

Policy learning and the COVID-19 crisis: A systematic review of scholarship and key lessons for research and practice

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Abstract

Policy learning plays an important role during crises, where it can empower effective crisis responses, or derail policy leading to fiascos with costly implications in terms of lives and livelihoods. Accordingly, a crisis like the COVID-19 pandemic has created a surge in research on policy learning. In this article, and more than three years from the crisis' onset, we systematically review what has COVID-19 policy learning research has hitherto offered. We take stock of 45 scientific articles to provide an account of where policy learning has been researched, what methods, policy domains, conceptual approaches were most used, and what new theoretical and conceptual advances have emerged from this growing body of research. Furthermore, we distil the key insights it offers to both scholars and practitioners. In doing so, we point to the theoretical and empirical gaps that future scholarship can address, as well as how can practitioners leverage research insights towards improving policy learning practices during similar crises in the future.

Keywords: Policy Learning; Policy Analysis; Crisis Learning; Crisis Governance; Systematic Literature Review

Points for Practitioners

- In creeping crises such as COVID-19, policymakers need to consider the multidimensionality and societal embeddedness of policy issues while designing policy learning processes, particularly in identifying relevant expertise.
- Creeping crises evolve over time. Hence, policymakers need to continuously re-align the policy learning processes to match evolving crisis definitions, manifestations, and societal perceptions. This requires continuous context scanning.
- In creeping crises, policy learning has considerable time and space interactions. Thus, when designing policy learning processes, policymakers need to account for the interactions of policy learning processes and their heterogeneity across various levels of the governance architecture over time. As such, holistic “governance” of policy learning processes becomes essential.
- Policymakers should strive towards minimizing perceived political interventions and influences on the policy learning processes, particularly during crises to maintain transparency and public trust.

1. Introduction

Policymakers “learn” in order to better address increasingly wicked policy issues. This process can be understood as one by which policy actors seek and process policy-issue related information and knowledge to update their beliefs and understandings of policy problems, and potential solutions (Zaki, Wayenberg & George, 2022). Through policy learning, actors engage in continuous problem identification and definition, solution formulation, and evaluation (Dunlop & Radaelli, 2016; Zaki, Pattyn, & Wayenberg, 2022; Sanderson, 2002). These learning processes can either help enhance policy effectiveness, or derail policy causing “endarkment”, and policy fiascos. Hence, understanding how policy learning takes place generates substantial insights into the dynamics of policy change or the lack thereof, making it a potent lens on policy analysis, both in research and practice.

Given its established influence on addressing complex problems, policy learning is critical within crisis contexts where intracrisis (within crisis) learning can help policy actors adapt to crisis evolutions and multidimensionality, and intercrisis learning can help preparing for future crises (e.g., Kamkhaji & Radaelli, 2017; Zaki, Pattyn, & Wayenberg, 2022). This becomes even more important during large-scale crises that extend for long durations, often referred to as “lingering” or “creeping crises” (Boin, Ekengren, & Rhinard, 2020). So, it was not surprising to see policy learning at the forefront within the COVID-19 pandemic. Throughout the crisis, policymakers undertook critical policy learning processes to define policy problems and enhance organizational crisis responses. This has taken place, almost globally and across different levels of governance architectures, from supranational, to national and local (e.g., Ladi & Tsarouhas, 2020; Crow, et al., 2022).

The important role policy learning played during the COVID-19 crisis spurred calls for research that provides value for theory, and utility for practice drawing on our COVID-19 experience (Dunlop et al., 2020). Theoretically, burgeoning COVID-19 policy learning research has generated advanced theoretical understandings of how certain learning types take place and their role in creating patterns of policy change and stability (Quaglia & Verdun, 2023; Zaki, Pattyn & Wayenberg, 2022), and it also conceptualized several new learning types (Lee, Hwang, & Moon, 2020; Crow, et al., 2022). Empirically and practically, this growing body of literature has shown us how good or “optimal” policy learning contributed to successful crisis policymaking. For example, through effective collective learning involving relevant stakeholders (Osei-Kojo et al., 2022), adequate engagement of expertise and cognizance of local contexts surrounding learning (Raudla, 2021), or ensuring adaptive and agile learning approaches (Lee, Hwang, & Moon, 2020; Kim, Shin, & Kim, 2023). On the other hand, it has also shown us how subpar learning derailed crisis policymaking leading to failures costing lives and livelihoods. This could be due to crisis politicization, inadequate governance of learning processes (Zaki & Wayenberg, 2021; Cairney, 2021; Kippin & Cairney, 2021), or the existence of too many lessons from past and present that are not fungible or transferable under conditions of ambiguity uncertainty, or urgency (Greener, Powell, & King-Hill, 2021).

So, more than three years from its onset, what do we now know about policy learning in the shadow of a creeping crisis such as the COVID-19 pandemic? In this article, and by means of a systematic data collection and review process, we take stock of what research on policy learning has hitherto delivered, with implications, both for theory and practice. The importance of systematically surveying this sprouting body of work is well-established throughout policy

learning literature. Despite its value, policy learning research is known to be prone to fragmentation, ambiguity, limited cross-fertilization of findings, and research design imbalances (e.g., limited methodological pluralism, underrepresentation of certain jurisdictions). Thus, context-specific policy learning research (such as on creeping crises like COVID-19 or learning in environmental governance, among other fields) requires periodical reviews that synthesize the field's state of the art, inform future research, and formulate usable lesson for practice (see Gerlak et al., 2018; Dunlop et al., 2020; Zaki, Wayenberg & George, 2022).

