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Abstract

The purpose of this study is to identify and understand key publics and their communication
behaviours in crisis communication, using the public segmentation framework which has been rarely

used in crisis communication. In doing so, the study quantitatively tests a new theoretical framework of Communicative Action in Problem Solving, classifying eight types of aware and active publics. Through the new framework of public segmentation, the survey results from 1,113 participants substantiate eight types of active and aware publics, as well as their communicative characteristics in a crisis situation. The study finds that the aware and active publics are, as the key publics, more likely to have negative behavioural intentions toward an organization. Theoretical and practical implications are discussed.

1. Introduction

Understanding and communicating with key publics are critical in crisis communication (Pearson & Mitroff, [69] ; Pfeffer & Salancik, [70]). When a crisis occurs, various publics respond differently (Lerbinger, [54]). Some publics become aware of a crisis quickly and actively respond; other publics are not aware of the severity of the crisis do not respond (Myers & Holusha, [64]). Therefore, it is important that public relations practitioners and crisis managers know why and how key publics will respond to a crisis because the public may influence the organization's evaluations of the situation at hand, which can also affect the organization's reputation (Coombs & Holladay, [17] ; Stephens, Malone, & Bailey, [75]).

Research in public segmentation indicates that those who are aware of and become active in response to a crisis are more likely to actively select, transmit, and acquire crisis information than other publics (Grunig & Hunt, [27] ; Grunig & Repper, [28] ; Kim, Shen, & Morgan, [47] ; Vasquez, [80]). They can be regarded as 'the key groups' in explaining 'how problematic situations arise and are shared through discursive interactions or symbolic convergence of messages' (Monberg, [62] ; Ni & Kim, [66] , p. 220). As such, the aware or active publics have to be considered the key publics in a crisis because they respond faster than other publics and their communication influences inactive publics positively or negatively (Coombs, [10] ; Kim, Hung-Baesecke, Yang, & Grunig, [41] ; Vasquez, [80]). Despite its scholarly labelling as 'the integral step' (Grunig, [26] ; Kim, Ni, & Sha, [39] , p. 761), crisis communication researchers have paid little attention to public segmentation in crisis situations (Kim, Kim, & Cameron, [33]).

To fill the gap, this study applies the new theoretical framework based on Communicative Action in Problem Solving (CAPS) to a crisis situation. CAPS proposes eight types of publics, elaborating on Grunig's ([25]) typology of four types of publics (Kim, Grunig, & Ni, [40]). The need for quantitative testing of the theoretical framework adopting CAPS has arisen because the extant public segmentation research is based on qualitative analysis and offers limited evidence (Kim, Kim, Tam, & Kim, [48] ; Ni et al., [66]). Accordingly, this study includes a national survey of 1,113 participants, and its results statistically substantiate the findings of previous research identifying eight types of active and aware publics and their communication behaviours. This study quantitatively demonstrates the applicability of the new framework of public segmentation to a crisis situation, and extends the public segmentation to crisis communication research by intertwining cross-situational and situational approaches.

2. Literature review

2.1. Segmentation of publics and CAPS

The concept of segmentation has evolved since its inception in the early years of the 20th century (Slater, [73]). John Dewey ([18]) introduced the notion of publics, indicating subgroups or subpopulations that share similar values or interests and organize around a given issue (Grunig et al., [27]). The concept shifted into the more applied social science disciplines, and marketing theorists developed it as a normative concept and established its criteria (Grunig, [24]). The basic idea of segmentation is 'to divide a population, market, or audience into groups whose members are more like each other than members of other segments' (Grunig et al., [28] , p. 129). Based on the concept and idea, marketing theorists have developed numerous segmentation theories (e.g., Bonoma & Shapiro, [6] ; Kotler & Andreasen, [50] ; Smith, [74]), but Grunig's ([23]) Situational Theory of Publics (STP) emerged as the only segmentation theory in public relations (Grunig, [24]).

STP is regarded as one of most useful theories for segmentation purposes, making communication efforts more effective and efficient (Aldoory & Sha, [1] ; Kim & Ni, [45] ; Vasquez, [80]). Scholars adopted and extended segmentation based on STP to public relations practice and research, especially community relations (Berkowitz & Turnmire, [5]), election behaviours (Hamilton, [30]), and intercultural public relations (Sha, [72]). STP provides a theoretically sound typology for identifying publics and understanding why and how they engage in information-related behaviour and processes (Grunig, [25] ; Van Leuven & Slater, [79]). In STP, such a public or publics need to be differentiated from audiences and stakeholders. An audience is a group being targeted by a product or service or for its attention to a public policy issue (Heath & Coombs, [31]). A stakeholder is defined as 'any group or individual who can affect, or is affected, by the achievement of a corporation's purpose' (Freeman, [21] , p. 6). Thus, a stakeholder relies more on a relationship with an organization than a public does (Grunig et al., [28]). A public is a group of people who finds that a problem affects their interest and realizes that it needs to do something about it; that is, publics 'form to exercise their influence in solving problems' (Ni et al., [66] , p. 218).

The STP conceptualizes public segmentation by classifying publics into four different categories based on Dewey's ([18]) concepts: latent publics who face a similar problem but do not detect the problem, aware publics who recognize the problem, active publics who organize to discuss and do something about the problem, and nonpublics who have none of these conditions and are not consequential to the organization (Grunig et al., [27] , [28]). To predict the four types of publics and their communicative behaviours, STP identifies three situational variables: problem recognition, constraint recognition, and level of involvement, (Aldoory et al., [1] ; Grunig, [25]). To help public relations practitioners know when and how to apply STP to segmentation, Grunig ([24]) proposed a nested model that groups segmentation variables and maintains that 'publics represent the optimal segment' (p. 206). This view of publics as the optimal segment is based on a perspective that segmentation maximizes the outcomes of public relations activities at a reasonable cost (Grunig, [24]).

