960).

CHAPTER 4: RESULTS

4.1. Manipulation Checks

Attitude similarity. Participants' social identity was established in the experimental stimuli based on group attitudes toward nuclear energy development. A one-way ANOVA using the Welch's F test (as the Levene's test indicated that equal variances might not be assumed) revealed a significant main effect of attitude similarity on the participants' social identification with the other users on the YouTube page, Welch's $F(2, 158.95) = 7.12, p < .01, \omega^2 = .01$. Post-hoc multiple comparisons using the Games-Howell test showed that participants exposed to a YouTube page with similar attitudes ($M = 4.43, SD = 1.11$) obtained significantly higher social identification scores than the participants exposed to a YouTube page with dissimilar attitudes ($M = 3.84, SD = 1.01$). Similarly, participants exposed to a YouTube page with similar attitudes ($M = 4.43, SD = 1.11$) displayed significantly higher social identification scores than the participants exposed to a YouTube page with mixed attitudes ($M = 3.98, SD = 0.87$). Therefore, the manipulation check demonstrated that participants' social group identity was successfully established in relation to the valence of the YouTube video and the comments on the YouTube page.

Social group status. An independent samples t -test was performed to determine if the manipulation for social group status worked as intended. Significant differences were observed among the participants exposed to the conditions featuring a SMI's YouTube channel ($M = 5.01, SD = .92$) and the participants exposed to the conditions featuring an ordinary SNS user's YouTube channel ($M = 4.73, SD = 1.19$) at an overall level, $t(241) = 2.08, p < .05$. As intended, the manipulation check indicated that the participants exposed to the SMI's YouTube channel rated its influence to be

significantly higher than the participants exposed to an ordinary SNS user's YouTube channel.

[Insert Table 1 about here.]

4.2. Hypothesis Tests

Attitudes toward the YouTube video. H1(a), H2(a), and H3(a) examined how participants' attitude similarity with the opinions displayed on the YouTube page affected their attitudes toward the YouTube video. A two-way between-groups ANOVA was conducted to examine the influence of attitude similarity and social group status on participants' attitudes toward the YouTube video. The participants were divided into three groups based on their attitude similarity with the opinions expressed on the YouTube page. The participants were divided into three groups based on their attitude similarity with the opinions expressed on the YouTube page (96 participants were assigned to Group 1: similar attitudes toward nuclear energy development; 71 participants were assigned to Group 2: dissimilar attitudes toward nuclear energy development; 84 participants were assigned to Group 3: mixed attitude similarity toward nuclear energy development). Based on their pre-existing attitudes toward nuclear energy development, participants who scored below 3 were considered to oppose nuclear energy development, while the participants who scored above 3 were considered to be supportive of nuclear energy development. Subsequently, participants' attitude similarity was determined by matching their pre-existing attitudes with the valence of the YouTube video and comments in the experimental stimuli. For instance, participants were exposed to a YouTube page with similar attitudes if their pre-existing attitudes toward nuclear energy were congruent with most of the attitudes expressed in the YouTube video and comments. Conversely, participants were exposed to a YouTube page with dissimilar attitudes if their pre-existing attitudes

toward nuclear energy opposed to majority of the attitudes expressed in the YouTube video and comments. Meanwhile, participants exposed to a YouTube video and comments with an equivalent proportion of pro-nuclear and anti-nuclear attitudes would possess mixed attitude similarity with the YouTube page.

There was a significant main effect for attitude similarity on participants' attitudes toward the YouTube video, $F(2, 254) = 7.00, p < .01$, partial $\eta^2 = .05$. Post hoc multiple comparisons using the Tukey HSD test indicated that participants exposed to a YouTube page with similar attitudes toward nuclear energy development ($M = 5.67, SD = .09$) had significantly more favorable attitudes toward the YouTube video as compared to the participants exposed to a YouTube page with dissimilar attitudes toward nuclear energy development ($M = 5.24, SD = .11$), therefore providing support for H1(a). Additionally, participants exposed to a YouTube page with similar attitudes toward nuclear energy development ($M = 5.67, SD = .09$) displayed significantly more favorable attitudes toward the YouTube video than the participants exposed to a YouTube page with mixed attitudes toward nuclear energy development ($M = 5.24, SD = .10$), therefore supporting H2(a). However, participants exposed to a YouTube page with mixed attitudes toward nuclear energy development ($M = 5.24, SD = .10$) did not differ significantly from the participants exposed to a YouTube page with dissimilar attitudes toward nuclear energy development ($M = 5.24, SD = .11$). Thus, H3(a) was not supported.

[Insert Table 2 and Figure 1 about here.]

H4(a) predicted that participants exposed to a YouTube video endorsed by a SMI would regard the YouTube video more favorably than the participants exposed to a YouTube video endorsed by an ordinary ingroup user. However, the main effect for social group status on participants' attitudes toward the YouTube video did not reach

statistical significance, $F(1, 245) = .01, p > .05$, partial $\eta^2 = .00$. Post-hoc multiple comparisons using the Tukey HSD test also revealed that the participants exposed to a YouTube video endorsed by a SMI ($M = 5.40, SD = .08$) did not differ significantly from the participants exposed to a YouTube video endorsed by an ordinary YouTube user ($M = 5.36, SD = .08$) in terms of their attitudes toward the YouTube video.

Hence, H4(a) was not supported.

H5(a) posited that the SMI's leadership status will strengthen the relationship between participants' perceived attitude similarity with the opinions on the YouTube page on their attitudes toward the YouTube video relative to ordinary YouTube users within the social group. However, there was no significant interaction between the effects of attitude similarity and social group status on participants' attitudes toward the YouTube video, $F(2, 245) = .30, p > .05$. Therefore, H5(a) was not supported.

Attitude strength toward nuclear energy development. H1(b), H2(b), and H3(b) analyzed how participants' attitude similarity with the opinions displayed on the YouTube page affected their attitude strength toward nuclear energy development. A two-way between-groups ANOVA was conducted to examine the influence of attitude similarity and social group status on participants' attitude strength toward nuclear energy development. The participants were divided into three groups based on their attitude similarity with the opinions expressed on the YouTube page (96 participants were assigned to Group 1: similar attitudes toward nuclear energy development; 71 participants were assigned to Group 2: dissimilar attitudes toward nuclear energy development; 84 participants were assigned to Group 3: mixed attitude similarity toward nuclear energy development). Based on their pre-existing attitudes toward nuclear energy development, participants who scored below 3 were considered to oppose nuclear energy development, while the participants who scored above 3 were

considered to be supportive of nuclear energy development. Subsequently, participants' attitude similarity was determined by matching their pre-existing attitudes with the valence of the YouTube video and comments in the experimental stimuli. For instance, participants were exposed to a YouTube page with similar attitudes if their pre-existing attitudes toward nuclear energy were congruent with most of the attitudes expressed in the YouTube video and comments. Conversely, participants were exposed to a YouTube page with dissimilar attitudes if their pre-existing attitudes toward nuclear energy opposed to majority of the attitudes expressed in the YouTube video and comments. Meanwhile, participants exposed to a YouTube video and comments with an equivalent proportion of pro-nuclear and anti-nuclear attitudes would possess mixed attitude similarity with the YouTube page.