To do so, we are driven by three main research questions: how were policy learning processes were studied in the interdisciplinary COVID-19 literature? What insights can COVID-19 policy learning research generate for practitioners? And how can existing research inform a future policy learning research agenda based on our COVID-19 experiences?

In doing so, this article makes two main contributions. *First*, it provides policy learning and policy analysis scholars with a synthesis of this burgeoning field, pointing out conceptual and methodological inclinations, key theoretical advancements, and outlining gaps and potential directions for future research. *Second*, it distils key insights and reflection points for practitioners, while still avoiding being overly prescriptive, keeping with the recognized context-sensitivity of policy learning processes.

This article is structured as follows: In section two, we offer an overview of our data collection and analysis frameworks, in section three, we present our key results and distil key insights for practice. In section four findings are discussed and implications for future research are highlighted.

2. Data collection and analysis

Data collection

Data was collected through an electronic systematic search using the ISI Web of Science (WoS) database following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) as outlined by Moher et al (2009). The web of Science (WoS) database offers a widely acknowledged and comprehensive source for systematically identifying publication for literature reviews. The last search update was conducted on the 1st of May 2023¹. To maximize our dataset and ensure inclusion of all potentially relevant literature, search by the expression “Policy Learning” and “COVID-19” or “COVID19” or “COVID” has been conducted in the “All fields” category. We have also used “lesson drawing” on conjunction with “COVID19” or “COVID” given that lesson draw is one of the most commonly associated conceptual labels to policy learning. This process yielded a total of 61 results. “Policy learning” and “lesson drawing” were used given our specific research focus on how policy learning processes and theories were research in COVID-19 literature. Using other terms such as “learn” or “learning” creates significant risks of search scope creep, particularly given the known tendency to use the term “learning” casually or metaphorically in literature without theoretical grounding (see Goyal & Howlett, 2018; Zaki, Wayenberg & George 2022). Additionally, given that policy learning is a largely interdisciplinary field of research, we did not impose limitations on journal disciplines. After reviewing for: non-article records, duplicates, and irrelevant works, 17 records were removed. We ended up with 44 records (both empirical and non-empirical) to be included in our review (Appendix A contains a list of the articles included).

¹ This is the date of the most recent search update undertaken during the review process.

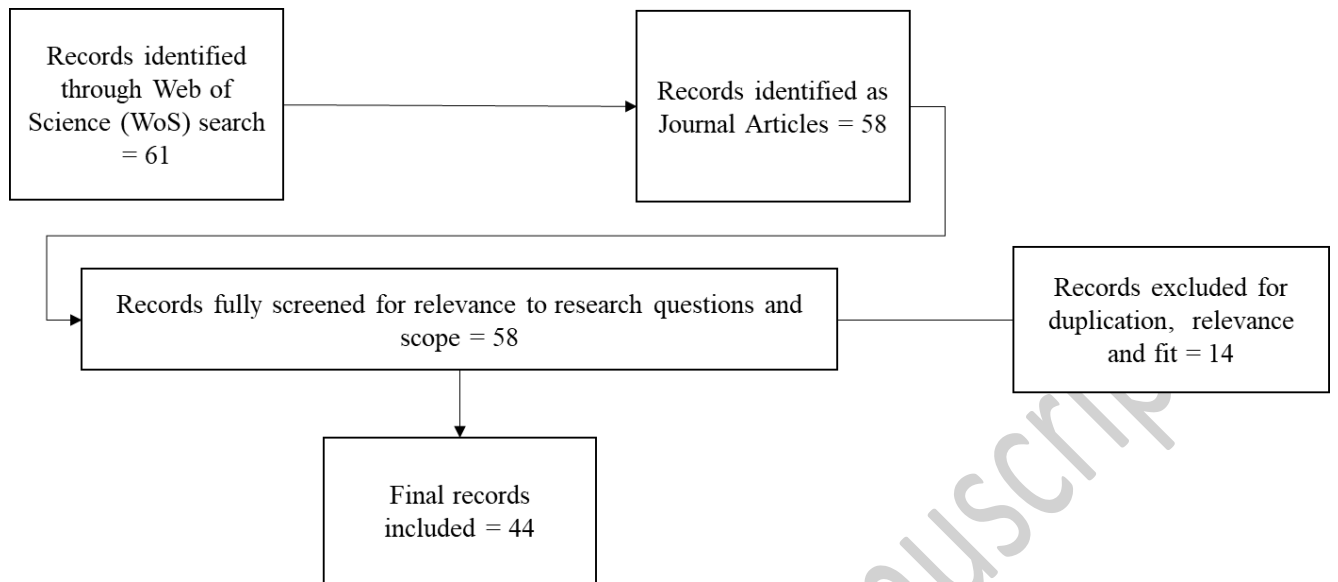


Figure 1. Data collection process

In conducting our literature search, we closely observe the four key criteria of robust systematic approaches to reviewing literature including: *problem definitions* (i.e., in our case being the tendency for conceptual and theoretical stretching, and fragmentation in policy learning research), *search strategy*, *evaluation criteria*, and *data extraction and analysis* (Badger et al. 2000). Figure 1 outlines our data collection process following the aforementioned PRISMA protocol.

