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An Exploratory Thematic Analysis of the Decision Challenges Faced by Emergency Responders During the 2017 Manchester Arena Attack

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ABSTRACT

On 22 May 2017, the Manchester Arena bombing resulted in twenty-two fatalities, marking the United Kingdom's most lethal terrorist attack since 2005. A subsequent public inquiry revealed the necessity for improved operational, tactical and strategic response and management strategies, and highlighted the barriers to effective decision-making processes of those present during the incident. Integrating macro-level societal ideologies, meso-level group dynamics and micro-level individual factors to understand decision-making complexities and the challenges, the present study thematically evaluated decision making, providing fresh insights into the multifaceted nature of high-stakes decision making. Using twelve transcripts, with an applied data saturation approach, findings represented three primary themes across the macro, meso and micro dimensions. Combined, these findings highlighted gaps between theoretical concepts and training, and practical application in high-stakes situations. It also highlighted difficulties in immediate response action, command and control and balancing established protocols with the need for adaptability in unpredictable emergency situations. We conclude that response decisions should be driven by the desire to optimize least-worst outcomes.

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The growing threat of terrorism has made the ability to respond effectively to critical incidents a defining challenge for modern security and emergency.¹ The 2017 Manchester Arena attack highlighted the continued consequences of decision making in high-pressure environments, where emergency responders often operate under conditions of uncertainty, constrained resources and the need for timely decisions.² In this regard, it is important to examine the decision challenges faced by first

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responders during critical incident events (e.g., terror attacks), addressing the issue of the challenges faced by those responding to such. By integrating sociological dimensions (e.g., macro-, meso- and micro-level analyses),³ research can provide a holistic understanding of the interdisciplinary and interdependencies between policy frameworks, organizational structures and individual cognition in crisis decision making.⁴ In so doing, it may contribute to both the theoretical discourse on naturalistic decision making (NDM) and the practical enhancement of response strategies,⁵ ultimately aiming to refine counterterrorism preparedness and emergency response coordination in future high-stakes incidents.⁶

Understanding the process through which decision makers navigate strategically complex, high-stakes situations has been a focus of the field of NDM. Indeed, NDM research has suggested that the absence of such vital information can significantly escalate situational uncertainty, increasing the likelihood of erroneous decisions, with potentially catastrophic consequences.⁷ However, the consequences of decision making extend beyond mere errors and encompass the crucial factor of decision timeliness, particularly in the face of rapidly evolving incidents. Of relevance too is the finding that, often, in such instances decision makers often redundantly deliberate during crisis, a cognitive phenomenon known as *decision inertia*.⁸

This failure of decision making is often highlighted in public inquiries into critical incident response.⁹ These inquiries have repeatedly pointed to the impact of decision delays on the implementation of vital actions and emphasized the growing importance of the topic of public safety and terrorism.¹⁰ More specifically, inquiries highlight the importance of effective mechanisms for learning from incidents, enhancing public safety and consistently advocating for policy reforms that strengthen resilience against future threats.¹¹ Thus, it is clear then that there are widespread challenges to the decision-making process in the aftermath of high-stakes incidents. However, the research on *in-situ* account of the decision-making challenges faced by operational personnel in response to a terrorist incident is still relatively new and open to fresh insights.

Decision Making *In-Situ* to High-Stakes Events

To date, a host of significant critical incident responses have been hindered by delays in the response and identification of tactical parameters for critical incident events (e.g., the Manchester Arena bombing site).¹² Yet this issue is not confined to the United Kingdom alone; it resonates internationally. Instances, such as the delayed provision of aid after the Boxing Day Tsunami,¹³ suboptimal information prioritization following the Haiti earthquake,¹⁴ and delayed international response to the war in Ukraine¹⁵ demonstrate the global implications of decision making, and decision inaction in extreme events.

Importantly, the challenges of delayed response and poor tactical coordination in critical incidents, such as the Manchester Arena bombing, highlight systemic vulnerabilities that terrorists exploit to amplify fear, casualties and societal disruption. What is noteworthy, though, is that the extant literature draws parallels between terrorism response and disaster management¹⁶ because both involve high-pressure, time-sensitive decision making where a failure to act, or the redundant deliberation of least-worst outcomes can worsen outcomes.¹⁷ In terrorism response, these same issues—breakdowns

in communication, lack of predefined tactical parameters and inefficient resource allocation—can hinder emergency efforts, allowing attackers to achieve their strategic objectives. Yet, despite the far-reaching consequences of critical incidents (e.g., outstripping resources at local, national and international levels),¹⁸ there has been a paucity of research dedicated to understanding the mechanisms underlying decision inaction, particularly in the context of counterterrorism and critical incident management. This complex system has warranted a nuanced understanding of the interactions between decision processes across individuals and teams in high-pressure time-sensitive environments and how this contributes to decision inaction.

Conversely, organizational researchers have explored interteam dynamics within multiteam systems (MTS), but their work typically does not explicitly focus on the issue of decision inaction¹⁹; rather, it has focused on the interactions between organizations. It is clear that neither the NDM nor MTS disciplines, in isolation, can offer a complete explanation of the root causes of decision inaction, or why we see decision challenges *in-situ* of critical incident events.

Strategic Responses to Terrorism

The response to terrorism necessitates a fundamental reconfiguration of governance structures, policy strategies and operational frameworks. Indeed, Carter²⁰ argues that terrorism is distinct from traditional security threats, as it disrupts conventional military and law enforcement response frameworks, thus necessitating an interdisciplinary approach that integrates intelligence, emergency management and transnational cooperation. Unlike conventional threats (where threats are external and state-centric), terrorism, especially in its modern transnational form, operates within a decentralized, asymmetrical framework that exploits the vulnerabilities of open societies. In that regard, existing emergency management systems are ill equipped to anticipate and mitigate terrorist threats.²¹ Consequently, effective counterterrorism requires a structural realignment wherein governance is not merely reactive but anticipatory.²²

From this perspective, it is critical to consider contemporary counterterrorism policies by advocating for architectural resilience in both governmental and organizational structures (e.g., resilience frameworks).²³ Carter's analysis suggests that coordinating existing agencies is insufficient; rather, addressing the evolving threats requires a proactive approach in crisis management that must be institutionalized. This shift aligns with the broader transition from defensive national security models to preventive and intelligence-led frameworks, wherein the agility of response mechanisms determines the effectiveness of counterterrorism operations. In this context, a sociological approach of counterterrorism responses might consider how policy frameworks shape emergency response institutions, how organizational resilience is structured through interagency coordination and adaptive crisis response, and how individual decision making within response frameworks influences the effectiveness of preventive strategies. For instance, Pelfrey²⁴ emphasizes prevention through collaboration and information sharing. This aligns with Farazmand's²⁵ discussion of micro-macro issues in crisis and emergency management, which covers environmental, health and terrorism-related emergencies. Indeed, both Pelfrey²⁶ and Farazmand²⁷

stress the importance of long-term strategic planning for prevention and preparedness in addressing crises and emergencies.