The main effect for attitude similarity on participants' attitude strength toward nuclear energy development was statistically significant², $F(2, 245) = 16.08, p < .001$, partial $\eta^2 = .12$. In particular, post hoc multiple comparisons using the Tukey HSD test demonstrated that participants exposed to a YouTube page with similar attitudes toward nuclear energy development ($M = 1.91, SD = .09$) had statistically stronger attitude strength than the participants exposed to a YouTube page with dissimilar attitudes toward nuclear energy development ($M = 1.26, SD = .10$), therefore supporting H1(b). As predicted in H2(b), participants exposed to a YouTube page with similar attitudes toward nuclear energy development ($M = 1.91, SD = .09$) expressed statistically stronger attitude strength as compared to the participants exposed to a YouTube page with mixed attitudes toward nuclear energy development ($M = 1.34$,

² Even though the Levene's test for homogeneity of variances suggested that equal variances might not be assumed, $p < .05$, a one-way ANOVA using the Welch's F test similarly identified a significant main effect of participants' attitude strength toward nuclear energy development, Welch's $F(2, 155.41) = 15.89, p < .001, \omega^2 = .108$. Post-hoc multiple comparisons using the Games-Howell test yielded the same results as the two-way between-groups ANOVA.

$SD = .09$). However, there were no significant differences among the participants exposed to a YouTube page with mixed attitudes toward nuclear energy development ($M = 1.34, SD = .09$) and the participants exposed to a YouTube page with dissimilar attitudes toward nuclear energy development ($M = 1.26, SD = .10$) in terms of their attitude strength toward nuclear energy development. Hence, H3(b) was not supported.

[Insert Table 3 and Figure 2 about here.]

H4(b) predicted that participants exposed to a YouTube video endorsed by a SMI would possess greater attitude strength toward nuclear energy development as compared to the participants exposed to a YouTube video endorsed by an ordinary ingroup user. However, the main effect for social group status on participants' attitude strength toward nuclear energy development did not reach statistical significance, $F(1, 245) = 1.09, p > .05$, partial $\eta^2 = .00$. Post hoc multiple comparisons using the Tukey HSD test indicated that there were no significant differences between the participants exposed to a YouTube video endorsed by an ordinary user ($M = 1.56, SD = .07$) as compared to the participants exposed to a YouTube video endorsed by an SMI ($M = 1.45, SD = .08$). Hence, H4(b) was not supported.

H5(b) posited that the SMI's leadership status will strengthen the relationship between participants' perceived attitude similarity with the opinions on the YouTube page on their attitude strength toward nuclear energy development relative to ordinary YouTube users within the social group. However, there was no significant interaction between the effects of attitude similarity and social group status on participants' attitude strength toward nuclear energy development, $F(2, 245) = 1.42, p > .05$. Therefore, H5(b) was not supported.

Willingness to share the YouTube video. H1(c), H2(c), and H3(c) examined how participants' attitude similarity with the opinions displayed on the YouTube page

affected their willingness to share the YouTube video. A two-way between-groups ANOVA was conducted to examine the influence of attitude similarity and social group status on participants' willingness to share the YouTube video. The participants were divided into three groups based on their attitude similarity with the opinions expressed on the YouTube page (96 participants were assigned to Group 1: similar attitudes toward nuclear energy development; 71 participants were assigned to Group 2: dissimilar attitudes toward nuclear energy development; 84 participants were assigned to Group 3: mixed attitude similarity toward nuclear energy development). Based on their pre-existing attitudes toward nuclear energy development, participants who scored below 3 were considered to oppose nuclear energy development, while the participants who scored above 3 were considered to be supportive of nuclear energy development. Subsequently, participants' attitude similarity was determined by matching their pre-existing attitudes with the valence of the YouTube video and comments in the experimental stimuli. For instance, participants were exposed to a YouTube page with similar attitudes if their pre-existing attitudes toward nuclear energy were congruent with most of the attitudes expressed in the YouTube video and comments. Conversely, participants were exposed to a YouTube page with dissimilar attitudes if their pre-existing attitudes toward nuclear energy opposed to majority of the attitudes expressed in the YouTube video and comments. Meanwhile, participants exposed to a YouTube video and comments with an equivalent proportion of pro-nuclear and anti-nuclear attitudes would possess mixed attitude similarity with the YouTube page.

The main effect for attitude similarity on participants' willingness to share the YouTube video was statistically significant³, $F(2, 245) = 3.67, p < .05$, partial $\eta^2 = .03$. However, post-hoc multiple comparisons using the Tukey HSD test showed no significant differences between the participants exposed to a YouTube page with similar attitudes toward nuclear energy development ($M = 4.83, SD = .16$) and the participants exposed to a YouTube page with dissimilar attitudes toward nuclear energy development ($M = 4.44, SD = .19$) in terms of their willingness to share the YouTube video. Therefore H1(c) was not supported. As predicted in H2(c), participants exposed to a YouTube page with similar attitudes toward nuclear energy development ($M = 4.83, SD = .16$) were significantly more willing to share the YouTube video as compared to the participants exposed to a YouTube page with mixed attitudes toward nuclear energy development ($M = 4.21, SD = .17$). Hence, H2(c) was supported. In contrast, post-hoc multiple comparisons using the Tukey HSD test indicated that participants exposed to a YouTube page with dissimilar attitudes toward nuclear energy development ($M = 4.44, SD = .19$) did not differ significantly from the participants exposed to a YouTube page with mixed attitudes toward nuclear energy development ($M = 4.21, SD = .17$) in terms of their willingness to share the YouTube video. Hence, H3(c) was not supported.

[Insert Figure 3 about here.]

H4(c) predicted that participants exposed to a YouTube video endorsed by a SMI would be more willing to share the YouTube video relative to the participants exposed to a YouTube video endorsed by an ordinary ingroup user. However, there

³ Although an application of the Levene's test for homogeneity of variances suggested that equal variances might not be assumed, $p < .01$, a one-way ANOVA using the Welch's F test similarly identified a significant main effect of participants' willingness to share the YouTube video, Welch's $F(2, 158.26) = 3.57, p < .05, \omega^2 = .019$. Post-hoc multiple comparisons using the Games-Howell test yielded the same results as the two-way between-groups ANOVA.

were no significant differences between participants exposed to a YouTube video endorsed by a SMI ($M = 4.51$, $SD = .14$) relative to the participants exposed to a YouTube video endorsed by an ordinary user ($M = 4.47$, $SD = .14$) in terms of their willingness to share the YouTube video, $F(1, 245) = .04$, $p > .05$, partial $\eta^2 = .00$. Therefore H4(c) was unsupported.

There was a significant interaction between the effects of attitude similarity and social group status on participants' willingness to share the YouTube video, $F(2, 245) = 3.40$, $p < .05$, partial $\eta^2 = .03$. Post-hoc multiple comparisons using the Tukey HSD test indicated that the SMI's leadership status ($M = 4.96$, $SD = .23$) strengthened participants' willingness to share the YouTube video when participants were exposed to a YouTube page with similar attitudes toward nuclear energy development, relative to an ordinary social group member ($M = 4.71$, $SD = .22$). Similarly, the SMI's leadership status ($M = 4.50$, $SD = .24$) strengthened participants' willingness to share the YouTube video when participants were exposed to a YouTube page with mixed attitude similarity toward nuclear energy development, relative to an ordinary social group member ($M = 3.93$, $SD = .24$). However, the SMI's leadership status ($M = 4.09$, $SD = .27$) reduced participants' willingness to share the YouTube video when participants were exposed to a YouTube page with dissimilar attitudes toward nuclear energy development, as compared to an ordinary social group member ($M = 4.78$, $SD = .26$). Therefore, H5(c) was partially supported.

