ABSTRACT

Title of Thesis: THE COMMUNICATION SOLUTION FOR ATTENTIONAL BIAS AMONG PROJECT DECISION LEADERS DURING CRITICAL INCIDENT STRESS PHASE OF CRISIS

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This research addresses barriers and solutions to crisis communication challenges based on existing crisis communication theories. The theories highlighted and expanded upon are integrated crisis mapping theory (ICM) and situational crisis communication theory (SCCT). Using these two theories, a new theory, attention crisis communication theory (ACCT) is postulated as a solution for attentional bias. Attentional bias is observed in crisis management teams during the onset of the critical incidence phase or at the beginning of a crisis trigger event. Other theories including real options decision theory and networks theory are considered and discussed as potential alternatives to ACCT.

THE COMMUNICATION SOLUTION FOR ATTENTIONAL BIAS AMONG PROJECT DECISION LEADERS DURING CRITICAL INCIDENT STRESS PHASE OF CRISIS

by

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1 Introduction

Attentional bias refers to how a person's perception is affected by selective factors in their attention (focus). It is defined as the tendency to believe—possibly erroneously—that there is a relationship (correlation) between two or more variables when instances of both are simultaneously observed, and that more attention is paid to this condition than when only one of the variables is present and the other variable is absent.

Attentional biases may explain an individual's failure to consider alternative possibilities when occupied with an existing train of thought (Baron 2008). It may explain an individual's failure to consider other explanatory variables or conditions. The question posed in this thesis is the role of attentional bias in crisis management, and how its effects can be mitigated. **Attention tension** refers to mental or emotional strain in the direction of focus, which typically comes as a precursor and as it relates to attentional bias.

The literature survey is limited to the past thirty years. Most researchers have focused on framing crisis management by examining case studies of industrial disasters. These studies are more descriptive than if they had focused on building organizational theory or focused on "accidents" instead of crises.

This thesis bridges this gap by shifting from analyzing a crisis constitutionally to an event that has a certain beginning and end. It analyzes a crisis from a process perspective by focusing on the human factors that influence crisis management and communication. Several questions are answered in this paper. One is the frequency in which project leaders take accountability during the critical incident stress phase of a crisis. The hypothesis is that it is not often. A more pertinent, second question is how frequently do project leader emotions get put aside for speedy resolution during the crisis incident stress phase of a crisis? The hypothesis is that it is often. Third question is whether or not a relationship exists between the stress project leaders face

during a crisis and how fast they move towards project completion by swiftly making a concrete crisis management plan? The hypothesis is that there is a statistically relevant relationship. Is attentional bias common for project leaders during stages of crisis management from the critical incident stress phase to the management phase? The hypothesis is that it is common. All the hypothesis are suggested to be true.

When a situation develops into a crisis, pressure becomes intense for the project decision leader. Crisis theory has evolved from analyzing natural disasters in the 1960s and 1970s to analyzing complex crisis events such as terrorist attacks, plane crashes, power network outages, and national economic meltdowns. The ramifications of these crises can be felt for decades. Proper analysis and quantification of these events are crucial as commerce becomes more globally interconnected.

Real options and networks adoption will be discussed within the framework of decision-making under uncertainty during a crisis. The aim of this part of the research is to tackle decision making and communication by perusing the crisis theory literature and adding crisis management communication theory. Real options and network solutions will be related and limitations in current research highlighted. The aim is to propose new approaches and suggest room for improvements.

The research presented focuses on human factor aspects required for change to transpire during a crisis trigger event or the critical incident stress phase of the initial onset of a crisis. More specifically, as crisis management deals with pre-crisis (prevention and preparation), crisis response, and post-crisis stages; this paper will focus on the first two of these aspects.

2 Literature review

Benson (1988) was the first to propose a situational approach to crisis management. He challenged scholars to understand how crisis type influences response strategies. The research later evolved to classification of different organizational crisis types without providing crisis solution strategies (Fearn-Banks, 1996; Lerbinger, 1997; Coombs & Sherry 2002).

Crisis clusters or crisis groupings of similar likeness were first proposed by Coombs and Sherry in 2002 and were divided into three categories of victim, accidental, and preventable. The prior two indicate the organization is not at fault for the crisis. Either harm is inflicted on the organization and its stakeholders or accidentally harm occurs from the organization to outside stakeholders. The latter indicating the organization is at fault when it comes to admitting culpability or protecting stakeholders.

Crisis management is a specific type of change management meaning the collective term for approaches to support individuals, teams, and organizations in making organizational change (e.g. technological evolution, process reviews, crisis). In literature, change management can relate to structural aspects or human reactions required to plan for or learn from change. Crisis communication and management after an outbreak or crisis onset will be analyzed at the internal stakeholder level (hierarchical managerial levels and horizontally across crisis management teams).

The literature refers to six stages of crisis management: 1) warning, 2) risk assessment, 3) response, 4) management, 5) resolution, and 6) recovery. The present review focuses on steps three through five. One parameter for this paper framing the four hypotheses is the speed for which change (crisis response) takes place. The second parameter is the degree to which a change transpires. This review focuses on short-term, immediate solutions for crisis management

resolution, not necessarily meant for implementation into an organization for longer term use (Boin and Hart, 2003).

Organizational psychology and crisis management literature is used to characterize how managers and teams perceive new decision-making contexts and what causes a different frame in managerial attention and tension. The literature has been limited to the past thirty years because typically researchers have focused on framing a crisis by examining case studies, which are typically more descriptive than focused on organizational theory, or focusing on "accidents" instead of crises at large from an organizational perspective.

In a similar, broader field of study, emergency management touches on the interplay among disaster stakeholders (people with an interest or concern during a given crisis). It largely concerns relations, information coordination of, and communication between governmental, private, emergency personnel, and public service organizations (Atkins, 2010; Kapucu, 2006; Vanderford, 2007) . Public and social media relations and the implications of technological systems are discussed in relation to inter-organizational networking, but not much emphasis is given to modes and quality of communication in disaster emergency management unlike crisis management research (Roux-Dufort, 2007). The information does touch on the recommendations that information should be distributed or communicated by the subject matter experts within the field, as that is seen to be the most effective and speedy during the recovery process (Heath, Jaesub, & Lan, 2009).

Early researchers such as Shrivastava (1993), defined crises as situations that require urgent decisions and include system restructuring and large impacts that are lasting. He stated that crises differ from emergencies in terms of time scale because they do not have a set beginning and end. Crisis effects can be felt years after an actual occurrence has taken place (e.g. global climate change, finance collapse of the automobile sector in 2009). Typically, a crisis also

has a concatenation of related events that appear on different time scales. For example, a water storage chemical eruption may affect IT servers in terms of temperature and rivers running through a city, but effects on humans in terms of cyber security and biological safety may take a bit longer to occur.

A crisis can be seen to have a long incubation process that suddenly manifests under the influence of a trigger event. Supporters of this approach defend the idea that crises develop in phases: warning signals, acute stage, amplification and resolution (Turner 1976; Fink 1986; Mitroff and Pearson 1993; Gatot and Jacques, 1999, Roux-Dufort, 2007). More specifically, crises are frequently compared to upheavals during which organizations lose the ability of making sense of the critical incident stress phase (Weick, 1993; Roux-Dufort, 2007). Coombs argued in 2007 that a crisis is an unpredictable event that threatens stakeholder expectations both internal and external to an organization and can seriously impact an organization's performance and generate negative outcomes. Extending the definition from the organizational to community level, a crisis can be interpreted as a situation when core values or life-sustaining systems of a community are under threat. In turn, a sense of urgency is induced and considerable uncertainties regarding the nature of the crisis event and its consequences occur (Boin, 't Hart, Stern, & Sundelius, 2005, pp. 2–3).

The term crisis has long been used to describe an unexpected event that threatens high-priority values of an organization, presents a restricted amount of time in which a response can be made, and is unexpected or unanticipated by the working organization (Hermann 1963). The term crisis has a special suggestion: that a system has been overwhelmed and outside resources and external coordination are necessary for effective response and recovery.

There should be a distinction made between crisis management and emergency management. The latter is the effort to plan and respond to inconvenient events that are termed

as emergencies and disasters– natural and man made. Crisis management is therefore the coordination of internal and external resources to a previously unanticipated event, an event surrounded by new uncertainty. The crisis is unlike any previous event that has transpired. The public sector typically includes the planning of anticipated events while the private sector includes unanticipated crisis events. With the world becoming more interconnected, countries such as America are more vulnerable to unpredictable human crises such as catastrophic human error, acts of terrorism, and greed (Van Wart & Kapucu, 2011). On the other hand, there are rare events of a large magnitude, which are extremely rare. Large, intense, dangerous events such as earthquakes, hurricanes, tornadoes, floods, or others can occur and render emergency systems inadequate, at least temporarily. Crises result largely from human error and human implications on speed and recovery.

Crisis management is, "a process designed to prevent or lessen the damage a crisis can inflict on an organization and its [internal and external] stakeholders" (Coombs 2004). There is disagreement on the effectiveness of different crisis management response strategies, such as apology, sympathy, or information (Coombs & Holladay, 2008; DiStaso et al., 2015). Effective crisis management encapsulates "society's ability to maintain critical social functions, to protect the life and health of the citizens and to meet the citizens' basic requirements in a variety of stress situations" (Olsen, Kruke, & Hovden, 2007). Its aim is to be a systematic approach for understanding and responding to large social problems such as "extraordinary stresses and losses, interference in complex and mutual dependent systems, or lack of trust in vital social institutions" (Coombs 2002; Coombs 2004; Olsen, Kruke, & Hovden, 2007). Future crisis infrastructure threats are not limited to specific areas, but stem from convoluted exchanges between economic, technological, social, and cultural factors. The main challenge to overcome

them will be the ability to organize and assign clear roles to different stakeholders at the international, national and local levels (Olsen, Kruke, & Hovden, 2007).

Crisis management as defined later by Van Wart & Kapucu in (2011), digs a bit deeper defining it as a special type of change management characterized by surprise or uncertainty in planning contexts due to unexpectedness or size of an incidence, short time frame, organizational threat, and criticality in terms of life-and-death consequences or organizational threat. Crisis refers to an organization being significantly damaged or being unable to respond effectively. During the crisis management process, decision leaders are surrounded by high levels of uncertainties and are characteristically unsure of what the steps will be to resolve the main issue(s). This distinguishes them from complex emergencies where past emergencies dictate future resolutions (e.g. fires, explosions). Typically, past experience provides little guidance to key project leaders as often in foresight different organizations aren't aware of which departments or individuals may be their partners for crisis resolution.

For effective crisis management, a crisis frame must first be identified. According to Coombs 2004 this is a two-step process. First, the crisis team needs to identify the crisis type. A crisis type is a "frame used to guide interpretations of the situation" (Coombs 2002; Coombs 2019). Crisis frames or types vary by the degree of crisis responsibility that is attributed to a given organization that is in question. This is identified as an order of magnitude not just by confirmation or not (Coombs, 2004). Based on literature, overall, there isn't just one manner of crisis management and that the proper form takes into account and depends on the environment as well as the crisis management team's emotional standing and concentration.