Data Analysis

Data was coded in iterations by the authors. For enhanced reliability, the first 10 articles were independently coded by the two authors, coding results were compared and discussed. From there on, the full dataset was coded by the first author. Challenging cases were regularly discussed. In developing our coding attributes, we focused on relevance to our problematization and research questions. Accordingly, given our focus on: how policy learning was hitherto studied in COVID-19 literature, the gaps in said literature, what are the main insights provided, we developed three main coding attribute categories. Those were: *research synthesis* (including policy domains,

jurisdictions, article types, data sources, research, and analytical methods), *conceptual and theoretical attributes* (including learning types, mechanisms, forms, and definitions, levels of analysis, theoretical lenses), *Challenges, catalysts, and insights for practice*. For a similar approach for developing coding categories for policy learning reviews see Gerlak et al. (2018) and Zaki, Wayenberg & George (2022).

3. Main Results

Research Synthesis

This category of analysis aims at describing the “how” aspect of COVID-19 policy learning research. Namely, we focus on the scientific journal specializations, empirical settings (i.e., policy domains), research designs and methods (empirical versus non-empirical, research and analysis methods, comparative versus single case), and research jurisdictions (i.e., where learning is studied).

The 44 articles analysed were published across a range of journal disciplines. The top three journal disciplines where policy learning² was referenced within the COVID-19 crisis context were: Public Administration, n= 27, 61.4% (e.g., Quaglia & Verdun, 2023), Political Sciences (e.g., Trein & Vagionaki, 2022), n = 6, 13.6%, and Medical and Health Sciences (e.g., Raoofi, et al., 2021) , n=5, 11.4%. This further substantiates the positioning of policy learning as a primary field of study within public administration and political sciences. Yet, several articles published in medical and health policy journals also points to increasing recognition of the interdisciplinarity of policy learning given the nature and context of the crisis at hand.

² This refers to policy learning and lesson drawing unless otherwise stated for theoretical distinction.

Our analysis identifies 38 empirical articles (86.4%), and 6 non-empirical articles (13.6%). Non-empirical articles present reflections on the state of learning with the crisis (e.g., Radaelli, 2022), or agendas for future research (e.g., Dunlop et al., 2020). Consistent with the field's methodological tradition, empirical articles were largely in qualitative case study form ($n = 33$, 86.3%)³. Thick descriptions and qualitative content analysis was commonly applied to data from policy documents, interviews, and news coverage (e.g., Lee, Hwang, & Moon, 2020; Mattei & Del Pino, 2021; Greener, Powell, & King-Hill, 2021). There are also robust applications of methods such as process tracing (e.g., Busetti & Righettini, 2023). However, we also start to see the use of new and innovatively sourced data, for example from Social Media Networks such as Twitter (e.g., Lahat, Keynan, & Scala, 2023). Furthermore, there is an observable increase in rigorous analytical qualitative approaches within the COVID-19 policy learning literature, for example the analysis of the relationship between crisis policy learning and policy change by Crow, et al. (2022) where they synthesize a database of policy contents, enactment time, substantive focus, stringency, and other variables across six cases in the United States of America. Our analysis identified a small proportion of articles employing quantitative methods ($n=5$, 13.7%), also consistent with the field's methodological tradition. For example, there is the use of differential equations to observe Bayesian learning across a large dataset of over 41,000 observations across 168 countries by Mamatzakis et al., (2023), and the use of surveys to understand learning sources and preferences by Jensen, Lynggaard, & Kluth (2022).

3 For attributes such as methodological approaches and jurisdiction of analysis, we only report on empirical articles.

Next, we look at the empirical domains where learning is studied. Here, we find that crisis governance comes at the forefront, e.g., Mattei & Del Pino (2021) (n=26, 68.4%), followed by public health, e.g., Raoofi, et al. (2021) (n=5, 13.2%), economic governance e.g., Quaglia & Verdun (2023) (n=3, 7.9%). In terms of research designs, policy learning was almost equally discussed in single cases (n= 21, 55.2%) as in comparative cases (n=17, 44.8%). This shows the growing acknowledgement of comparative case studies on policy learning for policy analysis (see Dunlop & Radaelli, 2020). Comparative case studies analysed included within-country comparisons between more than one policy domain for example public health and social welfare (e.g., Yuda & Qomariyah, 2022), across country comparisons for example policy responses in Italy and Spain (e.g., Mattei & Del Pino, 2021), or within country comparisons across governance units, for example across states or subnational governance levels (e.g., Crow, et al., 2022; Zaki & Wayenberg, 2023). We also see longitudinal comparisons, for example learning cases at the European Central Bank during the sovereign debt crisis versus the COVID-19 pandemic (e.g., Quaglia & Verdun, 2023).

The most five studied jurisdictions are shown in Table 1. There, we found 52 instances of jurisdictions being studied given that some articles contain multiple cases (i.e., countries, governance settings such as the European Union, or global studies spanning multiple countries).