[Insert Table 4 and Figure 4 about here.]

CHAPTER 5: DISCUSSION

Overall, this study presents several noteworthy findings in determining the appropriateness and effectiveness of utilizing SMIs as spokespersons of science. Notably, attitude similarity served as a key predictor in influencing individuals' attitudes toward the YouTube video, their attitude strength toward nuclear energy development, and their willingness to share the YouTube video. This observation is congruent with the central tenets of the SIT and SCT, which form the theoretical foundations for the SIT of leadership. This finding also addresses the caveats of the SIDE theory by accounting for social influence mechanisms on SNS imbued with rich visual information (e.g., images, videos, gifs). However, the findings yielded from this study provided mixed support for the SIT of leadership. Social group status did not significantly affect individuals' attitudes toward the YouTube video, their attitude strength toward nuclear energy development, and their willingness to share the YouTube video. Despite this, a significant interaction effect was observed for attitude similarity and social group status on participants' willingness to share the YouTube video. Therefore, this study value-adds to the SIT of leadership theory by examining its predictive capabilities on SNS.

Practically, the findings also indicate that SMIs are not suitable spokespersons for increasing public acceptance or shaping public opinion toward particular scientific issues due to their limited attitudinal influence over other SNS users. In fact, the results indicated that the SMI's attitudinal influences did not differ significantly from ordinary social group members on YouTube. Despite this, the findings demonstrated that SMIs are capable of influencing individuals to share the SMI's content on online and offline communication platforms, particularly when these individuals possess

similar or mixed attitudes with the SMIs. Therefore, SMIs would be suitable spokespersons for enhancing public awareness toward a specific scientific issue.

5.1. Main Effects of Attitude Similarity

Among the key findings, this study clearly demonstrated that attitude similarity affected participants' evaluations of the YouTube video and the issue portrayed in the YouTube video. The participants exposed to a YouTube page conveying similar sentiments expressed significantly more favorable attitudes toward the YouTube video as compared to the participants that were exposed to a YouTube page with mixed or dissimilar attitudes. Similarly, the participants exposed to a YouTube page with similar attitudes displayed significantly greater attitude strength toward nuclear energy development relative to the participants that were exposed to a YouTube page conveying mixed or dissimilar sentiments. These observations therefore attest to the social influence mechanisms put forth by the SIT and SCT (Hogg et al., 1995; Tajfel & Turner, 1979), as well as how these social group norms determine individuals' attitudes and attitude strengths when the social group salience is highlighted on SNS (Hogg, 1996; Sechrist & Young, 1996; Turner et al., 1987).

Despite this, the participants exposed to a YouTube page with mixed attitudes did not differ significantly from the participants exposed to a YouTube page with dissimilar attitudes in terms of their attitudes toward the YouTube video and their attitude strength toward nuclear energy development. Although the one-way ANOVA using the Welch's F test (as the Levene's test indicated that equal variances might not be assumed) indicated a significant main effect of attitude similarity on the participants' social identification with the other users on the YouTube page, Welch's $F(2, 158.95) = 7.12, p < .01, \omega^2 = .005$, post-hoc multiple comparisons using the Games-Howell test suggested that the participants exposed to a YouTube page with

mixed attitudes ($M = 3.98$, $SD = 0.87$) did not obtain significantly higher social identification scores from the participants exposed to a YouTube page with dissimilar attitudes ($M = 3.84$, $SD = 1.01$). Therefore, future research may identify and evaluate the strategies utilized to demarcate social group identity in experimental conditions with mixed and dissimilar attitudes. Additionally, future studies may consider strengthening the manipulation for attitude similarity by priming the participants about their attitudes toward nuclear energy development. Alternatively, future research may utilize other cues (e.g., nationality, ethnicity, gender) to demarcate the participants' social group identity and enhance its salience on SNS.

Congruent with SIT and SCT's predictions (Hogg et al., 1995; Tajfel & Turner, 1979; Turner et al., 1987), participants exposed to a YouTube page with similar attitudes were significantly more willing to share the YouTube video as compared to the participants exposed to a YouTube page with mixed attitudes. However, the participants' willingness to share the YouTube video did not significantly differ between the participants exposed to a YouTube page with similar attitudes and the participants exposed to a YouTube page with dissimilar attitudes. Similarly, the participants exposed to a YouTube page with mixed attitudes were not significantly more willing to share the YouTube video as compared to the participants exposed to a YouTube page with dissimilar attitudes. In light of these findings, the main effect of attitude similarity on participants' willingness to share the YouTube video could be also mediated by extraneous variables that are not included in this study. As such, future research may conduct a series of focus group discussions to understand individuals' considerations before they engage in any form of online behavior. To comprehensively examine how attitude similarity may affect individuals' behaviors, future studies may also consider examining how attitude similarity may trigger other

forms of online engagement (e.g., likes, comments, subscribes). Future research may also investigate whether attitude similarity influences individuals' online and offline behaviors differently.

5.2. Main Effects of Social group status

To verify the SIT of leadership's central tenets, this study examined whether SMIs exerted greater attitudinal and behavioral influences as compared to other ordinary social group members. In spite of the successful experimental manipulations, the main effects of social group status did not attain statistical significance. As such, this study revealed that SMIs may not exert greater attitudinal and behavioral influences on SNS as compared to ordinary ingroup members even though SMIs occupy a prototypical position within the social group. Hence, the findings were incongruent with the SIT of leadership's predictions.

The observations obtained in this study were also contrary to extant research on opinion leadership. Even though the findings from this study challenged the SMI's behavioral influences, Djafarova and Rushworth (2016) found that SMIs on Instagram effectively influenced purchase decisions among young female users. In addition, the findings yielded from this study also differed from opinion leadership studies in the pre-Internet era. While different domains of communication research (e.g., advertising and marketing, political communication, environmental communication, health communication) affirmed the attitudinal and behavioral influences of opinion leaders in the pre-Internet era, (Carr & Hayes, 2014; Dalrymple et al., 2013; Nisbet & Kotcher, 2009; Schuster et al., 2006; Shah & Scheufele 2006; Weeks et al., 2017) these main effects for social group status were not observed in this study. Therefore, future studies may analyze whether the attitudinal and behavioral influences of SMIs differ across different domains of communication research. Future research may also

examine the interplay between source factors (e.g., source credibility, source attractiveness), social influence, and critical evaluation of presented information in determining the persuasive influence of SMIs over ordinary SNS users.

5.3. Interaction Effects of Attitude Similarity and Social group status

The findings indicated that the SMI's leadership status did not strengthen the association between participants' attitude similarity and their attitudes toward the YouTube video. Similarly, the SMI's leadership status failed to intensify the effects of participants' attitude similarity and their attitude strength toward nuclear energy development. Coupled with the non-significant main effects of social group status, the findings suggest that SMIs are not suitable advocates or critics for nuclear energy development due to their limited attitudinal influence on other SNS users.

