



School of Mathematical and Geospatial Sciences

Reviewing research for policy-making and practice

**A discussion paper for the Australian emergency
management industry**

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1 Introduction

This discussion paper considers the use of research reviews to inform policy making and practice. In particular, it outlines some of the shortcomings of traditional narrative literature reviews and discusses principles of systematic review, which may be drawn on to make reviews more useful for some policy makers' and managers' purposes. While the paper considers this topic broadly, its intended audience is people involved in the Australian fire and emergency management industry. Where possible, we have therefore sought to include information sourced from literature relevant to this industry, although we also include a wider range of literature on the use of research reviews for policy making and practice more generally.

The key arguments made are as follows:

- That research reviews are an increasingly valuable tool for policy makers and managers
- That traditional narrative literature review methods can be (but are not always) misleading and of limited value to end users
- That the use of more systematic and transparent approaches to reviewing research may improve the quality and usefulness of research reviews for end users (within certain limitations discussed below).

2 Background

We prepared this discussion paper while in the early stages of a new project being conducted under the research program of the Bushfire CRC, titled 'Sharing Responsibility'. The project examines policy alternatives for sharing responsibility for bushfire risk management and community safety in Australia.¹ A key component of the project will be an extensive review of existing research to identify how responsibility sharing for community safety is framed and addressed across a range of policy fields, both in Australia and internationally.

This paper evolved out of the review for the Sharing Responsibility project. In the process of thinking about our own review, we began to consider the use of research reviews by end users in fire and emergency management more broadly. We believe that research reviews have an increasingly important part to play in linking research and practice in emergency management industry. Some of the reasons for this are not confined to this industry alone and are discussed in more detail in this paper. However, one important reason is particular to emergency management: this is an expansion in what society considers the appropriate realm of concern of emergency management agencies. Since the 1990s, there has been a push – in Australia as well as internationally - for the field to expand its traditional focus on emergency response and hazard management to include a broader 'risk management' or 'community safety' approach (COAG, 2004; Elsworth, Stevens, Gilbert, Goodman, & Rhodes, 2008; Handmer & Dovers, 2007, p. 6). Government, research institutions and society increasingly ask for and expect emergency management agencies to work in areas not previously considered a key part of their traditional activities. These areas include educating and engaging with communities, providing warnings and alerts, and managing the underlying factors that contribute to people's levels of risk exposure. These expectations were underlined recently in the final report of the 2009 Victorian Bushfires Royal Commission. The report stated that the State 'including fire agencies' needed to 'provide better leadership and guidance' by engaging in these types of activities in addition to strengthening fire mitigation and suppression capacities (Teague, McLeod, & Pascoe, 2010, vol 2, p. 352).

These broader areas of risk and safety cannot be addressed by emergency management agencies alone. They are influenced by developments in a range of related policy fields, including urban planning, education, public health, social welfare and community development. As emergency

¹ Further information about the 'Sharing Responsibility' project can be found at <http://www.bushfirecrc.com/projects/1-3/sharing-responsibility-component-mainstreaming-fire-and-emergency-management-across-pol>).

management agencies engage further with these new concerns and seek to coordinate with other government agencies working in these related fields (including municipal governments), the type of research relevant to their activities will also expand significantly (Dilling, 2008, p. 1-2). In this context, research reviews are a valuable tool for policy makers and managers to help make sense of primary research that is increasing both in quantity and scope.

Beyond the emergency management industry, there has been strong interest in developing new and improved ways to review research to inform policy and practice for some time. Systematic review of research literature has emerged as an alternative to the more common method of reviewing research: the traditional narrative literature review. Systematic review essentially applies the methodological attention that is standard in primary research studies to the process of reviewing existing research literature (Chalmers, 2003; Cooper, Hedges, & Valentine, 2009, p.xi; Howell-Major & Savin-Baden, 2010, p.72-88; Valentine, 2009). It therefore differs from traditional narrative literature review through its use of a more methodical, explicit and transparent review process (Gough & Elbourne, 2002).