Jurisdiction	Examples	Instances	Percentage
Multiple country datasets	Jensen, Lynggaard, & Kluth (2022)	6	11.8
United Kingdom	Zaki & Wayenberg (2021)	5	9.8
United States of America	Crow et al. (2022)	6	11.8
European Union	Ladi & Tsarouhas (2020)	4	7.8
Italy	Busetti & Righettini (2023)	4	7.8

Table 1. Most frequently studied jurisdictions (across empirical articles analysed)

It is worth noting that while these studies generated substantial insights on how policy learning takes place within the COVID-19 crisis context, COVID-19 policy learning literature still suffers from an underrepresentation of cases from developing countries, also as the larger policy learning body of research (see Zaki, George & Wayenberg, 2022). This is despite developing countries being a fertile soil for policy learning. We find only four explicit cases from developing country contexts, namely Ghana (Osei-Kojo et al. 2022), India (Jha, 2022), Iran (Raoofi, et al., 2020), and Indonesia (Yuda & Qomariyah, 2022).

Theoretical attributes

In this section, we look into the conceptual and theoretical treatment of policy learning in COVID-19 literature.

Conceptually, only 19 articles (49%) offered some definition of policy learning, while 20 articles (51%) did not. An issue that comports with the often-casual use of learning and the conceptual ambiguity in policy learning research (see Gerlak et al., 2018; Goyal & Howlett, 2018). Three main conceptual approaches to learning were identified. First, there is the use of the collective learning conceptualization by Heikkila & Gerlak (2013), being a process of acquisition, translation, and dissemination of knowledge or experience (e.g., Osei-Kojo et al., 2022; Busetti & Righettini, 2023). Second, the conceptual approach based on cognitive functional psychology which features in Sabatier's (1988) work on the Advocacy Coalitions Framework (ACF). There, learning is understood as enduring alternations of thought or behavioural intentions that result from experience, and which are concerned with the attainment or revision of the precepts of the belief system of individuals or of collectives (e.g., Trein & Vagionaki, 2022; Quaglia & Verdun, 2023). A third and also common approach to learning is more within the information processing realm, where learning is viewed as a communicative process of information seeking and processing (e.g.,

Zaki & Wayenberg, 2023; Lahat, Keynan, & Scala, 2023). It is worth noting that there are some hybrid approaches were information processing approaches to learning such as Bayesian learning are being leveraged to understanding the learning dynamics as belief updates (e.g., Mamatzakis et al., 2023).

Our analysis shows different types of policy learning being studied. This includes social learning and instrumental learning (Zaki, Pattyn & Wayenberg, 2022), political learning (Casula & Pazos-Vidal, 2021), single and double loop learning (Ladi & Tsarouhas, 2020), quadruple loop learning (Lee, Hwang, & Moon, 2020), epistemic learning (Zaki & Wayenberg, 2021), and organisational learning (Kim, Shin, & Kim, 2023). We also find studies on both mechanisms of learning taking place. However, only a handful of studies paid explicit attention to clearly establishing which forms of learning occur. This includes contingent learning (Quaglia & Verdun, 2023; Ladi & Tsarouhas, 2020), and inferential learning (Zaki, Pattyn & Wayenberg, 2022). The analysed literature also shows different mechanisms for learning, ranging from policy diffusion and transfer (Raudla, 2021; Glaser & Krizek, 2021), policy convergence (Attwell & Hannah, 2022), to emulation (Yuda & Qomariyah, 2022; Dragomirescu-Gaina, 2022), and lesson drawing (Petridou, Zahariadis, & Ceccoli, 2020). In terms of levels of analysis, we find that all work analysed was either on the meso or macro level, where no articles explicitly focused on the microfoundations of learning behaviour at the individual level. This is of course while acknowledging that several articles analysed did leverage surveys or individual interviews, albeit to provide aggregate analyses of learning behaviour. Analysed studies also looked at both

intracrisis learning (e.g., Casula & Pazos-Vidal, 2021; Buseti & Righettini, 2023), intercrisis lesson drawing (Siow, et al., 2021), as well as mixes of both (e.g., Lee, Hwang, & Moon, 2020)⁴.

With a variety of types, forms, and mechanisms of learning studied, we also find that several theoretical lenses were used next to policy learning itself. This for example includes the institutional collective action framework (Casula & Pazos-Vidal, 2021), historical institutionalism (Ladi & Tsarouhas, 2020), and some of its distinct approaches such as path dependency, punctuated equilibrium and ideational change (Jensen, Lynggaard, & Kluth, 2022), and Bayesian logic (Mamatzakakis et al., 2023).

While COVID-19 policy learning literature has provided important insights within existing conceptual approaches, our analysis identifies several articles that use COVID-19 empirical cases to develop conceptual and theoretical advances. For example, we see new learning type conceptualizations. Trein & Vagionaki (2022) use the crisis to propose a theory linking issue salience and actor polarisation to the uses of two learning heuristics in the policy process: policy-oriented learning (the updating of beliefs and ideas aiming at effective programmatically successful policymaking), and power-oriented learning (the updating of beliefs with the intention of augmenting or maintaining political influence or achieving political success). Crow et al. (2022) compare COVID-19 policy learning across six states to conceptualise “preemptive learning”, a process that occurs when governments are confronted with an emerging crisis that necessitates preventive measures while not being afforded the time to experiment with different instruments. The idea of preemptive learning comports with Mazey & Richardson’s (2020) call for more anticipatory policymaking. Lee, Hwang, & Moon (2020) leverage an empirical study of COVID-

⁴ Several studies such as the one above cited also look at both intercrisis and intracrisis learning simultaneously.