Despite this, this study obtained a significant interaction effect between attitude similarity and social group status on participants' willingness to share the YouTube video was observed. Congruent with the SIT of leadership's central tenets (Hogg, 2001), the SMI's leadership status strengthened participants' willingness to share the YouTube video when participants were exposed to a YouTube page with similar or mixed attitudes. Contrastingly, the SMI's leadership status attenuated participants' willingness to share the YouTube video when they were exposed to a YouTube page with dissimilar attitudes. These findings may be attributed to the interplay of opinion leadership and the social influence mechanisms. In line with the SCT (Hogg et al., 1995), participants may refrain from sharing a SMI's YouTube video to simultaneously assert their social group identity while accentuating outgroup differences. Participants may also eschew from sharing the SMI's YouTube video to inhibit the SMI's ability to influence information flows in the prevailing media environment. The participants may also avoid sharing and disputing the SMI's

YouTube video in fear of evoking criticisms from the SMI's extensive social network as compared to an ordinary user's YouTube video.

5.4. Study Implications

The findings obtained from this study provides noteworthy conceptual, theoretical, and practical contributions. Notably, this study extends opinion leadership research on SNS by examining the novel phenomena of SMIs on YouTube. Since most opinion leadership research on SNS are conducted on micro-blogging platforms, this study provides conceptual contributions by examining a platform imbued with rich visual information.

Moreover, this study provides theoretical implications by extending the SIT of leadership to SNS. The observations from this study potentially identifies the boundary conditions for the SIT of leadership on SNS. In particular, the SIT of leadership's central tenets was challenged when this study yielded non-significant main effects for social group status. Moreover, the SMI's leadership status failed to strengthen the main effects of attitude similarity on participants' attitudes toward the YouTube video and their attitude strength toward nuclear energy development. Even though the aforementioned observations were incongruent with the SIT of leadership's general predictions, the significant interaction between attitude similarity and social group status on participants' willingness to share the YouTube video provided partial support to the SIT of leadership. Specifically, the SIT of leadership was instructive in predicting the participants' willingness to share the YouTube video only when they were exposed to a YouTube page with similar or mixed attitudes. Meanwhile, the SIT of leadership's central tenets does not apply for circumstances whereby participants were exposed to a YouTube page with dissimilar sentiments. As such, the findings from this study do not conclusively determine the SIT of leadership's predictive

validity in accounting for social influence on visually-identified and visually-diverse SNS. Therefore, future research should replicate this study on other socially salient, yet under-studied SNS such as Instagram and Snapchat to verify the SIT of leadership's boundary conditions. Future studies may also compare if the findings obtained in this study vary across different SNS.

Although this study is unable to conclusively determine the SIT of leadership's predictive validity on SNS, the findings attest to the social influence mechanisms put forth by the SIT and SCT (Hogg et al., 1995; Tajfel & Turner, 1979), as well as how these social group norms determine individuals' attitudes and attitude strengths when the social group salience is highlighted (Hogg, 1996; Sechrist & Young, 1996; Turner et al., 1987). The significant main effects of attitude similarity may also support the phenomenon of echo chambers on SNS, where users exclusively seek and disseminate opinions from like-minded users (Bashky, Messing & Adamic, 2015). Hence, future studies may replicate this study and utilize individuals' exposure to ideologically diverse content as a mediating variable.

Additionally, the findings obtained from this study challenge the SIDE theory's general predictions. The SIDE theory stipulates that individuals socially identify with other users of online platforms in the absence of individuating cues, causing them to be more susceptible to the social influences of other online users on visually anonymous (Postmes, Spears, & Lea, 2002; Russell & Lea, 1992; Spears, Lea, & Lee, 1990) or visually uniform platforms (Lee, 2004). However, this study demonstrated that social influence can occur on a visually-identified and diverse SNS interface. In line with Gan et al.'s (2017) study, the findings suggest that the SIDE theory's precondition for visual anonymity or visual uniformity may not apply to the contemporary YouTube environment. Therefore, this study attests to the predictive

validity of the SIT and SCT on a visually-identified and diverse SNS interface while addressing the SIDE theory's caveat.

Practically, the findings from this study may inform policymakers, nonprofit, and corporate entities in engaging SMIs as campaign spokespersons. Specifically, the SMI's leadership status demonstrated limited influence on participants' attitudes toward the YouTube video and their attitude strength toward nuclear energy development as compared to other ordinary SNS users. As such, the findings indicate that SMIs are not suitable spokespersons if policymakers, nonprofit, and corporate entities wish to influence individuals' attitudes toward a particular subject matter. Despite this, the findings suggested that the SMI's leadership status could influence information flows by increasing users' willingness to share the YouTube video, thereby heightening awareness of specific issues.

5.5. Limitations and Future Research

This study possesses several limitations which can be addressed in future research. First, this study utilizes a cross-sectional study design whereby data is collected from a specific point in time. As such, the participants may not have sufficient time to establish their social group identities, categorize collections of SNS users as ingroup or outgroup members, and confer a leadership status on users that occupy a prototypical position within their social group. Hence, a cross-sectional research design may not holistically assess the attitudinal and behavioral influences of SMIs over ordinary social group members if these social group mechanisms occur over time. Taking this into consideration, future research can utilize a longitudinal approach to examine how SMIs function as social group leaders to influence the attitudes and behaviors of ordinary ingroup members.

Second, this study analyzed the appropriateness and effectiveness of engaging SMIs to influence the attitudes, attitude strength, and behaviors of SNS users across all age groups. While this approach represents the general populace of SNS users more accurately and comprehensively, SMIs are typically engaged by government bodies and nonprofit agencies in Singapore to raise campaign awareness and interest toward a specific issue among teenagers and young adults (Ministry of Communication, 2015; Seow, 2018). Therefore, future studies may consider examining whether the SMI's attitudinal and behavioral influences vary across SNS users from different age groups.

Third, this study solely examines the SMI's attitudinal and behavioral influences as an advocate or critic of nuclear energy development. Considering the contentious nature of nuclear energy development, the external validity of this study's context may be limited only to other controversial technological advancements. Thus, future research should replicate this study to determine the SMI's suitability and effectiveness of serving as a spokesperson for other non-controversial scientific developments.

5.5. Conclusion

In conclusion, the affordances of new media have necessitated changes to the conventional perspective of opinion leadership. While opinion leadership has been extensively researched upon in various domains in communication research during the pre-internet era, this study sought to address the conceptual and theoretical gaps in opinion leadership research on SNS. By applying the SIT of leadership on SNS, this theoretical extension identifies potential boundary conditions for the SIT of leadership's predictive validity on SNS. While the findings provide mixed support for the SIT of leadership, the observations clearly attest to the general predictions of the SIT and SCT, which the SIT of leadership was based on. In addition, the findings

challenge the SIDE theory's central tenets and addresses its caveats by demonstrating that social influence can occur on visually-identified and diverse SNS platforms. Based on the findings obtained in this study, we conclude that attitude similarity prevails over social group status as a predictor for individuals' attitudes, attitude strengths, and behaviors. Furthermore, we conclude from the findings that SMIs are not suitable spokespersons for scientific or technological issues due to their limited attitudinal influences. Despite this, SMIs can assist policymakers, nonprofit, and corporate organizations in influencing information flows and raising awareness toward a particular issue.

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TABLES AND FIGURES

Table 1.

Independent samples t-test and Descriptive Statistics for social group status

	Social group status						95% CI for Mean Difference		<i>t</i>	<i>df</i>
	SMI			Ordinary social group member			Lower	Upper		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>				
The YouTube user’s channel was influential.	5.01	.92	121	4.73	1.19	130	.02	.54	2.08*	241.04

* $p < .05$

Table 2.

