Advanced workshop on Systematic Quantitative Literature Reviews

1. Quick recap of method
2. Challenges in being systematic
3. Coding challenges
4. Analysis of data
   1. Basic
   2. Moderate
   3. Advanced
5. Questions raised by reviewers and possible responses

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1. Quick recap

Systematic quantitative literature review = Mapping the discipline...

1. **Systematic** = methods to survey literature and select papers to include are explicit and reproducible
2. **Quantitative** = measure of the amount (number of papers) of research within different sections of topic
3. **Comprehensive** = assesses different combinations of locations, subjects, variables and responses
4. **Structured** = working out what is important about the literature (categories/subcategories) - collecting, analysing literature, and writing follows clear steps

So how do you do it...


Includes –
1. Youtube videos on each stage
2. Papers outlining the approach
3. Papers published using the method,
4. Youtube videos of students talking about the method
5. Example excel databases
6. Youtube video on why publish during your PhD
Also article in The Conversation

15 step process

Step 1 Define topic
Step 2 Formulate research questions
Step 3 Identify keywords
Step 4 Identify & search databases
Step 5 Read & assess publications
Step 6 Structure database
Step 7 Enter first 10% papers
Step 8 Test & revise categories
Step 9 Enter bulk of papers
Step 10 Produce & review summary tables
Step 11 Evaluate key results & draft results section
Step 12 Draft methods
Step 13 Draft introduction
Step 14 Draft discussion & abstract
Step 15 Revise paper till ready for submission
Some databases used in papers
1. Google Scholar
2. Web of Science
3. ProQuest
4. ResearchGate
5. SCOPUS
6. ScienceDirect
7. Sage
8. EconLit
9. CINAHL
10. PsycINFO
11. PubMed
12. Medline databases
13. ERIC
14. CINAHL Plus
15. Business Source
16. Communication Source
17. Education Source
18. Cinii
19. J-STAGE
20. Emerald Insight
21. Wiley Online

Some times working out keywords & search terms is complex

Phrase one – keyword search string. Search databases: Proquest, Eric, Scopus, Web of Science & Google Scholar
Phrase two – keyword search string. Search databases: EBSCOhost

2. Challenges in being systematic

Reminder - being systematic when fishing
Aim: need to catch all the specified fish, but not spend forever, and minimise bycatch.

Questions
Why fish? Aims and research questions
What fish? Papers vs books, thesis, reports, other grey literature, other languages etc
What nets to use? Are there keywords that work? Title+Keywords+Abstract vs whole paper?
Where to fish? Which databases and how do they differ?
How long to fish? When have you found all the specified fish?

NB: check out bottom of this webpage to find out who is your expert librarian

https://www.griffith.edu.au/library/research-publishing
Using a table to set out the stages...


Table 1. Review protocol

<table>
<thead>
<tr>
<th>Step</th>
<th>Research question/Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review question</td>
<td>What are the thematic fields of research regarding LCSA and what are the identified needs for future research?</td>
</tr>
<tr>
<td>Inclusion criteria</td>
<td>Population: Studies representing the FCA concept. Intervention: No intervention in the research question. Comparison: No comparison in the research question. Outcome: Studies that represent, constitute or strengthen any FCA method.</td>
</tr>
<tr>
<td>Exclusion criteria</td>
<td>Presentations, book reviews, comments and all studies reported in non-English language.</td>
</tr>
<tr>
<td>Quality criteria</td>
<td>Methods: hierarchy of study design (experimental, observational, expert opinion) and quality checklist (lists of questions appropriate to the research question).</td>
</tr>
<tr>
<td>Data extraction</td>
<td>Data extraction form with developed categories from relevant studies: title, authors, year of publication, place of study, type of industry, type of focus (industry, organisation, project, product or process), and brief methodology description. Software used for extracting data: Microsoft Access.</td>
</tr>
<tr>
<td>Data synthesis</td>
<td>Methods: narrative synthesis, developed categories from a detailed examination of all FCA studies. Presentation methods: tables, matrices and qualitative thematic analysis.</td>
</tr>
</tbody>
</table>