Examining Decision Making Through a Holistic Multidimensional Lens

Given the challenges of studying critical incident decision making, especially when it involves multiteam response, an examination of decision making can be significantly enhanced by integrating insights from social and cultural psychology. This approach is grounded in the understanding that individual behavior and societal dynamics are interconnected.²⁸ To analyze critical incidents, multiple levels of analysis must be considered²⁹ (see [Table 1](#)). The integration of these three levels of analysis can provide an understanding of complex incidents. For example, Rohall, Milkie and Lucas³⁰ suggested that research often concentrates on the meso and macro levels, considering societal structures as the starting point for analysis. This disciplinary divide can lead to partial explanations of complex social psychological phenomena.³¹

To enhance our understanding of decision-making processes during critical incidents, therefore, necessitates an exploration through a multidimensional perspective, particularly focusing on the intersection of macro, meso and micro levels.³² This approach becomes particularly relevant when analyzing the decision making complexities in situations such as critical incident response. Earlier research³³ has laid the groundwork in identifying the challenges faced during crises: be it terrorism, global health crises (e.g., the COVID-19 pandemic)³⁴ or sociopolitical crises (such as the UK migrant crisis).³⁵

However, there remains a gap in integrating these findings into a comprehensive, multilayered analytical framework. While this gap has been partially addressed through some research efforts that attempt to bridge these dimensions,³⁶ their focus has predominantly followed a sociological aspect at the macro level. As such, the complexity of decision making in critical incidents requires an understanding of factors at the macro (such as political and societal influence),³⁷ meso (organizational factors)³⁸ and micro levels (individual cognitive factors³⁹), as they all contribute to the decision-making process.

Table 1. A definitional overview of macro, meso and micro dimensions.

Level	Definition
Macro-level analysis	This involves societal ideologies and social representations. For instance, understanding the broader social and political climate, including state ideologies and societal narratives about terrorism and security. This level of analysis helps to contextualize the incident within wider societal structures and ideologies.
Meso-level factors	The emphasis shifts to social group memberships, such as organizational communities and cultures. In analyzing the response to the Manchester Arena attack, this would explore the social environments and networks that may have influenced the organization, including any group dynamics or social influences that played a role in their decision making.
Micro-level factors	Factors that relate to the individual responders involved in the emergency. This encompasses their personal experiences, training and skills, which can affect their performance and decision making under pressure. Cognitive and emotional responses are also a key aspect, as individuals may experience stress, fear or trauma, influencing their actions and decisions.

The Present Study

This study examines the retrospective *in-situ* accounts of decision making during the response to the Manchester Arena attack, with a focus on interpreting the complex challenges encountered by those deployed in response to the incident. The aim was to examine the decision-making processes of frontline responders during the Manchester Arena attack, identifying key factors that influenced their actions and decisions. Specifically, it sought to analyze how responders worked in conditions of uncertainty, prioritized tasks and coordinated efforts in response to the Manchester terror attack. To achieve this, the current study represents a holistic account of the decision-making complexities across three distinct dimensions: macro (e.g., policy and legislative frameworks, emergency management reforms), meso (e.g., organizational factors such as interoperability) and micro (e.g., individual cognitive factors). This involved an exploration of the entire decision-making spectrum, from high-level policy influences to ground-level cognitive dynamics, thus offering novel contribution to the understanding of decision-making challenges as they materialized in the immediate situational context. By examining decisions made under acute stress and critical conditions, this study will also provide fresh insights into the multilayered and dynamic nature of critical incident management and decision making, which may potentially inform security services about how to respond to similar terror emergencies.

The Manchester Arena Terror Attack

On 22 May 2017, the Manchester Arena hosted an Ariana Grande concert as part of her Dangerous Woman Tour, with approximately 14,000 attendees.⁴⁰ Tragically, after the concert and as people were exiting the arena, Salman Abedi detonated an improvised suicide bomb packed with shrapnel in the arena foyer.⁴¹ This act marked the deadliest attack in the United Kingdom since the 7/7 bombings in 2005, resulting in the loss of twenty-two lives, including children, and leaving 116 individuals injured.⁴² The immediate response to this incident involved the deployment of sixty ambulances and the presence of 400 police officers at the scene. As detailed evidence of the impact can emerge from cases of failure through the post-event inquiry process,⁴³ our Manchester Arena attack analysis can serve as a roadmap for more optimal decision making in the wake of similar incidents.

Methods

Data Source

The primary data source comprised transcripts obtained from the official inquiry conducted in the aftermath of the Manchester Arena attack. The inquiry was established with the primary aim of conducting a comprehensive and systematic investigation into the incident to ascertain the sequence of events and better understand the response actions taken by various frontline responders.⁴⁴ As part of this inquiry, detailed and structured interviews were conducted with frontline responders who played key roles in the immediate aftermath of the attack. These responders included emergency medical personnel, police officers, firefighters and other professionals who were on-site during

the incident, actively involved in providing aid, managing the situation and ensuring public safety.

The transcripts obtained from the inquiry were publicly available and formed a reliable and authoritative source of information. The interviews during the inquiry were conducted by trained investigators and subject to strict protocols to ensure accuracy, consistency and adherence to legal and ethical standards. The responders' accounts presented in these transcripts were vetted and verified.⁴⁵ As the transcripts capture the immediacy and vividness of the responders' firsthand experiences and perspectives, it makes these data particularly valuable for gaining an understanding of the challenges faced, decision-making processes undertaken and emotions experienced by those directly involved in responding to the Manchester Arena attack. Furthermore, the use of transcripts from the inquiry ensures standardization and consistency in data collection, as all responders were interviewed using the same interview protocols and guidelines.⁴⁶ This, in turn, allows for a systematic comparison and analysis of the responses, facilitating the identification of common themes and patterns across different frontline responder groups. The rich and comprehensive nature of the data gathered from these transcripts provides researchers with a unique opportunity to gain insights into the dynamic and rapidly evolving situation that unfolded during the immediate response to the attack.

Inclusion Criteria

The data selection process for this research was carefully structured, adhering to specific inclusion criteria to ensure the relevance and depth of the data in relation to the objectives of the study. This process was key for obtaining an understanding of the factors influencing decision making during the Manchester Arena attack. First, the transcripts selected were required to be directly linked to the accounts of frontline responders present. This criterion was critical in ensuring that the data accurately reflected the real experiences and decisions made by those at the core of the response. The selected respondents comprised emergency services personnel, police officers, medical staff and other first responders.

The immediacy of these accounts was key to analyzing the real-time actions and decision-making processes of the responders. This element of the data selection facilitated a thorough examination of how decisions were made under intense high-stakes and time pressure, the effectiveness of communication and coordination among various teams and the adaptability of responders to the rapidly evolving situation. Concentrating on the immediate response allowed the research to explore the operational, tactical and strategic decisions that directly shaped frontline actions. In addition, the data selection process was further refined to include any challenges related to macro-, meso- or micro-level factors.⁴⁷

Data Selection

In the initial phase, available transcripts were subjected to a preliminary sift. This included the identification of transcripts that contained material pertinent to the research by the first author. The sift aimed to filter out any irrelevant information and selected only those transcripts that provided insights into the decision-making processes during the incident.

