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Considerations of Resilience in the Homeland Security Literature: Towards Conceptual Convergence?

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Abstract:

Scholars and policy makers argue that communities that increase their resilience are better positioned to protect themselves from disruptive events. The popularity of the resilience concept has created challenges for scholars and public policy makers. The most substantial challenge relates to whether there exists sufficient common understanding of resilience to enable the concept to be applied in research and public policy contexts. This article presents the findings of an analysis of resilience discussions in the homeland security literature. The analysis included the 56 articles that reference resilience terminology and are published in the journals: *Homeland Security Affairs* and the *Journal of Homeland Security and Emergency Management*. Our findings indicate that resilience discussions in the homeland security literature seem to be converging towards a hybrid conceptualization of resilience, which suggests that a resilient system would have the capacity to both resist a disturbance and to quickly restore services if a disturbance could not be prevented. Despite this possible movement towards conceptual convergence, additional steps must be taken if resilience is to become a concept that can be used to guide the development and implementation of homeland security policy.

Keywords: emergency management, homeland security, resilience, resiliency, resilient

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1 Introduction

Scholars and policy makers argue that communities that increase their resilience are better positioned to protect themselves from disruptive events (Longstaff et al. 2010; Palin 2010). Reflecting this argument, resilience terminology has gained prominence in policy domains such as homeland security (Kahan 2015), climate change (Gaddy, Clark, and Ryan 2014), critical infrastructure (Labaka et al. 2013), economic policy (Rose 2009), and information security (Crowther, Haimes, and Johnson 2010). Beyond mere references, resilience has also been advanced as a public policy goal. At the federal level, the Department of Homeland Security, the Federal Emergency Management Agency, and the Department of State have all issued policy statements that emphasize resilience as a goal. Similar trends can also be observed at the state level, as government agencies in Florida and New York have integrated resilience into their emergency management policies. Even local communities have embraced resilience. For instance, the mayor of Houston, one of the largest urban areas in the United States, is supported by a Chief Resilience Officer, whose responsibilities are directed towards the reduction of community risk.

The popularity of the resilience concept, however, has created challenges for both scholars and public policy makers. The most substantial challenge relates to whether there exists sufficient common understanding of resilience to enable the concept to be applied in research and public policy contexts. Indeed, a long-standing criticism of the resilience literature is that it is theoretically fractured, and as a result, resilience discussions often do not move beyond mere metaphor (Manyena 2006). Similar concerns exist about the use of the resilience concept in public policy domains. For instance, the White House, the Department of Homeland Security, and the Department of State have all proffered different definitions of resilience and they have employed resilience terminology in different contexts. Over time, these definitional and conceptual differences could lead to discrepancies in the design, implementation, management, and evaluation of public programs (Walklate, McGarry, and Mythen 2014a, 2014b). Others take a more critical perspective of resilience as a policy goal, suggesting that

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the concept could become a “universal dogmatism that [is] bereft of any rigorous critical reflection” (Evans and Reid 2014, xi).

If the various definitions and conceptualizations of resilience cannot be unified, or at least navigated, then contemporary explorations of resilience may not help us to bridge theory and practice. Without praxis, it will be difficult to align resilience thinking with the homeland security and emergency management policies that emphasize the holistic protection of critical infrastructures, democratic and economic institutions, and the social components of our communities (Office of the President of the United States 2017). Thus, by seeking broad understandings of resilience, we may be able to determine how resilience thinking could be used to develop solutions that are suitable for contemporary public policy problems (Chandler 2014). To these ends, efforts must be undertaken to understand what we know about resilience, and equally important, to identify the limitations and boundaries of our resilience knowledge.

This article presents the findings of an analysis of how the homeland security literature has approached inquires and discussions about resilience. Although this body of literature does not capture the full range of perspectives on resilience, it provides insights into how scholars and policy makers have defined and conceptualized resilience, and by extension, how these discussions are connected to the broader resilience literature. Specifically, we analyzed the 56 articles that focus on resilience as a primary or secondary focus and are published in the journals: *Homeland Security Affairs* and the *Journal of Homeland Security and Emergency Management*. Our analysis, part of a larger study on resilience thinking, was guided by three research questions. First, how prevalent are resilience discussions in the homeland security literature? Second, how do authors who publish in the homeland security literature conceptualize resilience? Third, to what extent do authors that contribute to the homeland security literature advance a unified conceptualization of resilience?

There were several motivations for undertaking the analysis needed to address these questions. Reflecting on the emergence of resilience as a goal of public policy importance, the authors want to take stock of the development and evolution of resilience thinking within the domain of homeland security. More specifically, by focusing on the definitional aspects of resilience, we also wanted to assist homeland security students and policy practitioners navigate the complexity of the resilience literature. To these ends, the findings generated by our analysis indicate that the homeland security literature, narrowly defined, may contain the foundations for a unified and coherent understanding of resilience. The findings further also indicate that additional steps must be taken if resilience is to become a concept that can be used to guide the development and implementation of homeland security policy (Walker and Salt 2006).