An example of reasons for exclusion/inclusions for less clear cut topics

Excluded:
1. Search engine reason: paper only has title, abstract and key words in English, but not full text.
2. Not -related:
   a. not an academic article – e.g. editorial materials, conferences reviews, contents, forwards etc. book, grey literature.
   b. the definition of the topic used in paper does not match that you are using in the review.
3. Loosely-related: the paper doesn’t focus directly on the topic of the review
   a. the topic is only used as an example
   b. the topic is only included in the discussion under the need for future research perspectives etc.
   c. the topic is only used as a cited expression
   d. the topic is only used in keywords and/or references.

Included:
1. Partly related
   a. paper focused on general issues with out mentioning specific topic
   b. topic is only used to support the description of some challenges, issues or trends
   c. topic is only one of serval to be reviewed, surveyed or discussed
2. Closely related: the research efforts of the paper are exclusively and specifically dedicated to the topic.


May want to try Colondr
(let me know how well it works)

CoResearch is an open access machine-learning assisted app for conducting systematic synthesis of evidence from primary and grey literature sources.

SMART SORTING & TEXT MINING
CoResearch has a sophisticated back-end that costs a state-of-the-art data science (natural language processing, and Goole vectors)

OPEN ACCESS & OPEN SOURCE
CoResearch is freely accessible and provides a collaborative community for users and developer.

NO BLACK BOX PROCESSES
Colondr helps speed up review process but lets the user have final say over what is ultimately included.
3. Coding challenges

Remember coding issues highlighted previously
1. Spend time working out the categories and subcategories and test them
2. Use lots of categories/subcategories
3. For each paper it's often better to just use '1' or blank if paper does this (will be easy then to calculate results)
4. Be clear about rules for categories/subcategories (Falkland/Malvinas Islands example)
5. Often good to check coding by different people gives the same results for a subsample of papers (increased consistence)
6. Record details in a second page of the excel sheet about what you did with hard to code examples

Coding different types of documents using content analysis

NB did not cite SQLR method

NB did not cite SQLR method

4a. Basic analysis: Tables of totals & percentages


Tables of concepts and constructs


<table>
<thead>
<tr>
<th>Key Concepts and Constructs</th>
<th>Frequency (%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>41 (29)</td>
</tr>
<tr>
<td>Retention (attention to continue)</td>
<td>30 (21)</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>18 (12.7)</td>
</tr>
<tr>
<td>Recruitment</td>
<td>12 (8.5)</td>
</tr>
<tr>
<td>Commitment (engagement)</td>
<td>10 (7.6)</td>
</tr>
<tr>
<td>Experience</td>
<td>7 (4.9)</td>
</tr>
<tr>
<td>Motivation measurement</td>
<td>5 (3.5)</td>
</tr>
<tr>
<td>Volunteer legacy</td>
<td>4 (2.9)</td>
</tr>
<tr>
<td>Identity</td>
<td>3 (2.1)</td>
</tr>
<tr>
<td>Expectation</td>
<td>3 (2.1)</td>
</tr>
<tr>
<td>Flexibility</td>
<td>2 (1.4)</td>
</tr>
<tr>
<td>Media</td>
<td>2 (1.4)</td>
</tr>
<tr>
<td>Job performance</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Volunteer learning</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Motivational climate</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Total</td>
<td>142 (%)</td>
</tr>
</tbody>
</table>

*Does not add to 100% due to rounding. Total > 71. More than one concept or construct examined in most articles.

<table>
<thead>
<tr>
<th>Method</th>
<th>Integration</th>
<th>Decision Analysis</th>
<th>Multi-Criteria Integration</th>
<th>Regional Input Output Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors</td>
<td>Authors</td>
<td>Authors</td>
<td>Authors</td>
<td>Authors</td>
</tr>
</tbody>
</table>

Basic analysis: Similar data but in graphs


Coding of journals by disciplines

Either use Scimago.com for the categories journals or even simpler – information is also available in an Excel spreadsheet from Scopus - Download Scopus source list (updated June 2017)

Can automate the process of adding categories against each journal by using the VLOOKUP Excel function - cross checking with your own dataset’s journal title column against this one, and have Excel auto-import the category info.