Following this initial review, the selected transcripts were added to a repository for initial classification. Eighty-four transcripts were identified as containing information relevant to the research aims. Next, a thematic analysis⁴⁸ of the transcripts in the repository was undertaken, which aimed to capture all relevant information, focusing on the decision-making processes and the actions of the frontline responders. However, it is important to note that, given the volume of transcript data available, a theoretical data saturation approach was employed, where data saturation was considered under the term *theoretical sufficiency*.⁴⁹

From this perspective, data saturation was more about the *adequacy* and *richness* of the data rather than the *amount* of data collected.⁵⁰ This approach aligns with Braun and Clarke's⁵¹ arguments that, in thematic analysis, theoretical sufficiency ensures that the data provide meaningful and well-developed patterns rather than simply being exhaustive. In this regard, theoretical sufficiency was determined through iterative engagement with the transcripts, allowing for the continuous refinement of the analytical categories. From a qualitative assessment perspective, the adoption of theoretical sufficiency is particularly well suited to studies that emphasize conceptual depth over exhaustive coding of every possible data point. Given the voluminous nature of transcript data, focusing on sufficiency rather than absolute saturation helped to avoid analytic redundancy. Following the constructivist and interpretivist epistemological perspectives, the researcher plays an active and reflexive role in engaging with the data to construct meaning, rather than treating meaning as something that passively emerges once a dataset reaches an arbitrary threshold of completeness. Thus, theoretical data saturation was achieved after analyzing twelve (14.3%) transcripts, meaning that analyzed data had sufficiently covered the spectrum of experiences and decision-making factors relevant to the Manchester Arena attack.

Note, this study prioritized the researcher's interpretative engagement with data over positivist notions of objectivity and reliability. Unlike coding reliability thematic analysis, which relies on interrater reliability as a measure of coding accuracy,⁵² a reflexive account views researcher subjectivity as an analytical resource rather than a bias to be constrained.⁵³ Given this, interrater reliability was not conducted, as the focus was on interpretative depth rather than coding agreement. Instead, the coder's expertise and contextual knowledge informed the analytic process, aligning with the principles of qualitative inquiry that recognize meaning as situated, constructed and reflexively generated.⁵⁴

Thematic Analysis

Given our dataset, a deductive and inductive form of thematic analysis was deemed most appropriate.⁵⁵ Unlike purely inductive thematic analysis, this approach incorporates preconceived ideas and theoretical frameworks drawn from previous research (i.e., meso, macro and micro dimensions),⁵⁶ guiding the initial coding process. More specifically, at the micro level, coding focused on individual responders' cognitive, emotional and behavioral processes, particularly decision making, stress management and adherence to operational protocols. Our analysis also considered how organizational structures and strategic policies influenced individual actions in high-pressure environments. At the meso level, coding identified systemic patterns within organizations, examining interagency collaboration, coordination challenges and leadership influence

on organizational culture. Particular attention was given to MTS, assessing communication structures and barriers to effective response. At the macro level, coding analyzed the impact of legislative and governmental policies on strategic decision making and institutional response. This included evaluating the alignment between national policies and frontline practices. Collectively, these predetermined themes formed the deductive aspect of the analysis through which the data were examined, offering a starting point for exploration.⁵⁷ Although the analysis began with predetermined themes, it also remained open to new themes that may be identified inductively from the data.⁵⁸

As outlined by Braun and Clarke,⁵⁹ this study followed a systematic six-stage process.

Researchers began by immersing themselves in the data during the familiarization stage, gaining an understanding of their content and context. Next, initial codes were generated, capturing meaningful units of text, subsequently proceeding to search for consistent threads of meaning by organizing and grouping related codes. At the reviewing stage, researchers critically assessed the identified protothemes to ensure their accuracy, relevance and coherence. Themes were refined or adjusted to enhance the overall analysis quality before each theme was defined and described in detail, providing clear and concise explanations while assigning meaningful labels that captured their contents. Finally, the narrative was created, connecting the themes to the research question and objectives, which was supported by relevant quotations and excerpts from the data.

Results and Discussion

Theme 1: Challenges to Strategic Level Decision Making— A Macro-Level Perspective

At an operational level, the focus of high-stakes response is on the broader picture: how to manage the crisis effectively, allocate resources and coordinate multiple agencies and stakeholders.⁶⁰ On the tactical level, the emphasis shifts to on-ground actions, immediate responses and direct interventions.⁶¹ However, strategically, policy frameworks in crisis command are viewed as underpinning effective response,⁶² the challenge being that strategic policy is seldom static, as it evolves in real time, influenced by the unfolding nature of a crisis.⁶³ In fact, these strategies typically require a balance between fast and frugal decision making⁶⁴ and consideration of the evolving situation. Given this, the current theme sought to identify the strategic elements that compounded effective decision making in response to the Manchester Arena bombing. Specifically, this theme emphasized the need for a cohesive strategic approach that aligns operational and tactical objectives, ensuring that immediate actions are in synch with the broader goals of crisis management.

Subtheme 1: Limitations in Strategic Action and Policy

Research has highlighted the need for improved interoperability and information sharing among emergency responders⁶⁵; a need that has been suggested by various large-scale events and inquiries (e.g., the London Bridge and Borough Market terror attacks). Indeed, Chen et al.⁶⁶ was among the first to draw attention to this gap in practical insights. Yet, in order to achieve this, it is vital that data-driven (rather than

ideology-grounded) policy frameworks are developed and implemented efficiently. For example, the Civil Contingencies Act (CCA) serves the United Kingdom's legislative framework for responding to high-stakes incidents.⁶⁷ Specifically, the CCA imposes statutory obligations on Category 1 and Category 2 responders, ensuring that partner agencies collaborate and coordinate effectively during emergencies. According to the CCA, it is designated as the primary mechanism for multiagency cooperation in emergency response situations (Cabinet Office).⁶⁸ However, in practice, the CCA—and the mechanisms that support interoperable systems (e.g., the Joint Emergency Services Interoperability Program [JESIP])—does not always provide effective capabilities in response to a high-stakes incidents. For instance, it was noted that a key barrier to decision making was the “[f]ailure to follow JESIP principles of colocation and information sharing” (Transcript A).

The failure to follow JESIP principles, particularly in colocation and information sharing, suggested the need to enhance strategic practices and improve JESIP principles. Saunders,⁶⁹ for example, suggested that the JESIP principles were unsuccessful, not because of the policy failure *per se*, but rather the embryonic stage of JESIP at the time.

In terms of processes related to strategic information exchange and communication, research has highlighted that JESIP should facilitate a platform for dialog.⁷⁰ Thus, at a macro level, current policy enables interoperable leadership and promotes collaboration across the multiagency system.⁷¹ In this context, this suggests that the theoretical framework of transformational leadership, which posits that leaders inspire followers to exceed their own self-interests,⁷² is relevant and might explain why the CCA and JESIP remain effective protocols.