2 Literature Review

In the context of natural and man-made disasters, resilience has been identified as a potential solution to the problems generated by disruptive events. While resilience is often considered to be an innovative concept, references to resilience-like concepts can be found in works that date back to classical antiquity (Alexander 2013). In contemporary times, Holling (1973) was one of the first to consider the meaning and dimensions of resilience, a concept used to describe the processes that promote stability and change within ecological systems. Since the publication of Holling’s ideas, the concept of resilience has been applied to other intellectual domains. Psychologists, for example, have used resilience to describe how at-risk children overcame various forms of adversity (Eisold 2005; Stein et al. 2000). Similarly, public administration scholars have explored whether resilience strategies could help public agencies manage uncertainty (Wildavsky 1988). In recent years, disaster management scholars have considered whether resilience can reduce the risks associated with hazard events (Comfort 1999).

More broadly, the resilience concept has received attention from scholars from fields as diverse as such as ecology, engineering, economics, computer science, public administration, complex adaptive systems, and emergency management. While a review of the knowledge generated within and across all these fields is outside the scope of this article, several scholars have undertaken comprehensive reviews of the resilience literature. For example, de Bruijne, Boin, and van Eeten (2010) present a concise review of the evolution of the resilience concept in the fields of psychology, ecology, and the social sciences. Similarly, a review undertaken by Reid and Botterill (2013, 38) explores the academic literature and reveals that resilience has “multiple and often conflicting meanings.” While Reid and Botterill (2013) explore the use of resilience concepts within the Australian public policy context, their conclusions about the resilience literature correspond with those of other scholars (Chandler 2014; Kahan 2015; Manyena 2006, 2014), namely that resilience discussions suffer from definitional ambiguity.

Despite this definitional ambiguity, Reid and Botterill (2013) suggest that conventional discussions about resilience have started to coalesce around common sets of assumptions. At a high level of abstraction, these assumptions seem to reflect the emergence of three categories of resilience, each of which sequentially increase

in scope and complexity (Folke 2006). The first category is engineering resilience, which is a system's capacity to preserve a steady state of operation, or at the very least, avoid alternative states of operation, during a disturbance. According to Holling (1996), 33, those that focus on engineering resilience seek to maintain a system's equilibrium through "efficiency, constancy, and predictability – all attributes embraced and celebrated by ... those who search for fail-safe designs." In the homeland security context, a system's engineering resilience can be improved through fortification or the strengthening of critical infrastructure.

The second category is ecological resilience, which is a system's capacity to absorb a disturbance "before a change in system control and structure occurs" (Holling 1973, 1996). Unlike engineering resilience, which focuses on the preservation of an established state of equilibrium, ecological resilience considers the extent to which a system can deviate from and then return to that established state of equilibrium. In the natural hazards context, a system is resilient to the extent it "has the ability ... to mitigate hazards, contain the effects of disasters when they occur, and carry out recovery activities in ways that minimize social disruption and mitigate the effects of future [disasters]" (Bruneau et al. 2003, 735). Stated differently, a system that possesses ecological resilience, also referred to as social resilience, can react to and absorb a disturbance, and equally important, bounce back from that disturbance without losing its core operational capacity (Tierney and Bruneau 2007). Hazard and disaster scholars suggest that a system's ecological/social resilience can be improved through social, institutional, economic, and infrastructure development (Peacock et al. 2010; Aldrich 2012; Ross 2013).

The third category is what we labeled as progressive resilience, which reflects a system's ability to adapt and self-organize in response to the constraints and opportunities generated by a disturbance. Unlike engineering resilience and ecological resilience, scholars that emphasize progressive resilience suggest that systems that are shocked by a disturbance do not return to an established state of equilibrium. Rather, they "bounce forward" to an alternative equilibrium, as the agents within the system learn to adjust and self-organize their structures and processes in response to their changing environment (Manyena et al. 2011). Scholars seem to be divided with respect to the time period in which this adjustment and self-organization occurs. For Manyena et al. (2011), the adaptation and self-organization can occur pre-disaster or post-disaster, as individuals, organizations, and communities learn new skills and institutional approaches to risk over the course of several decades. In contrast, Comfort (1999) argues that self-organization occurs over a shorter time period – the course of hours, days, or weeks – as individuals, organizations, and communities learn and make adaptive adjustments as a risk develops, materializes, and then dissipates. Despite their temporal differences, the resilience perspectives advanced by Manyena and Comfort overlap in two ways. First, they consider resilience to be an "intrinsic capacity of a system," meaning that solutions to problems related to disaster response and risk reduction can emerge from the non-linear processes that unfold in complex adaptive systems (Comfort 1999, 2007; Manyena et al. 2011, 3; Chandler 2014). Second, they consider these non-linear processes to be driven by information collection and distribution, which inform situational awareness and collective decision-making (Axelrod and Cohen 2000; Comfort 2007).