19 policy learning in South Korea to conceptualize “Quadruple loop learning”. An organisational learning process that incorporates past experiences, political and social contexts, and specific characteristics of new problems in the course of finding ultimate solutions. On the theoretical level, we also see advances in understanding of how learning takes place during creeping crises. For example, the non-linear and interactive nature of different learning types throughout the crisis and how this leads to patterns of policy change. Furthermore, insights on how certain creeping crisis conditions can contribute to social learning processes over relatively short periods of one or two years, rather than decades as often posited (Zaki, Pattyn & Wayenberg, 2022). We also find an advancement on the conceptual-methodological nexus where drawing on the concept of emulation, Dragomirescu-Gaina (2022) leverages the occurrence of the crises across multiple jurisdictions to create a preliminary accounts of where and when learning by emulation could have taken place. This is through accounting for cross-country heterogeneity in policy stringency responses to the COVID-19 crisis using a combination of sign and magnitude restrictions embedded in a global Autoregressive Model.

With a synthesis of how policy learning was approached in COVID-19 research offered, next we distil some of the key insights it has generated for practice.

Key insights for practice

Research on policy learning can provide critical insights to practice. However, there is a pressing need to articulate these insights as useable takeaways (Dunlop et al., 2020). In this section, we distil some emerging insights from the analysed literature on practicing policy learning within the COVID-19 context. It is important to note that policy learning is a highly context-sensitive practice (for which there are no definitive prescriptions for success). As such, this a non-exhaustive account of key factors that aims to point practitioners’ attention to potentially important issues. To

provide such account, we first need to elaborate on the context where this learning takes place, i.e., COVID-19 as a creeping crisis.

Creeping crises, recently conceptualized by Boin, Ekengren, & Rhinard (2020) are relatively under-researched. They have somewhat unique features when compared to commonly studied crises (e.g., natural disasters, major accidents, etc.). Such crises often begin in the background, rarely invoking sudden urgent attention. With a relatively slow onset, they develop out of sight, then by the time they require urgent attention, their scale, complexity become very challenging to manage (Sætren et al., 2023). Furthermore, they are often societally embedded, and at a large-scale, hence they interact with different demographic and social groups in varying ways, generating varying impacts. With varying degrees of intensity (i.e., waves or periods where crisis is strong, versus times where less so), they create divisive risk perceptions and interpretations among policymakers and different publics. This opens the door for political contestation and politicization of crisis responses, thus undermining coherent and decisive action (e.g., Di Mascio, Natalini, & Cacciatore, 2020; Zaki & Wayenberg, 2023). In the case of COVID-19, adding to the challenges of managing a creeping crises was that COVID-19 was a technically complex and novel issue, for which there were no pre-existing protocols and very limited scientific certainty (see Zaki et al., 2022).

Now, with the crisis context established, we explore what insights did learning in the shadow of COVID-19 has provided so far. To provide this account, this section is structured over three constitutive elements of the policy learning process, across-which, several interconnected factors can either facilitate or impede policy learning: *Actors, Systems and structures, Policy issues and contexts* (Zaki, Wayenberg & George, 2022).

In terms of *actors*, the first set of insights concern policy actors as stewards or facilitators of learning (i.e., controlling or overseeing learning). Emerging research highlights the need to minimise perceived interventions by political actors when undertaking epistemic policy learning (i.e., learning from experts). This is particularly given the crisis' increasing proneness to politicization over time (Zaki, Pattyn & Wayenberg, 2022). Here, it is necessary to shield policy learning from pre-existing political contestation to avoid further politicizing crisis responses. High issue salience (such in the cases of crises like COVID-19) in contexts of activates more politically oriented forms of learning (rather than technical ones needed for crisis problem solving), thus contributing to incoherent policy responses and undermining learning (see Trein & Vagionaki, 2022; Casula & Pazos-Vidal, 2021). COVID-19 policy learning literature strongly highlighted that political actors' intervention in expert-driven learning can undermine the quality of lessons learned, policy effectiveness and public trust (Cairney, 2021; Zaki & Wayenberg, 2021). On the other hand, it also highlighted that the positive influence of political buy-in and ensuring transparency of learning as enablers of swift and effective crisis governance (Raudla, 2021; Casula & Pazos-Vidal, 2021; Petridou, Zahariadis, & Ceccoli, 2020). The second set of actor insights concerns actors as teachers and learners, i.e., who gets involved in learning and teaching. Research points to the need for a collective crisis learning process that involves formal and informal actors to ensure the crisis multidimensionality and scale are adequately captured (Osei-Kojo et al., 2022). On the expertise level, it is important to ensure that multiple dimensions of the crisis are represented, for example by balancing out interdisciplinarity of expertise. This can mean involving not only medical expertise, but also social and economic ones (e.g., Zaki & Wayenberg, 2021), and also considering the important role of public administration practitioners and executives as experts (Jha, 2022; Zaki & George, 2022).