Some scholars (e.g., Hallahan, [29] ; Kruckeberg & Vujnovic, [51] ; Slater, [73]) criticize the limitations of STP and its concepts for segmentation and call for 'a reconceptualization of publics or a redefinition of the range of strategic publics' (Kim et al., [48]). For elaboration on the original typology of publics, Kim ([42]) points out that STP is not useful to explain how publics selectively 'interpret, produce, and

transmit information to other publics' (p. 299) because it focuses on the information-taking dimension, which includes seeking and processing. In order to identify a new typology of publics, Kim and Grunig ([35]) propose a more comprehensive and theoretical framework of public segmentation – CAPS – in the extended STP, the Situational Theory of Problem Solving (STOPS) (Kim & Krishna, [44]).

The new framework of CAPS delineates communicative activeness in information taking, selecting, and giving, based on active and passive components (Kim & Grunig, [36] ; Kim et al., [45]). CAPS conceptualizes communication actions in three domains – including information acquisition, selection, and transmission – thus yielding six communication behavioural variables (Ni et al., [66]). Information seeking refers to active and proactive information acquisition describing 'the planned scanning of the environment for messages about a specified topic' (Kim et al., [45] , p. 7). Passive and reactive information acquisition is information attending, meaning 'one tends to remain passive and reactive in gaining only information that is easily available' (Kim et al., [40] , p. 130). As active information selection, information forefending is the process of selecting more specific, systematic, and relevant information, and it refers to 'the extent to which a communicator fends off certain information in advance by judging its value and relevance for a given problem-solving task' (Kim & Grunig, [36] , p. 126). Publics, nonetheless, can be less likely to discriminate information when they are not active in problem-solving mode; that is, information permitting is passive information selection (Kim et al., [40]). Information permitting is the extent to which a communicator accepts any information related to a problem-solving task (Kim et al., [45]). Information forwarding refers to active information transmission and is called 'a planned and self-propelled information giver', as one forwards information proactively even without solicitation (Kim & Grunig, [36] , p. 127). However, reactive information givers are less likely to initiate information transmission because they share when someone else requests his or her expertise in solving the problem. Such communicative behaviour is information sharing and is passive information transmission (Kim & Krishna, [44]).

As STP posited, STOPS postulates the situational variables as the antecedents; in other words, problem recognition, constraint recognition, involvement recognition, and referent criterion, lead to CAPS (Kim & Krishna, [44]). Problem recognition refers to 'one's perception that something is missing and that there is no immediately applicable solution to it' (Grunig et al., [28] ; Kim & Grunig, [36] , p. 128). STOPS defines level of involvement of STP as involvement recognition and is 'what we perceive as being connected' or a perceived connection between the self and problem (Grunig, [25] ; Kim & Grunig, [36] , p. 130). Constraint recognition is a perceived obstacle that restricts a person's 'ability to do anything about the situation' (Grunig, [25] , p. 10). STOPS adds an additional antecedent variable, referent criterion, defined as 'any knowledge or subjective judgmental system that influences that way in which one approaches problem solving' (Kim et al., [45] , p. 8).

Recent studies have used CAPS to explain and understand awareness of the shortage of organ and health donors (Kim et al., [47]), communicative behaviours of hot-issue publics who are active on media issues in a socio-political context (Kim, Ni, Kim, & Kim, [46]), employees' voluntary efforts to collect and circulate strategic information (Kim & Rhee, [38]), and positive effects on chronic diseases patients' cybercoping processes and outcomes (Kim & Lee, [43]). When it comes to public segmentation, CAPS helps public relations scholars re-conceptualize and break down the active and

aware publics according to the importance of these key groups in an issue's emergence (Ni et al., [66]).

The active and aware publics help explain the process of information sharing, contrary to inactive publics, which are not easily observable and identifiable (Kim et al., [41] ; Vasquez & Taylor, [81]). Kim ([42]) and Kim et al. ([35]) identified three characteristics for the active or aware publics in the framework of CAPS: the openness to approaches, the time or history, and the extent of activeness. Based on such characteristics, Kim and colleagues propose eight types of publics: closed-situational activist public, closed-chronic activist public, closed-situational active public, closed-dormant passive public, open-situational activist public, open-chronic activist public, open-situational active public, and open-dormant passive public (Kim et al., [35] ; Ni et al., [66]) (See Figure [NaN]). As the eight types of publics refer to those who are active and aware, the typology consists of those publics who are already aware of problems but may vary in terms of perceived connection, perceived obstacles, and knowledge in doing something about the problem (Kim et al., [48]).

2.2. CAPS and crisis communication

The public segmentation studies demonstrate how CAPS can be applicable for elaborative segmentation. Segmentation based on CAPS can help public relations practitioners implement strategic communication effectively and identify and focus on the active or aware publics, even with a constraint in resources (Kim et al., [39]). Thus, CAPS provides a theoretical framework for public relations researchers and practitioners to better understand the flow of communication amongst such key publics (Kim et al., [48]). Applying CAPS to a post-crisis situation after hurricane Katrina, researchers found that the active publics did not share the same characteristics and that they played a critical role in the evolution or devolution of issues and conflicts (Ni et al., [66]). The scholars also maintained that CAPS, as a new typology of publics, provided public relations practitioners with a refined way to identify the critical publics (aware and active publics) with whom they need to communicate (Ni et al., [66]).