The use of systematic reviews has been largely limited to specific policy fields, particularly health and medicine, and social policy fields like education and crime. It is only very recently that a similar interest in their use has begun to emerge in the field of emergency and disaster management, either in Australia or abroad. In a scoping web search, we found few examples of either published or unpublished research reviews in emergency management-related fields that used one of the many emerging new review methods (for examples see Boo, 2008; Dilling, 2008; Elsworth, Gilbert, Stevens, Robinson, & Rowe, 2010; Kalies, Chambers, & Covington, 2010; Kopper, McKenzie, Peterson, & Station, 2009; Lettieri, Masella, & Radaelli, 2009; Uscher-Pines, 2009). Only one of these was Australian: a review of community education programs by Elsworth et al. (2010) conducted as a project of the Bushfire CRC (see also Elsworth, Gilbert, Rhodes, & Goodman, 2009). This is despite the fact that the potential benefits of using systematic approaches to review research have been recognized in Australian emergency management for some time. For example, Arbon and Smith (2000) highlighted the benefits of systematic reviews on the development of research in the emergency management field over a decade ago.

This discussion paper seeks to contribute to – and encourage - the nascent interest in using systematic and transparent ways to review research for Australian emergency management. In the following three sections it asks and answers three central questions in turn: Why review research? What is wrong with traditional narrative literature reviews? What is systematic review?

3 Why review research?

Many different views exist on the appropriate or most valuable role for scientific research in policy and practice (Almeida & Báscolo, 2006; Weiss, 1979). Most recently, the evidence-based movement has become influential in many countries, including Australia (Arbon & Smith, 2000; Banks, 2009). The evidence-based approach sees a central role for scientific research in policy-making and management to determine ‘what works?’ Evidence is generally taken to mean value-neutral and factual results of scientific studies. Although influential, the evidence-based movement has also been critiqued in recent years, in part for assuming an unrealistically linear policy-making process (Clarence, 2002). The emergence of this movement was a key driver for the development of systematic review methods (Gough & Elbourne, 2002; Sheldon, 2005). However, the use of systematic reviews today is not confined to policy making under an evidence-based model and does not need to be associated solely with this particular model of policy making and management.

It is not the aim of this paper to enter into debates about the appropriate role of research in policy, nor to make a detailed case for or against evidence-based policy-making. However, to be clear, our view of policy-making is somewhat different to that put forward by the evidence-based approach. It positions scientific research as an important input to much (but not necessarily all) policy-making. However, it also recognizes that scientific research is seldom a sufficient input on its own (see also Bielak, Campbell, Pope, Schaefer, & Shaxson, 2008; Funtowicz & Ravetz, 1993;

Marshall & Picou, 2008; Pullin, Knight, & Watkinson, 2009). Public policy analysis shows that a range of diverse and interacting factors may influence policy development, depending on the context and the issue at hand. They include factors related to values, feasibility, opportunity, relationships, capacity, and willingness (see for example Handmer & Dovers, 2007). How research informs policy therefore often depends on how the research is weighed up, evaluated, interpreted, traded-off or valued in the context of these other diverse factors (Denyer & Tranfield, 2006; Hammersley, 2005; Lavis, 2009). It also depends on what research exists, how it is communicated, and how well researchers and policy-makers interact (Bielak, et al., 2008).

We would also argue that the need for policy makers and practitioners to draw on more than scientific evidence is greater when they face 'wicked problems' (Australian Public Service Commission, 2007; Rittel & Webber, 1973). These are problems that do not have easy, straightforward, win-win solutions. Such problems commonly involve a high degree of uncertainty, conflicts between competing social values, and high stakes. Each of these issues is prevalent in emergency management. Taking just a few examples from Australian bushfire risk management: uncertainty exists over the impacts of climate change on future fire regimes; the issue of prescribed burning involves competing social values over community safety, public health, biodiversity and natural landscapes; and, bushfire risk management involves the very high stakes of life and death, and is therefore subject to a high degree of public scrutiny (Handmer & Dovers, 2007, p. 89). Confronting such complex issues requires more than a clear-cut assessment of 'what works?' using scientific evidence. It also needs value judgements to be made about 'what should be done?' that can't be answered by scientific research alone (Mays, Pope, & Popay, 2005; Pearson, 2010).