Concerning *systems and structures* COVID-19, key findings come in two main sets. The first set is about learning structures. In such novel and lingering crises, there is the tendency to establish several new learning groups such as advisory committees (Zaki & Wayenberg, 2021; Easton et al., 2022). However, their introduction in an ongoing crisis can entail confusion, role overlaps, and require significant amounts of time for assimilation. Hence, adjusting existing learning structures (with established roles and boundaries) can be a relatively more effective approach. Within these learning structures, it is necessary to maximize organisational learning capabilities during crises as they progress while establishing tolerance for experimentation (Lee, Hwang, & Moon, 2020). This means also adjusting organisational values, rather than simply working procedures (Kim, Shin, & Kim, 2023). The second set is about governance structures. Given the crisis scale, learning occurs at multiple levels of the governance architecture, at the Supranational, national, and subnational levels (e.g., Ladi & Tsarouhas, 2020). Hence, it is important to bottom-up and top-down information flows (Genest et al., 2021), as well as lateral coordination across different jurisdictions (Benton, 2020; Mattei & Del Pino, 2021) to enable real time learning. Learning processes across the different levels are significantly shaped by varying political dynamics, capacities, and administrative traditions, in turn shaping performance across different governance units (Casula & Pazos-Vidal, 2021). As such, we can find heterogeneous learning processes across different governance jurisdictions where different actors and types of experts participate (or not) in learning. This can also be affected by political contexts and citizens preferences in different regions among other factors (e.g., Crow, et al., 2022). While this can contribute to flexibility and agility of crisis policymaking, it can also lead to confusion via employing divergent or contradicting understandings of the crisis. Hence, it is necessary to provide an overall structure that governs how learning process can be structured and overseen across

different levels of the governance architecture, while still affording space for flexibility and regional specificity (Zaki & Wayenberg, 2023; Buseti & Righettini, 2023).

Now, we move to the last key dimension, *policy issue and context*. Policy issues around which learning takes place are strongly affected with the policy context. As a creeping crisis, COVID-19 was an ever-evolving policy issue. For example, starting as an almost exclusively medical one, then taking on economic, societal, and even legal dimensions. COVID-19 policy learning research shows that the dynamic and evolving nature (and meaning) of the crisis should be continuously observed and updated. Coping with these evolutions means updating the sources information and knowledge underlying learning, as well as the framing, narratives, and definitions of the crisis itself (Zaki, Pattyn & Wayenberg, 2022; Mintrom & O'Connor, 2020). This also implies the need for openness to paradigmatic shifts and changing objectives along with the evolution of crisis perceptions (Ladi & Tsarouhas, 2020; Quaglia & Verdun, 2023). Naturally, this means that those directing the policy learning processes need to undertake continuous context scanning (see Raudla, 2021; Crow, et al., 2022). These contextual updates are not only technical but are also highly political as the more the crisis lingers, it opens up avenues for political contestation, politicization, and division. Political pressures can implicitly shape learning, for example leading to convergence across different jurisdictions towards certain policies such as introducing mandatory restrictions (e.g., Attwell & Hannah, 2022). In the same vein of policy issues, effective learning needs to draw on a repository of institutionalised lessons and evidence, both from the ongoing crisis, as well as past ones (Lee, Hwang, & Moon, 2020). The existence of such lessons in institutional memory is crucial for decisive and adequate lesson drawing (Baniamin, Rahman, & Hasan, 2020; Raudla & Douglas, 2020; Kim, Shin, & Kim, 2023).

With the state of literature and key insights for practice outlined, in the next section we offer a synthesis of our findings and reflect on how they can inform future research on policy learning, both within the COVID-19 crisis context as well as beyond.

4. Discussion

In this article, by means of a systematic literature review, we looked at how policy learning featured in interdisciplinary COVID-19 research. So, what do our findings tell?

In terms of the research landscape, methodologically, we see a largely qualitative body of work. Naturally, qualitative methods, thick descriptions and in-depth discursive analyses are potent approaches to understanding the complex (and often obscured) processes of policy learning. Yet, we also find quantitative innovations, including novel cross-comparative models that identify when and where learning could have taken place, paving the way for in-depth qualitative analyses (e.g., Dragomirescu-Gaina, 2022). Empirically, we see an increase in comparative cases, at the supranational, national, and subnational levels, both across time (e.g., Ladi & Tsarouhas, 2020), and space (e.g., Mattei & Del Pino, 2021). We also find a significant underrepresentation of learning research from developing country contexts.

In empirical works, next to multiple country comparisons (ten countries or more), the most studied cases were in the contexts of the United Kingdom, the United States of America, and the European Union. While there are no sufficient cases yet in each context to make generalisations, we observe broad directions that highlight the context sensitivity of policy learning. For example, in studies focusing on the United Kingdom, we see a focus on politicization, and political crises as factors shaping or driving learning (e.g., Kippin & Cairney, 2021). This is particularly considering pre-existing political tensions resulting from Brexit and political crises within the British context (e.g., Zaki & Wayenberg, 2021; Dunlop, James, & Radaelli, 2019). Needless to

say, given that context's rampant politicization and contestation, these studies showcase how these conditions hamper learning. This is as opposed to studies from other relatively less contested settings (such as South Korea, among others), where political stability and buy-in facilitated more optimal learning (e.g., Lee, Hwang, & Moon, 2020; Raudla, 2021). On the other hand, studies looking at the United States of America, has dedicated significant attention to the country's politico-administrative structure and its influence on learning. For example, looking at variations in political preferences and capacities among states (e.g., Attwell & Hannah, 2022), the influence of partisanship or even hyper-partisanship on learning heuristics, and thus outcomes (e.g., Trein & Vagionaki, 2022; Crow, et al., 2022). Consistent with the contextual sensitivity of learning, studies at the European Union Level largely focused on the Union's institutional dynamics and changes in policy paradigms over time, by comparing institutional responses to crises over time. There, we find references to issues of democratic deficit, politicization among actors in collaborative governance settings, and historical institutionalism, all issues endemic to the debates on the European Union (e.g., Ladi & Tsarouhas, 2020; Quaglia & Verdun, 2023).