To be sure, the three categories of resilience identified above reflect a limited overview of the depth and nuance of the resilience literature (Alexander 2013; de Bruijne, Boin, and van Eeten 2010; Folke 2006; Reid and Botterill 2013). That said, this review does reveal that important conceptual differences separate the three resilience categories. Moreover, these differences seem to support the long-standing argument that, without a consensus as to the specific meaning of resilience, the concept of resilience may be nothing more than a metaphor for a desired condition or set of outcomes (Manyena 2006). Despite this concern, some have suggested that there exist sufficient common understandings of resilience to justify efforts to operationalize and measure resilience (Barker, Ramirez-Marquez, and Rocco 2013; Lee, Vargo, and Seville 2013; Ross 2013, 2016; Tiernan 2011; Yoon, Kang, and Brody 2016). In line with this perspective, the landscape of resilience indicators has grown in both diversity and sophistication. For example, following a comprehensive review of twenty-seven resilience assessment approaches, Cutter (2016), 747–748 reveals that most resilience assessment approaches can be organized according to their focus (specific assets vs. general baseline), spatial unit (local vs. global), methods (quantitative vs. qualitative), and domain (characteristics vs. capacities). While their review of resilience assessment tools suggests the presence of conceptual convergence in terms of the operationalization of resilience, they further note that questions about measurement variables and approaches remain unresolved (Cutter 2016).

Despite the recent advancements in our understanding of resilience, the literature indicates that resilience remains an ambiguous and contested concept, and as such, discussions about how to conceptualize, measure, and assess resilience should proceed with caution (Reid and Botterill 2013). Caution is necessary because the appropriateness of a given measurement and assessment tool will depend, in part, on its underlying definitions and assumptions. For instance, the variables used to measure and promote engineering resilience will likely differ from the variables used to measure and promote progressive resilience. There are similar concerns about the use of resilience concepts in the public policy domain. Here, ambiguities about resilience assumptions and definitions can create difficulties for those responsible for programs that emphasize resilience. For example, without conceptual and operational clarity, policy officials may struggle to make judgments about

which resilience category would bring about their desired outcomes (Seager et al. 2017). Additionally, even if the outcomes were known, officials would still struggle to navigate issues associated with accountability, transparency, and the identification of measurable indicators (Reid and Botterill 2013; Walklate, McGarry, and Mythen 2014a, 2014b). These issues are likely to be exacerbated because the capacities that facilitate resilience seem to be driven by context, meaning the choices needed to promote resilience in a community may be driven by factors such as whether that community is rural or urban (Asprone, Prota, and Manfredi 2014; Banica et al. 2017; Cox and Hamlen 2015; Cutter, Ash, and Emrich 2016).

The brief review of the literature indicates that resilience has been defined, conceptualized, and operationalized in a variety of ways. Given that resilience remains an ambiguous and contested concept, students, scholars, and policy makers who are interested in resilience should pay careful attention to how resilience terminology is employed. Within this context, this article presents the findings of an analysis of articles about resilience published in *Homeland Security Affairs* and the *Journal of Homeland Security and Emergency Management*. We focused on these journals for two reasons. First, we wanted to understand the various ways that resilience has been conceptualized in the homeland security literature, which has a strong public policy orientation. Second, and more specifically, we wanted to explore whether discussions of resilience in the homeland security literature are driven by any particular conceptualization of resilience. By focusing our inquiry on homeland security journals, we hope to contribute to conventional understandings of resilience, and by extension, contribute to discussions about where investigations of resilience need to go, both as a matter of scientific inquiry and public policy.

3 Methods

To complete this analysis, data were collected from electronic databases that cataloged the journal *Homeland Security Affairs* and the *Journal of Homeland Security and Emergency Management*. We searched both journals for articles that contained at least one instance of any of following keywords: “resilience”; “resiliency”; or “resilient” [collectively referred to hereafter as “resilien*”]. The search results identified 314 separate articles published between each journal’s inaugural issue and September of 2018. A preliminary review revealed that most articles, despite their use of one or more keywords, focused on editorial matters or scholarly topics other than resilience. Thus, to identify articles relevant to our inquiry, we classified articles as relevant if they were original scholarship that investigated the history, conceptualization, measurement, operationalization, or promotion of resilience in an emergency management, disaster management, or homeland security context. We defined “investigated” to mean that the discussion of resilience was the primary or secondary emphasis of the article under consideration. The article classification process, which was designed to be more inclusive than exclusive, identified 56 separate articles (or 17.83% of all 314 articles) that addressed substantive issues of resilience.