According to Power et al.,⁷³ leaders who are characterized by their interoperable leadership style are influential in inspiring members across different teams to collaborate effectively. However, in contrast to this, it is important to highlight that inadequate information sharing can lead to fragmentation of policy application, and shared situational awareness, affecting the overall strategic response.⁷⁴ These challenges stem not only from logistical and communication barriers but also in understanding the application of relevant policy.⁷⁵ For instance, the Cabinet Office⁷⁶ has argued that current policy frameworks should include: (1) evaluating the likelihood of emergencies and preparing accordingly, (2) keeping emergency and business continuity plans current, (3) engaging in public communication, (4) fostering business continuity practices, (5) sharing relevant information and (6) cooperating with multiple agencies. Yet the contrast between these protocols and their practical implementation during an incident is questionable. This became apparent in the context of interagency liaison, where idealistic guidelines for cooperation were rigorously tested by the complexities and pressures of the Manchester Arena bombing:

The need for a joint response is not new. ... The findings and lessons identified by public inquiries and inquests have highlighted cases where the emergency services could have worked better together and shown much greater levels of communication, co-operation and co-ordination. ... [This is] yet another illustration of the gap between theory and exercise and reality. The easy point to register is that information sharing between the emergency services on 22 May was obviously far from perfect. For instance, the absence of a forward control point at the scene. The failure to communicate formal declarations made by individual control rooms. Gaps and delays in information sharing between control rooms. A

failure to share the METHANE information in concise METHANE form, imperfect joint situational awareness. (Transcript B)

While it is clear from the transcripts that there was a gap between theory and practice, it also suggested a requirement to shift toward more adaptable and nuanced emergency response procedures and strategies. The disparities in decision-making approaches among groups, defined by their inclination toward either action-centric or information-centric behaviors, perhaps provide an understanding of how responders may shift between policy, theory and practice. These categorizations, devoid of theoretical bias, might therefore explain the distinct paths taken by various groups in their decision-making processes. However, the underlying reasons for these divergences remain speculative without further evidence. In other words, in exercises staff are assigned roles, are ring-fenced and are given “prior notice.” During actual emergencies, commanders usually lack sufficient staff, and their key resources are not yet available, meaning that the Gold/Silver Command structures may not be immediately available either.

The Manchester Arena incident also demonstrated the limitations of traditional, rigid emergency response protocols in the face of unpredictable, dynamic crises.⁷⁷ The variability in decision making among strategic coordination groups highlighted the need for emergency response frameworks that are not only grounded in solid theoretical foundations but are also adaptable to the fluid nature of emergency response. This gap between theory and practice highlights the importance of integrating practical insights from frontline experiences. It suggests that emergency response protocols should be continuously evolving, based on actual incident feedback and cross-agency learning. This would involve not just revising the theoretical models, but also addressing the underlying issues, such as interagency communication barriers, cultural differences and resource allocation challenges.⁷⁸

Subtheme 2: Failures in Strategic and Tactical Management

The response to the Manchester Arena attack provides an insight into the complexities of strategic and tactical management within emergency response frameworks. This incident highlighted the challenges faced when theoretical emergency response models confront the realities of a critical, high-pressure situation. For instance, the observed limitations in the service-level agreement between Greater Manchester Fire and Rescue Service (GMFRS) and North West Fire Control, which led to an overburdened response and significant challenges for the GMFRS national interagency liaison officer:

The response to the arena attack exposed the limitation in the service level agreement between GMFRS and the North West Fire Control... overburdened causing significant difficulties for the GMFRS national inter-agency liaison officer. (Transcript C)

The specific mention of the limitations in the service-level agreement between GMFRS and North West Fire Control is a key aspect of strategic management: the necessity for robust, flexible and comprehensive agreements and protocols that can withstand the demands of an unexpected and rapidly evolving emergency scenario. This reflected the challenges in ensuring effective interagency coordination and

collaboration.⁷⁹ The “overburdened” response and the difficulties faced by the GMFRS national interagency liaison officer further illustrate the practical consequences of inadequate strategic planning and preparation. However, it also implied a broader need for a systemic reevaluation of how emergency services design and implement their strategic agreements.⁸⁰ Yet a reevaluation of any model for public service is fundamentally oriented around public interest, incorporating the core values and principles that underpin public service ethics.

In principle, this might appear straightforward, as the definition of emergency response principles is clearly articulated through the Nolan principles.⁸¹ These principles—namely, selflessness, integrity, objectivity, accountability, openness, honesty and leadership—form the ethical framework for those operating as employees in the public sector.⁸² The progression of National Frameworks for Fire and Rescue Services, alongside the mission statements for policing and operational mandates for the National Health Service (NHS), illustrate that for these frameworks to be integrated effectively, they need three interlinked domains: policy development, service delivery and assurance or regulatory oversight. This tripartite model (see Figure 1) is central to the understanding of effective operational decision making and response strategies, highlighted by the need for policies to be feasible, service delivery to be optimized and accountable and for the public to receive assurance on the effective use of resources for policy implementation.⁸³

It also suggests a requirement for more dynamic and resilient frameworks that can adapt to the unpredictable nature of emergency scenarios. This includes not only the agreements themselves but also the training, resources and communication systems

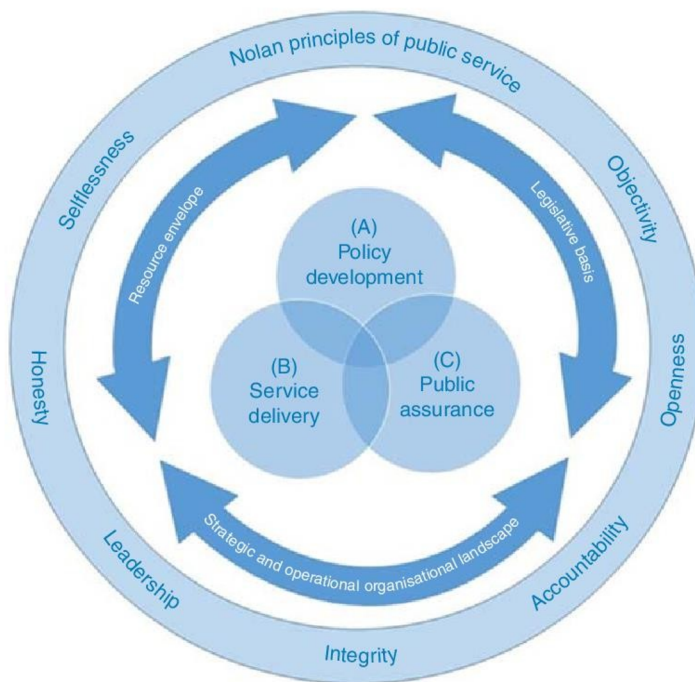


Figure 1. The key components required for systematic reevaluation and change in emergency response organizations.⁸⁷

that support them.⁸⁴ Yet, the ability of commanders and agencies to jointly collate information and make informed decisions, as emphasized by the Joint Decision Model (JDM), ultimately hinges on the strength and efficacy of these foundational elements.⁸⁵ For instance,

The Joint Decision Model in the context of situational awareness is designed to enable commanders to jointly collate all available information for decision-making. The central principle is that people work together to save lives and reduce harm. ... [However] the five core JESIP principles ... were plainly not followed in the way they should have been. (Transcript D)

Yet it is clear from this that the delay in following established principles was a key point of concern. Effective management structures in emergency response require a disciplined adherence to established protocols and principles.⁸⁶

While perhaps considered an intersection of macro-meso characteristics, it must be recognized that leaders play an important role in ensuring that principles like those in the JESIP framework are not only known, but also followed in practice. The failure to enforce these principles points to potential shortcomings in leadership and management oversight, that can have severe consequences during emergencies. However, the role of avoiding hindsight bias⁸⁸ in strategic and tactical management suggests that decisions made should be evaluated based on the information and knowledge available at the time, rather than retrospectively: “It’s emphasised that decision-making should not be judged with hindsight but rather based on what was known at the time. The importance of this perspective is highlighted” (Transcript E).