Coding of journals by disciplines


4.a Moderate analysis:
One variable against another (% studies) in tables

Table 3. Benefits attained by transformative travelers

<table>
<thead>
<tr>
<th>Benefit classification</th>
<th>Health &amp; wellness (%)</th>
<th>Physical activity (%)</th>
<th>Spiritual (%)</th>
<th>Cultural (%)</th>
<th>Volunteering (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual benefits</td>
<td>28</td>
<td>18</td>
<td>18</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>28</td>
<td>18</td>
<td>18</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Emotional well-being</td>
<td>54</td>
<td>60</td>
<td>40</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Independence</td>
<td>33</td>
<td>65</td>
<td>27</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Appreciation</td>
<td>45</td>
<td>49</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Self-enrichment</td>
<td>55</td>
<td>49</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Physical health</td>
<td>52</td>
<td>62</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>57</td>
<td>57</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Sense of achievement</td>
<td>55</td>
<td>55</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Cultural</td>
<td>38</td>
<td>48</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Awareness, sensitivity</td>
<td>47</td>
<td>50</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Repeated participation</td>
<td>64</td>
<td>64</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>


Basic analysis:
Maps

Moderate analysis:
One variable against another in tables (add statistics = chi-square)

<table>
<thead>
<tr>
<th>Topics</th>
<th># abstracts*</th>
<th>2002</th>
<th>2004</th>
<th>2006</th>
<th>2008</th>
<th>2010</th>
<th>2012</th>
<th>2014</th>
<th>χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Perceptions</td>
<td>644</td>
<td>61</td>
<td>48</td>
<td>106</td>
<td>84</td>
<td>104</td>
<td>138</td>
<td>103</td>
<td>0.959</td>
</tr>
<tr>
<td>Attitudes</td>
<td>128 (19%)</td>
<td>3</td>
<td>6</td>
<td>13</td>
<td>17</td>
<td>27</td>
<td>31</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Profile</td>
<td>155 (24%)</td>
<td>26</td>
<td>18</td>
<td>28</td>
<td>23</td>
<td>22</td>
<td>15</td>
<td>0.022</td>
<td></td>
</tr>
<tr>
<td>Behaviour</td>
<td>100 (16%)</td>
<td>10</td>
<td>5</td>
<td>7</td>
<td>14</td>
<td>9</td>
<td>30</td>
<td>25</td>
<td>0.002</td>
</tr>
<tr>
<td>Motivations</td>
<td>93 (14%)</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>16</td>
<td>12</td>
<td>22</td>
<td>23</td>
<td>0.031</td>
</tr>
<tr>
<td>Experiences</td>
<td>64 (10%)</td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>20</td>
<td>22</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>50 (8%)</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>3</td>
<td>13</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willingness to pay</td>
<td>78 (12%)</td>
<td>8</td>
<td>4</td>
<td>13</td>
<td>16</td>
<td>12</td>
<td>14</td>
<td>11</td>
<td>0.685</td>
</tr>
<tr>
<td>Social values</td>
<td>42 (7%)</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>12</td>
<td>5</td>
<td>0.741</td>
<td></td>
</tr>
<tr>
<td>Economic benefits of tourism</td>
<td>23 (4%)</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social carrying capacity</td>
<td>16 (2%)</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expectations</td>
<td>14 (2%)</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) the percentage of papers that addressed ecological, economic, or social attributes individually and in combination; (b) of the papers that included ecological attributes, the percentage that addressed vegetation structure, diversity and abundance, and ecological processes.


Venn diagrams showing number of papers by related concepts

Spider diagrams showing % papers by disciplines/paradigms


Trends over time vs topics

Social Science abstracts = 485 (64%) (86 mixed)


Moderate analysis: One variable against another graphs


4.c Advanced analysis: Multidimensional analysis

Results of a Multivariate Categorical Principal Components Analysis of 644 social science abstracts from the first seven Managing and Monitoring Visitors in Recreational and Protected Areas conferences.