More recently, CAPS helped researchers identify and examine chronic activists in an environmental case related to the 2007 oil spill crisis in South Korea (Kim et al., [48]). The findings indicate that most chronic activist publics are more likely than other publics to engage in active information seeking and forefending, regardless of their openness to problem-solving approaches (Kim et al., [48]). However, the existing studies focused on 'analytical or theoretical generalization' of the new typology of publics by using qualitative data based on the small number of participants (Ni et al., [66] , p. 239). This method limits the ability to find all types of publics, resulting in the need for a quantitative testing of the eight types of publics to achieve statistical generalizability (Kim et al., [48] ; Ni et al., [66]).

The public segmentation approach is uncommon in crisis communication research, even though researchers underscore its importance as the conceptual grounding for resilience-generating and managerial-crisis communication theories (Grunig, [26] ; Liu & Fraustino, [55] ; Nätti, Rahkolin, & Saraniemi, [65]). Crisis communication is a strategic dialog between an organization and its publics prior to, during, and after a negative occurrence (Allen & Caillouet, [2] ; Fearn-Banks, [19] ; Seeger, Sellnow, & Ulmer, [71]). Recent crisis communication scholars, in particular, increasingly emphasize the importance of the resilience-oriented crisis communication perspective, aiming at self-efficacy and affirming collective identity (Olsson, [68]). Resilience-oriented crisis communication seeks to support

people and communities in the crisis management process – as well as in the rebuilding and recovery processes – by facilitating coordination, information sharing, and collective sense making (Buzzanell, [7] ; Ulmer, Seeger, & Sellnow, [77]).

Further, the researchers also suggest managerial perspectives for effective crisis communication by tailoring communication to strategic publics (Grunig, [26] ; Nätti et al., [65]). In this sense, public segmentation using CAPS can be useful in crisis communication because its purpose is to make communication efforts more effective and efficient (Grunig et al., [28] ; Kim et al., [40] ; Liu et al., [55]).

In a crisis situation, crisis managers need to communicate with active and aware publics because they are more likely to influence others by actively selecting, transmitting, and acquiring crisis information than are other publics (Kim & Grunig, [36]). Sometimes, the active and aware publics actively transmit their dissatisfaction with the organization to inactive publics and tend to help create a negative reputation (Kim et al., [41] ; Stephens et al., [75]). Moreover, active publics share, forward, and discuss crisis messages via various media channels, including interpersonal, traditional, and new social media (Utz, Schultz, & Glocka, [78]). If the active publics become aware of the crisis from media before the organization officially notifies them, it can cause tension in the relationship (Coombs, [12]). In this regard, the aware or active publics should be taken into consideration as key publics in crisis communication (Coombs & Holladay, [14] ; McCown, [59] ; Mintzberg, [61]).

By identifying key publics and their communication behaviours, crisis communication researchers can help crisis managers strategically learn where to go or how to communicate in a crisis situation (Coombs et al., [17] ; Lerbinger, [54] ; Pearson et al., [69] ; Pfeffer et al., [70]). The idea of segmentation can provide crisis managers with the basis for creating crisis messages responsive to the concerns, needs, and perspectives of the key publics, as well as selecting the media, organizational, or interpersonal channels most suitable for such publics (Grunig, [24] , [26]).

In spite of the importance of identifying the key publics and communicating with them strategically, public segmentation has received little attention from crisis communication researchers. Therefore, this study aims to fill the research gap. Additionally, behavioural intentions as a result of a crisis are very important to organizations in the context of crisis communication (Coombs, [11]). A crisis is likely to make publics engage in negative behaviours such as negative word-of-mouth or reduced purchase intentions (Coombs, [12] ; Coombs & Holladay, [13] , [15]). Considering key publics' behavioural intentions toward the organization, this study asks the following research question () to quantitatively test and apply elaborative public segmentation based on the framework of CAPS to crisis communication:

> RQ1: Using a framework of Communicative Action in Problem Solving in a crisis situation, how do behavioral intentions toward an organization vary by the eight different types of key publics?

In his nested model, Grunig ([24]) used inferred variables rather than objective variables because they proved to be more effective for understanding segments and planning communication strategy. Inferred variables refer to situational or dynamic variables, including ephemeral notions such as publics' perceptions, cognition, and attitudes related to problems or issues (Grunig et al., [28]).

Objective variables are defined as cross-situational or static and are enduring characteristics, like demographics (Grunig, [24]). Subsequent scholars suggest a synthetic approach in public segmentation – taking two different types of variables – to maximize the power of each approach (Hamilton, [30] ; Kim et al., [39]). The synthetic approach, nonetheless, has rarely been attempted practically or scholarly in public segmentation (Kim et al., [46]). To help crisis managers identify and understand the key publics and make a theoretical addition to the criteria for public segmentation in crisis communication, this study proposes the following research question ():

> RQ2: How well do situational variables, such as publics' perceptions and cognitions, predict the key publics' communicative behaviors in a crisis situation, controlling for other cross-situational variables, including demographics, lifestyle, and socioeconomic status?

3. Methodology

3.1. Participants

A nationwide Web survey of 1,113 people living in the United States was conducted in October 2013. Excluding missing data (n = 44), the total number of valid respondents was 1,069. The participants' ages ranged from 18 to 80 years, with an average age of 35.76 (SD = 12.9). Male respondents were 39.1% (n = 418), and 60.9% (n = 651) were female. Among the participants, 75.1% (n = 803) were White, 9.4% (n = 100) were African–American, 7.1% (n = 76) were Asian–American, and 8.4% (n = 88) were as Hispanic/Latino or other races. Regarding education level, 12.4% of respondents (n = 132) had a high school degree or less, 41.1% (n = 439) had a 2-year associate degree or less than associate level, 29.8% (n = 318) had a bachelor's degree or less than 4-year university level, and 16.6% (n = 177) had a post-graduate degree or some graduate education.