A crisis has three dimensions: political, functional, and time. A crisis can lie between vertical and or horizontal cross political boundaries, which would in theory make management and dissipation more difficult (Chisholm, 1989). The crisis can jump functionally from for

example privately being a water pollution crisis at a university to becoming public if the resolution is not handled at an adequate time frame. Another example is a cyber-attack going from a private space of being handled to the public being made aware of it through media channels. When crises jump functionally it proves to be difficult to resolve them swiftly because each sector has more than likely different operations and finances set up. Multiple infrastructure disasters have similar characteristics in that "they affect multiple jurisdictions, undermine the functioning of various policy sectors, escalate rapidly, morph along the way" and require rapid response under conditions of uncertainty (Ansell, Boin, & Keller). For time, a crisis has a definite beginning and end, but swift resolution is sometimes not feasible.

Trust is seen as the base pillar by many researchers such as Patrick Lencioni (2002) in organizational psychology when an institution is functioning during normal periods. To diminish stress levels and improve and reduce team dysfunctions a team within an organization must establish an air of trust, which then theoretically progressively leads to productive conflict, commitment to solution creation by involved members, and finally group accountability and productive results. As seen in communication crisis management cycles of escalation, rigidity, and distrust impair the development of feasible solutions. The natural tendencies to turn to threat-rigidity and escalation cycles must be combated. Threat-rigidity meaning escalation tactics with competing interests during internal crisis communications between departments or infrastructure sectors may lead psychologically to a "fight or flight" response during the high stress situations. This can lead to impaired cognitive abilities for creative problem solving (Stubbart, 1987). Coercion or forcing techniques are as a result attempted, which are counterproductive as well to crisis management, negotiation, and solution generation (Holmes & Fletcher-Bergland, 1995).

2.1 Barriers to crisis management

A good portion of crises result from human error. Research shows that as much 80% of airplane accidents are due to human error (pilots, air traffic controllers, mechanics) (Van Wart & Kapucu, 2011). There have been devastating human error accidents, which are a portion of crises in the past three decades that were technologically related, with human errors at the source. The 1986 Chernobyl catastrophe, the 1989 Exxon Valdez oil spill, the 2014 Heartbleed security bug in OpenSSL cryptography are a few (Van Wart & Kapucu, 2011).

It should be noted that the flexibility and waiting for information communication approaches can both be costly in terms of operating costs initially during crisis management. It is postulated that if more information is gathered and by focusing on one variable at a time versus multiple at once, an organization or crisis decision leaders can utilize resources more effectively and efficiently. This is in terms of time management and therefore can resolve a crisis possibly in a shorter amount of time (Bennet & Driouchi, 2012). Taking from research on a national level based on case studies, in a cross-boundary, interjurisdictional, multi-infrastructure crisis, distributed sense making through communication, networked coordination, surge capacity, and formal scaling procedures are crucial.

During a crisis, project decision leaders are surrounded by uncertainties and are characteristically unsure of what the steps will be to resolve the main issue(s). This distinguishes crises from complex emergencies where past emergencies dictate future resolutions (e.g. fires, explosions). During a crisis, past experience provides little or no guidance to key decision players as often in foresight different organizations aren't aware of which departments or individuals may be their partners for crisis resolution. The common denominator between all crises regardless of size is that judgment becomes crucial (Topper & Lagadec, 2013).

Psychologists have argued that anxious individuals, which tend to be project decision leaders going through the critical incidence stress phase of a crisis first tend to prioritize threat stimuli during early information processing and direct their attention away from threats in more strategic stages of processing. This is during response, management, and resolution part of crisis. This correlates with the vigilance-avoidance pattern, which is when one initially directs attention to threat or crisis in this case, however, then proceeds to avoid processing details and information in order to avoid an anxious state of mind.

In essence, attentional bias is the human brain's cognitive bias that causes an individual in a state of anxiousness to avoid information at first. Then when attempting to analyze an overwhelming amount of information, an attempt to analyze multiple variables at once in attempt to find a pattern or relation transpires.

2.2 Traits that influence a crisis

Thompson 1967 stated that trust, communication, and speed are crucial factors in attempting to create swift resolutions. He defines mutual adaptation as when multiple sectors have to respond in real time to a complex crisis that involves multiple individuals or organizations.

Analytically, the crisis management and communication literature reviews how to create reliable performance for individuals during normal operations, but barely touches on factors that produce reliable performance across a network of individuals. This is because most organizations are unaware of which individuals may be their partners in a multilevel or cross boundary crisis. It is not discussed how trust is difficult to initially build during the onset of a trigger event when a crisis management team is being formed or assigned.

Communication among a network of individuals that is rallied for creating a swift crisis management solution for the first time will be strained or at best difficult to manage. This is even if an individual had experience in other crises, since a crisis is marked by an event that is unlike any other. Colocation could potentially make the management task easier, but within larger organizations the crisis management team typically is not sitting within the same department or office. Speed is another obstacle to crisis resolution during most crises. Even within a single organization there is an endless stream of information.

Technological management systems are typically employed when companies go through a 'sudden' financial crisis before other organizational sections are affected. Tensions within the organization across managerial lines appear because systems focus on needs of the whole company versus focusing on different levels of the company.

The barriers to crisis communication appear to be (1) late 'elucidation' of the crisis until a major financial burden or change is felt and a form of ignorance across project leader lines, and to the team assigned at the onset of a crisis trigger event. (2) The high uncertainty and ambiguity which always surround the critical incident of a crisis and influence communication and resolution. It is in this manner and topic during the crisis management process that the project decision leaders and team assigned surface the need to decipher the meaning, messages, and root cause behind the crisis events. This in order to move past rigidity and move into crisis competencies previously mentioned such as flexibility and speedy decision making when appropriate.

2.3 Competencies in Project Decision Leaders during Stress Phase

Specific traits are needed in internal stakeholder project leaders to aid swift crisis resolution. In the literature, traits that aid decision leaders or managers in leadership positions

during off crisis managing include decisiveness, resiliency, energy, willingness to assume responsibility, personal integrity, and emotional maturity. Communication skills have been mentioned, along with the ability to influence and negotiate, technical competence, analytical aptitude, and the eagerness for continual learning. Task-oriented behaviors such as problem solving, informing, delegating, monitoring and assessing work, and operations planning are also critical. People-oriented behaviors such as consulting coworkers, planning and organizing personnel, motivating, and team building are important to create speedy resolutions to steer the organization as a whole away from fear, frustration, and anxiety emotions during a major cross-boundary crisis, effectively steering away the crisis management team away from attentional bias.

In contrast, Van Wart and Kapucu (2011) frame crisis resolution competencies as change management skills that come up during crises. It was postulated by Kapucu in 2006 that traits like flexibility, communication, motivating, decision making, problem solving, and vision articulation appear during a crisis. It was also postulated that during a crisis, flexibility like behavior would arise to produce creative solutions. It was postulated that some transformational leadership traits would coincide with a crisis situation, but that they would largely differ. Similarities hypothesized were decisiveness, analytic ability, and self-confidence.

It should be noted that if threat-rigidity occurs in behavior and high-anxiety or high-defensiveness are triggered, much of higher cognitive functioning (aforementioned positive behaviors) that need to be gathered during a crisis will not function to the highest degree possible (Eysenck 2000; Van Wart & Kapucu, 2011).

Willingness to accept responsibility came up as the most frequently mentioned competency that was necessary in crisis resolution situations. Similarly, another real project leader stated that not all crisis leaders “are able or willing to adopt this proactive mindset [and] to adapt protocols on the spot... In a catastrophic event, some will seek or emerge to take on greater

responsibility, others will step-up if encouraged and guided, and only a few will resist" (Van Wart & Kapucu, 2011). This further supports the hypothesis that anxiety and fear tends to be the initial or natural response by some leaders in crisis scenarios at their onset. Challenges of rising to the occasion, sometimes too many fearing losing their job (Van Wart & Kapucu, 2011). Additionally, managers surveyed by the authors made comments about stress tolerance such as "catastrophic events require greater ability to work under stress," something much supported in the crisis management literature (Janis 1989; Edwards and Goodrich 2007; and Sylves 2008).

Flexibility and decisiveness along with willingness to assume responsibility came up as the top three competencies in respective order in emergency or disaster management according to experienced managers, which should translate to crisis management scenarios as well. Flexibility in mindset of the crisis leaders serve as solutions to the onset of crises. One experienced manager stated that 'leaders involved need to have a strong resiliency to recover from change. Many fall away from the overwhelming effects of a catastrophic event' (Van Wart & Kapucu, 2011). There are three primary responsibilities in a crisis. One being the need for calm, but 'strong' leadership according to literature. More specifically, crisis management leaders must exhibit self-confidence externally and have the resilience to cope with the trauma and exhaustion that normally accompanies prolonged events (Van Wart & Kapucu, 2011). Another second key responsibility that crisis leaders and decision makers need to have is the ability to make accurate decisions under severe resource and time constraints. This naturally correlates to the internal struggle created by the stressful uncertain conditions surrounding a crisis.

To explore the difference in attention and mindset between top decision leaders and line managers, a crisis aspect framework was proposed by Shrivastava in 1993, which consists of the 4Cs (causes, consequences, caution, and coping). "Causes" focuses on managerial attention that

stems from immediate failures that caused the crisis and the conditions which allowed for the failure to transpire. “Consequences” focuses on immediate and more long-term impacts of various issues and answers surrounding the crisis (e.g. damages). “Caution” measures what is needed to minimize the impact of a potential crisis, which most prescriptive crisis studies focus on, and lastly. “Coping” includes measures taken to respond to a crisis that has already occurred (e.g. management techniques). The 4C framework is interesting and applicable because it touches on the similarities and differences between top executives and line managers (i.e., crisis decision leaders and crisis team) in terms of the degree and direction of their attention when a critical incident stress phase of a crisis transpires.

Gladwin and Kumar (1987) proposed that during a crisis, communication typically is surrounded by an air of distrust and defensiveness, which may impair stakeholder abilities to adapt or adjust to each other’s actions. The crisis communication problem solving therefore takes longer than needed. The threat-rigidity response tends to lead to control centralization of the crisis versus creation of open collaborative communication, which would theoretically speed up crisis resolution. Distrust and blame tend to breed a lack of empathy between involved project decision leaders and hence more crisis management issues. The initial response of project leaders involved is to restrict information gathering and analysis, which becomes counterproductive to cooperative problem solving.

