Introducing Faculty and Graduate Students to Systematic Reviews:

Evaluation of a Stand-Alone Workshop
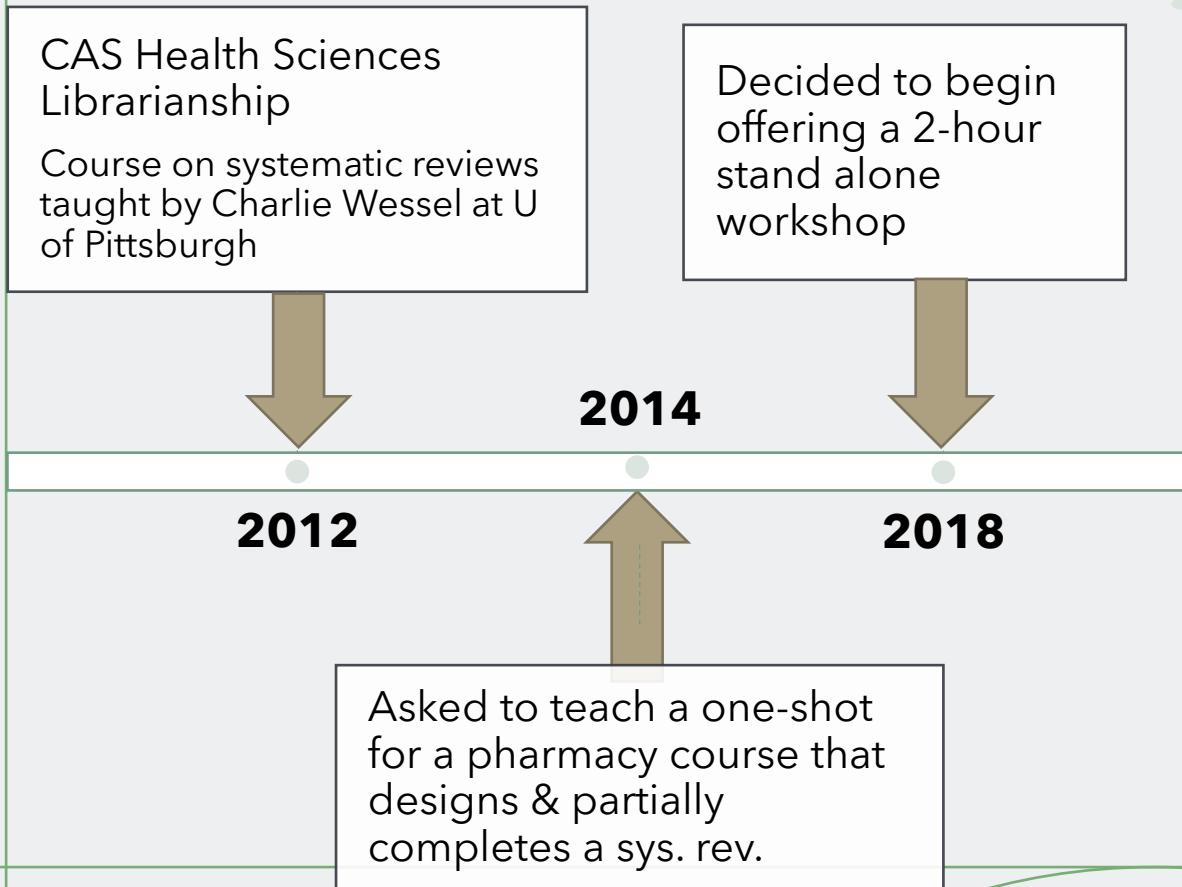
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Introduction to Systematic Reviews

Background

CAS Health Sciences Librarianship

Course on systematic reviews taught by Charlie Wessel at U of Pittsburgh

Decided to begin offering a 2-hour stand alone workshop

2014

2012

2018

Asked to teach a one-shot for a pharmacy course that designs & partially completes a sys. rev.