We then used the qualitative data analysis software MAXQDA (2016) to review and code the relevant articles. The coding process proceeded in four steps. First, we counted the number of times each article contained the words “resilience”, “resiliency”, and “resilient”. So that we focused on the substantive content of the document, we excluded instances where these words were used in an article’s title, abstract, footnotes, endnotes, or list of references. These data were stored in *Excel*, which was used to generate descriptive statistics. Second, we coded the substantive content of each article. To identify which conceptualizations of resilience were explored within the articles, we then identified every instance where the author(s) defined resilience, either explicitly or implicitly. Then, using Table 1 as a coding heuristic, we classified each resilience definition according to whether it most resembled: (1) engineering resilience (stability); (2) ecological/social resilience (recovery); or (3) progressive resilience (transition). Both authors engaged in the initial coding processes by separately classifying each resilience definition included in the analysis. Once coding was completed, the authors cross-validated their coding efforts and resolved their coding discrepancies through discussion. During this process, we identified a sub-set of resilience definitions that did not fall directly within any of three categories of resilience or they employed conflicting definitions of resilience. These definitions were classified as “other” and subjected to further analysis.

The data collected for this study provides insights into how articles published by homeland security journals approach the concept of resilience. The limitations of this study, however, cause us to caution against making broad generalizations about the use of resilience in other public policy domains. The primary limitation relates to the nature of resilience discussions explored by the present analysis. Not only do many of the articles fail to anchor their discussions of resilience to a specific body of literature, but also many of the resilience definitions advanced in these articles were vague, making them difficult to classify with a high degree of certainty. Additionally, the articles included in our analysis were extracted from a small pool of journals. As previously mentioned, we limited our focus to journals that contained the words “homeland security” in their

titles. This decision was motivated by our desire to understand resilience within the homeland security policy context. Consequently, we excluded from our analysis the *Journal of Homeland Security Education* and the *Journal of Global Homeland Security Education Network*. Finally, there are other journals that address homeland security issues, especially in fields of public policy, criminal justice, law enforcement, and public administration. Given the breadth and depth of the resilience literature, however, we believe that systematic attempts to understand the resilience literature must pursue an incremental approach. As such, the scope of our future research will be expanded to include journals from fields not considered in the present article.

Table 1: The Three Categories of Resilience.

Category	Definition	Outcomes
Engineering resilience	The system can maintain a steady-state of operation, or at the very least, avoid alternative states of operation, during a disturbance	Resist and maintain the original equilibrium
Ecological/social resilience	The system can absorb and bounce back from a disturbance without losing its core operational capacity	Absorb and return to the original equilibrium
Progressive resilience	The system can self-organize and bounce forward from a disturbance through the exchange of information and learning how to adapt its operational capacity	Adapt, self-organize, and transition to a new equilibrium

4 Findings

This study identified 314 articles published in *Homeland Security Affairs* and the *Journal of Homeland Security and Emergency Management* that mention of “resilience,” “resilient,” or “resiliency”. To narrow our scope of analysis, we focused on articles that addressed, as a primary or secondary focus, the history, conceptualization, measurement, operationalization, or promotion of resilience in an emergency management, disaster management, or homeland security context. This selection process revealed 56 articles, which we classified as core articles. Of these core articles, 19 (or 33.93%) were published in *Homeland Security Affairs* and 37 (or 66.07%) were published in the *Journal of Homeland Security and Emergency Management*. The remainder of this article focuses on the findings generated by the analysis of the content of the core articles.

4.1 The Use of Resilien* Terminology

The core articles mentioned resilience, resiliency, or resilient a total of 2451 times. The data reported in Table 2, which focuses only on the use of resilien* terminology in the core articles, indicates that “resilience” is the word most often used by authors, at 2137 or 87.19% of all resilien* mentions. More broadly, although the average number of resilien* mentions is 43.77 per document, we only identified six articles that contained 100 or more resilien* mentions. Of these, one was published by *Homeland Security Affairs* (Kahan 2015) and five were published by the *Journal of Homeland Security and Emergency Management* (Kahan, Allen, and George 2009; Cutter et al. 2013; Labaka et al. 2013; Taquechel 2013; da Silva Stefano, Daniel Pacheco Lacerda, and Pantaleão 2017). Together, these six articles contain 1257 or 51.29% of all resilien* mentions.

The data further reveal that the *Journal of Homeland Security and Emergency Management* contain the most resilien* mentions, at 1713 (or 69.89% of 2451 total mentions). In contrast, *Homeland Security Affairs* contains 738 resilien* mentions (or 30.11% of 2451 total mentions). When we normalized the results, the journals differed in terms of the number of resilien* mentions, at 46.30 and 38.84 mentions per article, respectively. That said, some scholars made extensive use of resilien* terminology across both journals. For example, a single scholar was involved in the publication of two articles, one in each journal, which contain a combined total of 528 resilien* mentions (Kahan, Allen, and George 2009; Kahan 2015). Together, these two articles account for 21.54% of all resilien* mentions identified in the 56 core articles included in this study.

Table 2: Frequency of Resilien* Usage in Core Articles by Journal.