For complex issues, then, the answer to the question of 'why review research?' is not likely to be 'to find the solution'. Why then would policy makers and practitioners faced with the task of dealing with sticky policy issues that often call for urgent attention take the time to commission research reviews that cannot directly solve their problems? In reality, the answer to this question is most likely to change depending on the nature of a particular issue, the social, economic, political, environmental, historical and other contexts in which it occurs, what stage the policy making process is at, and what research is available. We therefore focus here on just four 'big', general reasons that end users (including policy makers and practitioners) and policy researchers have given for reviewing research. Taken together, they indicate the value to end users of effectively 'checking in' against the current, relevant research before choosing on a course of action. The process of 'checking in' can help end users to reduce uncertainty, avoid pitfalls, stimulate new ideas, reflect on the possible consequences of different choices, and ultimately proceed with greater confidence in their decisions.

a. *To determine what we already know (and don't know)*

Perhaps the most obvious reason that policy makers and managers use reviews of research is to answer the important question of "what do we already know about this policy issue?" For many complex issues, scientific evidence can be uncertain or contentious, and scientific consensus may not have yet emerged (Oreskes, 2004). A prime example of this type of issue is anthropogenic climate change. In this scenario, it can be dangerous for policy makers and managers to rely on a single research study to guide policy (Davies, 2000; Lavis et al., 2005). By contrast, research reviews can give end users a better idea of where current scientific knowledge related to a policy issue stands. It is likely that both researchers and end users will rely more heavily on research reviews for this purpose in the future, simply because the volume and accessibility of research studies is greater today than in the past (Badger, Nursten, Williams, & Woodward, 2000).

b. *To compare alternatives*

Policy making is forward looking, in that it is concerned with shaping future actions and predicting likely consequences of alternative courses of action that are not yet enacted. Policy makers therefore often face the task of identifying and then choosing amongst a range of alternative potential policy actions. Reviews of research can have an important part to play in this aspect of policy making. Research reviews can show policy makers what

barriers, challenges, reactions and consequences have been revealed by research studies of alternative policy approaches implemented in other contexts. Policy makers can therefore use research reviews to help them gauge the potential pros and cons of alternative actions, including the particular set of trade-offs required by each (Lavis 2009). Therefore, while research reviews may not tell policy makers which alternative to pursue, they can provide a stronger foundation for deciding amongst a range of options.

c. *To stimulate new ideas*

Research reviews can also be important for stimulating new ways of thinking about problems and potential solutions. For most complex issues, there are multiple ways of defining, or framing, the problem at hand (Vaughan & Seifert, 1992). Importantly, different ways of defining a problem leads to different conclusions about how to solve it. Using the example of floods, Handmer and Dovers (2007, p. 84-5) show how defining floods as a physical problem of flood hazard leads to engineering solutions while defining it as a problem of people's vulnerability to flood impacts leads to different solutions such as social policies targeting health and housing quality. Because of the impact of problem framing, Handmer and Dovers (2007) stress that emergency management problems are initially best approached using multiple framings that reveal a broader range of potential solutions. However, they also emphasize how difficult it is to 'see' problems in different ways because 'some of the drivers of problem framing are fundamental to society and it can be difficult to step outside dominant institutions or disciplinary ways of thinking' (p. 83).