Focusing on enhancing top down communications during a crisis, operator decision making at the bottom of the managerial spectrum and vice versa can be more streamlined. This is because each organizational level has taken the time to gather information either internally within a team or externally to make sure that a crisis can’t be solved on a certain level before escalating an issue. The question becomes do teams typically move in shorter periods of time to resolve a crisis with minimal information or do they wait and gather facts over a certain amount

of time before taking action? Which is more effective in reality? The procedures either way during a crisis should at the least be unique to each organization, if not specific to internal teams on each level of an organization (e.g. C-suite, managers, operators). Information sharing should be subject to a system of real options analysis or game theory that is specific to organizational procedures (Helfat and Raubitschek 2000; Miller and Shapira 2004). This in turn implies that managerial and organizational structure play crucial parts in crisis resolution through communication during the critical incidence phase of a crisis. A crucial piece to consider is uncertainty modeling in the face of a crisis (Borison 2005; Miller and Shapira 2004), but will not be discussed in this literature review. Decision making in relation debiasing attentional bias will be across the organizational spectrum. The key point will be an organization's ability to harness information to create flexibility, so that resources can be sequenced, staged, or reversed easily in times of high uncertainty (Bennet & Driouchi, 2012; Bourmistrov & Kaarbøe 2017).

Research shows that when top decision leaders pay attention to internal information during a crisis, they are more likely to survive than ones that focus on external information or factors. Attention direction and communication methods employed need to be monitored at the beginning of a crisis because they set the tone and trajectory of the crisis solution. Imposing too many stipulations in terms of organizational controls may restrict flexibility and agility (Bogsnes, 2009; Bhimani and Langfield-Smith, 2007). Vertical communication in a hierarchical organization, even though formal under normal proceedings, under a crisis, information sharing needs to increase in speed and flexibility on a local and interorganizational level, but that can prove problematic and difficult to merge (Bogsnes, 2009; Meer-Kooistra and Scapens, 2008; Bhimani and Langfield-Smith, 2007; Frow *et al.*, 2005). With a strong hierarchy, typically operators and lower managers find it difficult to bypass formal control lines and at the same time

remain flexible during a crisis (as can be seen by the aforementioned TeleCo descriptive case study).

The literature suggests that by decoupling or loosely coupling attention from formal authority controls may enhance communication channels (Nyland and Pettersen, 1996; Høgheim *et al.*, 1989; Meyer and Rowan, 1977). The theoretical result being information on various levels of an organization architecture acquiring different intelligence, which later needs to be deciphered into useful and unuseful data. This is especially to be expected during a crisis (Bourmistrov & Kaarbøe, 2017).

2.4 Crisis communication theories

Various crisis communication theories exist. Two main ones are image repair theory (IRT) and situational crisis communication theory (SCCT).

2.4.1 Image repair theory

IRT assumes that organizational "image" (e.g. internal stakeholders) is seen as an asset and the organization aims to protect it during crisis situations. It assumes that the organization will take responsibility and attempt in any way to repair the standing image. Benoit later introduced fourteen specific response strategies that the accused organization could utilize during a crisis, but that will not be discussed within this paper. Timothy Coombs started working on SCCT in 1995. Originating from attribution theory, SCCT assumes that crises are negative events and that stakeholders attempt to attribute responsibility. Coombs believes crisis managers can employ different crisis strategies according to different crisis types through strategic planning prior to a crisis occurring in reality. "Severity and performance history have proven to modify perceptions of crisis responsibility for some crisis types" (Coombs, 1998; Coombs & Holladay, 1996, 2001). Coombs and the part of SCCT theory suggests that initial assessments of

crisis responsibility are based on crisis type and should be adjusted depending on severity in correlation to performance history.

2.4.2 Situational crisis communication theory

A critical part of SCCT according to Coombs 1998 is the relationship between crisis responsibility and organizational reputation. The objective of the SCCT is to evaluate the attributions of individual control or the organization's ability to control the event. Crisis responsibility takes on a central focus. Perceptions of crisis responsibility have proven to increase as attributions of personal control intensify. In fact, personal control and crisis responsibility may be so highly correlated as to merit treating them as essentially the same. The crisis response strategies should then lessen reputational damage by demonstrating that the organization genuinely cares for the victims and knows how to behave, therefore meeting public expectations (Coombs & Sherry, 2002).

The defensive-accommodative continuum is adapted from the work of McLauglin, Cody, and O'Hair (1983) who used the continuum to explain what people offer for their negative behavior. This framework should be applied first to the attention spectrum that surrounds a crisis namely from ignoring to defensive to speculative to collaborative. Then the crisis overall response strategies and the same spectrum can be applied. Crisis attention, division, tension, and bias should first be addressed when attempting to come up with crisis solutions or mitigation (Coombs & Sherry, 2002). Coombs (1998-2011) suggests that crisis leaders utilize progressively more 'accommodative strategies' as crisis responsibility increases, because perception of crisis responsibility is believed to be directly correlated to reputational damage.

According to Coombs (1995), "crisis attributions do matter as they shape feelings and behaviors toward the organization involved in the crisis." People commonly use three causal

dimensions when making attributions: stability, external control, and personal control/locus. Stability reflects whether the cause of the event happens frequently or infrequently. Organizational crisis responsibility should be perceived as strongest when the cause is stable (the organization has a history of crises), external control is low (controlled by others outside of the organization), and personal control/locus is internal (the crisis originates from within the organization). When a crisis event is repeated, the public should be more likely to attribute responsibility to the organization. Attributions that entail an internal locus/ personal control suggest that the organization could have done something to prevent the crisis. Coombs for SCCT argues that information about past crises is a significant factor that can affect perceptions of a more recent crises.

It is assumed that if a crisis is attributed to an organization that the organization will do everything in its power to solve the crisis as soon as possible because they have a duty to the public but more importantly realize that the longer the crisis persists the more resources and capital it will demand (Coombs, 2004). Coombs and other crisis experts believe that specific action plans or crisis management strategies can result from similar types of crisis clusters when identified (Coombs, 1995, 1998, 1999; Coombs & Holladay, 1996). Coombs proposes to create crisis plans in response to a given crisis, proposing to keep those crisis clusters in mind (victim, accidental, preventable) and proactively, prior to a crisis happening create potential crises management and response strategies.

What defines and separates SCCT from data is that external stakeholders need and want to know once a crisis hits. SCCT focuses on whether or not a company caused or created dysfunctional equipment by accident. Basic information on what happened needs to be addressed as well. Protection needs to be put in place for stakeholders involved and corrections must be made. The crucial point of mentioning instructing information is that a crisis manager or

response team in the beginning of a crisis may not know what information to take in or reveal to internal and or external stakeholders. This causes tension or in other words friction and strain. The relevance of high uncertainty and attention tension and attentional bias due to a crisis within an at fault organization must be discussed, which Coombs neglects to do in his research.

Coombs focuses on an organization's reputation and the effects the crisis has on it relating to three crisis response strategies, which he states are deny, diminish, and deal. An organization in response to a crisis can deny there is a crisis, diminish or lessen the negative attributes of the crisis, or deal within head on and work to produce a solution. This paper focuses on an accepted infrastructure crisis and frames potential manners on how an organization begins to or should respond internally. Management of an organization uses strategies to protect its reputation and works to rebuild legitimacy with external stakeholders during a crisis (Coombs and Holladay, 1996).

Trust is seen as the base pillar by many researchers such as Patrick Lencioni (2002) in when an institution is functioning during normal periods. To diminish stress levels and improve and reduce team dysfunctions a team within an organization must establish an air of trust. This then theoretically progressively leads to productive conflict, commitment to solution creation by involved members, and finally group accountability and productive results. As seen in communication crisis management cycles of escalation, rigidity, and distrust impair the development of feasible solutions. The natural tendencies to turn to threat-rigidity and escalation cycles must be combated. Threat-rigidity meaning escalation tactics with competing interests during internal crisis communications between say departments or infrastructure sectors may lead psychologically to a "fight or flight" response during the high stress situations, which can lead to impaired cognitive abilities for creative problem solving (Stubbart, 1987). Coercion or

forcing techniques are as a result attempted, which are counterproductive to crisis management, negotiation, and solution generation (Holmes & Fletcher-Bergland, 1995).

2.4.3 Typology for crisis communication: resilience-oriented communication

The difference between inner corporate crisis management decision making versus communication to the public has to be distinguished. Olsson (2014) proposes a two-dimensional typology for crisis communication. The first dimension concerning operational and strategic communication. Operational communication focuses on the critical incident stress phase of crisis and how to best provide direct communication with stakeholders involved and the public. It traditionally focuses on the distribution of relevant information about a crisis to those most affected in order for informed decision making to occur. As well, on pertinent, comprehensive information and emotional reactions instead of organizational survival or recovery. Strategic information communication on the other hand is often planned and aimed at achieving longer term organizational goals, influencing or cultivating positive perceptions among stakeholders, which will not be focused on in this paper (Olsson, 2014).

The second dimension focuses on the aims of reputation-oriented and resilience-oriented communication. Reputation-oriented communication, which is organization centered being sender-oriented communication, which aims to manage organization reputation aspects. Its purpose is to promote an organization's preferences and so it strengthens its legitimacy and credibility. The organization's reputation relates to internal stakeholder perceptions of the firm in its ability to produce services and its associated perceived quality. The organization's standing in terms of prominence in the minds of stakeholders is also connected to collective recognition and awareness; it exemplifies the quality of its innerworkings. The resilience-oriented communication focusing on the organizartion's ability to 'bounce-back' during or after a crisis

(Longstaff & Yang, 2008; Smith & Fischbacher, 2009). The resilience factor needs to be centered around the process of adaptability versus an actual outcome (Olsson, 2014). Related, community resilience builds trust as it is an essential component in creating effective crisis information collaboration, network formation, and public engagement (Dekker, Jonse, Bergstrom, & Dahlstrom, 2008; Hutton, 2012; Olsson, 2014).

Between the two intersections of the two dimensions discussed by Olsson (2014), the two categories of operational and strategic communications on the resilience end are important to note in relation to network creation. 'Operational resilience-oriented' category focuses on providing emotional support and creating a collective identity, which ensures a strong sense of responsibility among the crisis decision leader and team. This frame of mind helps to ease the cognitive load on the tasked leadership decision crisis team, which can seep into the general public (also known as external stakeholders) as well as a result once information is shared during or after crisis internal processing. This creates and provides positive, direct accountability within the organization that is associated or responsible for the critical incident stress phase of a crisis.

Crisis resolution can come as a proactive or reactionary approach, so in the face of uncertainty, which is best becomes a pressing question (Lin *et al.*, 2006). Literature agrees that tightening corporate controls and policies is a tendency after the signaling of a crisis has been set by internal or external stakeholders (Czarniawska-Joerges, 1988). Whether this is true for other types of crises remains uncertain. The downside of tightened controls is that organizations can lose agility, flexibility and dynamics and take managerial attention away from emerging opportunities (Bogsnes, 2009). The literature argues that over time during a crisis, an organization needs to loosen controls in order to maintain flexibility.

Crozier & Friedberg (1995) showed that the analysis of team decisions, which includes crisis leader decisions are most often treated under the label of game theory (for multi-

infrastructure crises). This simple (real options) decision theory, which could potentially work as a mathematical quantitative basis for single independent crisis. From the standpoint of game theory, most of the problems treated in decision theory are one-player games (or the one player is viewed as playing against an impersonal background situation). In the emerging field of socio-cognitive engineering, the research is focused on the different types of distributed decision-making in organizations, in normal and abnormal/emergency/crisis situations. Overall, the field of judgment and decision making has evolved to one with "numerous models that entail precise formal descriptions of the cognitive mechanisms involved" (Marewski, 2018).