Outline

Follows general flow of PRISMA guidelines

- Difference in systematic review & Lit review
- Inclusion/Exclusion criteria
- Search strategy
- Screening
- Flow chart
- Quality assessment
- Data extraction
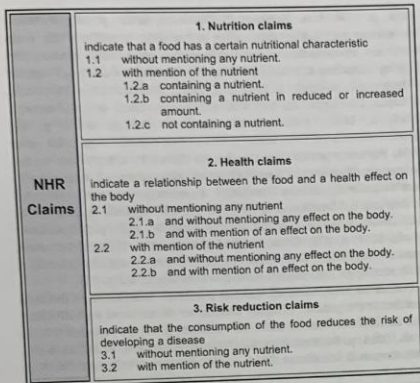- Synthesis
- Other types of reviews

Fig. 2. NHR claim types

1. Nutrition claims		
indicate that a food has a certain nutritional characteristic		
1.1	without mentioning any nutrient:	
1.2	with mention of the nutrient	
	1.2.a	containing a nutrient.
	1.2.b	containing a nutrient in reduced or increased amount.
	1.2.c	not containing a nutrient.
2. Health claims		
NHR Claims	indicate a relationship between the food and a health effect on the body	
	2.1	without mentioning any nutrient
		2.1.a and without mentioning any effect on the body.
		2.1.b and with mention of an effect on the body.
	2.2	with mention of the nutrient
		2.2.a and without mentioning any effect on the body.
		2.2.b and with mention of an effect on the body.
3. Risk reduction claims		
indicate that the consumption of the food reduces the risk of developing a disease		
3.1	without mentioning any nutrient.	
3.2	with mention of the nutrient.	

Fig. 2. Categorization and definition of NHR claim types based on EU Regulation No. 1924/2006 and Codex Alimentarius Commission (2013).

with the various names given to NHR claims. In some cases, the term 'risk reduction claim' might be used, in others 'reduction of disease risk claim', or – especially in US articles – a 'health claim' might be called a 'structure function claim' and a 'risk reduction claim' might be called a 'health claim'. However, other terms for these claims like 'health label' or 'nutrition label' (e.g. Barreiro-Hurlé, Gracia, & de-Magistris, 2010a, 221) were not included in this search term because their usage is rare. The final search term used was:

((Title-Abstr-Key("nutrition claim*")) OR (Title-Abstr-Key("health claim*")) OR (Title-Abstr-Key("risk reduction claim*")) OR (Title-Abstr-Key("reduction of disease risk claim*")) OR (Title-Abstr-Key ("structure function claim*")) OR (Title-Abstr-Key("health label*"))) AND (consum*)

Besides the lack of unified terms for NHR claims, another problem became apparent while scanning the articles: the different and sometimes even contrary definitions or categorizations of NHR claims made

Fig. 3. Article selection process

Identified entries through database search
Thomson Reuters Web of Science (n = 877)
Science Direct (n = 472)
EBSCO (n = 383)
AgEcon (n = 55)

↓

Potentially relevant articles identified for full-text screening (n = 293)

→ | Articles excluded: |
| Articles not about NHR claims (n = 77) |
| Review articles about NHR claims (n = 16) |

↓

Studies presenting empirical results about NHR claims (n = 200)

→ | Articles excluded: |
| Articles not reporting product or consumer-specific characteristics in combination with consumer behavior regarding the effect of NHR claims on preferences or purchase behavior (n = 134) |

↓

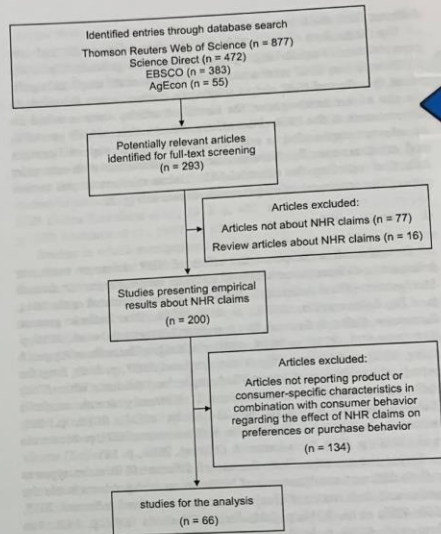| studies for the analysis (n = 66) |
|---|

Fig. 3. Article selection process.