Research reviews can be a valuable source of new and different ways of thinking about a given issue, which can help researchers and end users to step outside these dominant institutions and disciplinary ways of thinking. As Lavis et al. (2006) point out in the context of health policy:

A systematic review can help managers and policy makers think differently about the challenges they face (i.e., it can support conceptual uses of research) even if differences in the precise focus of studies or in the context in which they were conducted mean that a review cannot help them directly solve a particular problem (i.e., it can't always support instrumental uses of research. (p.60)

A local emergency management example of a research review intended to stimulate new ways of thinking is a discussion paper by Beatson and McLennan (2010) produced in conjunction with the Bushfire CRC. This exploratory review considered how different theories and models in social psychology that are used in other policy fields might contribute to understanding and researching community bushfire safety issues.

d. *To save time (and money)*

Finally, research reviews may also save policy makers and managers valuable time and money compared to commissioning primary research studies (Lavis, et al., 2005; Mulrow, 1994). A common complaint from end users about research is that by the time the research is done, policy and management has already moved on to the next issue (Arbon & Smith, 2000; Lavis, 2006). Compared to primary research, research reviews can be a more efficient way to draw on research to inform the policy making process. Generally speaking, research reviews are less resource-intensive than primary research studies, although this can vary depending on the scope of the particular review (Lavis, et al., 2005). In some circumstances, it may also be possible to draw on existing reviews rather than commissioning new ones, which can be an even more efficient way to access and review research (Lavis, et al., 2005).

4 What is wrong with traditional narrative literature reviews?

By far the most common way to review research is through a traditional narrative literature review. This type of review summarises, critiques and/or interprets a body of existing research in a

narrative format (Denyer & Tranfield, 2006). Most research studies begin with a background literature review, undertaken to locate the study within a wider field of knowledge, to identify the gaps that the study will attempt to fill, and to show how the findings of the study contribute to the wider field of knowledge (Davies, 2000, p.19; Sandelowski & Barroso, 2006; Thorne, Jensen, Kearney, Noblit, & Sandelowski, 2004).

Despite being standard practice in scientific research, the traditional narrative literature review has also been criticised increasingly in recent years (Badger, et al., 2000; Davies, 2000; Denyer & Tranfield, 2006; Gough & Elbourne, 2002). This raises questions about its usefulness as an input to policy and management. These criticisms stem from the fact that traditional literature reviews are seldom subjected to the same methodological scrutiny as primary research studies. In primary research, methodologies are reported so that end users have an audit trail from research question through methods to conclusions. By contrast, the process of conducting a literature review is generally taken as given. It is not often questioned or critiqued and few reviewers report the steps they took to conduct a literature review (Badger, et al., 2000; Bondas & Hall, 2007; Gough & Elbourne, 2002). As Badger notes (2000), '[i]t is perhaps surprising to realise that the process of literature review has received relatively little attention until recent years and that the level of advice given in research texts is often very wide-ranging and of limited value to the anxious researcher faced with an apparently endless array of literature' (p.220).

This lack of methodological scrutiny may not be a major problem when the results of the literature review provide background information only. However, it can be a significant problem when the results of a literature review directly form a part of research findings or become a basis for decision-making (Denyer & Tranfield, 2006). When a literature review constitutes a research study in itself or is used as an input to decision-making, there is a strong argument for paying as much attention to methodology as in a primary research study (Badger, et al., 2000; Chalmers, 2003).

Critics highlight three main ways that this lack of attention to methodology can threaten the quality of a traditional narrative literature review: through opportunism, researcher subjectivism and a lack of transparency.

a. Opportunism

Opportunism occurs when a review is limited to the 'low hanging fruit' rather than the sources most relevant and valuable for the particular topic of the review. It is essentially a type of sampling error that arises because some research reports are easier to find than others. Because of this, there can be a tendency for literature reviews to miss the harder-to-find reports. There are a range of reasons for why some research might be more difficult to locate. Reviewers at universities benefit from institutional subscriptions to indexed research databases that enable them to easily access peer-reviewed, published journal articles. However, it can still be difficult to find the relevant studies within these databases. According to Conn et al. (2003), even searches conducted by librarians professionally trained in literature retrieval find only around half of the studies that meets a given set of inclusion criteria (p.179). This is partly due to inconsistencies and incompleteness in indexing methods in the databases (Conn, et al., 2003). It is also due to the way reviewers select which databases, strategies and search terms to use (Badger, et al., 2000).