Two-way ANOVA for attitudes toward the YouTube video

Effect	<i>df</i>	<i>M</i> ²	<i>F</i>	<i>p</i>	η_p^2
Social group status	1	.07	.09	.77	.00
Attitude Similarity	2	5.46	7.00	.00	.05
Social group status * Attitude Similarity	2	.23	.30	.75	.00
Error	245	.78			
Total	251				
Corrected Total	250				

Table 3.

Two-way ANOVA for attitude strength toward nuclear energy development

Effect	<i>df</i>	<i>M</i> ²	<i>F</i>	<i>p</i>	η_p^2
Social group status	1	.74	1.09	.30	.00
Attitude Similarity	2	10.97	16.08	.00	.12
Social group status *	2	.97	1.42	.24	.01
Attitude Similarity					
Error	245	.68			
Total	251				
Corrected Total	250				

Table 4.

Two-way ANOVA for willingness to share the YouTube video

Effect	<i>df</i>	<i>M</i> ²	<i>F</i>	<i>p</i>	η_p^2
Social group status	1	.10	.04	.84	.00
Attitude Similarity	2	8.86	3.67	.03	.03
Social group status *	2	8.20	3.40	.04	.03
Attitude Similarity					
Error	245	2.41			
Total	251				
Corrected Total	250				

Figure 1. *Main effects of attitude similarity on the participants' attitudes toward the YouTube video*

Note: Scale on the y-axis is partially displayed.

Figure 2. *Main effects of attitude similarity on the participants' attitudes strength toward nuclear energy development*

Note: Scale on the y-axis is partially displayed.

Figure 3. *Main effects of attitude similarity on the participants' willingness to share the YouTube video*

Note: Scale on the y-axis is partially displayed.

Figure 4. *Interaction effects between social group status and attitude similarity on the participants' willingness to share the YouTube video*

Note: Scale on the y-axis is partially displayed.

APPENDIX

Appendix A —Informed Consent Form and Parental Consent Form

Principal Investigator: Dr. Shirley Ho Soo Yee

Institution: Wee Kim Wee School of Communication & Information, Nanyang Technological University

Email: tsyho@ntu.edu.sg, **Tel:** (+65) 6790-6044

IRB Reference No: 2018-04-021

Title of Study: Social phenomena on YouTube

Objective: This study seeks to learn more about social phenomena on YouTube among the general public in Singapore. This academic study is a Master's by Research dissertation project conducted by Ms. Looi Jie Min under the supervision of Dr. Shirley Ho in the Wee Kim Wee School of Communication and Information at Nanyang Technological University. Only Singapore citizens and permanent residents, aged 21 or older, are eligible for this study. You must have had experience using YouTube in order to participate in this study. There are approximately 480 participants partaking in this study.

Procedures: If you give permission to participate in this study, you will first be asked to complete a questionnaire about your general views of nuclear energy. Afterwards, you will be required to watch a YouTube video about nuclear energy. Thereafter, you will be asked to complete a questionnaire about your opinions of the YouTube video and nuclear energy. You will also be asked to provide some basic demographic information. This study should take approximately 15 minutes to complete.

Right to Refuse or Withdraw: Your participation in this study is completely voluntary. You may withdraw from the study at any time without penalty. However, it is important to us that you fully answer as many questions as possible. You may skip any questions or procedures, or you may withdraw by informing the researchers that you no longer wish to participate. You will not be questioned in case you decide to withdraw. Your decision to participate, decline, or withdraw participation will have no effect on your status or relationship with Nanyang Technological University.

Risks and Discomforts: There are no anticipated risks associated or discomfort with participating in this study.

Benefits: Your participation in this study will contribute to research on social media influencers and will have no direct benefits to you.

Compensation: If you complete the study, you will be remunerated with points from Research Now SSI after participating in the study. These points can then be exchanged for research incentives, such as vouchers for shopping malls, cinemas, and supermarkets.

Anonymous and Confidential Data Collection: The data collected from your participation in this study will be kept confidential.

Confidentiality of records: Your participation in this study will remain confidential and your identity will not be stored with your data. That is, no one will ever know who gave the answers that we collect. Study records will be stored securely in a locked facility, and only researchers conducting this study will have access to the information. Results of this study may be presented at conferences and/or published in books and journals in the future. All data and recordings will then be stored for 10 years before they are disposed of safely and securely.

Personal Data:

By signing the Consent Form attached, you (*or your legally acceptable representative, if relevant*) are authorizing (i) collection, access to, use and storage of your “Personal Data”, and (ii) disclosure to, and use and storage by, authorised service providers and relevant third parties, whether located in Singapore or overseas, for the purposes of the study, and other purposes for which Institution or Company may wish to collect, use and disclose the data, e.g., other similar research studies conducted by the Institution or Company.

“**Personal Data**” means data about you which makes you identifiable: (i) from such data; or (ii) from that data and other information which an organisation has or likely to have access.

Research arising in the future, based on this “Personal Data”, will be subject to review by the relevant institutional review board.

Data collected are the property of Nanyang Technological University. In the event of any publication regarding this study, your identity will remain confidential. Any research data containing your “Personal Data” that is collected for the purposes described in this Consent Form will be stored in Singapore.

Who to contact with questions:

If you have any questions about the study, please contact either:

Ms. Looi Jie Min
Masters by Research student
Wee Kim Wee School of Communication
& Information
Nanyang Technological University
Email: jiem001@e.ntu.edu.sg
Tel: (+65) 6790-6565

Dr. Shirley Ho
Associate Professor
Wee Kim Wee School of
Communication & Information
Nanyang Technological University
Email: tsyho@ntu.edu.sg
Tel: (+65) 6790-6044

OR if you have questions on participants' rights in the study, please contact:

NTU-Institutional Review Board
Research Integrity and Ethics Office
50 Nanyang Avenue, North Spine
NS4-05-92A
Singapore 639798
Email: irb@ntu.edu.sg

Consent Form

I have read, discussed and understand the information and procedures in the study information sheet attached to this consent form. My questions concerning the study have been answered to my satisfaction, and I acknowledge that I am participating in this study of my own free will. I understand that I may refuse to participate or stop participating at any time.

Consent to participate in the research

- ☐ Yes, I agree to participate in this research.
- ☐ No, I do not agree to participate in this research.

Name of Participant

Signature

Date

For this study involving minors (unmarried subjects who are less than 21 years of age), consent from a parent or guardian is necessary

I give consent for my child as named above to participate in the study and agree to the consent as noted above.

Name of Parent

Signature

Date

Appendix B — Experimental stimuli

Experimental condition: Pro-nuclear YouTube video, pro-nuclear comments, SMI

IS NUCLEAR ENERGY AWESOME?

#4 ON TRENDING
3 Reasons Why I Support Nuclear Energy
2,478,816 views

LIKE DISLIKE SHARE

Isaac Tan
Published on Jan 5, 2018
SUBSCRIBE 5.6M

Nuclear energy might have a lot of unused potential. Not only is it one of the best mid term solutions for global warming but despite what gut feeling tells us, it has saved millions of lives. By investing more into better technologies we might be able to make nuclear energy finally safe and clean forever.

SHOW MORE

4,645 Comments SORT BY

*** Pinned by Isaac Tan**
Isaac Tan
What do you think about nuclear energy? Are you pro-nuclear or anti-nuclear? Let me know in the comments below!