In order to have a diverse subject pool, participants in this study were recruited through an online web-based platform, Amazon.com's Mechanical Turk (MTurk), which consists of more than 400,000 available panel members who have voluntarily registered. MTurk has been increasingly used for survey research in social science, recruiting and automatically paying respondents to perform tasks (Berinsky, Huber, & Lenz, [4]). After the survey questionnaire was built on Qualtrics.com, a web-based tool for building surveys, the questionnaire link was posted on MTurk. The participants were paid 75 cents to complete the questionnaire and could choose to withdraw from the survey at any time.

3.2. Procedures and measurements

The survey was comprised of two parts focusing on (1) situational variables, (i.e., perceptual and cognitive variables), and communicative behaviours (i.e., CAPS), and (2) cross-situational variables such as media use, lifestyle, and demographic characteristics. In each part, the respondents indicated their answers on a 7-point Likert-type scale that ranged from 1 = not at all to 7 = very much. The questions used were from previous research, but some wording was slightly modified to fit this study (Coombs et al., [13] ; Kim & Grunig, [36]). For instance, the general words such as 'the organization' and 'this problem' in the original questionnaire were changed to be more specific to this study. The organization and the problem were changed to 'Asiana Airlines' and 'the airline crash crisis' or 'this crisis'. An actual crisis situation, the Asiana Airlines crash crisis, was used for the ecological validity (Lyon & Cameron, [58]). The Asiana Airlines crash occurred in July 2013, leading to the deaths of three teenage girls from China and serious injury of 181 of the jet's 307 passengers (Golgowski, [22]).

The questionnaire contained an official statement from Asiana Airlines' first press release on the crash. This served as the survey participants' introduction to the event. Participants answered questions measuring situational, perceptual, and cognitive variables. Problem recognition (M = 4.15, SD = 1.19, Cronbach's α = .705) was measured by four items (e.g., I think there is something missing in this crisis message). Constraint recognition (M = 5.31, SD = 1.53, α = .94) was assessed by four items as well (e.g., I believe this crisis is a problem that I can do something about), and reverse-coded. Four questions (e.g., I see a connection between myself and this crisis) were asked to measure involvement recognition (M = 2.77, SD = 1.50, α = .87). Referent criterion (M = 2.98, SD = 1.39, α = .84) was measured by four items (e.g., I have strong opinions and thoughts about this crisis).

The participants also answered five questions for each situational communication behavioural variable (CAPS), to assess whether they are active or passive in information acquisition, selection, and transmission. For instance, participants indicated how much they seek (active: e.g., I am willing to visit websites relevant to this crisis) (M = 3.22, SD = 1.48, α = .88) or attend (passive: e.g., I pay attention to this crisis when a news report appears on TV news) (M = 4.08, SD = 1.50, α = .89) crisis information. They also answered whether they forefend (active: e.g., I know where to go when I need updated information regarding this crisis) (M = 3.53, SD = 1.18, α = .76) or permit (passive: e.g., for this crisis, I welcome any information regardless of where it comes from) (M = 4.31, SD = 1.20, α = .76) the information. Regarding information transmission, the respondents indicated how they forward (active: e.g., if possible, I will take the time to explain this crisis to others) (M = 2.96, SD = 1.45, α = .90) or share (passive: e.g., I may not initiate but willing to have conversation about this crisis) (M = 3.80, SD = 1.41, α = .88) (Kim & Grunig, [36]). Supportive behavioural intentions were measured by four items, including 'I would say nice things about the organization to other people' and 'I would attend a rally designed to show public support for the organization' (M = 2.71, SD = 1.36, α = .87).

In the second part, respondents answered questions on cross-situational variables – including demographic and socio-economic information such as age, gender, education, income and race; lifestyle, regarding frequency of air travel and media, regarding use of interpersonal communication, traditional media, and social media.

3.3. Segmentation procedure

Since a new typology regarding eight types of publics was proposed by qualitative methods, there is no suggested quantitative method; therefore, this study adopted Kim's ([34]) summation method used for segmentation. Kim ([34]) recently introduced this method using STOPS variables. Due to its simplicity and accessibility for practitioners and researchers, the summation method is now more commonly used as a powerful method for public segmentation studies (Kim, [34] ; Kim et al., [47] ; Lee, Oshita, Oh, & Hove, [53]). In this study, specifically, the survey questions measuring CAPS were recoded into a dichotomous scale indicating high and low. Each CAPS variable was matched with one characteristic related to openness to approaches, the time or history, and the extent of activeness.

For example, information forefending is closed and information permitting is an open approach in problem solving (See Table [NaN]). Each group was created by three-dimensional characteristics based on the summation of CAPS. By taking the midpoint of the survey scale, (i.e., 4 on a 7-point Likert-type scale), information acquisition, selection, and transmission were recoded as high or low. Decimal fractions in high and low were assigned to distinguish and segment publics exclusively based on

segmentation criteria; that is, the decimals were not meaningful by themselves (Grunig, [24]). High consisted of 1 for forefending,.1 for forwarding, and.01 for seeking, and low represented 0 for permitting,.0 for sharing, and.00 for attending. To find a closed-situational activist (CSAt) group, each high score was summed in information forwarding (.1: high), information seeking (.01: high), and information forefending (1: high). Therefore, one group has 1.11 (.1 + .01 + 1) as the actual closed-situational activist public. Similarly, other types of publics were segmented exclusively: CSAt public (CSAt: 1.11), closed-chronic activist public (CCAt: 1.1), closed-situational active public (CSA: 1.01), closed-dormant passive public (CDP: 1.00), open-situational activist public (OSAt:.11), open-chronic activist public (OCAt:.1), open-situational active public (OSA:.01), and open-dormant passive public (ODP:.00).