	Resilience	Resiliency	Resilient	Totals
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Homeland Security Affairs

Number of Mentions	595	68	75	738
Percentage	79.87	9.13	10.07	100
Average	31.32	3.58	3.95	38.84
High	196	22	24	192
Low	0	0	0	0
<i>Journal of Homeland Security and Emergency Management</i>				
Number of Mentions	1542	44	127	1713
Percentage	90.02	2.57	7.41	100
Average	41.68	1.19	3.43	46.30
High	265	12	29	265
Low	2	0	0	0

4.2 Resilience Definitions: Towards Conceptual Convergence

While some suggest that there are sufficient understandings of resilience to move beyond conceptual debates (Cutter, Burton, and Emrich 2010), scholars have yet to reach a consensus on what resilience actually means. The challenge is summarized by Walker and Salt (2006), 37, who note that “resilience means different things to different people.” The findings generated by this study confirm that this lack of consensus continues to exist within the homeland security literature.

As Table 3 reports, 22 or 39.29% of the articles included in the analysis touch on one of the three conventional conceptualizations of resilience: engineering, ecological/social, or progressive. Table 3 further indicates that 12 or 21.43% were classified as indeterminate, meaning that the definition of resilience used in the articles could not be identified. The most interesting finding was that a large portion of the articles included in this study contained a perspective of resilience that seemed combine two of the three conventional conceptualizations of resilience. We classified these articles as hybrid resilience, which we defined as a combination of engineering resilience and ecological/social resilience. In terms of the importance of the hybrid resilience category, it was the most prevalent conceptualization of resilience identified in this study, at 19 or 33.93% of the relevant articles. As illustrative examples, content from some of the articles associated with the most prevalent of the resilience categories identified in Table 3 are discussed below.

Table 3: Frequency of Resilience Conceptualization Categories by Journals.

	HSA		JHSEM		Totals	
	n	%	n	%	n	%
Engineering resilience	5	8.93	1	1.79	6	10.71
Ecological/social resilience	3	5.36	10	17.86	13	23.21
Progressive resilience	2	3.57	1	1.79	3	5.36
Other categories of resilience						
Hybrid (engineering & ecological/social) resilience	6	10.71	13	23.21	19	33.93
Psychological resilience	0	0.00	3	5.36	3	5.36
Indeterminant	3	5.36	9	16.07	12	21.43
Totals	19	33.93	37	66.07	56	100

4.2.1 Engineering Resilience

The articles associated with engineering resilience addressed topics and issues related to the protection of critical infrastructure. An article that emphasized engineering resilience focused on critical infrastructure protection (CIP) instructors, who must become familiar with a wide range of concepts related to the design of protective systems (Hart and Ramsay 2011). For CIP instructors, the goal is to teach those who want to protect critical infrastructure how to identify hazards, assess vulnerabilities, and then select the mitigation option that is best suited for the context at hand. Although Hart and Ramsay (2011), 15 acknowledge that a “complete protective system encompasses physical, human and cyber elements”, their work calls upon CIP instructors to focus threat identification and the deployment of countermeasures that can eliminate or neutralize those threats before they can cause disruptions to critical infrastructure systems. A similar perspective was adopted by White (2014), who developed and evaluated an Asset Vulnerability Model (AVM), which can be used to protect critical infrastructure and chemical, biological, radiological, and nuclear stockpiles from a catastrophic attack. The

AVM formula emphasizes, among other factors, the probability that an attack can be detected/disrupted and defeated. After assessing the utility of the AVM, White (2014), 10 suggests that a homeland security strategy supported by AVM would seek to “maximize protective investments that minimize the probability of successful domestic catastrophic attack.”

4.2.2 Ecological/Social Resilience

The data indicate that ecological/social resilience was the most prevalent of the three conceptualizations of resilience referenced in the literature review. Although the articles that mentioned ecological/social resilience did not follow a unified definition, this conceptualization was applied to a variety of topics and levels of analysis. For example, in their exploration of interorganizational coordination in disaster response networks in Florida, Kapucu et al. (2010), 4 indicate that resilience is “characterized by reduced failure ... that is, [the] rapid restoration of social systems and institutions to their normal, pre-disaster levels of functioning.” Similarly, Chittister and Haimes (2011), who shifted the focus from social to technological systems, employed the social conceptualization of resilience in their exploration of how cyberinfrastructure systems can be protected from risks such as intrusion. The most illustrative example of such an article was written by Cutter, Burton, and Emrich (2010), which introduced the Baseline Resilience Indicators for Communities (BRIC) and explored how the ecological/social conceptualization of resilience can be operationalized for measurement and assessment. Building upon this line of inquiry, da Silva Stefano, Daniel Pacheco Lacerda, and Pantaleão (2017) used the BRIC indicators as a tool to assess the resilience of the City of Porto Alegre, Brazil. Although they indicated that the BRIC indicators had limitations, they concluded that the BRIC tool enabled them to identify areas where the city could improve its resilience.