This approach acknowledges that decision makers often have to make tough choices under intense pressure and limited information, which can result in outcomes that may appear flawed or misguided in hindsight.

Theme 2: Barriers of Organizational Processes on Effective Decision Making: A Meso-Level Perspective

This overarching theme was contextualized through the investigation of three distinct subthemes, each reflecting an aspect of the meso-level determinants of the Manchester Arena bombing response. The first subtheme explored the concepts of organizational preparedness and foresight that preceded the event. This focus emerged from recognizing the various factors, such as the effectiveness of past training exercises, the timeliness and relevance of plan reviews and the identification of coordination gaps.⁸⁹ These elements collectively highlighted the meso-level challenges and necessities in building a robust critical incident response framework⁹⁰ at the organizational level.

In summary, the aim here was not to capture the holistic characteristics that influence organizational response, but rather to understand how organizational factors in isolation (i.e., prior preparations and joint exercises) influenced the ability to respond to the unforeseen event effectively. The thematic analysis then identified a shift toward the immediate actions taken in the wake of the attack. This particular subtheme was informed by the observation of initial response delays, challenges in command and

control, and the management of operational protocols under extreme pressure.⁹¹ The final subtheme focused on the decision-making process during the peak of the crisis. This subtheme was informed by the evaluation of how individuals responded in the context of the organizational conditions (e.g., the performance of commanders), and the adherence to or deviation from organizational and operational protocols. In this regard, high-stakes decision making, especially the judgment and presence of personnel at the scene, was a focal point.

Subtheme 1: Bridging the Gap in Emergency Response Preparedness

The data highlighted the importance of preparedness and suggested the benefits of simulation exercises, such as Exercise Winchester Accord—a strategic counterterrorism exercise—and the efforts made to simulate high-pressure situations. Yet the inquiry data also suggested a disconnect between these exercises and their practical application in real-world scenarios. For instance, “Emergency services [learned] from [the] Exercise Winchester Accord ... just a year before the arena attack.” However, “... the experts do not consider that the necessary lessons were learned from that training” (Transcript F).

This implied that while preparedness is critical in ensuring resilience to operational strategy, and that these exercises were conducted, their lessons are not also fully integrated into the actual response strategies. This discrepancy showed a gap between the theoretical framework of critical incident management training and its practical execution in real-world scenarios.⁹² Thus, the failure to integrate effectively lessons learned from training exercises into real-world crisis response not only revealed a procedural gap,⁹³ but also demonstrated how this could significantly impact organizational response and decision making during actual emergencies. For instance, “[I]t’s clear ... that some of the challenges which were identified in multi-agency training exercises and other mass terror events emerged again on the night. In particular, the failure to maximise shared situational awareness among co-located agencies” (Transcript B).

Despite prior identification of challenges in training exercises, these issues did not appear to be managed effectively or integrated into the actual response strategies, leading to their recurrence during the Manchester emergency response. However, conducting an exercise is only one part of preparedness; equally important is the process of reviewing the outcomes of these exercises, identifying gaps and then integrating these learnings into standard operating procedures and training⁹⁴:

In a multi-agency exercise even if that’s two or three agencies the individual agency will do their own debrief so the representatives can then say “That’s the 10 things we feel happened and we’re going to take that into the multi-agency debrief” so they come together on an informed basis and say what have we all learned here. (Transcript G)

While this suggested that individual agencies conducted their own debriefs to identify key learnings, these were carried out in isolation rather than holistically. This approach might have hindered a comprehensive understanding and integration of lessons across a multiagency system. Consequently, the effectiveness of this process in practice, particularly during the Manchester attack, raised concerns. Despite recommended procedures for debriefs and integration of lessons learned,⁹⁵ the actual implementation during the crisis was insufficient. In other words, debriefing in isolation might have contributed to the failure of individual agencies to work interoperably.

Thus, debriefing to achieve a shared understanding might offer an effective mechanism to enhance operational and strategic practice.⁹⁶

It was evident, that the insights from training exercises were not always fully absorbed and implemented. As such, at an organizational level, decision makers were ill prepared to face the complexities and unique challenges presented by the actual crises.⁹⁷ Indeed, it was evident that there were organizational coordination and communication issues, and that these factors were identified in previous exercises. For instance,

... the problem I was touching on ... is the coordination of training between you all and that you'd actually know about the training that was going on before it happens in detail and you'd automatically be led into any lessons learnt. (Transcript D)

In this context, the lack of effective communication and coordination between agencies likely led to delays, miscommunication and, potentially, a less effective response.⁹⁸ Specifically, the data suggested that there was an inability to apply learned lessons of coordination effectively, limiting the agility and responsiveness of agencies. This, in turn, can have far-reaching consequences on the effectiveness of emergency response decision making, ultimately impacting the safety and well-being of those involved.⁹⁹ Yet it is important to note that the training itself is always not adequate:

Greater Manchester Police (GMP) control room staff have not received specific training regarding the force response to an MTFA [marauding terrorist firearms attack]. (Transcript H)

This demonstrated an important issue in organizational response strategy. For instance, the lack of specific training for GMP control room staff in responding to an MTFA could have impacted decision making in response to the attack. In an emergency, particularly one as complex as a terrorist incident, rapid and accurate decision making is crucial.¹⁰⁰ Control room staff are central to this process,¹⁰¹ coordinating the response, making critical decisions and ensuring effective communication between different agencies and units on the ground.¹⁰² Without specialized training, it is plausible to state that control room staff might struggle to process rapidly evolving information, thus informing operational, tactical and strategic decisions. This can lead to redundant deliberation of information, as personnel might need more time to understand the situation, assess the available options and determine the most effective course of action.¹⁰³

What is more, the quality of decisions made under these circumstances was likely to be compromised.¹⁰⁴ As discussed above, staff without specific training in MTFA scenarios were not necessarily aware of the best practices or most effective strategies for such situations. As a result, their decisions might not be as informed or strategic as they need to be to manage an incident effectively. This extends to communication and coordination efforts. In other words, it is vital that responders are skilled in clear and effective communication,¹⁰⁵ which is essential in high-pressure, high-stakes situations. Poor communication can lead to redundant deliberation of information, confusion of events, duplication of efforts or even contradictory actions by different agencies, further complicating the response efforts.¹⁰⁶

Subtheme 2: The Impact of Delays on Organizational Decision Making

Whether it is a natural disaster or a terrorist attack, the ability to respond rapidly can mean the difference between life and death. Every second counts, and the effectiveness

of the emergency response can be influenced by a multitude of factors. One of the most crucial factors identified was the need for a rapid response from emergency services. It was clear that in the aftermath of the Manchester Arena bombing, concerns quickly emerged about the organizational response time of emergency services. Specifically, it was noted in the transcript data, that “*frustration*” and “*disappointment*” were demonstrable as responders expressed their eagerness to provide assistance sooner. For instance:

It did not in fact take long for concerns to emerge about the way in which the emergency services responded to the bombing. ... [F]rustration at how events developed... considerable disappointment even anger at not being deployed to the scene sooner in order to provide assistance. (Transcript A)

This conveyed the responder’s sense of urgency and the need for response organizations to action a quicker response. This supports the principles of the “Golden Hour” where responders often perceive the organization’s response time as a determinant of least-worst outcomes (e.g., reduced mortality).¹⁰⁷ However, the delayed response from GMFRS suggested that this principle was superseded by an alternative taxonomy: “GMFRS did not arrive at the scene and therefore played no meaningful role in the response to the attack for nearly 2 hours. ... The Fire Service was effectively outside the loop” (Transcript A).