Conceptually and theoretically, we find several refinements that provide important insights to baseline (i.e., original, non-crisis) conceptualizations of learning. For example, conceptualising new learning types by theorising triggers of learning such as Crow et al.'s (2022) preemptive learning. Or updates to organisational learning conceptualisations by introducing quadruple loop learning (Lee, Hwang, & Moon, 2020), and integrating new factors that explain organisational learning outcomes (Kim, Shin, & Kim, 2023). This is in addition to updated understandings of how learning types take place during certain types of crises, such as accelerated social learning by Zaki, Pattyn & Wayenberg (2022), and the relationship between learning and change within successive crisis iterations (Busetti & Righettini, 2023; Quaglia & Verdun, 2023; Ladi &

Tsarouhas, 2020). Yet, interestingly, the overall analysis however, shows that the conceptual treatment of policy learning still suffers ambiguity and fragmentation where we find that in almost half of the work reviewed, policy learning is left undefined or requiring theoretical grounding. Overall, these empirical, conceptual, and theoretical trends do not break away from the tradition of policy learning research (see Zaki, Wayenberg & George, 2022).

In terms of practice, while COVID-19 policy learning research is relatively nascent, it offers several important lessons. These include the need for proactively managing crisis policy learning processes across different key dimensions: Actors, Systems and structures, policy issues and contexts involved in learning. These lessons included the need for ensuring transparency, reducing perceived political interventions, the need for streamlining learning structures, balancing different sources of knowledge to capture crisis multidimensionality, continuous context scanning and reformulation of policy issue understanding as the crisis evolves.

With that said, in the next section, we propose a research agenda for future research on COVID-19 policy learning and crisis learning in general. We structure our recommendations along two main dimensions: Theoretical and conceptual, and methodological.

Theoretically, future research can dedicate special attention to exploring the microfoundations of policy learning (i.e., learning on the individual level), an issue that remains understudied, both in the general field, and in the crisis learning domain. This can include, generating better understandings of how the crisis is perceived and experienced at the individual level, individual learning preferences, and how individual dynamics aggregate and interact with collective learning. This is as emerging research has pointed that the same crisis can be experienced differently by various actors, invoking a range of learning heuristics (e.g., Trein & Vagionaki, 2022; Zaki, Pattyn, & Wayenberg, 2022). Another issue is that future research might need to focus more on grounding

itself in robust theorisation and conceptualization. This can be by explicitly establishing which forms of learning are being experienced, contingent versus inferential (see Kamkhaji & Radaelli, 2017), what conceptual approaches or ontologies of learning are being observed (see Zaki, Pattyn & Wayenberg, 2022). It also needs to provide clearer accounts of what specific types of crises are being studied or experienced by the actors at hand, cathartic, fast-burning, creeping, or others (see Boin, Ekengren, & Rhinard, 2020). Furthermore, how do specific crisis features affect the dynamics of learning. Put together, such theoretical and conceptual grounding can help better accumulation of findings, and the field's ability to make nuanced assessments of generalisation and better theory-building while maintaining relevance to existing frameworks (see critiques and recommendations by Goyal & Howlett, 2018; Zaki, George & Wayenberg, 2022). There are also broad important themes that remain unexplored, for example, questions of “learning governance” (Author, forthcoming), i.e., what strategies do actors use to design and administer policy learning frameworks and processes. Moreover, what political and administrative factors shape these preferences, and how do these strategies contribute to certain policy outcomes across different contexts.

This takes us to the second dimension of research designs. While qualitative research has proven impactful, the above-mentioned directions can benefit for more quantitative and mixed methods. Given the growing space for comparative work, there is also promising space for configurational methods such as variations of qualitative comparative analysis, among others. In terms of case selection, future research could benefit from more work on policy learning within developing country contexts.

Before concluding, it is important to highlight some limitations and caveats. The first concerns data, due to analytical capacity, we have limited our sourcing to one scientific database

(WoS). However, future research can also expand the data scope by looking at other databases such as Google Scholar, ProQuest, Scopus, among others. Future reviews can also attempt using other keywords such as “replication of best practices” or build into other conceptual approaches such as those within the policy transfer and diffusion literatures. Second, our account of policy learning literature within the COVID-19 context is preliminary. In other words, a first attempt to read this growing body of literature from a policy learning theory perspective. As such, by it is by no means exhaustive, neither in terms of offering a full theoretical account of all perspectives there in (as the case with all reviews), nor in generating an exhaustive list of lessons learned. Rather, we elected to focus on what we see as most compelling themes while upholding a problematized approach, i.e., one that is focused on reflexivity and considering caveats of extant research and what we already know about policy learning as a field of research.

In conclusion, our findings show that over the past three years, the COVID-19 policy learning literature has indeed provided interesting insights for theory and practice. However, they also highlight that while still nascent, said literature is growing in a manner similar to that of the overall policy learning literature. Accordingly, we call on future COVID-19 policy learning research to further invest in robust research designs, and the provision of useable takeaways for practitioners within different contexts.