Table 1. Breaking Down Active and Aware Public by Three Dimensions of Problem Solving

		Proactive (information forwarding)	Extent of activeness in problem solving	Reactive (information sharing)	
		History of problem solving		History of problem solving	
		Situational (information seeking)	Chronic (information attending)	Situational (information seeking)	Dormant (information attending)
Openness to approaches in problem solving	Closed (information forefending)	Closed-situational activist public (collective problem solver)	Closed-chronic activist public (collective problem solver)	Closed-situational active public (individual problem solver)	Closed-dormant passive public (individual problem solver)
	Open (information permitting)	Open-situational activist public (collective problem solver)	Open-chronic activist public (collective problem solver)	Open-situational active public (individual problem solver)	Open-dormant passive public (individual problem solver)	

1 Note: Adapted from 'Classifying publics: Communication behaviours and problem-solving characteristics in controversial issues' by L. Ni, and J-N. Kim, 2009, International Journal of Strategic Communication, 3, p. 224.

3.4. Analysis

After the summation procedure, a nominal variable was created with the eight unordered categories. Accordingly, categorical analyses, Chi-square (χ^2) and multinomial logit analyses, were appropriate to estimate the set of models in the current study (Knoke, Bohrnstedt, & Mee, [49] ; Long, [57] ; Tabachnic & Fidell, [76]). Multinomial logistic regression has a baseline as the comparison category, and its procedure yields k −1 columns of estimates when the dependent variable includes k categories (Long, [57] ; Mondak, [63]). Using STATA 12, this study estimated the multinomial regression logit model with the baseline category comprised of the least-aware public, ODP. The multinomial logit regression allowed the effects of the independent variables, including situational and cross-situational variables, to be estimated on the dependent variable, which consists of nominal categories. The categories of dependent variable reflected eight types of publics segmented based on CAPS, showing how these effects differ for each outcome.

4. Results

4.1. Key publics' communicative behaviours in terms of behavioural intentions ()

By considering information selection, transmission and acquisition concerning CAPS, this study identified how each type of public arises in terms of different behavioural intentions toward an organization in a crisis situation. Within the participants, the eight types of publics can be identified as CSAt (N = 43, 4.02%), OSAt (N = 242, 22.64%), CCAt (N = 10,.94%), OCAt (N = 34, 3.18%), CSA (N = 79, 7.39%), OSA (N = 89, 8.33%), CDP (N = 430, 40.22%), and ODP (N = 142, 13.28%).

To identify how the behavioural intentions of eight different publics can vary in a crisis situation, a Chi-square (χ^2) test was conducted. Overall, respondents were less likely to have supportive behavioural intentions toward the organization when they had a total percentage of almost 90 (N = 946), or less than 4 out of 7 points on the scale. This pattern appeared commonly in all type of publics as the Chi-square result showed, (χ^2 (36, N = 1,069) = 28.09, p = .82), indicating that the distribution of cases down each column of the table would be the same as the total column (Knoke et al., [49]). Therefore, there were no significant differences in the relationships between the key publics segmented by CAPS and supportive behavioural intentions (See Table [NaN]).

Table 2. Supportive Behavioural Intentions by Different Types of Publics

Behaviour Intentions	CDP (N / %)	ODP (N / %)	CSA (N / %)	OSA (N / %)	CCAt (N / %)	OCAt (N / %)	CSAt (N / %)	OSAt (N / %)	Total (N / %)
1	85 / 19.77	34 / 23.94	13 / 16.46	18 / 20.22	2 / 20.00	1 / 2.94	7 / 16.28	54 / 22.31	214 / 20.02
2	113 / 26.28	35 / 24.65	22 / 27.85	24 / 26.97	2 / 20.00	14 / 4.18	12 / 27.91	69 / 28.51	291 / 27.22
3	90 / 20.93	34 / 23.94	12 / 15.19	15 / 16.85	0 / .00	10 / 29.41	8 / 18.60	46 / 19.01	215 / 20.11
4	94 / 21.86	24 / 16.90	21 / 26.58	22 / 24.72	5 / 50.00	4 / 11.76	10 / 23.26	46 / 19.01	226 / 21.14
5	35 / 8.14	11 / 7.75	8 / 10.13	9 / 10.11	1 / 10.00	4 / 11.76	2 / 4.65	18 / 7.44	88 / 8.23
6	9 / 2.09	2 / 1.41	1 / 1.27	1 / 1.12	0 / .00	1 / 2.96	3 / 2.33	7 / 2.89	24 / 2.25
7	4 / .93	2 / 1.41	2 / 2.53	0 / .00	0 / .00	0 / .00	1 / 2.33	2 / .83	11 / 1.03
Total	430 / 40.22	142 / 13.28	79 / 7.39	89 / 8.33	10 / .94	34 / 3.18	43 / 4.02	242 / 22.64	1,069 / 100

2 Note: $\chi 2$ (36, N = 1,069) = 28.09, p > .05. CCAt = closed-chronic activist public; CDP = closed-dormant passive public; CSA = closed-situational active public; CSAt = closed-situational activist public; OCAt = open-chronic activist public; ODP = open-dormant passive public; OSA = open-situational active public; OSAt = open-situational activist public. Percentages within the bottom row are not equal to total of each column, but represent percentage of each public in the total number.