REPLY

Jaslyn Chua
I'm Nuclear supporter, because it is one of the cleanest energy but it also can produce a huge amount of power in a short time, meanwhile you need hundreds square miles of solar farm or wind farm to equally produce same amount of electricity compare to a single nuclear reactor.

REPLY

Xavier Sim
I am all for nuclear energy. Why would you be against it, it produces way more energy and takes up way less space. With a few easy innovations, the waste problem wouldn't be a big issue, and the disasters are nothing compared to the benefits provided by a nuclear plant.

REPLY

Navena Prakesh
Nuclear power is the only future to keep up with energy demand in a CLEAN way!!! Nuclear is green! If you are an environmentalist you must support nuclear energy because its the only clean solution on a large scale. Wind and solar are nice, but cannot provide all the power.

REPLY

Bryant Ng
I'm pro nuclear energy, simply because it's one of the only options. Wind energy? Well, have you seen those things, they are huge, and they break down frequently. Solar energy is very hard to extract So you have to build THOUSANDS OF THEM before you can really pull enough power.

REPLY

Up next AUTOPLAY

NUCLEAR ENERGY
Nuclear Energy Explained: How does it work? 1/3
Kurzgesagt – In a Nutshell
2,359,849 views
5:18

NUCLEAR VS SOLAR
NUCLEAR ENERGY vs SOLAR ENERGY: Which Is Better? - Energy Source Comparison
The Infographics Show
307,098 views
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Where Do We Store Nuclear Waste?
Seeker
333,690 views
3:27

FUSION ENERGY
Fusion Power Explained – Future or Failure
Kurzgesagt – In a Nutshell
2,824,296 views
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Inside a Nuclear reactor core - Bang Goes The Theory - BBC
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1,102,282 views
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Nuclear Reactor - Understanding how it works | Physics Elearnin
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787,890 views
4:52

Is Nuclear Power Good Or Bad?
The Good Stuff
158,583 views
13:50

Debate: Does the world need nuclear energy?
TED
286,619 views
25:32

SHOW MORE

Experimental condition: Pro-nuclear YouTube video, pro-nuclear comments, ordinary user

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IS NUCLEAR ENERGY AWESOME?

147 views

Isaac Tan
Published on Jan 5, 2018

Nuclear energy might have a lot of unused potential. Not only is it one of the best mid term solutions for global warming but despite what gut feeling tells us, it has saved millions of lives. By investing more into better technologies we might be able to make nuclear energy finally safe and clean forever.

SUBSCRIBE 959

85 Comments SORT BY

- Pinned by Isaac Tan**
 What do you think about nuclear energy? Are you pro-nuclear or anti-nuclear? Let me know in the comments below!
- Jaslyn Chua**
 I'm Nuclear supporter, because it is one of the cleanest energy but it also can produce a huge amount of power in a short time, meanwhile you need hundreds square miles of solar farm or wind farm to equally produce same amount of electricity compare to a single nuclear reactor.
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- Navena Prakesh**
 Nuclear power is the only future to keep up with energy demand in a CLEAN way!!! Nuclear is green! If you are an environmentalist you must support nuclear energy because its the only clean solution on a large scale. Wind and solar are nice, but cannot provide all the power.
- Bryant Ng**
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Up next

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286,619 views

Experimental condition: Anti-nuclear YouTube video, anti-nuclear comments, SMI

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IS NUCLEAR ENERGY TERRIBLE?

0:00 / 4:09

#4 ON TRENDING

3 Reasons Why I Oppose Nuclear Energy

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Nuclear energy might be a failed experiment. In over sixty years, the technology has not only failed to keep its promise of cheap, clean, and safe energy, it also caused major catastrophes and enabled more nuclear weapons while the nuclear waste problem is still not solved.

SHOW MORE

4,645 Comments

SORT BY

Isaac Tan

What do you think about nuclear energy? Are you pro-nuclear or anti-nuclear? Let me know in the comments below!

REPLY

J

OMG NONONONO!!! This must never happen!!! Have they thought about how to dispose the nuclear waste??? NOBODY has yet to find a solution to the problem of nuclear waste disposal!!! Nuclear power has NEVER been economically justified since its very first nuclear power plant. U should NEVER consider nuclear power!!

REPLY

Xavier Sim

Fukushima is having a irreversible effect on the world's oceans. This is why nuclear is not the answer to our energy needs. We should behave as stewards of this planet, and the risks of nuclear are too high given that radiation from meltdowns sticks around for a really long time.

REPLY

Navena Prakesh

NEVER should we say YES as any leakage is simply too much to bear. We cant even afford any leak. We must find and use alternative power source as we cannot take a risk to put ourselves in danger because of the goodness of NPP. We should never underestimate it.

REPLY

Bryant Ng

Fukushima killed the entire Pacific you lying heartless fucks. 4600 nuclear bombs exploded in testing above ground atmospheric detonations. Majority of nuclear power plant running 20 year longer than engineered and polluting every fucking community around them. Everyone associated with this video should be hung for a crime against humanity!

REPLY

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WHICH IS BETTER

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25:32

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Experimental condition: Anti-nuclear YouTube video, anti-nuclear comments, ordinary user

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IS NUCLEAR ENERGY TERRIBLE?

0:00 / 4:09

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Experimental condition: Mixed YouTube video, mixed comments, SMI

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CONTRA SIDE

PRO SIDE

0:00 / 4:09

#4 ON TRENDING

Nuclear Energy Explained: Benefits & Risks

2,478,816 views

LIKE DISLIKE SHARE

Isaac Tan

Published on Jan 5, 2018

SUBSCRIBE 5.6M

Nuclear energy is a controversial subject. The pro- and anti-nuclear lobbies fight furiously, and it's difficult to decide who is right. So we're trying to clear up the issue — In this video, I will discuss how we got to where we are today, as the basis of discussion. I will also be looking at the arguments for and against nuclear energy.

SHOW MORE

4,645 Comments

SORT BY

Isaac Tan

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REPLY

Xavier Sim

I am all for nuclear energy. Why would you be against it, it produces way more energy and takes up way less space. With a few easy innovations, the waste problem wouldn't be a big issue, and the disasters are nothing compared to the benefits provided by a nuclear plant.

REPLY

Navena Prakesh

NEVER should we say YES as any leakage is simply too much to bear. We cant even afford any leak. We must find and use alternative power source as we cannot take a risk to put ourselves in danger because of the goodness of NPP. We should never underestimate it.

REPLY

Bryant Ng

I'm pro nuclear energy, simply because it's one of the only options. Wind energy? Well, have you seen those things, they are huge, and they break down frequently. Solar energy is very hard to extract So you have to build THOUSANDS OF THEM before you can really pull enough power.

REPLY

Up next

AUTOPLAY

NUCLEAR ENERGY

Nuclear Energy Explained: How does it work? 1/3

Kurzgesagt – In a Nutshell

2,359,849 views

5:18

NUCLEAR VS SOLAR

WHICH IS BETTER?

The Infographics Show

307,098 views

5:31

Where Do We Store Nuclear Waste?

Seeker

333,690 views

3:27

FUSION ENERGY

Fusion Power Explained – Future or Failure

Kurzgesagt – In a Nutshell

2,824,296 views

6:16

Inside a nuclear reactor core - Bang Goes The Theory - BBC

BBCWorldwide

1,102,282 views

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Nuclear Reactor - Understanding how it works | Physics Elearnin

Elearnin

787,890 views

4:52

Is Nuclear Power Good Or Bad?