This is why what is obtained as knowledge learned during past crises have limited to no value for improving future crisis management issues. A crisis requires a specific context and special decision making. Some decisions such as crisis resolution creation decisions pertaining to information sharing and communication in general between multiple groups across managerial lines are difficult because of the need to take into account and somehow model how internal and external stakeholders in the situation will respond to the decision that is taken. Real, accurate options in terms of potential decisions to take would need to be modeled during or somehow accounted for prior to a crisis.

Coombs (2006) uses a subject pool of undergraduate communication students who are interviewed to see how crisis clusters would be grouped. That isn't a relevant subject pool as that is typically a group not knowledgeable on the topic of crisis clusters, management nor their implications for internal or external stakeholders. Instead it is proposed that for crisis management research to expand legitimately, a pool of organizational employees on various managerial levels (crisis management decision leaders and executives) as well as operators should be interviewed at companies that have experienced and have managed to come out the

other side of a crisis in a positive manner (i.e., the organization did not shut down or going bankrupt). This should especially be the case in the future when evaluating the internal stakeholder crisis response time, delay factors, and solution strategies.

The limitations on crisis management communications research are that evaluations do not happen in actual industry settings, are based on limited information, and don't show personal experiences or situational circumstances. The research is largely aimed at imaginary scenarios. Since typically the main goal of studies are to figure out the relationship of the measured constructs and not external validity, some mentioned limitations seem acceptable, but still need to be explored in depth regardless.

3 Results

Four results emerge from the literature regarding the critical stress incident stress phase of an organization in crisis. Several questions are answered within this body of research.

One is the frequency in which project leaders take accountability during the critical incident stress phase of a crisis. The hypothesis is that it is not often. As seen by the literature review, organizations tend to take full responsibility only when attempting to resolve a novel crisis if they are the at fault entity. The reaction time of organizations and decision leaders may be slow as they attempt to mobilize and create an execution or resolution plan during a crisis. Formulating a crisis leadership team that is tasked with creating and implementing solutions is done first, followed by resolution creation and actions. All this transpires typically after the critical incident stress phase of a crisis.

A more pertinent, second question is how frequently do project leader emotions get put aside for speedy resolution during the crisis incident stress phase of a crisis? The hypothesis is that it is often. According to the literature survey, altered emotional states, a crisis decision leadership team will exhibit and become victim to attentional bias during the process of finding a crisis response solution (response stage). If they manage to avert attentional bias, this is by accepting personal control (while accepting and putting aside personal emotions) and assuming full responsibility.

Third question is whether or not a relationship exists between the stress project decision leaders face during a crisis and how fast they move towards project completion by swiftly making a concrete crisis management plan? The hypothesis is that there is a statistically relevant relationship. The crisis management leader or decision maker's response will be delayed and

fractured across managerial levels hierarchical and horizontally because the crisis management team as a whole and on the individual contributor level will enter an altered state (anxiety, fear frustration, anger), slowing down response and resolution time.

The last question that arises is, whether or not attentional bias is common for project decision leaders during stages of crisis management from the critical incident stress phase to the management phase? The hypothesis is that it is common. To avoid attentional bias and repair crisis management communications, flexibility in engineering by way of real options decision making and network structure adoption can serve as a suitable combination solution strategy. Typically high intensity emotions surround the critical incident stress phase of a crisis and so attentional bias ensues. Whether the crisis project decision leader assumes crisis responsibility fully and quickly decides how quickly attentional bias or resolution takes place.

4 The proposed Attention Crisis Communication Theory approach

The proposed Attention Crisis Communication Theory (ACCT) approach is an extending decision and awareness level tree. Depending on the severity of a crisis, a myriad of emotions and crisis responsibility acceptance levels or lack thereof can arise. From these variables a certain level of personal control for the entity (decision leaders) in question arises from their interplay. From there, emotions may arise that lead to resolution of the crisis or attention deviation or tension can occur, which if gone unchecked leads to attentional bias during the crisis. Real options filter into crisis severity level either aiding or weakening the crisis resolution creation process.

The emotional energy surrounding a crisis leads decision leaders and stakeholders to frustration (e.g., fear, anxiety, anger, resentment). This impedes cognitive processes, which in turn creates psychological biases among which is *attentional bias*. Attentional bias is the tendency to believe that there is a relationship between two or more variables when instances of both are simultaneously observed, but otherwise ignore relationships with other variables even though those may be relevant and important.

4.1 COVID-19 example

We use the COVID-19 crisis in the US Government as an example. The COVID-19 outbreak created confusion and frustration at first between the Trump administration (federal representatives) and state governments. It had to do with how early warning signs from federal intelligence agencies (federal decision makers) were interpreted (accepted or disregarded). When the first COVID-19 patients started showing up in Washington state. Federal and state decision makers had to decide between stopping international travel from China or bringing back international travelers that come for business, which could import the COVID-19 virus.

Attentional bias arouse in the U.S. by Trump deciding to pre-maturely stop the air travel from China compared to Western Europe governments. The attentional bias arose because China and the U.S. were in an economic dispute, so Trump had to decide between minimizing COVID-19 spread and a negative economic impact. The inherent stress surrounding the crisis restricted attention and created tension. This tension among government federal agencies (and Trump administration) and state governments led to attentional bias. The resulting bias caused cognitive rigidity (Holmes & Fletcher-Bergland, 1995) and an ineffective ability to deal with the crisis.

IRT and SCCT have been suggested as ways of thinking about attentional bias in crisis situations like COVID-19 (see section 2). Different from IRT or SCCT, however, we propose an audience-oriented (i.e., external stakeholders) theory, which focuses on stakeholder perceptions of crisis situations, this is ACCT.

4.1.1 Pre-existing information

Coombs in arguing for SCCT says that information about past crises is a significant factor that can affect perceptions of a current crisis. For example, Trump's initial reaction to COVID-19 in the US was affected by seeing results in Asian and European countries and eventually deciding to make his own flights restriction policy with regards to stopping flights from China (which slowed the business economy and COVID-19 initially). This reaction can be related to emotional upheaval when the crisis is attributed to an organization or entity that consists of decision leaders. They have to act quickly in times of crisis such as COVID-19.. Attentional bias may cause an environment of attention tension (e.g., state governments initial fear of not having enough resources from federal sources (within the U.S. when the first state COVID-19 cases started to arise and spread).

Attentional bias arises during a crisis due to the urgency and desire to produce a solution quickly by only thinking of relations among variables which have already been assumed. This limits the opportunity for stakeholders to rely on trust-based relationships suggestive of other correlations among factors (Moynihan, 2008). This is because the environment surrounding a crisis is high speed, so decision leaders don't always have time to link with or get advised by trusted, preconceived, established relationships. Quick decision and action is of the essence. According to Muller & Hillyard (2000), prior trust-based work relationships ease attention tensions (i.e., Trump's formation of new COVID-19 U.S. response team). However, in a crisis prior trust-based work relationships are not always easily invoked as there may be external stakeholders to be considered as well as internal stakeholders. This affects trusting relations again because quick decision making is key during the critical incident stress phase of a crisis. Coordination efforts may be difficult as anxiety and attention tension may surround the crisis management team, but in time with relationships strengthened and with increased coordination, attentional bias is lowered. An example would be daily press releases from COVID-19 decision federal team tasked in the U.S. trumps quick action on creating the crisis response team delegated what other federal agencies or he couldn't do on his own as president. A quick federal task team branching and delegating approach was critical during the onset of COVID-19 in the U.S.

Attention tension and the resulting attentional bias may be alleviated over time as the crisis management decision leader team regains control (e.g. establishing a COVID-19 crisis response federal team). The blame assigned by external stakeholders (i.e., public, state government bodies during COVID-19 outbreak) influences the response of the organization at fault (i.e., Trump's slow mobilization response), internal attention (i.e., federal government during), and public relations (i.e., state governments and the public during).

4.1.2 Crisis communication

The role of crisis communication in relation to project leader decision making is an important factor that has yet to be explored in the difference in crisis handling among governing bodies and the role of crisis communication in relation to decision making (i.e., how effectively and efficiently Trump and the federal government handled the COVID-19 outbreak). It is postulated that a majority of skills and traits combined would serve as a constructive solution to the erratic response by project leaders during the initial stages of a crisis (i.e., initial response during COVID-19 critical incident stress phase by Trump, federal, and state governments).

4.1.3 Decisiveness and analytical ability

Decisiveness and analytical ability are behaviors that may arise during a crisis to combat attentional bias. A separate issue is self-confidence (i.e., Trump's creation and mobilization of crisis response teams). Self-confidence can be a deterrent or an aid in resolution creation by provoking attentional bias or not. It is postulated from the literature that there will be a lack of self-confidence in crisis decision leaders due to their fear, anxiety, and frustration. Crisis situations are characteristically novel (i.e., COVID-19 outbreak), so they evoke strong, sometimes negative emotions. Quick decisiveness, analytical ability, solution generation some dampen or eliminate attentional bias.

It is presumed that pressure to respond to external stakeholders (e.g., the public) causes attention tension, competing demands, and hence attention bias. Trust has to be established among stakeholders both internally and externally, and across teams vertically and horizontally to maintain an organization's credibility. This, too, is a stress factor. It is important to note that part of the solution to reducing attention tension and the cognitive attentional bias associated

with it would be to create trust among parties within the organization (i.e., between federal agencies, state governments, and the public during the COVID-19 crisis).

4.1.4 Debiasing attentional bias

By focusing on option-based decision making—specifically, "wait and see"—mixed with reversible commitments, organizations can enhance strategic planning. By combining option-based decision making with debiasing attentional bias, organizations can gain information at each stage of dealing with, and solving a crisis. Specifically, by debiasing attentional bias (the focus on multiple variables at once versus each one separately), flexibility in decision making can be utilized and exploited (Bennet & Driouchi, 2012).

Debiasing is the act of reducing the effects of a bias with respect to decision making and judgment or discernment. Debiasing or preventing attentional bias or even before that attention tension by creating creative, decisive resolutions even among the calamity of the critical incident stress phase of a crisis. A real-life example of this is the Trump administration taking the lead to create and delegate the COVID-19 federal decision leader task force to handle or dampen the spread of the virus within the U.S.

Flexibility in management theories are not discussed by Coombs. It is postulated that if an organization maintains a flexible response to using existing financial and management resources, that when a crisis does occur, a flexible and adaptable method can be implemented in response (i.e., the Congressional stimulus package). In this case, attention tension and bias will be less likely because the organization has proactively planned and prepared. Similar to what Coombs postulates, a crisis portfolio would thus be created in advance.

