

# THE VALUE OF CAQDAS FOR SYSTEMATISING LITERATURE REVIEWS

*Software designed to facilitate qualitative and mixed methods research is collectively known as CAQDAS (Computer Assisted Qualitative Data Analysis). Available since the 1980s it provides tools designed to support a range of analytic activities across disciplines and sectors. Using references from bibliographic software (e.g. Endnote, Zotero, Mendeley) enables systematic literature reviewing, integrated with data analysis. This article outlines some possibilities, highlighting considerations in planning a literature review for librarians and others.*

## What CAQDAS packages “do”?

The acronym “CAQDAS” is misleading because these programs do not “do” analysis; users remain in control of and responsible for everything. It’s therefore better to think of them as project management tools. Harnessing CAQDAS *powerfully* involves their use from start to finish, whether for an academic study, service evaluation, public consultation, literature review, or anything else. Each program has a suite of features, too many to list here.

### Table 1.

Leading CAQDAS packages

- ATLAS.ti [atlasti.com](http://atlasti.com)
- Dedoose [dedoose.com](http://dedoose.com)
- HyperRESEARCH [researchware.com](http://researchware.com)
- QDA Miner [provalisresearch.com](http://provalisresearch.com)
- Qualrus [ideaworks.com/qualrus](http://ideaworks.com/qualrus)
- Quirkos [quirkos.com](http://quirkos.com)
- MAXQDA [maxqda.com](http://maxqda.com)
- NVivo [qsrinternational.com](http://qsrinternational.com)
- Transana [transana.org](http://transana.org)

Undertaking a literature review is similar to conducting a qualitative data analysis (QDA) in terms of the analytic activities involved (Table 2.). Specific analytic requirements should drive the way tools are used rather than the availability of product features

### Table 2.

Analytic activities supported by CAQDAS

#### Integration

- Bring together all relevant material into one “workspace”
- Quantify qualitative data / qualify quantitative data

#### Organisation

- Manage facts about data (metadata, socio-demographics etc.)
- Represent ideas that form the basis of analysis

#### Exploration

- Familiarise with data
- Access and mark inherent structure

#### Reflection

- Write about data, process, interpretations and results
- Map connections in data

#### Interrogation

- Query connections based on earlier work
- Identify patterns, relationships, anomalies
- Test theories/hypotheses, validate interpretations
- Compare subsets and cases

CAQDAS packages are not substitutes for bibliographic software as they do not include options

for collecting references, generating bibliographies or cite while you write capabilities. Added value comes in harnessing tools to create systematic means of appraising literature. Ways of integrating literature into CAQDAS packages are summarised in Table 3:

**Table 3.**

Key ways and purposes of integrating literature into CAQDAS

- Import bibliographies, full-text PDF articles, conference papers, reports etc.: annotate, search, code.
- Write notes in “spaces” linked to other project objects: summarise, appraise and comment.
- Reference “external” sources: link for quick access.
- Hyperlink data segments within and between data sources: track associations, build an argument.
- Import metadata: manage, query.

### Planning a literature review using CAQDAS

Electronic literature files can be worked with directly, meaning they can be searched, annotated and coded. Word frequency and text searching tools enable keywords and phrases indicative of relevant concepts to be accessed and automatically coded with specified context, e.g. sentence or paragraph. Most CAQDAS packages have word cloud functions to visualise frequencies (Fig. 1). Analysing frequency of occurrence on this basis can be useful in quantifying significance.

Annotation is the process of marking data segments and commenting on them, similar to footnoting in word processors. This is useful for literature familiarisation and identifying pertinent areas for subsequent analysis.

Coding in qualitative analysis involves ‘tagging’ data segments according to the concepts they represent. There are many approaches to coding in QDA and an extensive literature discussing this form of conceptualisation. These debates are relevant to reviewing literature because journal articles, reports, books etc. are a form of qualitative data.

Working directly with literature has many uses but it can be fruitful to initially work indirectly. This involves creating writing spaces within CAQDAS that represent literature and writing appraisals that are then analysed, for example, searching and coding to synthesize and compare. A structured template reflecting the review’s focus ensures appraisals are



Fig. 1. Word cloud of literature discussing mixed methods research in the social sciences (NVivo)

consistent, facilitates systematic analysis, and enables prioritization.

Direct or indirect working need not be an ‘either-or’ decision. A hybrid approach can be designed so that the analysis of appraisals identifies pertinent subsets of literature on relevant dimensions, e.g. methodologically, substantively, historically or theoretically. Full-text literature rated significant can then be incorporated into the CAQDAS program and worked with directly. This approach is particularly useful when the topic being appraised is prolific or under-researched.

ID	Variable	Variable type	To be displayed	Categorical	Source
28	TV_Type of reference	String	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	System
29	AU_Author	String	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	System
30	TI_Book title	String	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	System
31	ID_Reference ID	Integer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	System
32	PY_Publication year	Integer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	System
10000001	Discipline	String	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Code
10000002	Quality	String	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	User

Fig. 2. Display of imported metadata, linked to literature (MAXQDA)

Importing references from bibliographic software links metadata with literature (Fig. 2) such that interrogations can be performed that combine factual characteristics (metadata) with analysts’ assessments (appraisals) and source literature (full-text files). CAQDAS programs vary significantly in this regard but metadata such as publication date, author, key-

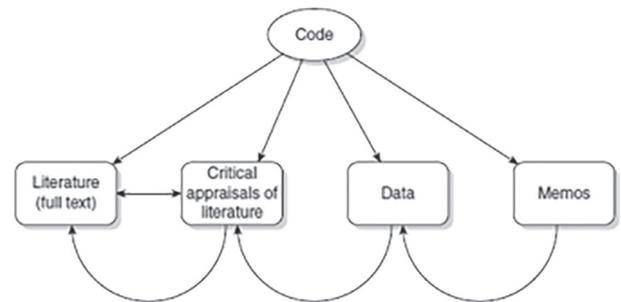


words, publication type etc. can usually be incorporated and linked. CAQDAS query tools (e.g. Boolean, Proximity) can be used to interrogate patterns of coding according to these factual characteristics.

#### CAQDAS tools for reviewing literature

- Word frequency and text searching (aids exploration)
- Annotation, memoing, summarisation (aids reflection)
- Code and retrieval (aids organisation of ideas)
- Classification (aids factual organisation)
- Mapping (aids reflection)

Whatever approach is taken, it is important to be systematic: this involves planning. CAQDAS packages include features that can be employed as tools for undertaking literature reviews systematically. However, it is not necessary to utilize all the options. Having an understanding of features is useful in designing an approach, but the design should be guided predominantly by the needs of the review.



*Fig. 3 Codes as collection devices (Silver & Lewins, 2014:129)*

It is particularly useful to use CAQDAS packages for reviewing literature when this forms part of a larger study. Studies that review literature as a means of formulating research questions and then go on to analyse data generated for the purpose are strengthened by the cross-referencing and comparisons that are enabled by working with literature and data within the same CAQDAS package. Where coding is employed, for example, material relating to concepts can be retrieved together from different sources (Fig 3). This enables researchers to make comparisons and illustrate how the data analysis contributes to gaps identified in knowledge at the literature review stage. That said, where a literature review is a study in itself, the use of CAQDAS can also be of great benefit.