4.2.3 Progressive Resilience

The data indicate that only three articles were classified as emphasizing progressive resilience. While these articles did not specifically refer to resilience as a concept whereby a system or community had the capacity to “bounce forward,” they indicate that resilience is a process that includes both recovery and redevelopment activities that push a system towards a new state. For instance, Caudle and Broussard (2011), 2, note that communities that experience a disaster may “aggressively take advantage of a ‘window of opportunity’ to build a new community future through recovery and redevelopment, not simply restore the past.” Another article stressed that resilience involves individual learning, system learning, and self-organization, which provide a system the means to respond to changing operational environments (Palin 2010; Pfeifer and Roman 2016). As an example, Pfeifer and Roman (2016), 3 identify the foundations for a modified Tiered Response Pyramid, which they argue provides emergency and crisis managers with a system-level view of the diverse set of resources and capacities possessed by the organizations that are involved in emergency and crisis management activities. They further contend that such a holistic perspective would increase the response and surge capacities of crisis management organizations, and enable crisis managers to reconfigure the structures, processes, and behaviors of these organizations as they confront a “dynamic and unpredictable threat environment” (Pfeifer and Roman 2016, 3).

4.2.4 Hybrid Resilience (Engineering Resilience & Ecological/Social Resilience)

Of the articles included in this analysis, the most prevalent were those that combined the engineering and ecological/social conceptualizations of resilience. The key emphasis of these articles was on a system’s capacity to both resist a disturbance and recover from the shock caused by a disturbance. This hybrid conceptualization of resilience was applied to both engineered systems and social systems. For instance, in considering how non-structural conceptualizations of resilience might guide the protection of critical infrastructure, Taquechel and Lewis (2017), 5 adopted the Department of Homeland Security Risk Lexicon’s definition of resilience: “the ability to adapt to changing conditions and prepare for, withstand, and rapidly recover from disruption.” Similarly, Labaka et al. (2013), 292 referred to resilience as a process that “serves not only to reduce the magnitude of the impact after the triggering event has occurred, but also helps to avoid the occurrence of a crisis.” This hybrid conceptualization of resilience was also identified in articles that address business recovery (Atkinson and Sapat 2014), information security (Crowther, Haimes, and Johnson 2010), building construction (Labaka et al. 2013), and household preparation of rural populations (McNeill et al. 2016). Other articles advanced this hybrid conceptualization of resilience as a policy goal. For example, in investigating resilience as an emergency

management goal and standard, McCreight (2010), 6 refers to resilience as the ability of an organization or community to rebound after a disaster and the ability to absorb strain and withstand destructive disasters.

4.2.5 Indeterminate Conceptualizations of Resilience

The third most prevalent category contained articles in which the discussions of resilience were classified as indeterminate. Articles were classified as indeterminate for two reasons. First, the article provided a definition of resilience that was too vague to be classified within an existing or potential category. Second, the article did not provide a specific definition of resilience that could be classified within an existing or potential category. Although an article may have received an indeterminate classification, this classification does not suggest anything about the nature or quality of its substantive content. In fact, these articles explore a variety of homeland security topics, including the resilience of individual responders, families, and organizations (Landahl and Cox 2009), evacuation and sheltering (Risoë, Schlegelmilch, and Paturas 2013), and how community health centers could support resilience (Wood 2009). Other articles, especially those that considered issues of policy, were broader in focus. Illustrative examples include articles that discussed the need for frameworks that can be used to develop disaster resilient regions (Hardenbrook 2005), as well as articles that considered how the Department of Defense can help agencies prepare for terrorism and natural hazards (Stockton 2011).

5 Discussion

This study supports and advances conventional understandings of resilience thinking. Within the context of the homeland security literature, the findings give insights into how scholars have approached questions for resilience. First, the findings provide empirical confirmation that resilient* terminology has made its way into the homeland security literature, which means that scholars and practitioners consider resilience to be a phenomenon worthy of investigation. Unfortunately, the use of resilient* terminology is neither reflective of a conceptual understanding of resilience nor synonymous with an emerging consensus about what resilience means. In many ways, these two points are reinforced by how resilient* terminology was used in some of the core articles. Indeed, our analysis identified several articles that employ resilient* terms as adjectives to reference a desired quality (Fowler and Aaron 2007, 242). As an illustrative example, we often encountered sentences such as: “we need to build disaster resilient communities.” Without further specification, however, such sentences do not provide readers with the theoretical or policy insights they need to understand what is meant by the word “resilient”.

The findings further confirm that scholars and policy makers who publish in homeland security journals approach questions of resilience from a diversity of perspectives. To this end, the analysis revealed that scholars approach questions of resilience from all three of the conventional perspectives: engineering; ecological/social; and progressive. More specifically, however, the findings further suggest that the homeland security literature has begun to coalesce around particular conceptualizations of resilience. For example, of the three conventional resilience perspectives, the most prominent was ecological/social resilience. This finding corresponds with the trends identified in the broader resilience literature (Cutter 2016; Reid and Botterill 2013). Although this evidence of conceptual convergence seems to reflect progress in our understandings of resilience, this progress has not eliminated the obstacles related to the measurement and assessment of resilience (Carpenter et al. 2001; Cumming et al. 2005; Cutter 2016; Cutter, Burton, and Emrich 2010; da Silva Stefano, Daniel Pacheco Lacerda, and Pantaleão 2017). Even assuming such obstacles can be overcome, the diverse contexts in which policy makers operate suggest it may be difficult to establish a “one-size-fits-all approach for applying resilience in connection with homeland security issues” (Kahan 2015, 3).