4.2 Limitations to the SCCT approach

What Coombs failed to discuss is how each crisis type relates to or is different from crisis clusters (macro level). Cluster on a macro level meaning people or things occurring closely together with regards to a crisis situation. It is important for leaders to preemptively prepare real options for effective crisis management. Real options preparation in decision theory relating to tangible assets for judgment. A decision can occur to defer or wait, act on, or ignore (abandon) a crisis. This thinking pattern, discernment, and decisive actions taken would theoretically alleviate attention tension, which in turn lower or eliminates attentional bias.

4.2.1 Use of social media

Coombs and Olsson argue that social media can be used by an at fault entity (e.g., government agency, organization, company) directly when notifying the public of a crisis instead of relying on news media outlets to decide what information is worthy of publishing. A problem with this work is that nothing is said about the emotional upheaval within the at fault entity of a crisis (internal stakeholder emotional reaction) prior to the decision to distribute information to the public. ACCT proposes to bridge this gap. If decision leaders decide to firmly own up to crisis responsibility, in turn personal control is accepted and therefore attentional bias is lowered or eliminated according to ACCT.

4.2.2 Crisis communication

The important transition is the need to shift crisis management literature from a ‘strategic reputation-oriented’ communication approach to ‘strategic resilience oriented’ communication. Meaning switch from strategic reputation protection focused communication to bouncing back reputation wise internally for the at fault entity or head crisis decision leaders. In this manner an at fault entity avoids attentional bias altogether and can recover from a crisis quickly/quicker.

Traditional crisis communication issues need to be addressed in relation to repairing the organization's reputation with the community. The direction on 'strategic resilience-oriented' communication focuses instead on learned information and sharing after the critical incident stress phase of a crisis.

It is argued that another dimension should be added to Olsson's (2014) crisis communication theory which is 'internal strategic resilience' communication. This form of communication would focus on the internal stakeholder network and crisis solution creations. This form of communication could be shared with the public and lower operator levels (i.e. public news communications from the federal COVID-19 task team and state governors during COVID-19). It would most likely sit at the intersection of the four dimensions discussed in Olsson (2014) as a way to combine embracing learned and process improvement communication during a crisis. It wouldn't solely focus on how to repair the at fault entity's reputation. By adopting a network systems approach or decision trees and the ACCT model, an at fault entity reputation can possibly be repaired and cognitive biases such as attentional bias can be avoided by the crisis decision leaders. This is because the at fault entity would assume crisis responsibility, so it would lead to positive crisis resolutions. Thereby mitigating or avoiding attention tension and therefore attentional bias (ACCT model, figure A).

4.2.3 Uncertainty in crisis management

Uncertainty is inherent in the sources of the crisis communication problem, the evolution of the problem, and its possible solutions. Coombs and Sherry (2002) identify eight crisis strategies, which are attack on the accuser, denial, excuse, victimization, justification, ingratiation, corrective action, or full apology. One precursor is missing, which is to synthesize information to direct their attention internally. Crisis decision leadership should only go to one

identified crisis response, which is corrective action (i.e. ACCT positive action flow through the decision tree, see figure A). Crisis decision leaders should try to minimize the impact of the critical incident stress phase by repairing the damage done by the crisis.

4.2.4 Protecting the organization's reputation

Past research has focused primarily on organizational communication methods and how they protect an organization's reputation during a crisis. Internal stakeholders and the divided attention of the participating parties is largely ignored. Coombs concludes that an organization would take full responsibility internally for a crisis if it affected the public, but doesn't speak to the psychological and physiological effects on members within the organization (internal stakeholders) to whom blame is assigned.

The speed and efficiency of crisis management methods is ignored. According to Coombs (2002), "SCCT is composed of three core elements:

(1) the crisis situation,

(2) crisis response strategies, and

(3) a system for matching the crisis situation and crisis response strategies."

Coombs forgets to include a primary step, which is the emotional and attention state of the organization itself on each crisis project decision leader level, which leads to the identification and characterization of the crisis situation and later crisis response strategies and network systems.

4.2.5 Crisis coordination

Intersectional and interjurisdictional coordination arise as challenges in crisis coordination even though that subject is not discussed within this paper. It should be researched further by academics and industry professionals. Inter-jurisdictional has horizontal and vertical

dimensions. Inter-sectoral proves to be a challenge because between sectors goals and priorities as well as logic of operations may differ highly between organizations or project decision leaders. Crisis resolution coming from a series of decisions or information sharing by various managerial levels is a gap in literature discussion. Information across managerial lines and system information sharing is discussed, but not individual decision making as it corresponds to attentional bias and how that relates to organizational crises. Let's not forget that a crisis also demands an excess amount of emotional energy for its participating parties (internal stakeholders). The role of emotions among internal stakeholders or decision leaders during a crisis has been little researched.

The crisis management theory from a process perspective, touching on the portions of a pre and post crisis sections provide organizations the opportunity for transformational growth if meaning and purpose can be extracted. The overflow of information and supposed meaning lead organizations to falter instead of taking direct action. It may explain the initial inaction by crisis management leaders or managers across vertical hierarchical lines. Meaning is made through cognitive, emotional and sociopolitical filters so that it can be understood and decoded by internal stakeholders. These filters act as normalization processes. It brings back the crisis event and its meaning. Putting the crisis into categories that are familiar and acceptable to the organization's internal stakeholders. A goal of crisis communication is for an audience whether it be internal or external to the organization which is going through a crisis to believe in it, its source, and credibility of the organization are important.

4.2.6 Trustworthiness and credibility in communication

Items such as trustworthiness and credibility come into play when judging a message during crisis communication. This emphasizes the "importance of choosing the right project

leader during in a crisis situation (Tkalac Verčič, A , V rčič, D., & C o bs, 201). Using a credible project leader has an effect on crisis communication outcomes (Yang, Kang, & Johnson, 2010). Researchers have tried to establish the relationship between the level of credibility and changes in beliefs, attitudes, and behaviors in audiences (Pornpitakpan, 2004), but they haven't focused on the emotional value and behaviors of the internal stakeholders during crisis management processes and how that affects public or (external) shareholder response to a crisis communication message.

4.2.7 Ambiguous responsibility

There are many crisis situations where crisis responsibility is ambiguous (Laufer, Gillespie, & Silvera, 2009) and that may lead to ambiguity about internal stakeholder and crisis team responsibility. A crisis leader apologizing to media and external stakeholders has found to have a more profound effect on protecting an organization's reputation during crisis as opposed to a spokesperson speaking for the organization. No investigations have been made into internal stakeholders and how more effectively can a crisis management team harness the power of all managerial levels, both vertically and horizontally to create a crisis response strategy faster and more efficiently. Tkalac, Vercic, & Coombs (2019) findings add to the body of knowledge in crisis communication and show that both organizational reputation and speaker reputation are influence the chosen response strategy. It may add anxiety to the crisis leaders if they are the spokespersons.

On the other side, the current literature results do not show a source effect. Even though an apology by a crisis decision leader leads to higher organizational reputation (in comparison with an official spokesperson's apology), the difference has not been proved as significant. The same is true when it comes to speaker reputation. This potentially confirms previous findings

that a crisis is perceived as a collective organizational problem instead of a crisis decision leader or CEO responsibility. “It seems logical, as those studies concluded, that the CEO’s involvement in crisis response gives [external] stakeholders a higher level of confidence and through this reduces the damage and negative reactions” (Pauly & Hutchison, 2005). The CEO seems to be “punished” more by the respondents for not taking accountability, but an industry case study or pooling of multiple CEOs that have experienced infrastructure crises must be researched.

Within Van Wart & Kapucu (2011) research study, which does take away from industry crisis management teams, the survey of the paper was carried out by only seventeen emergency management officials in the even though fifty-one surveys were sent out, which is a saddening response rate. Since the respondent rate was below thirty, the respondent rate is not a significant statistical sample size at least in the eyes of classical statisticians. As well, it did not include which levels of responsibility the officials were accountable for as an input factor to crisis response strategy, but only the number of employee direct reports was noted. Granted since emergency management is only loosely connected to crisis management (paper focused primarily on natural disaster emergencies), only a speculative connection can be made. From the limited response rate though, the average number of national disasters that the respondents participated in was relatively high (3.8), so the findings were at least partially valid.

4.3 Structure of ACCT

Ocasio (1997, p. 189) defined project leader attention, as noticing, interpreting, and focusing of time and effort by decision leaders “on both issues (the available repertoire of categories for making sense of the environment- problems, opportunities, and threats) and answers (the available repertoire of action alternatives, proposals, routines, projects, programs,

and procedures).” The federal team mobilized by Trump to help resolve COVID-19 pandemic attention illustrates how the concentration of attention is on the decision makers’ selectivity of issues and is answered by an individual cognitive process (Bourmistrov & Kaarbøe, 2017).

One postulates that competing demands between problems and solutions and the need to find quick resolution induces attentional bias in the crisis management leader as well as in the team. The organizational structure shapes the context of crisis management and resolution, for example, the way resources were allocated between the federally tasked COVID-19 team and state governments. The problem then goes from an individual (e.g., experts such as key engineers who adapted ventilator equipment or scientists who worked on vaccine trials) to organizational decision makers (e.g., federal technical team or scientists creating ventilators). Foresight and strategic planning prior to the crisis are necessary to create a response network or system (Bourmistrov & Kaarbøe, 2017).

Strategic planning was employed and tasks were delegated in a networked fashion during the critical incident stress phase of the COVID-19 pandemic according to reputable sources and articles. Engineers created ventilators, scientists worked on developing new vaccines, and federal government were able to communicate a plan of action to state governments initially to a degree. Whether the federal government mobilized a team quickly enough and delegated timely actions to avoid attentional bias has yet to be known as the crisis is still ongoing.

The role of emotions and the change of constitutional or environment perception is important. A crisis is not only characterized by high uncertainty but calls for a different type of understanding to draw conclusions and is facilitated by a number of intense emotions (e.g. fear, anger, anxiety, confusion, resentment, frustration) (Sayegh et al., 2004) according to SCCT and

IRT theories. To comment on a decision leader's (e.g. federal appointed COVID-19 task force or team) or individual operator's (e.g. local state expert engineers and doctors) mindset during a crisis, it can be said that during non-crisis operation times, uncertainty runs typically of a normal scale. This familiar zone of typical operations (non-crisis time periods) or familiar amount it can be stated that the situation deals with "comfort zones.". Meaning that if the work situation and a person's mindset are congruent with a work action, appropriate behavior will occur (i.e., federal COVID-19 task team mobilizing state level doctors and engineers with resources to speed up COVID-19 resolution and turn it from a national crisis and pandemic to a nonthreatening virus that is cured through a ventilator or vaccine to sick individuals). On the other hand, if there is a high intensity situation and it is characterized as the critical incident stress phase of a crisis (i.e., first 24 hours of COVID-19 outbreak in the U.S.), then a project leader or organization as a whole will be forced to act in accordance with comfort (i.e., some of the first COVID-19 victims still traveling to meet others; not following now established self-isolation or seeking immediate medical help with new guidelines). Decision project leaders (or organization as a whole) will be forced to generate new ideas and be innovative. The organization will be forced to move out of comfort into creation, where the typical mindset and behavior have to change and adapt to the new crisis situation (i.e., public in each state following federal government communicated social distancing rules). This can either be positive in the generation of solutions or can be negative, causing attentional bias if anxiety increases within the crisis management team further affecting the organization experiencing the infrastructure crisis as a whole.