Specifically, the Fire Service was effectively “outside the loop,” unable to contribute to the efforts unfolding at the scene. The meso-centric concerns here are threefold: (1) the lack of communication between agencies, (2) the lack of situational awareness across the organization and (3) the lack of coordination within the organization. For instance, the collective understanding of the event, its implications and potential future developments should have been essential for an effective response.¹⁰⁸ However, the perception, comprehension and projection of the bombing were compounded by increasing levels of situational processing. In this regard, the shared situational awareness of GMFRS arguably faced challenges in data interpretation, particularly regarding semantic meaning, perception and data quality.¹⁰⁹ Alison et al.¹¹⁰ posited that this was a representation of *exogenous uncertainty*; in other words, uncertainty surrounding the behavior of others in the responding teams placed a strain on the decision makers and likely led to the delays.

Nonetheless, as shown above, responders often felt that the organizational decisions were insufficient and contrary to effective decision-making strategies. Research on critical incident decision making among emergency service workers has shown that even experienced decision makers often *fail to act* when faced with challenging decisions (i.e., whether to deploy). From an organizational perspective, this behavior suggested a reliance on a heuristic that deemed inaction as the safest option. Instead of committing to a choice, decision makers in this instance appeared to actively engage in delaying the implementation of a decision.¹¹¹ The decision of *failing to act* thus led to *worst* outcomes than acting without complete information (i.e., *least-worst outcomes*), as “*more is missed by not doing than not knowing*.”¹¹²

In addition to this, effective command and control were found to be essential during the rapid response of emergency service responders. However, failure in command structures led to chaos and a disjointed effort within and across priority response

agencies. For example, the data highlighted an absence of joint agency tactical scene command, resulting in a failure of JESIP principles: “The joint view of the experts is that there was an absence of joint agency tactical scene command ... [that] resulted in a JESIP failure” (Transcript A).

It is demonstrated that the significance of effective command and control structures during response is essential. In particular, it served as a reminder that when command systems fail, the consequences can result in chaos and a marked lack of coordination among responders.

This not only hindered the overall response but also impacted the decision-making process at a more local level (i.e., within individual response agencies).¹¹³ The specific instance of the absence of joint agency tactical scene command and the subsequent failure of JESIP principles provided an example of how interoperability, facilitated by the JESIP framework, was critical in achieving effective and optimal outcomes in emergency scenarios.¹¹⁴ Such breakdowns, however, extended their influence beyond the overall response and permeated into levels of inaction across the hierarchy of command. For instance, “The FDO [force duty officer] made a deliberate decision not to follow his training and not to implement the procedures he had been taught to use” (Transcript C).

The deliberate decision not to follow established training and procedures is an exemplar of how organizational command structures influenced response outcomes. Emergency management plans that ensure agencies are familiar with standard operating procedures are essential for maximizing the effectiveness of flexible decision making.¹¹⁵ However, allowing deviations from predetermined rules can sometimes lead to catastrophic outcomes.¹¹⁶ Nonetheless, it is crucial for commanders to interpret situations as unique or unmanageable within standard procedures, enabling them to exercise discretion and adaptability.¹¹⁷ In cases like the Manchester incident, the ability to be flexible and adaptable in procedures was indispensable for effective emergency management. However, the challenge lay not in whether commanders were flexible and adaptable, but in how they balanced these two elements. For instance, “Although GMP cannot support the withholding of information from the other emergency services it does understand why the FDO did what he did and one of the many possibilities is that his decision may have saved lives” (Transcript C).

This illustrated the tension between following protocols and adapting to unique the circumstances: it suggested that adherence to operational protocols was not necessarily a requirement for a least-worst outcome.¹¹⁸ Even so, mismanagement of these protocols can hinder efforts. For example, the declaration of Operation Plato, a critical response protocol, was not actively and accurately managed during the Manchester Arena attack: “The declaration of Operation Plato ... was not actively and accurately managed. In the view of the experts this too represents a failure” (Transcript A).

Mismanagement of critical operational protocols, like Operation Plato¹¹⁹ during the Manchester Arena attack, can impact decision-making processes and the overall efficiency of emergency response at the local and system levels. First, it can lead to information overload across responders.¹²⁰ A profusion of unfiltered and unstructured information, without the guidance of well-managed protocols, can make it difficult for decision makers to discern what is most relevant. This not only delays the

decision-making process but also increases the likelihood of organizational oversights (e.g., resource allocation).¹²¹ Second, poor management of protocols can result in inadequate coordination among various response agencies. Finally, cognitive biases become more pronounced.¹²² Decision makers may resort to heuristic or instinctive decision making, which, while sometimes beneficial,¹²³ can lead organizational systems to opt for suboptimal choices if not grounded in a solid framework of well-managed protocols.¹²⁴

Subtheme 3: Enhancing Organizational Decisions During Crisis

The decision-making process and the roles of various commanders provided a valuable case study in crisis management. For instance, Assistant Chief Constable (ACC) Debbie Ford's dual role as the Gold commander and strategic firearms commander illustrated the challenges of centralizing command in a high-pressure situation. Her assumption of these roles embodied a principle crucial in crisis response: unified command, which consolidated organizational decision making to ensure a coordinated approach. However, this centralization raised questions about the potential for cognitive overload by those in attendance. For instance,

There is no question that the FDO [was] being overloaded with tasks in the initial stages of a potential Plato. (Transcript I)

ACC Debbie Ford assumed overall command for the incident as the Gold Commander and also became the strategic firearms commander... (Transcript B)

In practice, task centralization should streamline decision making and prevent conflicting commands. Yet task overload, and the concentration of roles in a single individual, could be problematic¹²⁵:

[Y]ou have to know your limits ... what you can achieve before you become overloaded. ... [T]he reality is the FDO will be frazzled (Transcript J)

By centralizing a decision point across an organization, it risked creating a bottleneck in the decision-making process, where the capacity of one individual to process information and issue commands could become overwhelmed by the scale and complexity of the situation. In other words, managing high-stakes responsibility, often simultaneously with other roles, under critical incident conditions, can significantly increase cognitive load at the micro level.¹²⁶ For instance, cognitive load theory¹²⁷ suggests that individuals have a limited capacity for processing information, and when this capacity is exceeded, it can lead to decision fatigue,¹²⁸ creating organizational vulnerability across the decision framework (i.e., fatigue can impair judgment and slow down response times). In Ford's case, balancing the strategic oversight of the entire incident with the tactical considerations of firearms deployment would have been an immense challenge.