A further difficulty arises because not all research studies relevant to a topic necessarily make it into the databases. These missing sources are known as 'fugitive literature' (Conn, et al., 2003; Sandelowski & Barroso, 2006, p.49-50). Fugitive literature may include articles in new journals not yet indexed in research databases, manuscripts of recent research that have not yet passed through the peer review process, older articles published before databases were widely used, and dissertations that are not always routinely indexed (Sandelowski & Barroso, 2006, p.49). Furthermore, not all potentially valuable and relevant research is published. In particular, studies that find negative or no results and small-scale studies with little wider relevance beyond the particular study site are less likely to be published (Badger, et al., 2000; Bondas & Hall, 2007; Conn, et al., 2003). Unless commissioned by an external client, reports on these studies are not likely to be distributed by the researchers, a situation known colloquially as "the file drawer

phenomenon". Finally, research that is not university-based ("grey literature" in research parlance) can also be more difficult to locate (Conn, et al., 2003). Studies and reports by government agencies and their contracted consultants, for example, are less likely to be published in indexed research databases. Because of such issues, some authors argue that opportunistic literature reviews relying on easy-to-find, published research reports suffer from a form of 'publication bias' (Bondas & Hall, 2007).

b. Unacknowledged researcher subjectivism

Researcher subjectivism can have a significant influence on the results of literature reviews. This influence stems largely from the choices that researchers need to make throughout the review process. For example, researchers make choices about which studies to include and exclude from the review; how to assess the importance, relevance and quality of each study; and how to interpret the key messages in each study (Howell-Major & Savin-Baden, 2010, p.43). Such choices are a necessary and important part of the review process. However, just like anyone else, researchers' choices and interpretations reflect their particular, subjective world views (MacCoun, 1998; Oreskes, 2004). Their expectations, interests, training background and personal values associated with their world views can – both unwittingly and intentionally - influence how they conduct their research and hence what results they find (Hammersley, 2005; Howell-Major & Savin-Baden, 2010). Consequently, two reviews of the same topic conducted by different researchers may come to very different conclusions.

A striking example of the way that subjectivism may influence how researchers evaluate research results is the resistance that is sometimes put up against new studies that challenge established researchers' own views (MacCoun, 1998; Oreskes, 2004). In this vein, Campanario (2009) documented 19 cases of resistance to major scientific discoveries from scientific communities and 24 cases of resistance from journal editors and reviewers: in each case the discovery went on to later win a Nobel Prize for the scientists involved. In some cases, this resistance was fruitful and led to improvements to the initial studies or reports. However, most cases were found to be examples of 'genuine resistance to scientific discovery' (p.558). The resisted discoveries included advancements in key scientific developments, such as the first law of thermodynamics, magnetic resonance imaging, and identification of the agent that causes hepatitis.

In contrast to primary research studies, traditional narrative literature reviews generally do not employ methodologies to guide the reviewer to reduce the influence of subjectivism. Critics argue that because of this, reviews are 'very likely to reflect the preferences and values of the individual reviewer' (Badger, et al., 2000, p.225) and/or the reviewer's particular research interests (Davies, 2000).

In some cases, researcher subjectivism may be inevitable or even desirable in a review. For example, the researcher may have particular training and experience that gives them good grounds to evaluate and interpret a body of research for a particular purpose (Badger, et al., 2000). Hence it is not researcher subjectivism *per se* that is a problem in traditional narrative literature reviews. Rather, the problem is *unacknowledged* researcher subjectivism that impacts the review findings without the reader's knowledge (also called 'bias').

c. Lack of transparency

A lack of transparency is arguably the greatest shortcoming of traditional narrative literature reviews, and the one that is most likely to mislead the end user. It occurs when the review process is not described sufficiently for the end user. In the scope of a single review, it is not always realistically possible, or even desirable, to avoid opportunism altogether or eliminate researcher subjectivism (Lomas, 2005). However, if the review process is not described, the end user has no way of evaluating for themselves how opportunism and researcher subjectivism may have impacted the results. In other words, their impacts are hidden and unknown to the end user. As Gough and Elbourne (2002) point out:

Experts may well have extremely valuable skills and experience but, without clear statements about how their conclusions were reached, policy makers, practitioners, and others have little basis for interpreting the way in which the experts' conclusions relate to practice and research experience or to choose between various experts providing different advice (p.277).