The Good Stuff

158,583 views

13:50

Debate: Does the world need nuclear energy?

TED

286,619 views

25:32

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Experimental condition: Mixed YouTube video, mixed comments, ordinary user

YouTube SG

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CONTRA SIDE

PRO SIDE

0:00 / 4:09

Nuclear Energy Explained: Benefits & Risks

147 views

Like Dislike Share

Isaac Tan

Published on Jan 5, 2018

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Nuclear energy is a controversial subject. The pro- and anti-nuclear lobbies fight furiously, and it's difficult to decide who is right. So we're trying to clear up the issue — In this video, I will discuss how we got to where we are today, as the basis of discussion. I will also be looking at the arguments for and against nuclear energy.

SHOW MORE

85 Comments

Sort By

Isaac Tan

Pinned by Isaac Tan

What do you think about nuclear energy? Are you pro-nuclear or anti-nuclear? Let me know in the comments below!

REPLY

Jaslyn Chua

OMG NONONONO!!! This must never happen!!! Have they thought about how to dispose the nuclear waste??? NOBODY has yet to find a solution to the problem of nuclear waste disposal!!! Nuclear power has NEVER been economically justified since its very first nuclear power plant. U should NEVER consider nuclear power!!

REPLY

Xavier Sim

I am all for nuclear energy. Why would you be against it, it produces way more energy and takes up way less space. With a few easy innovations, the waste problem wouldn't be a big issue, and the disasters are nothing compared to the benefits provided by a nuclear plant.

REPLY

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REPLY

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I'm pro nuclear energy, simply because it's one of the only options. Wind energy? Well, have you seen those things, they are huge, and they break down frequently. Solar energy is very hard to extract So you have to build THOUSANDS OF THEM before you can really pull enough power.

REPLY

Up next

Nuclear Energy Explained: How does it work? 1/3

Kurzgesagt – In a Nutshell

2,359,849 views

Nuclear Energy vs Solar Energy: Which Is Better? - Energy Source Comparison

The Infographics Show

307,098 views

Where Do We Store Nuclear Waste?

Seeker

333,690 views

Fusion Power Explained – Future or Failure

Kurzgesagt – In a Nutshell

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787,890 views

Is Nuclear Power Good Or Bad?

The Good Stuff

158,583 views

Debate: Does the world need nuclear energy?

TED

286,619 views

SHOW MORE

80

Appendix C – Profile pictures and usernames selected for experimental stimuli

	<u>YouTube Profile Pictures of Commenters:</u>	<u>YouTube Usernames:</u>
1		Jaslyn Chua
2		Navena Prekash
3		Xavier Sim
4		Bryant Ng
5		Isaac Tan* <i>*Either taking on the role of SMI or ordinary YouTube user depending on the experimental condition.</i>

Appendix D – Comments selected for experimental stimuli

	<u>YouTube Comment:</u>	<u>Valence of comments:</u>
1	OMG NONONONO!!! This must never happen!!! Have they thought about how to dispose the nuclear waste??? NOBODY has yet to find a solution to the problem of nuclear waste disposal!! Nuclear power has NEVER been economically justified since its very first nuclear power plant. U should NEVER consider nuclear power!!	Anti-nuclear Word count: 50
2	Fukushima is having a irreversible effect on the world's oceans. This is why nuclear is not the answer to our energy needs. We should behave as stewards of this planet, and the risks of nuclear are too high given that radiation from meltdowns sticks around for a really long time.	Anti-nuclear Word count: 50
3	NEVER should we say YES as any leakage is simply too much to bear. We cant even afford any leak. We must find and use alternative power source as we cannot take a risk to put ourselves in danger because of the goodness of NPP. We should never underestimate it.	Anti-nuclear Word count: 50
4	Fukushima killed the entire Pacific you lying heartless fucks. 4600 nuclear bombs exploded in testing above ground atmospheric detonations. Majority of nuclear power plant running 20 year longer than engineered and polluting every fucking community around them. Everyone associated with this video should be hung for a crime against humanity!	Anti-nuclear Word count: 50
1	I'm Nuclear supporter, because it is one of the cleanest energy but it also can produce a huge amount of power in a short time, meanwhile you need hundreds square miles of solar farm or wind farm to equally produce same amount of electricity compare to a single nuclear reactor.	Pro-nuclear Word count: 50
2	I am all for nuclear energy. Why would you be against it, it produces way more energy and takes up way less space. With a few easy innovations, the waste problem wouldn't be a big issue, and the disasters are nothing compared to the benefits provided by a nuclear plant.	Pro-nuclear Word count: 50
3	Nuclear power is the only future to keep up with energy demand in a CLEAN way!!! Nuclear is green! If you are an environmentalist you must support nuclear energy because its the only clean solution on a large scale. Wind and solar are nice, but cannot provide all the power.	Pro-nuclear Word count: 50
4	I'm pro nuclear energy, simply because it's one of the only options. Wind energy? Well, have you seen those things, they are huge, and they break down frequently. Solar energy is very hard to extract So you have to build THOUSANDS OF THEM before you can really pull enough power.	Pro-nuclear Word count: 50

Appendix E – Measurement instruments

Please indicate your opinion by clicking in the option for the number that expresses your level of agreement with each statement.

PRE-TEST

PRE 1. General Attitudes toward nuclear energy development

Adapted from: Ho & McLeod (2008)

6-point Likert scale

1. In general, how much do you favor/ oppose nuclear energy development?

Oppose 1	2	3	4	5	Favor 6
☐	☐	☐	☐	☐	☐

2. How much do you support/ oppose nuclear energy development in Singapore?

Oppose 1	2	3	4	5	Favor 6
☐	☐	☐	☐	☐	☐

POST-TEST

POST 1. Instrumental attitudes toward the YouTube video

Adapted from: Mehling, 1959, Neuwirth & Frederick, 2004

7-point semantic-differential scale

3. Overall, I find the arguments raised in the YouTube video to be:

Useless						Useful
☐	☐	☐	☐	☐	☐	☐
Worthless						Valuable
☐	☐	☐	☐	☐	☐	☐
Unimportant						Important
☐	☐	☐	☐	☐	☐	☐
Convincing (R)						Unconvincing (R)
☐	☐	☐	☐	☐	☐	☐
Poorly argued						Well argued
☐	☐	☐	☐	☐	☐	☐
Uninformative						Informative
☐	☐	☐	☐	☐	☐	☐
Boring						Stimulating
☐	☐	☐	☐	☐	☐	☐
Meaningful (R)						Meaningless (R)
☐	☐	☐	☐	☐	☐	☐

POST 2. Affective attitudes toward the YouTube video

Adapted from: Hagger & Chatzisarantis, 2005; Kang, Cappella & Fishbein, 2006

7-point semantic-differential scale

4. Overall, I find the **YouTube video** to be:

Bad						Good	
☐	☐	☐	☐	☐	☐	☐	
Pleasant				Unpleasant			
☐	☐	☐	☐	☐	☐	☐	
Unappealing						Appealing	
☐	☐	☐	☐	☐	☐	☐	
Enjoyable (R)				Unenjoyable (R)			
☐	☐	☐	☐	☐	☐	☐	
Foolish						Wise	
☐	☐	☐	☐	☐	☐	☐	
Rewarding (R)						Punishing (R)	
☐	☐	☐	☐	☐	☐	☐	