Attention crisis management theory (ACCT) focuses specifically on managing crisis communications to address attentional bias and attention tension at the onset of the critical incident stress phase. The flow of ACCT is gathered from, related to, and expanded upon from

SCCT and IRT. According to SCCT and IRT the internal stakeholders have personal control relating directly to crisis responsibility, but it can be argued that personal control has an arrow going to and from in relation to emotional or psychological states and attentional bias (Figure A).Those then relate to crisis responsibility. Also, the severity of a crisis may be an inlet or arrow to personal control and crisis responsibility because the severity of the crisis may influence subjective thoughts on personal control over the situation and emotions leading to deviations in attention. Cognitive dissonance, confusion, or indecision due to the uncertainty surrounding the crisis occur within organizations during the critical incident stress phase (i.e., the federal government and tasked crisis force, state governments, and the public including seasoned, expert engineers and scientists during the initial first three months of the COVID-19 crisis and outbreak or pandemic within the all being confused on the best course of action to take to resolve the crisis and pandemic). During a crisis some of the key resolutions are achieving organizational restoration (initial operational capacity back) and learning (experience or knowledge gained from navigating through a crisis successfully).

Instead of focusing on the situation and which stakeholders assign blame, the focus during crisis characterization and management at first should at least be on engaging the crisis management decision leadership team and delegating hierarchically effectively from an emotional standpoint individually and focus on their attention direction and breadth, so as to downsize on or prevent attentional bias and negative attempts to assign blame (i.e., federal government and state governments working together to get rid of COVID-19 quickly and effectively by taking a positive effort to mobilize and equip engineers and doctors across the to aid the public versus political arguments between the federal and state governments with the U.S.). Efforts should be focused on minimizing uncertainty among the initial chaos as much as possible thereby reducing

crisis severity by evaluating real options on an organizational level and simultaneously loosening communication channels (from a hierarchy of communication standpoint depending on management and influence level) and attention during a crisis to speed up crisis resolution.

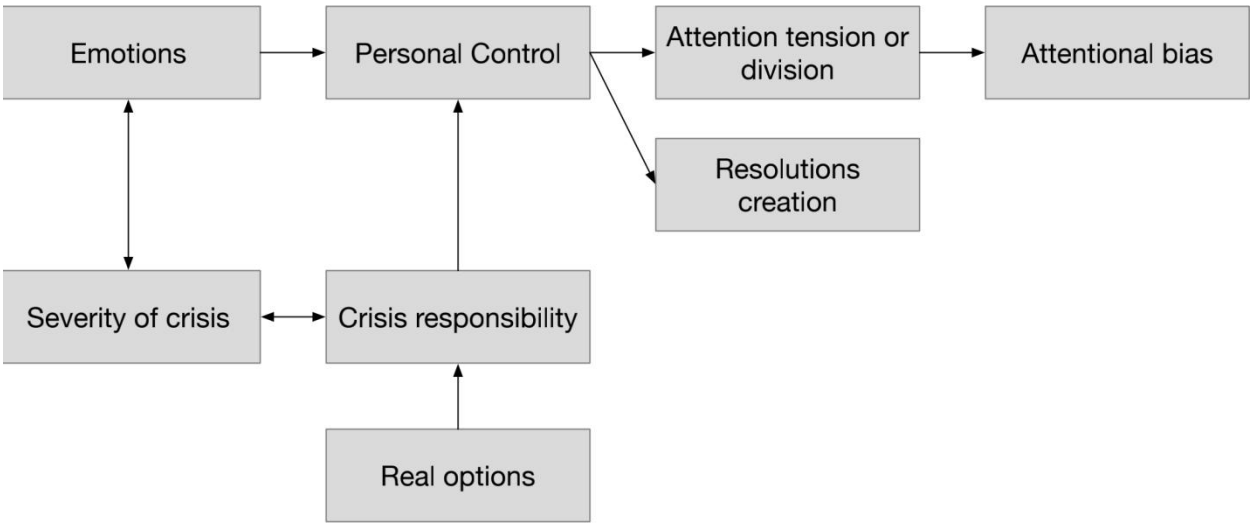

Figure 1. Attention Crisis Communication Theory (ACCT) Flowchart

Coombs (SCCT) makes excellent points that there are categories of crises and how they can be addressed, but fails to take into account the psychological standing and emotions of the stakeholders internally within an organization at the time of the crisis and its effects for the duration of it. SCCT later remarks on reputation changes, which IRT puts into consideration, but fails to consider the organizational impact. Emotion intensity and mental conceptual blocks tend to dictate or surround a crisis. A crisis is characterized as a situation which has not occurred before that's negative and beyond the capabilities of the project decision leaders or internal stakeholders solving it quickly without a huge influx of resources (i.e., federal and state governments not realizing the severity of the COVID-19 crisis outbreak during the first month of

the pandemic- the amount of masks and ventilators necessary for disbursement to various state and military hospitals). The project decision leaders during the critical incident stress phase of a crisis are typically pulled from their real options within the company or organization. There may be an attention deviation or attentional bias backlash (state governments, engineers, and doctors rallying by notifying the federal government that they need more resources- the attention deviation between what's more necessary- to get more ventilators to COVID-19 severe symptomatic patients or protect themselves with more masks) as well when it comes to situation crisis communication, which is why ACCT is proposed as an extension of SCCT and IRT.

Organizational psychology researchers are aware that individuals, whether it be top crisis management decision leaders (i.e., federal government COVID-19 lead task team) or operators (i.e., state engineers, scientists, doctors – local level crisis management teams) each tend to be frozen or not act in time or sufficiently when in crisis at the beginning of the occurrence (i.e., the as a whole not realizing COVID-19 was shaping up to become a pandemic). Emotions, thoughts, and behavior are a mixed, sequential cycle. They feed off and into each other like a cyclic loop. As an extension of the current research body, specifically the hypothesis of Coombs in 2002 and 2006, it is postulated that crisis responsibility and attention manner/degree/concentration (division or synthesis along a spectrum) is central to ACCT internally for the organization. The more deviated or separated attention is, the greater the complexity of the crisis, the more negatively it impacts the organization in terms of reputation (i.e., the current federal government workings for COVID-19 being under daily scrutiny by the public and media). The greater amounts of attention bias and greater amounts of attention division and tension will occur, regardless of crisis cluster/type.

For ACCT crisis characterization, crisis theme will be assumed to be negligible in that the cluster (victim, accidental, intentional) it can be assumed that the organization (federal government during COVID-19) will act to solve the crisis (intentional only) and will either willingly or forcefully have to respond to victims of the crisis or the public. By default the organization will be utilizing their financial resources and decision leader emotional calm or clarity to mitigate the crisis (e.g. federal COVID-19 task team holding daily news updates for state governments and Trump signing off on and providing economic stimulus package nationally). Second part of the crisis characterization is identifying the intensity of the crisis notably evaluated by 1. Performance history of the organization (good or bad past organizational dealings with internal versus external stakeholders i.e., federal government COVID-19 task team past success record of its members), 2. Crisis past history (how effectively they dealt with a crisis in the past) and 3. Severity of the current crisis situation (e.g. current status of COVID-19 pandemic in the eyes of Trump). As reputational threat increases, crisis management decision leaders utilize strategies that indicate a greater acceptance of responsibility for the crisis and simultaneously demonstrate concern for the public affected. Be that the internal organization (i.e., COVID-19 federal task team) or in a national (state government COVID-19 task teams) or international crisis external stakeholders (i.e., global public), as in the COVID-19 outbreak in 2019.

Attention (state of awareness or focus) deviation, attention tension, and emotional influence are major variables in crisis management theories. ACCT is proposed as an expansion of Coombs's theoretical model (SCCT), which relates crisis internal control to organizational reputation, but it also includes emotional and attention influences (Figure A). It can be hypothesized that performance and crisis history of the organization will intensify crisis attention

tension and attention deviation due to division. This may result in attentional bias because the organization would have more data, but more uncertainty surrounding the crisis. An example of attentional bias being, as the federal government received more notice on confirmed patients of COVID-19 or data reports of either survived or dead, the federal COVID-19 crisis decision team tried to make sure state governments were equipped with the right resources focusing on communication instead of resource delivery possibly speedily to the states and hospitals with regards to masks and ventilators).

The other factor that is proposed to include in the ACCT model is having real options filter into crisis responsibility (Figure 1) as a factor that has the capability to influence decision making that can aid in swift crisis management and solution generation. These options will have a positive effect on organizational reputation overall in relation to crisis internal or external stakeholders specifically because it will cut down on crisis uncertainty.

At the internal stakeholder, organization level, a real option is hypothesized to have a positive correlation for solution creation, which stops at the personal control stage. It simply helps avoid altogether attention tensions/division or attentional bias from arising during a crisis. Real options enable corporations to manage their strategic options portfolios more optimally. It is posed that a real options strategy portfolio would provide for efficient leader decision making. Real options could eliminate internal attentional bias as the organization would have uncertainty surrounding the crisis with one variable instead of multiple. It will give the organization more time to solve the crisis and would allow for a flexibility in the decision-making approach. Resources would be allocated more quickly than if a real options portfolio was not already in existence. Real options is an instrument that allows for managing projects in an active and forward-thinking manner.

There are varying levels of crisis responsibility attribution. SCCT by Coombs and his research states that reputational damage and intensifying factors during a crisis drive the response methods. ACCT focuses primarily and expands on the theory of the severity of the crisis, which Coombs largely ignores when outlining the presumptions behind SCCT, which can be seen in his papers if 1999-2011 is analyzed (see references). Coombs postulates that crisis responsibility is a function of crisis type and the severity of the damage. The researcher neglects the internal collective organizational emotional damage and intensity (on the decision leader combined with internal stakeholder level) and attention tension processing by the individuals at fault, which are major influences during any crisis. ACCT model could be the key to unlock the correlation or connections between internal and external crisis stakeholders and how they relate. This theory not only touches on internal stakeholders (vertically and horizontal interplay within the organization going through a crisis), but also external stakeholders and their views on the crisis (e.g. public, shareholders, board members).

The convoluted process surrounding a crisis breeds internal tension on an individual level in attempts to deflect blame and to rationalize behaviors. This contrasts with attempting to analyze the critical incident and to extract positive lessons. Defining work role expectations within the organization and accepting accountability helps alleviate the consequences of anxiety, competition, and vigilance. ACCT is a simple and currently accurate speculation judging by how systematically the globe is in crisis by the COVID-19 outbreak in China that spread and was not initially contained.

4.4 Application of ACCT

Continuous active learning helps manage and reduce uncertainty and attentional bias during a crisis. Forming network structures, for example, cyclic proliferating cycles, aids in the

resolution of an organizational cross-boundary crisis. Network implementation leads to quicker learning during a crisis by decision leaders effectively delegating tasks, which leads to the creation of new procedures (e.g., SOPs). Learning prior to, during, and after the critical incident stress phase of a crisis is what leads to flexibility and the capability to manage a catastrophe. Learning leads to valid, verified information and timely action. Learning is ultimately a force for positive change. Active learning is an implementation of new systems during a crisis.