5 What is systematic review?

5.1 Evolution and applications

Until recently, the term 'systematic review' was used almost exclusively to refer to a particular approach to systematically reviewing *quantitative* research that is used primarily in health and medicine. This type of systematic review was developed after the publication of studies showing that beneficial medical treatments had been delayed - and harmful treatments continued - for long periods of time. This had occurred because existing studies of the treatments' effects on particular populations had not been reviewed collectively to determine the overall effect of the treatments (Chalmers, 2003; Pearson, 2010; Sheldon, 2005). In response, and under the influence of the evidence-based medicine and policy movement, the well-known Cochrane Collaboration was set up to promote, monitor and disseminate systematic reviews of quantitative studies of the effects of medical and health interventions (Cooper, et al., 2009, p.53-55). The term 'meta-analysis' is used in this context to refer to the statistical re-analysis of quantitative data to determine the overall 'effect size' of a given intervention across all the studies (Boaz et al., 2006; Cooper, et al., 2009, p.6; Davies, 2000).

The success of the Cochrane Collaboration has since stimulated interest in the use of systematic reviews beyond health and medicine. This growing interest in other policy fields also stimulated a new and more diverse generation of systematic review methods. Today, systematic review methods encompass a broader and more diverse range of purposes and approaches than just the 'classic' quantitative approach developed under the Cochrane Collaboration (Suri & Clarke, 2009). In particular, there has been a rapid growth in methods designed to systematically review or synthesize qualitative studies (Barnett-Page & Thomas, 2009; Howlett, Ramesh, & Solomon, 2003; Sandelowski & Barroso, 2006; Thorne, et al., 2004), as well as to review a mix of qualitative and quantitative research (Dixon-Woods, Agarwal, Jones, Young, & Sutton, 2005; Mays, et al., 2005). The growing diversity of methods has expanded the scope of systematic review to cover a much wider range of objectives, types of primary research studies and diverse analysis methods (Suri & Clarke, 2009). The Cochrane Collaboration has also participated in this expansion, and it now includes a qualitative methods group (see <http://www.joannabriggs.edu.au/cqrmg/about.html>).

It is important to note that common usage of terminology has not yet been settled in this expanding field. Many terms have multiple meanings while the same term may also be used to mean quite different things. This can create a lot of confusion for end users. The term 'systematic review' is itself used in quite different ways. It is still used by some authors to refer to the narrower, quantitative approach most common in health and medicine. However, others use it more broadly to refer to the diverse suite of approaches that are now available for reviewing qualitative and quantitative research literature in an explicit and transparent way (Dixon-Woods, et al., 2005). The terms 'meta-synthesis' or 'qualitative research synthesis' are increasingly used to differentiate qualitative approaches to systematically reviewing research from quantitative approaches (Thorne, et al., 2004). Meanwhile, some qualitative reviewers have re-interpreted the term 'meta-analysis' to mean the general endeavour of 'researching research' – both qualitative *and* quantitative (Bondas & Hall, 2007), while others use it to describe a particular stage in the process of synthesizing qualitative studies (Paterson, Thorne, Canam, & Jillings, 2001; Thorne, et al., 2004).

Despite this confusion, the term systematic review is increasingly used in policy-oriented forums to refer to all methods for systematically reviewing research. This is the meaning of systematic review

that we use in this discussion paper. Lavis et al. (2005) outline the key components of systematic review, broadly-defined:

By systematic reviews, we mean reviews of the research literature with five components: an explicit question; an explicit description of the search strategy; an explicit statement about what types of research evidence were included and excluded; a critical examination of the quality of the studies included in the review; and a critical and transparent process of interpretation of the findings of the studies included in the review (Lavis, et al., 2005, p.35-36).

Although traditional and systematic reviews are often compared as if they are two separate and very different things, the distinctions between them are not necessarily clear cut. Methods used to review research literature range from more to less systematic along a sliding scale. Some literature reviews that have not been labelled as 'systematic' may have been conducted in relatively methodical, explicit and transparent ways. Conversely, other reviews that are labelled as 'systematic' may lack some of the key components outlined above.