4.2. The effects of situational and cross-situational variables on the key publics ()

To examine the effects of situational variables on predicting the key publics' communicative behaviours in a crisis situation, we controlled for cross-situational variables by considering and choosing entry items based on previous literature regarding public segmentation. The cross-situational variables included age, education, gender, income, race (Hong, Park, Lee, & Park, [32] ; Kim et al., [46]), lifestyle (Kim et al., [33]), media use (Hong et al., [32]), and situational variables such as problem recognition, constraint recognition, involvement recognition, and referent criterion (Kim et al., [40] , [46]). For multinomial logit regression analysis, gender was recoded 1 for female and 0 for male. Race was also recoded as dichotomous variables, White coded 1 and 0 for others, Black coded 1 and 0 for others, and coded 1 for Asian and coded 0 for others. All independent variables were entered in one step, and the multinomial logit regression model simultaneously estimated a series of binary logits for comparisons of a baseline, ODP, with other types of publics. The model fit the data quite well, with pseudo R^2 of .19 and highly significant χ^2, 661.06 (p < .001). The results indicate that the multinomial logit model does a much better job of predicting significant factors influencing the eight types of publics than what one would expect by chance (See Table [NaN]).

Table 3. Multinomial Logit Results for Models of Different Publics

	CDP		CSA		OSA		CCAt		OCAt		CSAt		OSAt	
Variables	**b**	**z**	**b**	**z**	**b**	**z**	**b**	**z**	**b**	**z**	**b**	**z**	**b**	**z**
Demographics														
Age	.02	1.85	.03	2.65	.03	2.27	.02	.82	−.02	−.82	.02	1.41	.03	3.02
Gender	.01	.05	−.50	−1.65	−.43	−1.46	.84	.94	−.59	−1.43	.05	.12	−.21	−.82
White race	−.45	−1.12	.43	.62	−.37	−.72	12.67	.02	1.10	1.01	−.20	−.28	−.25	−.52
Black race	−.86	−1.59	.78	.95	−.70	−.98	14.08	.02	−.07	−.05	.17	.2	.19	.31
Asian race	−.72	−1.27	.60	.68	−1.08	−1.39	14.42	.02	1.82	1.52	.43	.5	−.37	−.59
Education	−.01	−.07	.04	.37	.17	1.83	−.13	−.57	−.16	−1.14	.09	.74	.03	.35
Income	−.09	−2.26	−.12	−1.93	−.01	−.18	−.27	−1.65	−.00	−.06	−.12	−1.54	−.13	−2.52
Lifestyle														
Use of Airplanes	−.02	−.2	−.160	−1.46	−.22	−2.12	.54	2.23	.06	.44	−.13	−.96	−.08	−.86
Media Use														
Traditional Media	−.03	−.12	.27	.76	.26	.72	.36	.39	−1.35	−2.43	.55	1.15	−.35	−1.14
New Media	−.40	−1.5	−.360	−.91	.14	.38	.15	.15	−.46	−1.01	−.29	−.54	−.26	−.81
Situational Variables														
PR	−.12	−1.3	.12	.91	.05	.37	.13	.41	.04	.2	−.09	−.49	.23	1.96
CR	−.16	−1.52	−.07	−.46	−.09	−.72	−.04	−.13	−.23	−1.22	−.12	−.7	−.40	−3.49
IR	−.01	−.12	.29	2.07	.49	3.69	−.30	−.88	.23	1.16	.65	3.97	.57	4.85
RC	−.59	−5.53	−.37	−2.49	−.03	−.21	−.22	−.66	−.01	−.03	−.01	−.06	.38	3.07
Baseline	ODP													
Number of Cases	1,069													
Pseudo R^2	.1871													
χ^2	661.06													

3 Note: ***p < .001, **p < .01, *p < .05. CCAt = closed-chronic activist public; CDP = closed-dormant passive public; CR = constraint recognition; CSA = closed-situational active public; CSAt = closed-situational activist public; IR = involvement recognition; OCAt = open-chronic activist public; ODP = open-dormant passive public; OSA = open-situational active public; OSAt = open-situational activist public; PR = problem recognition; RC = referent criterion.

The first column in Table [NaN] reports that income (b = −.09, z = −2.26) and referent criterion (b = −.59, z = −5.53) had statistical significance in differentiating CDP from ODP, controlling for other variables.

The second column in Table [NaN] reveals that (b = −.03, z = −2.65) involvement recognition (b = .29, z = 2.07) and referent criterion (b = −.37, z = −2.49) were statistically significant predictors of CSA differentiating from ODP, controlling for other predictors.

For OSA, age (b = .03, z = 2.27), use of airplane (b = −.22, z = −2.12), and involvement recognition (b = .49, z = 3.69) appeared as statistically significant predictors when controlling for other variables.

In accounting for CCAt in the fourth column in Table [NaN] , there was no situational variable that appeared as a significant predictor, but only one factor – use of airplane – was statistically significant (b = .54, z = 2.23) when controlling for other factors.

The results in differentiating OCAt from ODP also did not have any situational variables as significant predictors. There was only one variable – use of traditional media (e.g., TV, radio, and newspapers) – that was a statistical and significant predictor (b = −1.34, z = −2.43), controlling for other variables.

The results reported in the sixth column of Table [NaN] reveal that only involvement recognition (b = .65, z = 3.97) was a statistically significant predictor for CSAt differentiating from ODP – the least aware public – controlling for other variables.