POST 3. Instrumental attitude strength toward nuclear energy development

Adapted from: Mehling, 1959, Neuwirth & Frederick, 2004

7-point semantic-differential scale

5. In general, I perceive **nuclear energy development** to be:

Useless						Useful	
☐	☐	☐	☐	☐	☐	☐	
Worthless						Valuable	
☐	☐	☐	☐	☐	☐	☐	
Unimportant						Important	
☐	☐	☐	☐	☐	☐	☐	
Boring						Stimulating	
☐	☐	☐	☐	☐	☐	☐	
Meaningful (R)						Meaningless (R)	
☐	☐	☐	☐	☐	☐	☐	

POST 4. Affective attitude strength toward nuclear energy development

Adapted from: Hagger & Chatzisarantis, 2005; Kang, Cappella & Fishbein, 2006

7-point semantic-differential scale

6. In general, I perceive **nuclear energy development** to be:

Bad						Good	
☐	☐	☐	☐	☐	☐	☐	
Pleasant				Unpleasant			
☐	☐	☐	☐	☐	☐	☐	
Unappealing						Appealing	

☐	☐	☐	☐	☐	☐	☐
Foolish			Wise			
☐	☐	☐	☐	☐	☐	☐
Rewarding (R)			Punishing (R)			
☐	☐	☐	☐	☐	☐	☐

POST 5. Willingness to share the YouTube video

Adapted from: Pang et al. (2016)

7-point Likert scale

7. Please select the option that best represents your views:

	Highly unlikely						Highly likely
	1	2	3	4	5	6	7
How likely are you to click “share” on the YouTube video?	☐	☐	☐	☐	☐	☐	☐
How likely are you to share the YouTube video in offline conversations?	☐	☐	☐	☐	☐	☐	☐
How likely are you to speak about nuclear energy development in offline conversations?	☐	☐	☐	☐	☐	☐	☐
Please select “strongly agree” for this question	☐	☐	☐	☐	☐	☐	☐

POST 6. Manipulation checks:

6.1. Social identification

6.1.1. Perceived similarity

Adapted from: Cameron, 2004; Doosje, Ellemers & Spears, 1995

7-point Likert scale

8. Please select the option that best represents your views:

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
I have a lot in common with the YouTube users featured in this YouTube page.	☐	☐	☐	☐	☐	☐	☐

I am similar to the YouTube users featured in this YouTube page.	☐	☐	☐	☐	☐	☐	☐
I am different from the YouTube users featured in this YouTube page (R).	☐	☐	☐	☐	☐	☐	☐

6.1.2. Ingroup ties

Adapted from: Cameron, 2004; Doosje, Haslam, Spears, Oakes & Koomen, 1998; Ellemers, Kortekaas & Ouwerkerk, 1999
7-point Likert scale

9. Please select the option that best represents your views:

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
I feel strong ties to the YouTube users featured in this YouTube page.	☐	☐	☐	☐	☐	☐	☐
I find it difficult to form a bond with the YouTube users featured in this YouTube page (R).	☐	☐	☐	☐	☐	☐	☐
I don't feel a strong sense of connection to the YouTube users featured in this YouTube page (R).	☐	☐	☐	☐	☐	☐	☐
I identify with the YouTube users featured in this YouTube page.	☐	☐	☐	☐	☐	☐	☐

6.2. Social group status

7-point Likert scale

10. Please select the option that best represents your views:

	Not very well						Very well
	1	2	3	4	5	6	7

The YouTube user's channel was influential.	☐	☐	☐	☐	☐	☐	☐
Please select "strongly agree" for this question	☐	☐	☐	☐	☐	☐	☐

6.3. Valence of the YouTube video

7-point Likert scale

11. The YouTube **video** contained arguments that were _____ of nuclear energy development:
- ☐ Mostly supportive
 - ☐ Mostly unsupportive
 - ☐ Both supportive and unsupportive
 - ☐ I did not notice the arguments in the YouTube video

12. How much do you agree/ disagree with the following statement?

- A) **[Display logic]** If the YouTube video contained arguments that are **supportive** of nuclear energy development:

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
The YouTube video contained arguments that were <u>largely supportive</u> of nuclear energy development.	☐	☐	☐	☐	☐	☐	☐

- B) **[Display logic]** If the YouTube video contained arguments that are **unsupportive** of nuclear energy development:

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
The YouTube video contained arguments that were <u>largely unsupportive</u> of nuclear energy development.	☐	☐	☐	☐	☐	☐	☐

- C) **[Display logic]** If the YouTube video contained arguments that are **both** supportive and unsupportive of nuclear energy development:

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
The YouTube video contained arguments that were <u>both</u> supportive and unsupportive of nuclear energy development.	☐	☐	☐	☐	☐	☐	☐

6.4. Comment valence

7-point Likert scale

13. The YouTube **comments** were _____ of nuclear energy development:

- ☐ Mostly supportive
- ☐ Mostly unsupportive
- ☐ Both supportive and unsupportive
- ☐ I did not read the comments

14. How much do you agree/ disagree with the following statement?

A) **[Display logic]** If the YouTube comments are **supportive** of nuclear energy development:

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
The YouTube comments were <u>largely supportive</u> of nuclear energy development.	☐	☐	☐	☐	☐	☐	☐

B) **[Display logic]** If the YouTube comments are **unsupportive** of nuclear energy development:

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
The YouTube comments were <u>largely unsupportive</u>	☐	☐	☐	☐	☐	☐	☐

of nuclear energy development.							
--------------------------------	--	--	--	--	--	--	--

- C) **[Display logic]** If the YouTube comments are **both** supportive and unsupportive of nuclear energy development:

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
The YouTube comments were <u>both</u> supportive and unsupportive of nuclear energy development.	☐	☐	☐	☐	☐	☐	☐

POST 7. Demographics

- What is your gender?
 - ☐ Male
 - ☐ Female
- What is your age?

- What is your nationality?
 - ☐ Singaporean citizen
 - ☐ Permanent resident
 - ☐ Foreigner, please specify: _____
- What is your ethnicity?
 - ☐ Chinese
 - ☐ Malay
 - ☐ Indian
 - ☐ Eurasian
 - ☐ Others, please specify: _____
- What is the highest level of education that you have completed?
 - ☐ No formal education
 - ☐ Primary education
 - ☐ GCE “N” Level
 - ☐ GCE “O” Level
 - ☐ GCE “A” Level
 - ☐ Diploma & Professional Qualification
 - ☐ Bachelor’s degree or equivalent
 - ☐ Master’s degree
 - ☐ Doctoral degree

6. What is your marital status?

- ☐ Single
- ☐ Married
- ☐ Others

7. What is your religion?

- ☐ Christianity
- ☐ Buddhism
- ☐ Catholicism
- ☐ Taoism
- ☐ Islam
- ☐ Hinduism
- ☐ Other religions, please specify: _____
- ☐ No religion/Free-thinker

8. How much guidance does religion provide in your everyday life?

No guidance at all				A lot of guidance		
☐	☐	☐	☐	☐	☐	☐

9. What is your monthly household income?

- ☐ Up to \$2,499
- ☐ \$2,500-\$4,999
- ☐ \$5,000-\$7,499
- ☐ \$7,500-\$9,999
- ☐ \$10,000-\$12,499
- ☐ \$12,500-\$14,999
- ☐ \$15,000-\$16,499
- ☐ \$17,500-\$19,999
- ☐ \$20,000 and above