Vector lines indicate the strength and direction of the variable in explaining variation among the abstracts, with lines close together indicating a cluster of abstracts assessing similar combinations of the variables.


**Cluster analysis of related theory/theorist for Schmitt**

Agglomerative hierarchical cluster analysis using Euclidian distances of publications based on attributes of the study – minimizes within-group variance and maximizes between group variance.


Leximancer analysis of themes


Map concepts by extracting and ranking a list of key words and phrases from source texts. Then uses intelligent algorithm to iteratively build a thesaurus of concepts from more than one or two keywords. Concepts are indexed and weighted.

Identify related concepts, but also topics missing.
5. Questions raised by reviewers and possible responses

1. Why only English language? Response = most research is in English

2. Why only journal articles? (e.g. why not grey literature etc) Response = not same standard of work - details methods results etc, have not been peer reviewed, and are not as consistently available as in papers via on line search engines

3. Why was a specific paper not included? Response = need to provide greater clarification around the criteria used for inclusion/ exclusion for the systematic component of the methods

Questions raised by reviewers

4. Why not a meta-analysis? Response = not enough suitable data sets

5. Why not other topics? Response = this is an important issues for other reviews to look at (beyond the scope of the current study)

6. The review is bland/ pedestrian. Response = may need to provide some more context/discussion around the context of the review and the meaning/importance of the results. The nature of the response depends on what's in your review, but sometimes its easy to run out of energy by the discussion, and this is where a bit more work may be needed to fully examine implications/importance and limitations of the review

Examples of responses in papers

“Only peer-reviewed journals were included because they reflect the interests and values of mainstream research communities and have a degree of control and credibility through peer review processes (Fox and Diezmann, 2007; Lubienski and Bowen, 2000). . . . We note that the identified publications are unlikely to reflect the full scope of work in the field. For example, we were only able to access papers written in English. We are cognizant that relevant publications could well appear in a number of different journals indexed in different databases. Nevertheless, our selection of databases was informed by advice from university librarians, preliminary searches and careful review of individual titles. While peer-reviewed journals are the most common, reliable and current dissemination methods, research on embedding of sustainability into initial teacher education may also be published in other formats.”


Examples of responses in papers

By focusing on peer reviewed academic journals we were able to use a consistent sampling method to identify a literature that has contains similar levels of detail about the study and standards of research. It follows from the approach used in other systematic qualitative literature reviews (Guitart et al., 2012; Pickering et al., 2014) including in recreation ecology (e.g. Stevenson et al., 2011; Ansong and Pickering, 2013). We do this while recognising that original research on trail impacts occurs in other sources including peer reviewed academic journals published in languages other than English and in a range of ‘grey’ literature such as protected area management plans and reports. Reviewing non-English language peer reviewed journals, however, was beyond the expertise of the authors. As more than 90% of sciences papers are in English (Hamel, 2007) including papers in other languages may not dramatically alter the general patterns found in the current review apart from those relating to the geographical spread of studies (see below).

We did not include grey literature such as protected area management plans and reports as much of this literature tends to be very specific to certain regions or problems and is often not publicly available and hence included in online searchable databases. Also there can be less consistency in the details provided within grey literature about how research was conducted and data analysed and the work often have not been subject to peer review. Future reviews encompass such ‘grey’ literature are likely to provide important insights particularly for certain regions, although consistent access to grey literature globally remains a challenge.

Examples of responses in papers

In terms of the supply factors, explanations for the geographical biases in the research include:
(1) more researchers and research funding in the USA and wealthy parts of Europe (Pasgaard and Strange, 2013),
(2) the dominance of the English language in academic publishing (Hamel, 2007; Muresan and Pérez-Llantada, 2014),
(3) often higher rates of citation/impact for American journals (Anderson-Levitt, 2014), but also
(4) social biases affecting perceptions regarding the importance of research from different regions/languages (Anderson-Levitt, 2014; Liddicoat, 2016; Muresan and Pérez-Llantada, 2014; Pérez-Llantada et al., 2011).

All four of these factors are important and their impacts on academia in general are increasingly recognized.