The last column in Table [NaN] shows that the predictors function much better in differentiating OSAt from ODP than in accounting for other types of publics. When controlling for other factors, the six factors of age (b = .03, z = 3.02), income (b = −.13, z = −2.52), problem recognition (b = .23, z = 1.96), constraint recognition (b = −.40, z = −3.49), involvement recognition (b = .57, z = 4.85), and referent criteria (b = .38, z = 3.07) reached statistical significance (p < .05), while only a few of the coefficients reached statistical significance for other types-vs-ODP contrasts.

5. Discussion

This study sought to extend public segmentation research to the context of crisis communication. Through public segmentation using a new theoretical framework based on CAPS, this study found that the aware and active publics were, as the key publics, more likely to have negative behavioural intentions toward an organization. Further, the current study found the significant effects of situational variables, especially involvement recognition and referent criterion, characterizing the key publics who used different communicative action strategies in the areas of openness, activeness, and history. Such findings make a considerable contribution to crisis communication research and practice.

The summation method for public segmentation in this study showed how aware and active publics are, to some extent, different in the same crisis situation, meeting the need for quantitative testing of previous research. Specifically, the majority groups were CDP and OSAt. In terms of activeness, history, and openness, CDPs are reactive as they share the information when they are requested, dormant as they tend to gain the information only that is easily accessible and available, and closed as they tend to fend off certain information by judging its value and relevance in advance (Grunig, [23] , [25] ; Kim et al., [40] ; Kuo & Young, [52]).

On the other hand, OSAt has the opposite characteristics; that is, those who are segmented as OSAt are more proactive (e.g., information transmission even if no one solicited it), situational (e.g., the planned scanning of the environment for messages about the crisis), and open (e.g., selecting any information related to the crisis) to the communicative actions (Clarke & Kline, [9] ; Grunig, [25] ; Kim et al., [41]). In the same crisis, OSAt considered the crisis a newer problem than others and became more situational or transient in their public status, but CDP became more chronic and dormant. The summation method confirmed the dynamics of aware and active publics that qualitative studies (e.g., Kim et al., [48] ; Ni et al., [66]) have found. However, the differences were not statistically significant in terms of supportive behaviours toward the organization. The publics' behavioural intentions toward the organization were consistently negative. The result implies that the publics who are more aware and active, regardless of their communicative actions and characteristics, are less likely to have supportive behaviours after a crisis.

Nonetheless, when it comes to significant predictors, the findings extend previous studies' by demonstrating why publics were varied by a different predictor between CDP and OSAt. A situational variable, especially referent criterion, was negatively associated with CDP but appeared as a positive predictor for OSAt. Referent criterion means 'available and applicable knowledge' and 'inferential rules' from one's prior experiences (Kim & Grunig, [36] , p. 131). Accordingly, those who have a high level of knowledge based on prior crisis experiences are more likely to actively seek and forward crisis information. In other words, those who have previous direct or indirect crisis experiences are more likely to scan the environment for crisis messages and give the crisis information to others even without solicitation. They are also less likely to engage in passive communicative behaviours, such as acquisition through unplanned discovery of crisis messages and transmission upon others' requests. Simply put, those who have previous experiences related to the crisis can be the most critical publics.

Furthermore, the findings indicate that previous crisis history can influence active publics' communicative behaviours in a crisis situation. Existing crisis communication studies, in particular Coombs's ([11]) SCCT studies, postulate that crisis history has indirect or direct effects on reputation. Previous studies, however, are unable to illuminate which publics are most influential for the reputational threats, because the research assumes that most publics experience a crisis as a mediated event, thanks to traditional and online media (Coombs & Holladay, [16]). Creating strategies based on how the media frame the crisis is an important step for an organization to protect its reputation (Coombs, [11] , [12]).

The current study, nevertheless, suggests that response strategies should be strategically tailored for those with similar, previous crisis experience. Such publics will affect the ideas, attitudes, and behaviours of other types of publics (Grunig, [26] ; Kim et al., [41]). Their communication behaviours can also result in negative word-of-mouth or lashing out at the organization, which negatively affects the organization's reputation (Coombs, [11]). In this sense, the crisis communication should emphasize public segmentation to allow crisis managers to improve chances for successful communication. They can do so by segmenting publics based on their engagement in communicative actions.

Taking a synthetic approach to public segmentation in CAPS, this study demonstrates how to communicate with activist groups who can create unfavourable consequences, including negative

campaigns and boycotts (Coombs, [12]). In this study, the objective or cross-situational variables appeared across all types of publics, while situational, inferred or dynamic variables were significant in situational publics rather than in chronic or dormant publics. As activeness increased regardless of openness, the differences became salient; that is, the activists were different from each other. When comparing chronic activist publics (CCAt and OCAt) and situational activist publics (CSAt and OSAt), lifestyle related to the crisis and use of traditional media were significant in CCAt and OCAt, respectively. Involvement recognition in CSAt was significant, as were all situational variables, age, and income in OSAt.

The chronic publics are delayed communicators because of the absence of a solution, and the situational publics are people who try to find solutions within a short amount of time (Kim, [42]). Therefore, situational variables – especially high levels of problem recognition, involvement recognition, and referent criterion, along with low levels of constraint recognition – are more influential predictors than other objective variables for those actively engaging in communicative actions to find solutions faster than other publics. Focusing on how to decrease problem recognition, involvement recognition, and referent criterion, and how to increase constraint recognition, will help crisis managers or public relations practitioners implement more strategic and effective crisis communication (Kim et al., [45]).

This study confirms the importance of involvement recognition for public-segmentation theories and provides meaningful new insights into crisis communication in a digital era. As 'involvement cannot be used indiscriminately' to segment publics, the involvement variable is useful for communication researchers and practitioners to distinguish active and passive publics (Grunig, [24] , p. 213).