Finally, the findings indicate that resilience discussions within the homeland security literature, narrowly defined, appear to converge around a hybrid of the engineering and ecological/social conceptualizations of resilience, meaning that a resilient system has the capacity to both *resist* a disturbance, and if necessary, *bounce back* after a disturbance. While this finding warrants further investigation, the emergence of this hybrid conceptualization of resilience would have several implications for resilience thinking in the homeland security context. First, the hybrid conceptualization reflects an acknowledgment that our communities are comprised of different types of systems – both engineered and social – each of which have different attributes and operational parameters. Second, the hybrid conceptualization acknowledges that the systems that make up our communities are nested and functionally interdependent (Ostrom 2005; Perrow 1999), meaning they are best described as sociotechnical systems (Coakes 2002). The third implication is that the hybrid conceptualization

reflects an acknowledgment that resilience requires cross-sector collaboration, since the sociotechnical systems that shape our communities represent joint efforts of the public and private sectors.

The scope of the present study, however, prevents us from identifying what might be driving the movement towards the hybrid conceptualization of resilience. It could be driven by changes at the national policy level, which would encourage authors to adopt a certain resilience perspective. It could also be driven by theoretical changes, which could be driven by scholarship published in non-homeland security venues. Admittedly, given the difficulties of differentiating between the resilience definitions and conceptualizations used by the articles included in this analysis, suggested movement could also be an artifact of the coding process. Regardless of what, if anything, may be driving the change, the foundations of policy oriented conceptualizations of resilience must be guided by answers to the questions of “resilience of whom” and “resilience against what?” While further research is necessary, the hybrid approach seems to begin to answer these questions in that it suggests our communities are comprised of complex and interdependent sociotechnical systems that must be holistically protected against a diversity of natural and man-made hazards.

The findings also have implications for those interested in broader discussions of resilience, meaning those that transcend the boundaries of the homeland security literature. The most important implication is that students, scholars, and policy makers must be aware that discussions of resilience continue to be driven by a multiplicity of definitions and conceptualizations, many of which are based upon differing assumptions about the mechanisms, processes, and outcomes of resilience (Demiroz and Haase 2018). Making this point more than a decade ago, Kahan, Allen, and George (2009), 4 noted that the variety of resilience perspectives are the result of “differing and sometimes inconsistent viewpoints.” Kahan and colleagues noted that these viewpoints are extremely complex, and can emphasize a system’s capacity to maintain its functions and structure in the face of change; a system’s ability to resist, absorb, recover, or adapt to an adverse occurrence; a community’s ability to withstand an extreme event with tolerable level of losses; or the capacity of a society to prepare itself, to react, and to bounce back expeditiously to an enhanced functioning (Kahan, Allen, and George 2009, 4-5). Adding to this complexity, conceptualizations of resilience have also been applied to a diversity of contexts, including hard systems (infrastructure and institutions), soft systems (family, community, and society), and more broadly, the political, economic, and social dimensions of life (Kahan, Allen, and George 2009). Furthermore, as the present study suggests, the conceptions of resilience discussed in the literature will probably continue to evolve for the foreseeable future.

Consequently, students, scholars, and policy makers must take care to select definitions and conceptualizations of resilience that are appropriate for the policy context in which they operate or the phenomenon they seek to investigate. More specifically, they must be precise with their use of language, as a variety of terminology is employed across the varying conceptualizations and definitions of resilience. Indeed, this study identified a vast lexicon associated with discussions of resilience. This lexicon includes words as varied as resist; contain; adjust; factor; evolve; system; absorb; self-organize; network; recovery; capability, capacity, structure; emergence; complex; determinant; function; and change, to name a few. As a further complication, terms such as self-organization and adaptation were used to describe both ecological/social resilience and progressive resilience. Without specification, the use of terms such as these can complicate our ability to understand resilience, whether as a theoretical construct or as a public policy goal. As an example, consider the term “adaptation,” which the English Oxford Living Dictionary (2018) defines as “a change or the process of change by which an organization or species becomes better suited to its environment.” Without further specification, adaptation could be interpreted to mean a single policy change (single adjustment) that would occur after a disruptive event, or a series of ongoing policy changes (continual adjustment) that would occur before, during, and after a disruptive event. This point was stressed by Kirschenbaum (2006), 4, who noted the term adaptation “has numerous behavioral meanings that are dependent upon and best understood in the context within which they are expressed.” Consequently, efforts should not only be undertaken to standardize the terminology used to define and conceptualize resilience, but to systematically integrate this terminology into the homeland security literature.