Ultimately, the advantage of a more systematic review over a less systematic traditional narrative literature review is that it uses more explicit and transparently described methodologies. Because of this, the results are less likely to be affected by opportunism and unacknowledged researcher subjectivism. End users will also be better able to evaluate the applicability, scope and limitations of the review for themselves. Consequently, end users can have more confidence in their interpretation and use of systematic reviews than of traditional narrative literature reviews (Badger, et al., 2000; Gough & Elbourne, 2002; Lavis, et al., 2005; Lomas, 2005; Mays, et al., 2005).

5.2 Criticisms and limitations

While systematic reviews offer end users some advantages over traditional literature reviews, they have also been criticised on a number of fronts. Of course, different systematic review methods have different specific strengths, weaknesses and applications, and hence are more or less suited for particular purposes. In particular, quantitative approaches focused on aggregating or cumulating research results have very different applications and methods compared to qualitative approaches that are focused on interpreting and constructing themes and understanding out of research results (Denyer & Tranfield, 2006; Dixon-Woods, et al., 2005; Gough & Elbourne, 2002). It is beyond the scope of this paper to consider the particular pros and cons of the full range of systematic review methods (but see Boaz, et al., 2006; Dixon-Woods, et al., 2005; Mays, et al., 2005; Suri & Clarke, 2009). However, there are also some general criticisms of systematic review methods that we list below.

a. *They are too rigid and inflexible for complex policy issues*

Because systematic reviews use prescribed, methodical review processes, they may be too rigid and inflexible for responding to some policy and management questions. The body of research relevant to understanding complex, multi-faceted issues is often diffuse and spread amongst a range of different research communities. This makes the potential research to include in the review large in scope and difficult to locate (Badger, et al., 2000; Bondas & Hall, 2007; Humphreys et al., 2009; Lomas, 2005). This requires researchers to make many different choices throughout the research process to scope the review. These choices can be overly constrained by the more rigid methodologies used in many approaches to systematic review (Badger, et al., 2000; Davies, 2000). Related to this, research studies relevant to understanding complex issues also tend to use a diverse range of research methods (Dixon-Woods, et al., 2005). Yet many systematic review methods are unable to integrate results from studies that use a range of different methods (Suri & Clarke, 2009). Some approaches are more flexible than others and hence can accommodate more diverse studies (Dixon-Woods, et al., 2005; Mays, et al., 2005). However, this tends to come at a cost of less transparency and greater susceptibility to unacknowledged subjectivism and opportunism (Denyer & Tranfield, 2006; Lomas, 2005).

b. They are insensitive to important contextual factors

A second criticism stems from tensions between generalized and context-specific demands on review results (Bondas & Hall, 2007). Policy makers and managers are usually concerned with a specific context. For example, Davies (2000) highlights how teachers and education managers are concerned with specific groups of students, particular educational activities, and detailed outcomes, 'all of which are anything but average' (p.373). By contrast, systematic reviews, like all forms of research review, tend to focus on finding patterns and general trends across a collection of research studies rather than understanding differences and particularities. Because of this, end users need to translate the broader results of reviews to meet their more specific needs (Lavis, 2009).

In response to this tension, some systematic review methods have sought to explicitly address contextual issues. In particular, Pawson and colleagues have developed 'realist synthesis' as a form of policy-oriented systematic review that explicitly seeks to find out 'what works for whom, in what circumstances, in what respects and how' (Pawson, Greenhalgh, Harvey, & Walshe, 2005, p.32). An example of an adapted form of realist synthesis used in the context of Australian emergency management research is the study by Elsworth, et al. (2010) referred to above.