In the context of the Manchester Arena attack, the application of the JDM was particularly pertinent. The JDM emphasized the importance of situational awareness and collaborative information gathering and processing in decision making. By enabling commanders to collate all available information jointly, the JDM should have supported a more holistic understanding of the incident. Even so, the inquiry's reference to the JDM suggested the need for an organizationally relevant decision-making framework

that could accommodate both the structure provided by standard operating protocols (e.g., information sharing) and the flexibility for response agencies to adapt to the specific circumstances of a crisis. This did not appear to have been achieved on the night of the bombing:

The Joint Decision Model in the context of situational awareness is designed to enable commanders to jointly collate all available information for decision-making. The urgent imperative to save life in appalling circumstances created a big gap between JESIP guidance and practical reality. Communication between the different emergency services was tested beyond [the] breaking point. Joint situational awareness ... was not achieved in the way that JESIP expects... (Transcript B)

JDM works in many complex emergencies; however, in a terrorist incident the police have primacy in terms of response, deployment and trying to neutralize an active threat to the public and other emergency responders.¹²⁹ This highlighted shared situational awareness and collaborative information processes as key factors in effective emergency management. Shared situational awareness in this context goes beyond mere data collection; it involved a dynamic understanding of the evolving situation across response agencies, allowing primary decision makers to anticipate future developments and adjust their strategies accordingly.

Thus, the collaborative aspect of the JDM was absolutely crucial. It ensured that decision making was not siloed, but rather involved a collective assessment of information from various sources, leading to more informed and comprehensive decisions.

Subtheme 4: Bridging Theory and Practice

This event stands as a paradigmatic model, providing insights into the nature of critical incident management, particularly in relation to organizational decision-making processes. The response to the attack emphasized the dichotomy between theoretical frameworks in incident management and the exigencies of real-world application. This dichotomy is highlighted in the disparity between established protocols and the situational demands encountered. In addition, it continued to highlight the essential role of adaptability and resilience in crisis response. For instance,

Communication between the different emergency services was tested beyond [the] breaking point. Joint situational awareness between the different control rooms was not achieved in the way that JESIP expects. ... The operational response of British Transport Police to this bomb attack was the sum of the responses of its individual officers. ... BTP believes that the overall response to the attack by its officers and staff was extremely good. (Transcript D)

Thus, it is evident that organizations must adopt a framework of resilience and adaptability to help support critical decisions in the absence of effective communication and coordination, as per established protocols.¹³⁰ Yet the gap between theory and practice appeared to necessitate a focus on training and preparation that better equipped organizations and responders to handle the unpredictable nature of real-world emergencies.¹³¹ Furthermore, the acknowledgment of communication shortcomings and the commitment to shared responsibility by GMP suggested an organizational reflexivity imperative for continuous improvement: “The tri-service communication system was

available to be shared and used amongst the three principal emergency services and it could and should have been used on the night GMP apologises...” (Transcript D).

This represented an organizational *mea culpa* (i.e., an acknowledge of fault), an essential component in the iterative process of incident management enhancement.¹³² The ability to reflect on actions, identify flaws and commit to improvement is vital for enhancing the overall effectiveness of incident management. This reflective process is a foundation of adaptive response—focusing on introspection and iterative improvement, rather than relying on *recognition prime*.¹³³ Based on NDM, we often train responders to make the “same” decision again (recognition prime). But, as discussed above, the scene at the Manchester bombing did not match recognition primes, and so one must think about the decision maker differently in terms of how they *prepare*, how organizations support resilience and how the policies organizations use might not match the principles of *least-worst* outcomes.¹³⁴ Thus, it is worth considering what represents *good* decision making and critical thinking, as well as a need to focus on time and interoperability.

Theme 3: Barriers to Response Level Resilience and Decision Making—A Micro-Level Perspective

Several studies on high-stakes decision making have emphasize the cognitive processes involved for the decision maker.¹³⁵ Thus, collectively, several factors can result in what is commonly referred to as “*decision-inertia*.”¹³⁶ However, these factors were seldom recognized in the context of the Manchester Arena bombing. Rather, a focus toward emotional recovery was evident.

High-stakes incidents often leave deep psychological and emotional scars on victims, responders and the community at large.¹³⁷ The trauma and stress induced by such events can have long-lasting effects, influencing individuals’ mental health and overall well-being.¹³⁸

This implies that it may not be clear when a Gold or Silver commander becomes overwhelmed and when a “substitute” should be brought in. Thus, this study identified the importance of addressing these psychological and emotional needs as part of the response to an incident. It suggested a shift from a purely operational focus in emergency response management to one that also incorporated therapeutic jurisprudence.¹³⁹

In emergency response management, the decision-making process often prioritizes immediate physical safety and logistical concerns.¹⁴⁰ Even so, the emotional and psychological support for victims was considered a critical component. Decisions regarding this aspect of support were essential for comprehensive management at the incident, as they directly influenced the long-term recovery and well-being of those affected. For instance, “Everyone feels differently about his or her experiences on the night. ... [M]eeting and sharing has proved a comfort to some people at least” (Transcript D).

This suggested the varied and personal nature of emotional responses to a critical incident. It revealed the necessity for decision makers to consider the diverse emotional needs of individuals impacted by traumatic events.¹⁴¹ The decision to facilitate meetings and sharing sessions reflected an understanding of the therapeutic value of communal

support and shared experiences in the healing process. From a decision-making perspective, however, this approach appeared to suggest the importance of empathy and emotional intelligence in response management, rather than the consideration of barriers to effective decision making. Thus, it seems to suggest that decisions must extend beyond the immediate tactical responses, to include strategies for emotional recovery and support. This involves recognizing the psychological impact of the incident and allocating resources not just for physical aid but also for mental health support.¹⁴²

The emphasis on the comfort resulting from shared experiences points to the need for incorporating community-based support mechanisms in response plans.¹⁴³ This approach can be instrumental in fostering resilience and aiding in the emotional recovery of the victims.

Decision makers need to consider these aspects when developing and implementing response strategies. In this context, the Manchester inquiry provided further insight into the real-time experiences of those in command during the crisis. It highlighted the challenges and emotional responses of key decision makers. For instance:

It is important to ensure that the BTP commander on scene is aware of their responsibilities including attending and possibly chairing the Silver coordinating group meetings. ... Shocked clearly. Not something you ever probably prepare yourself for. And at that time I thought there was an ongoing terrorist attack in Manchester hence I made my way into work when Chief Inspector Buckle arrived. It didn't happen at 23.43 during the call or shortly afterwards and in the end the FDO was not relieved of his Tactical firearms commander (TFC) responsibilities until 00.15 or just afterwards. Was that unsatisfactory? Yes. (Transcript K)

This provided an interpretation of the immediate reactions and personal experiences of those in command roles during the incident. The mention of shock and the unpreparedness for such a situation reflected the emotional and psychological challenges faced by decision makers in real-time scenarios. The expectation of attendance and active participation in coordinating group meetings, as highlighted here, suggested the role and engagement in response management.¹⁴⁴ This, therefore, shows a gap between the theoretical preparedness and the actual emotional and psychological readiness of those involved in the Manchester response—particularly those in leadership positions.¹⁴⁵

General Discussion

An understanding of past terrorist incidents and the challenges encountered during response efforts is essential for enhancing future counterterrorism preparedness and crisis management.¹⁴⁶ The Manchester Arena bombing exemplifies this,¹⁴⁷ specifically from a strategic, operational and tactical lens. The findings for the current study necessitate the integration of dynamic and interoperable response mechanisms that bridge theoretical frameworks with practical exigencies.¹⁴⁸ Further, by evaluating deficiencies in information exchange, strategic command structures and situational awareness protocols, this research reveals the structural and cognitive barriers that impede effective crisis management. It is in this regard that insights from this study may provide an empirical foundation for refining counterterrorism response strategies, ensuring that

future incidents are met with an analytically informed, evidence-based approach that enhances resilience, decision-making efficacy and interagency collaboration.