Human cognitive processes are strained during a crisis. During a crisis, regular rationality cannot be applied. This is because a novel, time sensitive crisis, which is high in uncertainty and scope of information inhibits rationality. Cross-boundary crises are of particularly high impact within an organization, government, or the public. Iterative trial and error processes, to deciphering information and active learning may be risky and costly. This is why a network systems learning approach may be best. Even if warning signs are received by organizations they tend to be overlooked, can't be addressed, or are minimized. Warning is assessed as unimportant. Urgency during a crisis constrains and narrows decision leaders choices and attention causing attention tension and eventually attentional bias.

Adopting a malleable system allows decision leaders to produce contingency plans and allows flexibility in creating solutions. Another issue that decision leaders face is initially being unaware of basic solutions that could feasibly work. This is why flexibility in engineering approach such as real options can be applicable to avoid pitfalls such as attentional bias that arise due to a lack or an overload of information. Active learning is expedited by the ability of crisis decision leaders to establish equilibrium between action and an ambiguous, fluctuating, and even volatile environment. This all relates to a networked system adoption suggestion (figure A).

By creating a network system information can be cross checked and utilized better by the decision leaders. The network system is best utilized through the use of adequate resources, error discovery (trial and error troubleshooting of the system), and process improvement strategies that are rewarded, and a strong adherence mission (entity values and vision). It must be noted that when approaching a new crisis (during the critical incident stress phase), active learning from past crises can negate current systematic learning because by definition each crisis is unique and novel by character. Blind spots can be created and other cognitive biases similar to attentional bias can occur (figure A example of ACCT system). Standard operating procedures (SOPs) can serve as a reference, but shouldn't be relied upon as a new crisis may not be similar to past ones.

Networks in well-known case studies are sometimes presented as an ideal type of crisis, which is in the decentralized structural form meaning there is no network tree established, it's more random and chaotic. ACCT is different from hierarchical norms, which mostly occur during regular operations. Some incidents of crises within the ACCT framework are a mixed approach takes place between a decentralized and hierarchical network.

Dependencies management as the case study example of the exotic Newcastle disease (END) outbreak in California that took place in 2002 in the U.S. spread to four other states. Seven thousand individuals were employed during the critical incident stress phase of the crisis. The case study provides an example of a massive multi-infrastructure coordination effort. The case was surveyed by senior managers and 2,400 network participants. It was fairly successful crisis management overall. As crises get more convoluted, as for the COVID-19 example, new systems need to be regenerated from scratch as crises are always changing and evolving.

Standard operating procedures (SOPs) creation is a common solution for network modes of operation. SOPs move from uncertainty to crisis resolution and overall efficiency because formal procedures are put in place for a process (it provides order and logic during a crisis which sometimes isn't present during the critical incident stress phase of a crisis). It is important to note as a caveat, too many established procedures will reduce the flexibility in engineering approach. This may still be key in a national (e.g. U.S.) or international cross-boundary crisis (i.e., COVID-19 global pandemic). A mixed approach between hierarchical leadership and network coordination (system creation) would be necessary to effectively and appropriately solve a crisis. This type of approach would at least manage a crisis during or after the critical incident stress phase of a crisis. Not one part of an organization has the capacity to organize an effective response.

The structure of a network during a cross-boundary crisis depends on the degree of tasks faced and the individuals involved. Both subjects are related to the operational challenges and communication flows. A crisis is categorized as three types of network uncertainty. Substantive uncertainty, deals with the lack of knowledge about the problem or overload of non-definitive information. Strategic uncertainty, arises since multiple key players retain varying degrees of strategic autonomy, creating uncertainty about what choices they will make. Much of the strategic uncertainty that networks face after the critical incident stress phase of a crisis arises from their relatively loose structural form. Networks that are more established are likely to perform better as a crisis management plan begins and continues to form the crisis leaders' decision-making. Institutional uncertainty arises from trying to coordinate individuals who have their own perceptions, norms, and objectives. People who come from different functional backgrounds, administrative levels, or cultures. If a crisis situation is not paid attention to it can

lead to fear, which can lead to attentional bias if the crisis management process is not approached optimally.

In a hierarchical network system where a key crisis decision project leader is assigned, key crisis management subjects such as operations and finance are essential. If a critical incident stress phase becomes too large and disperse geographically, then other subordinate crisis decision leaders are assigned (i.e. COVID-19). There is always a conflict resolution network that is delegated and created by the at fault entity (despite having also a hierarchical top down component). In time, attentional bias will be reduced. Due to the established network structure, the ability to transfer pertinent information will occur more efficiently because to do tasks and action plans can occur at greater speeds.

The adoption of a layered network helps to reduce strategic uncertainty during a crisis. Individual stakeholder autonomy is reduced. A more centralized management network is focused on. Increasing collaboration seen as a success factor. Since uncertainty was lowered with this management system, it can be concluded that attentional bias would be reduced or averted. Key stakeholders would be aware of the members of the new network (or systems of operation). This establishment of an incident command system doesn't necessarily constrict the flexibility in engineering approach for crisis management. The system offers a line of ultimate responsibility and common organizational vocabulary. The resultant or typical degree of attention tension and therefore attentional bias should be lowered.

An incident command system may possess its own pitfalls. During crisis resolution creation- at the lowest level of operators, they need to be allowed to take direct action on their own (without being advised by a head incident crisis decision leader). The system may increase

the reaction crisis management time overall for the internal stakeholder team collective. This may reflect poorly on the external stakeholders. Overall, ongoing process learning, information sharing, and collaboration may be stifled. Instead, these factors should be aided by the adoption of a hierarchical system versus more of a flat, network systems approach to the problem. The ICS model needs to have the ability to be adapted to the needs of a crisis. This pertains to both structure and level of discretion given to resolution creation teams executing tasks.

Just like any hierarchical organization, some regional line managers involved in the crisis management process may become territorial. This pertains to information sharing, which may cause nearsightedness for the resolution process. This structure may also cause a lack of delegation between siloed crisis management groups, which can reduce overall creativity and resolution time (i.e., state governments during COVID-19 crisis outbreak). With the need of dynamic movement for resolution creation, having an ICS can increase resolution time. Vertical chain of management will need to transpire on top of horizontal management between teams. One caveat- if the crisis decision leader is tasked with this great responsibility, even seasoned leaders may initially feel confused or panic during the process because the crisis would be unlike any other faced. Uncertainty will surround the entire decision crisis management team and the resolution task. All of this further showing the need for a mixed network creation approach. One positive aspect of adopting an ICS in a large crisis is that it spans across multiple organizations. There is high turnover in the overall network of crisis management stakeholders (i.e., between federal and state agencies during COVID-19 outbreak). This structure could serve as a base for individuals to turn to for reference or questions during the resolution process.

There is active learning through network systems implementation that must take place during crisis resolution creation. Implementing systems will reduce uncertainty, overall internal and

external stakeholder anxiety, and hence attentional bias (i.e., news current daily reports on COVID-19 testing statuses and data collection). Standard operating procedures (SOPs) reduce uncertainty while in a crisis. Helping to shape cognitive behaviors of internal stakeholders by creating and recording common routines during the process. This type of learning encapsulates a cybernetic approach (a multidisciplinary approach for exploring regulatory systems) by simplifying decision making burdens in a convoluted environment. It is important to note that SOPs will most likely need to be rewritten once established because a crisis duration is a dynamic, changing, and occasionally an unpredictable process. Online discussions as well as virtual learning are manners in which to exchange information throughout the network, which can also lead to SOP generation. This ensures clarity, standardization, and consistency in new system operations as the network grows and develops during crisis.

At the center of the subject is that there is an issue between the way decisions circulate and the manner in which information flows. Within crisis management communication between parties involved in decision making and communication lines there lies a discrepancy. It's why hierarchical traditional top-down crisis management communication cannot work. A layered network approach would be more useful. The scale of the crisis and variables involved can be interpreted at different resolutions; the nuance differences can actually be observed. A piece of information can suffer if decision leaders are not specific in their communication topics (an amount of distortion can occur). During a crisis, one piece of information is received differently by the internal stakeholders (partial transmission, distortion, etc.). Every internal stakeholder interprets it differently based on his/her perception of reality and may act differently.

In attempt to reduce ambiguity and uncertainty during crisis resolution creation, flexibility in design is needed. It maximizes the efficiency of a system over time. Flexibility in

design allows the crisis decision leader and team to be most effective when they work together- to integrate planning, design, and management activities from beginning to resolution. Creating best value during a long-lasting crisis requires a sustained team effort (from the central decision leader and across the established network team). Success involves more than applying special techniques; it entails a way of thinking about systems and implementing them. Flexibility is fundamental to systems design.

In an organizational systemic context, real options in decision-making surround an entity's ability to sequence, stage, and or reverse commitment in the face of uncertainty. It allows for flexibility in its operations and inner-workings of an independent entity. Sequentially observing and implementing decisions allows room for crisis decision leaders to assess the benefits or partly reverse commitments if necessary. This method would allow more room for debiasing attentional bias.

Acquiring the necessary knowledge for adapting to uncertainty, a responsible entity can develop systems and practices (e.g. procedures) to benefit from the variance of operations and explore new opportunities. The crisis decision leaders enter an evolution lifecycle where knowledge is a core competence, and learning becomes a competitive advantage. Empirical research and simulations solve issues of timing and real options creation. The uncertainty-flexibility systematic relationship optimizes over the time scale.

The key challenges in creating a productive attention scale distribution are focus differentiation and integration (aligning with decision leader values). Attentional bias can be avoided if a decision leader as a whole looks at variables sequentially (critical pieces of information). That is, one variable at a time and evaluates them independently. Therefore,

movement toward crisis resolution will move in a positive and quicker direction. This method is quicker than if attentional bias happens where two pieces of information are seen at the same time as correlating with one another. This must be confirmed quantitatively with further research. Information sharing is key, but literature has yet to decide how much is too little or too much information sharing during a cross-boundary crisis. Game theory would be most applicable for testing. By establishing real options and seeing in which directions attention (focus) is going, an a decision leader and team could avoid a crisis or at least minimize its impact.

The classical model for decision making follows a normal Gaussian distribution, and is therefore blind to extreme crisis events. The idea of networks and its approach with non-changing variables are what doesn't change in a system (in this the critical incident stress phase of a crisis) can be seen as another angle for crisis resolution creation. This approach helps to identify which variables are part of the problem (changing variables) and which are part of the solution. In this manner, different types of crises could be compared to see which independent variables are consistent across fields to bring crisis management closer to emergency management. As in the financial industry, how invariants help with understanding volatility, the same can be applied to crises for example. A number of variances surface when crises are analyzed.