it difficult to compare studies and their results. Based on EU Regulation No. 1924/2006 and the Codex Alimentarius Commission's Guidelines for Use of Nutrition and Health Claims, Fig. 2 shows a categorization of the NHR claim types. This categorization depicts a balance between a very high degree of detail, which would lead to incomprehensibility, and a very low degree of detail, which would lead to inaccuracy. Additionally, this categorization is the basis for the comparison of the studies referred to in this review paper as well as in its summary table, Table A1. For better illustration, Table 1 gives examples for the
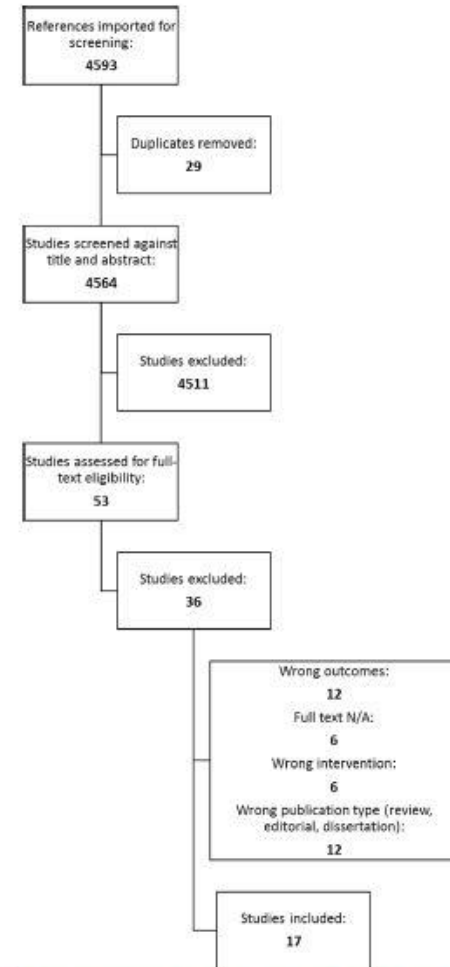
Table 1
Examples of the NHR claim types.

NHR claim type		Example	Legal status in the EU
Nutrition Claims	1.1	natural	allowed - (EU No. 1924/2006 Annex)
	1.2.a	contains calcium	allowed - (EU No. 1924/2006 Annex)
	1.2.b	increased calcium	allowed - (EU No. 1924/2006 Annex)
	1.2.c	fat free	allowed - (EU No. 1924/2006 Annex)
Health Claims	2.1.a	healthy	not allowed, because a specific health benefit and the nutrient the health benefit is based on is missing (EU No. 1924/2006 Art. 10 par. 3)
	2.1.b	supports bone density	not allowed, because the nutrient the health benefit is based on is missing (EU No. 1924/2006 Art. 10 par. 3)
	2.2.a	live healthy with calcium	not allowed, because a specific health benefit is missing (EU No. 1924/2006 Art. 10 par. 3)
	2.2.b	calcium is needed for the maintenance of normal bones	allowed - (EU No. 432/2012 Annex)
Risk Reduction Claims	3.1	lowers the risk of developing osteoporosis	not allowed - because the nutrient the health benefit is based on is missing (EU No. 1924/2006 Art. 10 par. 3)
	3.2	calcium helps to reduce the loss of bone mineral in post-menopausal women. Low bone mineral density is a risk factor for osteoporotic bone fractures.	allowed - (EU No. 1228/2014)

Fig. 1. PRISMA flow diagram

References imported for screening: 4593

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Duplicates removed: 29

↓

Studies screened against title and abstract: 4564

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Studies excluded: 4511

↓

Studies assessed for full-text eligibility: 53

↓

Studies excluded: 36

→ | Wrong outcomes: 12 |
| Full text N/A: 6 |
| Wrong intervention: 6 |
| Wrong publication type (review, editorial, dissertation): 12 |

↓

Studies included: 17

Fig. 1. PRISMA guidance flow diagram of identification, screening, and inclusion of eligible studies.

2.2.2. Exclusion criteria

Studies were excluded from the review according to the following a priori criteria: i) commentary manuscripts; ii) literature reviews; iii) dissertations; iv) studies that used qualitative analysis, and v) studies which did not investigate the relationship between mindfulness and road safety.

2.3. Information sources and search

An electronic search of databases from the disciplines of public health, psychology and transport safety (Ovid Cochrane Library, Ovid PsycINFO, Ovid EMBASE, CINAHL PLUS, Ovid TRANSPORT and TRID: TRIS and ITRD database) was conducted on February 7th 2018 to locate studies from the first available year to February 2018. In addition, a bibliographic review of included studies and a review of gold set articles[1] was conducted to locate additional studies. Leading researchers in the field of mindfulness and road safety were also contacted to identify further relevant studies.

Two key concepts were selected: 1) mindfulness; and 2) road safety. Search terms (i.e., both indexed [e.g., Medical Subject Headings] and key words) associated with both concepts were derived independently from each author and in consultation with a subject matter expert librarian (see Table 1).