The multiplicity of resilience perspectives and the diversity of resilience terminology can also affect how policy makers apply the resilience concept to public policy issues. The practical challenge is to determine what actions need to be taken to promote resilience. The range of potential actions, however, will be determined by the conceptualization of resilience that policy makers ultimately adopt. For instance, in their exploration of the relationship between climate change and emergency management, Gaddy, Clark, and Ryan (2014), 248 stress that there are important differences between the concepts of “disaster resilience” and “climate change resilience.” Citing a white paper from the Rockefeller Foundation (2009), 1, Gaddy, Clark, and Ryan (2014), 248 note that climate change resilience is defined as “the ability to survive and recover from the effects of climate change.” In contrast, citing UNISDR (2009), 24, they also note that disaster resilience is defined as “the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of

its essential basic structures.” The similarities and differences between these terms are important because, depending on which term is employed, they provide policy makers with conflicting insights into the nature of the activities that can be taken to reduce risk (Gaddy, Clark, and Ryan 2014). One could interpret “climate change resilience” as necessitating actions that enable a community to react to a change after it occurs. In contrast, “disaster resilience” could be interpreted to include proactive actions that can be taken before the change occurs. There is also the concern that the use of vague resilience terminology in the policy domain could lead to nefarious outcomes, for example, the surreptitious transfer of the responsibilities for preparing for and responding to disruptive events from governmental entities back to individual citizens (Chandler 2013).

6 Conclusions

This article presents an analysis of how the homeland security literature frames discussions of resilience. A content analysis of the 56 articles that referenced resilient* (resilience, resilient, or resiliency) as a primary or secondary focus and were published in *Homeland Security Affairs* and the *Journal of Homeland Security and Emergency Management* confirmed that resilient* terminology permeates the homeland security literature. The analysis further confirmed that discussions about resilience in the homeland security literature are not based upon a singular or unified definitional or conceptual foundation. Rather, they tend to correspond with the three conventional perspectives of resilience: engineering resilience (robustness), ecological/social resilience (bouncing back), and progressive resilience (bouncing forward).

This study also revealed that resilience discussions in the homeland security literature seem to be converging, albeit in different ways. For instance, of the three conventional conceptualizations of resilience, the ecological/social conceptualization is most prevalent. The data further revealed convergence towards a hybrid conceptualization of resilience, which, from a definitional perspective, makes connections between the engineering and the ecological/social conceptualizations of resilience. This hybrid conceptualization suggests that a resilient system would have the capacity to both resist a disturbance, and if necessary, quickly restore services to a predetermined level if the disturbance cannot be prevented. While the causes and scope of such a convergence are unknown, movement towards this hybrid conceptualization of resilience suggests that scholars and policymakers are developing a more comprehensive understanding of resilience, as a hybrid conceptualization would incorporate a greater set of system attributes and resilience strategies.

Despite this finding, we agree with Walker and Salt (2006), 12, who argue that the resilience concept is not sufficiently refined to be effectively and efficiently employed by decision-makers. This investigation of resilience discussions in the homeland security literature suggests that conceptual clarity can be pursued. As a first step, scholars and policy makers could better specify their chosen approach towards resilience, namely by proffering a specific definition of resilience and by anchoring that definition to the appropriate theoretical literature. By extension, scholars and policy makers could also better specify the terms they use to define or explain their approach to resilience. This would help to bring clarity to discussions of resilience, especially those built upon terms such as adaptation, change, and recovery. Once common ground for the exploration of resilience is established, then efforts towards the promotion of community resilience might become more successful (Barishansky and Mazurek 2012). For example, Zavaleta et al. (2018) suggest that simulation-based instructional design can be used to engage communities in preparedness education, which would draw more attention from the public and make preparedness efforts part of their daily life. If scholars and policymakers have a shared understanding of resilience, they can then employ design based perspectives to develop policy initiatives that can effectuate the transfer of resilience knowledge and experience from one community to another (Seager et al. 2017).

While these recommendations suggest that resilience scholarship has a path forward, this path has yet to be revealed. It may be that, as a basis for homeland security, the future of resilience as an area of intellectual inquiry will not be determined by a single path, but rather, by multiple paths (Kahan 2015). This perspective does not discount the value of previous scholarship, nor does it discount the importance of cutting-edge research. Rather, this perspective supports our conclusion that we should seek to further our understandings of the present state of resilience knowledge, while at the same time acknowledging the boundaries and limitations of our knowledge. Future research can focus on several lines of inquiry. First, the efforts undertaken in this study can be expanded to incorporate resilience articles published in a wider range of journals, namely those that focus on issues of public administration, public policy, emergency management, and governance. Second, bibliometric methods can be used to analyze resilience articles, which can provide insights into the topography of resilience research. Such methods can also reveal whether resilience research activities cluster around certain theoretical and methodological streams. Additionally, efforts can be undertaken to identify keyword co-occurrences, author citation networks, and genealogy of our knowledge of resilience. Third, by analyzing

the content of the resilience literature, future research can also consider whether resilience is a construct that can be operationalized, and if so, where there might be areas of agreement or disagreement. Only by taking stock of the current state of resilience knowledge will be able to clarify whether the path forward for resilience thinking, as it relates to homeland security, is one of divergence or convergence.

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