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Appendix A – Analysed articles

Sn.	Article	Journal Name
1	A Bayesian policy learning model of COVID-19 non-pharmaceutical interventions	APPLIED ECONOMICS
2	Assessing the Multi-level Government Response to the COVID-19 Crisis: Italy and Spain Compared	International Journal of Public Administration
3	Averting institutional disasters? Drawing lessons from China to inform the Cypriot response to the COVID-19 pandemic	European Policy Analysis
4	Can street-focused emergency response measures trigger a transition to new transport systems? Exploring evidence and lessons from 55 US cities	Transport Policy
5	Capitalising on Twitter for Policy Learning during Crises: The Case of the Covid-19 Pandemic	INTERNATIONAL JOURNAL OF PUBLIC ADMINISTRATION
6	Challenges to Federalism and Intergovernmental Relations and Takeaways Amid the COVID-19 Experience	American Review of Public Administration
7	Collective learning and COVID-19 mitigation in Ghana	Review of Policy Research
8	Comparative Public Policy Analysis of COVID-19 as a Naturally Occurring Experiment	Journal of Comparative Policy Analysis: Research and Practice
9	Convergence on Coercion: Functional and Political Pressures as Drivers of Global Childhood Vaccine Mandates	International Journal of Health Policy and Management
10	Coordination and Health Policy Responses to the First Wave of COVID-19 in Italy and Spain	Journal of Comparative Policy Analysis
11	COVID-19 and Comparative Health Policy Learning; the Experience of 10 Countries	Archives of Iranian Medicine
12	COVID-19 and the second exams fiasco across the UK: four nations trying to avoid immediate policy failure	British Politics
13	COVID-19 opens a window of reflection for comparative health systems and global health research	New Perspectives on Turkey
14	COVID-19 Pandemic and Comparative Health Policy Learning in Iran	Archives of Iranian Medicine
15	Estonian response to COVID-19 pandemic: learning, cooperation, and the advantages of being a small country	Brazilian Journal of Public Administration
16	EU economic governance and Covid-19: policy learning and windows of opportunity	Journal of European Integration
17	Explaining the response of the ECB to the COVID-19 related economic crisis: inter-crisis and intra-crisis learning	JOURNAL OF EUROPEAN PUBLIC POLICY
18	Facing an unfortunate trade-off: policy responses, lessons and spill-overs during the COVID-19 pandemic	Economics and Human Biology
19	Harnessing international climate governance to drive a sustainable recovery from the COVID-19 pandemic	Climate Policy
20	How does policy learning take place across a multilevel governance architecture during crises?	Policy & Politics
21	Ideas and Policy Response to the COVID-19 Crisis: Evidence from Jakarta, Indonesia	SOCIAL POLICY AND SOCIETY
22	In trust we trust: The impact of trust in government on excess mortality during the COVID-19 pandemic	Journal of Public Policy and Administration
23	Intercrisis learning in disaster response network: experience of Korea from MERS and COVID-19	ASIAN JOURNAL OF POLITICAL SCIENCE
24	Interrogating the resurgence of administrative state: ideas and state capacity	International Journal of Public Sector Management
25	Intra-crisis learning and prospective policy transfer in the COVID-19 pandemic	International Journal of Sociology and Social Policy
26	Intra-Crisis Lesson-Drawing in Real-Time: The Pandemic Lessons Available in the UK Media during the First Months of COVID-19	Social Policy & Society

27	Is Obesity Policy in England Fit for Purpose? Analysis of Government Strategies and Policies, 1992-2020	The Milbank Quarterly
28	Learning heuristics, issue salience and polarization in the policy process	West European Politics
29	Lesson-Drawing from New Zealand and Covid-19: The Need for Anticipatory Policy Making	The Political Quarterly
30	New development: Policy learning and public management-a match made in crisis	Public Money and Management
31	Optimal policy learning for COVID-19 prevention using reinforcement learning	Journal of Information Science
32	Paths, Punctuations and Policy Learning-Comparing Patterns of European use of Scientific Expertise during the Covid-19 Crisis	Public Organization Review
33	Policy learning and change during crisis: COVID-19 policy responses across six states	REVIEW OF POLICY RESEARCH
34	Policy learning and crisis policy-making: quadruple-loop learning and COVID-19 responses in South Korea	Policy and Society
35	Policy Learning and European Integration	JOURNAL OF COMMON MARKET STUDIES
36	Policy learning from crises: lessons learned from the Italian food stamp programme	POLICY AND POLITICS
37	Policy learning type shifts during creeping crises: A storyboard of COVID-19 driven learning in Belgium	European Policy Analysis
38	Re-Building Students' Post-COVID-19 Confidence in Courses, Curriculum and Careers for Tourism, Hospitality, and Events	Journal of Hospitality & Tourism Education
39	Researching COVID-19: A research agenda for public policy and administration scholars	Public Policy and Administration
40	Shopping in the scientific marketplace: COVID-19 through a policy learning lens	Policy Design and Practice
41	The COVID-19 pandemic: why are some countries coping more successfully than others?	Asia Pacific Journal of Public Administration
42	The importance of policy narrative: effective government responses to Covid-19	Policy Design and Practice
43	This time was different: the budgetary responses to the pandemic-induced crisis in Estonia	Journal of Public Budgeting, Accounting & Financial Management
44	Translating COVID-19 emergency plans into policy: A comparative analysis of three Canadian provinces	Policy Design and Practice