2.4. Study selection

Search results were exported into Endnote X8 software and duplicates were removed from the total number of identified records. Two researchers (SK, PH) independently completed an initial screening of titles and abstracts for eligibility and a priori inclusion and exclusion criteria were applied.

Following title and abstract screening, the two reviewers (SK, PH) independently applied inclusion and exclusion criteria to the full texts of the remaining articles to select studies for this review. A bibliographic review of included studies, as well as a review of gold set articles was conducted to identify additional relevant studies. Any conflicts between the two reviewers were resolved by a third reviewer (LB).

The primary outcome of interest was to identify whether mindfulness is associated with improved road safety. Road safety is largely concerned with methods of preventing road traffic injuries or fatalities among road users such as motorists, pedestrians, cyclists, and vehicle passengers (World Health Organization, 2018). This outcome was measured primarily via crashes or near-crashes, as identified through self-reports, crash records or driving simulator performance. Secondary outcomes of interest included aberrant driving behaviours (including speeding and texting while driving), as well as decrements in driving performance (i.e., such as errors) in a driving simulator.

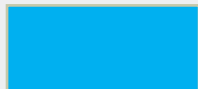*2.5. Data collection process and data items*

A full-text review of each included study was conducted by one reviewer (PH) and the following data items were extracted into a pre-tested data extraction sheet: study aim, study period, date of publication, study location and population, participant demographics, research design and method, recruitment, data sources and analysis, completion date, outcomes including crashes/near crashes, violations and driving performance, interventions, assessment of the risk of bias, salient findings and study limitations. Case-control studies were firstly reviewed, followed by observational cohort and cross-sectional studies. A second author (SK) reviewed the data extraction, and disagreements were resolved via consensus.
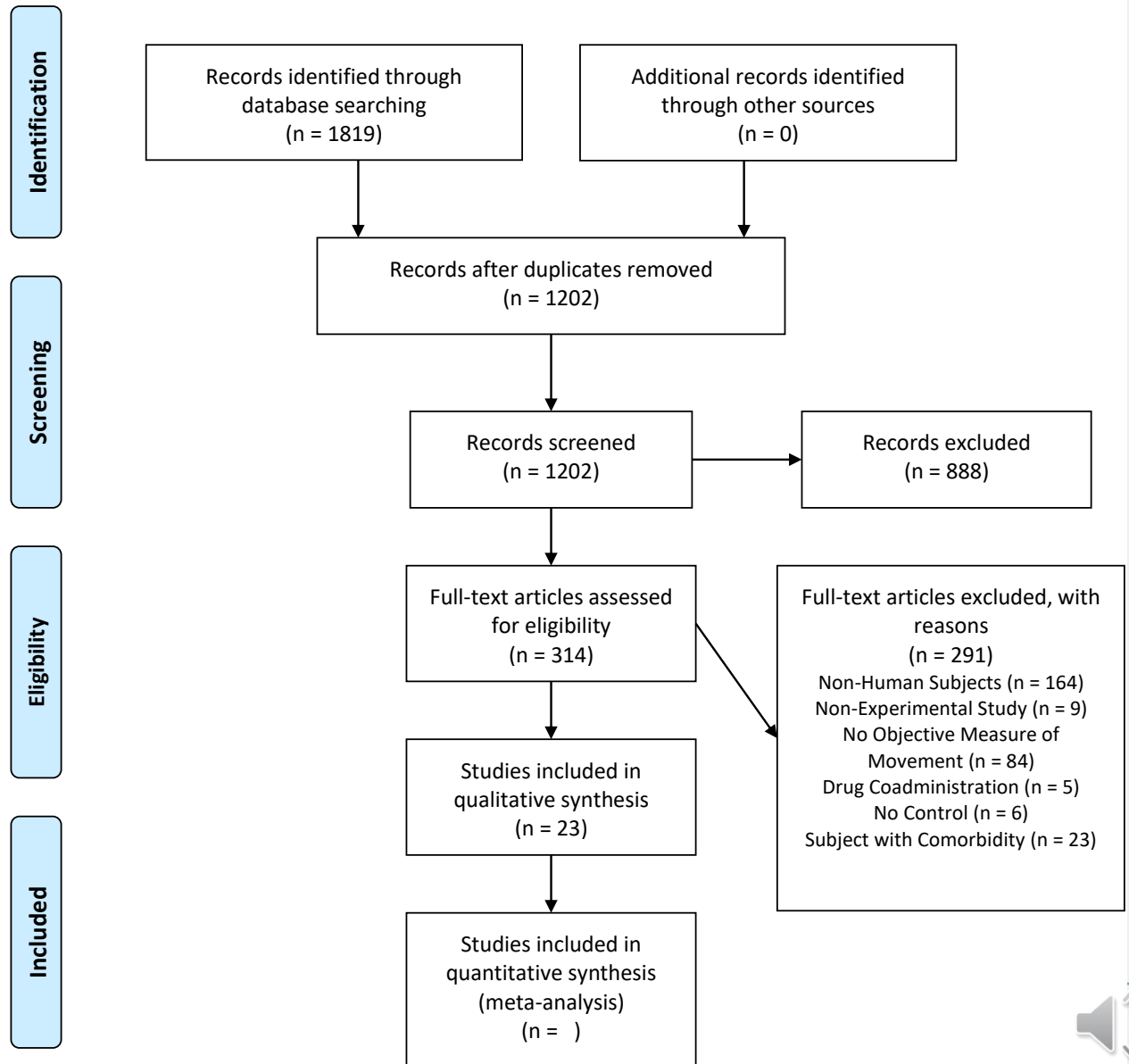
2.6. Quality of evidence