Notably, the domino effect post the critical incident stress phase of a crisis occurs. Localized, relatively small events can proliferate into multistate, national, or international crises in a matter of hours/weeks (e.g. COVID-19 international pandemic outbreak). A lack of spatial containment during and after the crisis event is prevalent. The magnifier effect on a time scale increases exponentially as well. For financial crises, stock markets crashing in a few milli-seconds to infrastructures such as dams collapsing and causing widespread damage in a record

number of hours as could be seen by the effects of hurricane Katrina. Later causing pervasive crises in the surrounding states as a massive number of humans are displaced from their homes and needing to find new ones. This all relates to the aggregation effect in terms of how individuals and their movement are related in a crisis situation.

The sense making invariance also proceeds as the initial crisis management team and individuals affected by the crisis attempt to wrap their heads around the crisis trigger event. The crisis decision leaders and team usually cannot as the event is outside the realm of normal operational functioning. This can be seen for the COVID-19 crisis, which spread from China globally across to countries such as America. Even though information was available from other countries (such as those in Europe), it still took the time and networked attention between the federal and state government to really grapple with the COVID-19 pandemic crisis and finally contain it. All included decision leader teams failed to grasp the severity and magnitude of the event initially. The COVID-19 pandemic caused attention tension and division. Therefore, attentional bias was caused during the onset of the pandemic crisis. A networked approach to sequentially focus on the crisis at hand will slowly, but surely control and weaken a crisis.

The majority of literature reviewed agree that a centralized and top-down approach to crisis management is typically ineffective as too many variables become intertwined during the onset of the critical incident stress phase of a crisis. The problem during crisis communication is that messages become distorted and reinterpreted according to competing interests and demands across the crisis decision leader managerial lines. Distortion becomes a central issue along with ambiguity and uncertainty surrounding a crisis. All cause emotional strain for the crisis decision leader team and other key individuals (internal and external stakeholders) effected by the crisis.

This is why a combined approach of network systems with a real options decision-making strategy are recommended as a solution within the realm of single entity crisis.

5 Conclusions

The foregoing discussions suggest the following conclusions on dealing with attentional bias in crisis management.

1) **Creativity**. The literature suggests that the creativity of decision leaders needs to be stimulated to develop broad options during crisis operations. Hypothetical games could be used as a future experiment with experienced crisis leaders in industry (public or private) or from government or military agencies better to understand and manage the direction of attention during crisis situations. Scenario exercises may help to reduce the effects of attentional bias and the associated overconfidence in the belief that a set of options is comprehensive. Creativity is important in any group dynamic to encourage ideas and action so as to prevent attentional bias. Creativity allows decision leaders to focus on solutions to a pressing problem. If a decision leader provides a safe, open environment where internal and external stakeholders can provide feedback and ideas, a crisis situation can be solved more promptly.

2) **Resilience-oriented and operational communication**. As Olsson (2014) stated, "by emphasizing more resilience-oriented and operational communication in times of crisis, the focus moves away from strategic messages to dealing with issues related to how crisis decision leaders cope with issues related to control, transparency, speed and tone." In turn resilience-oriented and operational communication eases internal, initial emotional upheavals during crisis management, making the crisis decision leadership more effective. The team is able to find swift, creative solutions. These may reduce negative effects of attentional bias by focusing on one variable at a time. If emotions and level of personal control are fully acknowledged, straight forward, speedy, creative solutions are more likely to flourish. By communicating authentically about their emotions within the high

pressure and challenging onset of the critical incident stress phase, decision leaders can move toward creating solutions or taking action. Resilience-oriented communication means the project decision leader and team are able effectively to move through unpleasant feelings, still communicate effectively, have greater levels of self-awareness, and can communicate that self-awareness as needed.

3) **Real options and networks**. Concrete solutions by way of the project decision leader taking responsibility and leading with resolve are a positive way to lead during the critical incident stress phase of a crisis. However, if resolutions can't be made quickly (within 24 hours), the project decision leader should delegate tasks to his/her appointed decision leader team and hence taking a networked approach. Establishing real options alongside a network during a crisis ensures that decision leaders in combination with other internal and or external stakeholders can more effectively improve cross institutional coordination. The cross coordination occurring because through network establishment resolution and creativity are more easily attained since the environment for them is created. Delegating and splitting up tasks to a main decision leader team or external stakeholders increases solution creation speed during the critical incident stress phase of a crisis. Decision leaders and stakeholders (internal and or external) have a shared, vested interest to expedite resolving a crisis.

4) **Apologies**. Apologies produce more positive effects than sympathy when dealing with the public (external stakeholders) and trying to positively impact organizational reputation (Coombs and Sherry, 2002), but there has been no research to see how apology or sympathy play a role within a crisis management team and how they deal affect internal stakeholders across managerial lines. It is clear theoretically that if ACCT is adopted by a crisis decision leader and or team that there are certain crisis management

competencies that the crisis decision team must possess in order to positively influence internal and external stakeholders and move the crisis from the initial shock of the trigger event to swift resolution. A combination of direct communication and strategic decision making by way of dispersing crisis management layered networks and real options analysis prior to and during a crisis help to ease the attention tension and attentional bias for an organization during a crisis and move it to speedier solutions (figure A). When a decision leader takes a stance of apology instead of defensiveness or assigning blame, it comes from an authentic state of intention and is therefore more believable. An apology makes the decision leader seem receptive to internal and external stakeholder feedback. It shows that the decision leader is willing to proceed from the critical incident stress phase of the crisis to resolution. It exhibits authenticity from the main decision leader and ensures the stance that the wrongful behavior won't be repeated. When a decision leader apologizes, often the entity (e.g. organization, company) survives a crisis (U.S. COVID-19 example of its eventual control and slowing down of).

6 Further Research

The present review and recommendations suggest several topics of future research.

How organizations weaken over time and dissolve could be researched in the future. The art of decision making and extracting pertinent data or information remains the central topic for crisis processing and resolution creation. Bayesian theory may be best applicable for crisis management quantitative analysis as less statistical samples are necessary to extract valid information to produce solutions and most corporations aren't keen on accepting crisis blame as seen in the above literature survey.

Personal commitments. Shrivastava selected a set of personal commitments (on the side of the researcher), which he thought were key to making contributions to crisis research overall. These are: integrity, courage, creativity, patience, and perseverance, which can be explored in depth in terms of subjective influences leading to cognitive biases on analyzing crisis management communication theory.

Communication lines and degree of discussion. It is agreed with Olsson (2014) that organizations that have a more centralized, top-down structure for internal communication to internal and external stakeholders are more engaged in reputational aspects of communication internally and with the public. Decision leaders that can adopt a decentralized, open discussion, and networks approach can take on a more resilience-oriented approach to crisis communication both internally and externally. It may be more appropriate for the future operations during crisis management as it incorporates a flexibility in engineering approach which is more adept in handling and minimizing uncertainties during a crisis. The flexibility in engineering and networks approach would ideally be aimed at reducing internal attention tension and attentional bias. Teamwork and collaboration would be focused on inducing creativity instead of competing

interests. A traditional hierarchical approach would not create unnecessary red tape during a crisis.

Standard operating procedures. During a crisis the important resolutions are gaining organizational restoration (initial operational capacity back) and learning (experience or knowledge gained from navigating through a crisis successfully). The crisis management process transitions from the critical incident stress phase to organizational restoration and learning phases as concluding cyclic phases. It will be beneficial for the crisis management decision leader or group to create a structure by way of standard operating procedures (SOPs) and reporting. This way learning and growth can transpire, ensuring that the same type of crisis will not occur in the future. Future research on how SOP creation and system operations intertwine during crisis communication management could be another potential avenue for future research.

'**Emergency' and 'crisis management'**. The prior focuses on traditional, open, public service emergency management and the latter on organizations' reputation which stems from business and marketing (Frandsen & Johansen, 2009). Too much emphasis on market analysis and organizational preservation is counter effective in crisis communication. It would only breed more internal attention tension hence resulting in attentional bias, which is the opposite of what would be desired during crisis management and would be ineffective as a strategy overall. It could be seen in the TeleCo. case study example of how a top down hierarchical structure bred confusion across managerial lines instead of fostering collaboration. The developing COVID-19 crisis in the and internationally is also an example. COVID-19 slow action towards resolution and confusion between federal and state governments is also huge. It is presumed that these types of results would be seen in other organizations during a crisis event if handled inappropriately, but further research must be conducted.

If conceptually crisis management communication scholars expand the definition and implications of crisis research, then opportunity, learning, and networks can be discussed in addition to blame or bias reducing strategies. Even the breadth of induced biases have not been discussed in great detail, which is why this paper chose to focus on attentional bias specifically resulting from the critical incident stress phase of a crisis and its potential implications. Methods on how to facilitate not only information sharing, but crisis leadership team or organizational trust between various line managers, operators, and departments can help ease the transition from crisis conception to resolution creation in literature. This frame of thinking and decision making away from anxiety and induced biases would instead breed resilience in the crisis management team within an organization and the community at large when a larger scale crisis takes place (i.e., international COVID-19). It would ultimately provide an opportunity for growth in the literature and apply directly to industry.

Game theory. Other topics that should be explored are decision theory interactions with game theory as a proposed solution or necessary analysis for the proposed ATTC model. In addition, decision and organizational psychology as applications for ATTC could also be a fascinating exploratory study. Socio-cognitive research is human factor and socio-organizational factor based. Socio-cognitive research assumes an integrated knowledge engineering, environment and business modeling perspective, therefore, it is not social cognition, but rather is a branch of psychology focused on how people process social information. Bandura's (2000) social learning theory stresses the importance of observational learning, imitation and modeling. His theory integrates a continuous interaction between behaviors, personal factors - including cognition - and the environment referred to as the reciprocal causation model.

Perceived collective efficacy. Evidence from diverse lines of research attests to the impact of perceived collective efficacy on group functioning during crises. The findings taken

show that the stronger the perceived collective efficacy, "the higher the groups (crisis decision leader) aspirations and motivational investment in their undertakings, the stronger their staying power in the face of impediments and setbacks, the higher their morale and resilience to stressors, and the greater their performance accomplishments" (Bandura 2000). The findings taken as a whole show that the stronger the perceived collective efficacy, the higher the crisis decision leader(s) aspirations and motivational investment in their undertakings. The stronger their staying power in the face of impediments and setbacks, the higher their morale and resilience to stressors, and the greater their performance accomplishments (Bandura, 2001). ACCT and the relation to the socio-cognitive theory could be an interesting organizational psychology exploration.

Ludic fallacy. A general criticism of decision theory based on a fixed universe of possibilities is that it considers "known unknowns" but not "unknown unknowns." Decision theory focuses on expected variations, not on unforeseen events, which some argue have a large impact and must be considered. This line of argument, called the ludic fallacy, states that there are inevitable imperfections in modeling the real world by particular models, and that unquestioning reliance on models blinds one to their limits. Researchers are fallible, despite attempts to put theories and mathematics behind their words. Unforeseen events or loopholes in logic or experience should be explored and observed during a crisis. Overall though the point to consider is this is only due diligence done in retrospect to learn from a crisis.

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