As discussed, the rarity and complexity of critical incident events often pose significant challenges for understanding and assessment of decision making. Despite retrospective accounts not being capable of fully capturing the stress load in real-time critical decision making,¹⁴⁹ they represent a valuable repository of data that allows for the examination of the factors influencing responses to critical incidents. In this study, a systematic inquiry and thematic analysis of the nuances of decision making, with a specific emphasis on *in-situ* decision-making contexts, revealed the multidimensional decision-making challenges faced by emergency responders *in-situ* to the Manchester Arena attack. Specifically, the analysis identified the dimensionality¹⁵⁰ of decision-making challenges across the meso, macro and micro dimensions.

One important characteristic of the response was preparedness and foresight. The effectiveness of past training exercises, the timeliness of plan reviews and the identification of coordination gaps all played a key role in the construction of a robust critical incident response framework. Understanding how prior preparations and joint exercises influenced the ability to respond effectively to unforeseen events was highlighted as critical.¹⁵¹ Yet it was evident that the ability to integrate the lessons learned from pre-event exercises into real-world crisis response strategies was a significant challenge.

The inquiry also spotlighted deficiencies in planning and preparedness, which inevitably incur cost and are subject to rigid budget limitations.¹⁵² Indeed, the findings from this study supports this, as decision makers felt largely unprepared to respond to the terrorist incident. Yet what emergency preparedness in the public health sector looks like is still contested.¹⁵³

While training exercises can simulate response scenarios,¹⁵⁴ they often fall short of capturing the dynamic, rapidly evolving nature of actual emergencies.¹⁵⁵ This discrepancy between the controlled environment and the chaotic reality of a critical incident event can hinder decision makers from effectively applying the knowledge and skills they have acquired (e.g., decision inertia).¹⁵⁶ Organizational culture and bureaucratic hurdles can further exacerbate these gaps. It has already been demonstrated that decision makers facing high stakes, uncertainty and time pressure are more likely to resort to standard operational procedures rather than flexible thinking.¹⁵⁷

The significance of immediate actions taken in the aftermath of a critical incident cannot be understated, as they have a profound impact on the overall response strategy. For instance, the timeliness of response to the Manchester attack played a key role in crisis management. Yet the delays in initiating the appropriate response measures had severe consequences. This is partially explainable by the lack of coherency and clarity in defining and characterizing the attack as a critical incident. This is particularly relevant in instances of a marauding terrorist incident.¹⁵⁸

Central to the current study was the examination of established emergency response protocols and their adaptability in high-pressure situations. These protocols were designed to guide responders in executing their tasks efficiently. However, the unique challenges posed by the incidents necessitated flexibility from standard operating procedures.¹⁵⁹ This suggests that the response personnel should not be automatically

accountable for deviating from the standard protocol if the evaluation of circumstances surrounding their decision is indicative of high stakes, ambiguity and time pressure. Thus, determining the specificity required in emergency planning and the degree of adherence to these plans remains an area of inquiry within critical incident and decision-making research.

Balancing adherence to protocols and situational adaptability is a complex challenge.

Mismanagement of critical operational protocols can lead to information overload,¹⁶⁰ inadequate coordination,¹⁶¹ and cognitive biases,¹⁶² further complicating the decision-making process. Furthermore, examining the concept of decision suspension—known as decision inertia—in the context of critical incident response is crucial. Decision makers may sometimes opt for inaction due to the overwhelming nature of the incident or fear of making a wrong decision under pressure,¹⁶³ which can potentially negatively impact their careers (and offer no official incentives for rightful deviations from the protocol). This form of inaction can be just as detrimental as making rapid decisions.¹⁶⁴ Understanding the factors that contribute to decision inertia, such as consequentialist reasoning, information overload and the desire to avoid accountability, can provide insights into how to mitigate its negative effects. Developing effective strategies that balance adherence to protocols with independent and flexible decision making in the face of high-stakes pressure and uncertainty is likely to remain a key security challenge for years to come.

When considering the direct implications of this study, it is beneficial to examine the existing response framework, specifically the Bronze, Silver and Gold command structures (e.g., whether there is a command gap¹⁶⁵), which constitutes the hierarchical model for emergency response management in the United Kingdom. The Manchester Arena bombing inquiry highlights critical limitations between these command levels, particularly in information sharing, decision-making coherence and the application of crisis response protocols.¹⁶⁶ By considering these findings through the lens of command integration, it becomes evident that a recalibrated of current approaches may be necessary for optimizing counterterrorism preparedness.

At the Bronze level, deficiencies in situational awareness and interoperability were seen to hinder tactical response, with communication breakdowns and a lack of structured command leading to delays in decision making. A recalibration toward decentralized yet coordinated decision making, enhanced through multiagency training, may mitigate these issues (e.g., poorly shared mental models and conflicts between distributed and individual decision-making processes can hinder coordination).¹⁶⁷ For Silver Command, the compromised synchronized interagency collaboration revealed critical weaknesses in information sharing and operational coordination. Implementing a more integrated framework with a horizon-scanning lens¹⁶⁸—such as shared command platforms and real-time decision logs—could strengthen cross-agency responsiveness and better align tactical execution with strategic oversight.

Pratt, Bisson and Warin¹⁶⁹ proposed a Decision Intelligence/Data Science Integration Framework with a view to enhancing strategic decision making by combining human expertise with technology. In this context, Kahneman's dual-process framework¹⁷⁰ could provide further insights: while contemporary technological systems operate primarily in a System 1 mode (e.g., fast and frugal), specializing in rapid pattern recognition and intuitive processing, they struggle with the deliberate, analytical reasoning of System 2 thinking (slow, effortful and logical processing). Because effective operational command requires both fast, adaptive decision making and structured analytical reasoning,

embedding a System 2 layer into decision-making processes could provide a more balanced and adaptive approach.¹⁷¹ Finally, at the Gold command level, it is of the essence to recognize that rigid and static protocols (e.g., the mismanagement of Operation Plato) may not capture the rich and dynamically changing tapestry of unexpected new variables, the implication being that under exceptional circumstances leadership must be allowed reasonable operational flexibility beyond the standard protocol without fear of reprisal.

Limitations

The inquiry data used in this study are a retrospective account of the information provided by first responders and decision makers. While their firsthand accounts offer valuable insights into the *in-situ* decision-making process during critical incidents, it is crucial to acknowledge the inherent limitations associated with such accounts. First, these accounts are often influenced by legal advice and guidance, leading to potential sanitization and distortion of the information presented. Responders and decision makers may be cautious in their responses, aiming to avoid legal implications or negative consequences putting their careers in peril. This cautious approach can limit the candidness and accuracy of their accounts. Second, the passage of time can affect the accuracy of memory recall. Memory decay and the potential for detail to become blurred, mixed up or forgotten over time can introduce inaccuracies and fabrications into the accounts. Additionally, exposure to media accounts and public discourse about the incident can further distort individuals' recollections. Finally, the sense of self-serving bias may influence responders' and decision makers' accounts. Even when providing evidence under oath, individuals may feel the institutional pressure and present their actions and decisions in a more favorable light, emphasizing their positive contributions and downplaying any individual and organizational shortcomings, oversights and missed opportunities.

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