c. They privilege technocratic perspectives and particular interests

Systematic reviews have also been criticised for advancing a technocratic perspective of policy and, relatedly, for implying that a single, value-neutral, 'best' response to complex problems exists. The strongest criticisms come from within the education field, with claims that systematic review will steer education research and policy towards a focus on technical evaluations of efficiency and effect while overlooking important social, philosophical and ethical issues (Gough & Elbourne, 2002). This criticism is most heavily laid against the 'classic' quantitative approach to systematic review associated with evidence-based medicine and policy. However, Thorne, et al. (2004) claim that a similar focus on finding overarching explanations and single 'truths' pervades many qualitative systematic reviews also, in practice if not in theory. Because of this, there is a potential danger that systematic reviews may privilege particular stakeholder groups' policy preferences above others. They may imply that one group's preferred policy option has been objectively and neutrally evaluated as a better solution than alternatives, when the differences between options is due more to differences in value judgements than in degrees of effectiveness.

d. As with other forms of review, communication and engagement with end users is often insufficient

Finally some procedural challenges have been revealed when attempting to use systematic reviews to inform policy and practice. End users with experience using systematic reviews have reported that the methods used to communicate and disseminate results are not always well-suited to their needs (Denyer & Tranfield, 2006; Lavis, 2009; Lavis, et al., 2005). This mirrors similar experiences reported by end users of other types of research review. Review reports may be exceedingly lengthy and not well-targeted to answering end users' specific questions. Further, reports may not be disseminated via channels that are easily accessed by policy makers and managers. In response, some agencies involved in commissioning and disseminating systematic reviews for policy makers have begun to trial ways to improve their accessibility (Lavis, 2009).

However, perhaps the most important way to increase the accessibility of reviews is by involving end users in the review process. This has significant advantages for both the reviewers and end users that include: contributing to a shared understanding of problems amongst stakeholders (Humphreys, et al., 2009); striking a better balance between policy relevance, the available research, and the practicalities of meeting resource and time requirements (Humphreys, et al., 2009; Lomas, 2005); enabling greater access to hard-to-find unpublished and grey literature (Humphreys, et al., 2009); improved access to and communication of review results (Lavis, et al., 2005); and greater uptake of - and trust in -

research by policy makers and managers (for examples from health policy see Lavis, et al., 2005). Yet engaging end users in research reviews, for example through participation in reference groups and steering committees, requires time and resources (Humphreys, et al., 2009). Both of these may be difficult for reviewers and end users to commit.

6 Conclusion

The aim of this discussion paper was to consider the use of research reviews to inform policy making and practice in the Australian emergency management industry. It argued that research reviews can help end users to reduce uncertainty, avoid pitfalls, stimulate new ideas, reflect on the possible consequences of different choices, and ultimately proceed with greater confidence in their decisions. However, it also argued that the most common way of reviewing research, the traditional narrative literature review, can be misleading and of limited value to policy makers and managers in some circumstances. Traditional narrative literature reviews may be influenced by opportunism and unacknowledged researcher subjectivism because the review process is not transparently described.

While interest in systematic review has grown in other sectors, it is relatively new to the emergency management industry, and few systematic reviews have been conducted of emergency management- or disaster-related topics. The use of more systematic and transparent approaches may improve the quality and usefulness of research reviews for end users. Their use of a more methodical, explicit and transparent review process means that results are less likely to be affected by problems of opportunism and unacknowledged researcher subjectivism. An outstanding feature of all systematic review methods is that they transparently describe the review process, enabling end users to better-evaluate the applicability, scope and limitations of the review for their own purposes. However, like all research methods, systematic reviews have also been criticised, and they have their own limitations. Possible problems include being overly rigid and inflexible, being insensitive to context, privileging a technocratic perspective and particular stakeholder interests, and failing to communicate and engage with end users sufficiently.

Despite these issues, we believe that research reviews used as an input to emergency management policy and practice ought to draw more heavily on the key principles underpinning systematic review. They should pay greater attention to addressing the impacts of opportunism and unacknowledged researcher subjectivism. Most importantly, they should include a clear description of the review process, including key choices made by the researcher along the way, and the reasons why. A move in this direction would require action from both researchers (to implement more systematic and transparent methods) and end users (to ask for and engage in more systematic review processes).

7 References

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