Through confirming statistical analysis using multinomial logit regression analysis, this study demonstrates how involvement recognition functions to distinguish active publics from others. Involvement recognition was statistically significant in all types of situational publics – including CSAt, OSAt, CSA, and OSA – but not for chronic or dormant publics. In crisis communication, involvement recognition may be the most important of the situational variables for communicating with the activists. In the digital era, activist groups' behaviours have the most strategic potential in crisis communication because their voices can initiate a crisis (e.g., online flaming as a form of cyberactivism) (Kim & Kim, [37] ; McHale, Zompetti, & Moffitt, [60]).

Also, the digital media environment that includes social media can affect whether publics become more involved in the crisis, as these active communicators provide information, criticize, or support an organization (Coombs et al., [17]). Theoretical frameworks for media activism have been suggested in the changing digital environment. Considering situational variables – especially involvement recognition – can provide the theoretical building blocks to identify, predict, and explain how the activist groups arise and take communicative actions in crisis situations.

6. Implications

As a practical implication, this study demonstrates how easy and powerful the summation method is for public segmentation. Public segmentation researchers have tested and suggested the summation method (Kim, [34] ; Kim et al., [47]) to help public relations practitioners have a simple and accessible tool based on a theoretical framework. For the segmentation of aware and active publics who are

important in crisis communication, however, the method has yet to be applied. This study shows how the summation method could be applied easily and affordably to identify such publics in accordance with the segmentation criteria that the different publics be 'mutually exclusive, measurable, accessible' (Grunig, [24] , p. 203). Using CAPS, crisis managers can use the summation procedure for public segmentation to predict different characteristics of the publics in a crisis situation, as well as implement more specific strategies/tactics for each strategic subgroup (Kim et al., [40]).

In addition to methodologically and theoretically extending the public segmentation research to crisis communication, the current study also creates better understanding of aware or active publics in CAPS, using a quantitative perspective. The results of this study can help crisis managers predict how key publics arise and how they communicate in a crisis, allowing them to implement more precise crisis communication response strategies. The synthetic approach of intertwining cross-situational and dynamic or situational factors corroborates how publics' situational perception and cognition can predict communicative behaviours in terms of time, openness, and activeness as STP and STOPS assume (Kim & Grunig, [36]).

Further, this study found that cross-situational variables like demographics can alter the effects of the situational variables on communicative actions. No individual situational variable for the chronic activists, including CCAt and OCAt, was a significant predictor. Future research using CAPS needs to be done to generalize the results.

Moreover, since current crisis communication theories – especially Benoit's ([3]) image repair theory and Coombs's ([11]) SCCT – are limited in explaining how different publics respond to a crisis, this study contributes to practical development of crisis communication by providing crisis managers with a better understanding of the key publics (Liu, Jin, & Austin, [56]). Since the best way to manage a crisis is to prevent one, this study can aid crisis managers in how to reach key publics and how to make more effective crisis communication strategies by understanding and better communicating to key publics.

7. Limitations and suggestions for future research

There are some limitations to this study, and topics that should be addressed in future research. First of all, this study used a convenience sample and an online survey. The questions about demographic information did not measure nationality. Also, the samples on MTurk were drawn from those with technical proficiency and access to technology. This may influence the overall results of the study. Future research should use refined questionnaires and be conducted with a broader range of samples via mail or phone interviews.

In addition, this study did not directly measure participants' actual behaviours but rather measured their hypothetical actions in a crisis situation (Kim, [42]). The behavioural intention in three-dimensional variables, information acquisition, selection, and transmission, can be an antecedent to an action and predict behaviours (Fishbein, [20]). However, such a behavioural intention may not exactly predict publics' behaviours in crisis communication because there is the temporal gap between intentions and actions, leading to the possibility that people may act based on the nature of the threat, rather than intentions, in a crisis situation (Obhi & Haggard, [67]).

Future research also needs to address a variety of crisis situations. This study dealt with only one crisis situation – an airplane crash – which cannot generalize key publics' behavioural characteristics to all kinds of crises. In addition, this study did not consider other factors – including crisis history and the organization's prior reputation – which can influence effective crisis communication (Coombs et al., [13]). Since a favourable pre-crisis reputation helps an organization protect its reputation during crises, prior reputation should be considered in future research (Claeys & Cauberghe, [8]). Also, cultural issues are important factors influencing publics' communication behaviours (Wertz & Kim, [82]). Cross-national analysis of the eight types of publics in the same crisis situation should be considered for future research.

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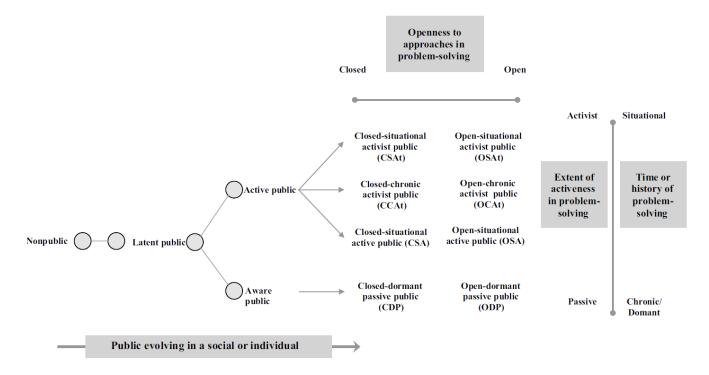
Figure 1. Illustration of the public evolving from three key problem-solving characteristics. Adapted from 'Classifying publics: Communication behaviours and problem-solving characteristics in controversial issues' by L. Ni and J-N. Kim, 2009, International Journal of Strategic Communication, 3, p. 221.