The quality of included studies was independently assessed by the two reviewers (SK, PH) using the National Heart, Lung and Blood Institute (NIH, 2014) study quality assessment tools. The NIH (2014) guidelines consider the following factors when critically evaluating a study's internal validity: risk of potential for selection bias, information bias, measurement bias or confounding factors – where the greater the risk of bias, the lower the quality rating of the study. A table was

[1] Gold set articles are relevant references identified before the development of a search strategy. These articles can then be used to help identify relevant search terms and to test that the search strategy will retrieve these items and other relevant references on your topic.

# Documenting your search

PRISMA 2009 Flow Diagram

Identification

Records identified through
database searching
(n = 1819)

Additional records identified
through other sources
(n = 0)

Records after duplicates removed
(n = 1202)

Screening

Records screened
(n = 1202)

Records excluded
(n = 888)

Eligibility

Full-text articles assessed
for eligibility
(n = 314)

Full-text articles excluded, with
reasons
(n = 291)
Non-Human Subjects (n = 164)
Non-Experimental Study (n = 9)
No Objective Measure of
Movement (n = 84)
Drug Coadministration (n = 5)
No Control (n = 6)
Subject with Comorbidity (n = 23)

Studies included in
qualitative synthesis
(n = 23)

Included

Studies included in
quantitative synthesis
(meta-analysis)
(n =   )

Assessment after each session

Qualtrics survey with 7 questions
(3 Likert questions – 'Strongly agree' to 'Strongly disagree', 4 open-ended questions)

- The systematic review workshop met my expectations. (Likert)

- I now feel more capable of beginning a systematic review. (Likert)

- What I learned in the workshop will be helpful in completing other types of research and/or assignments. (Likert)

- What was the most helpful part of the workshop? (open ended)

- What was the least helpful part of the workshop? (open ended)

- What confused you the most? (open ended)

- Other comments? (open ended)
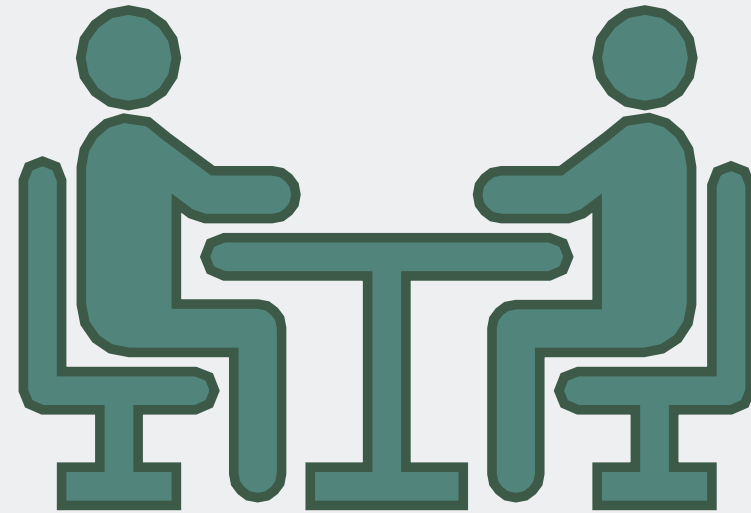
29 responses between 9/2018 and 5/2021 from 14 different sessions

Results of Likert Scale Questions
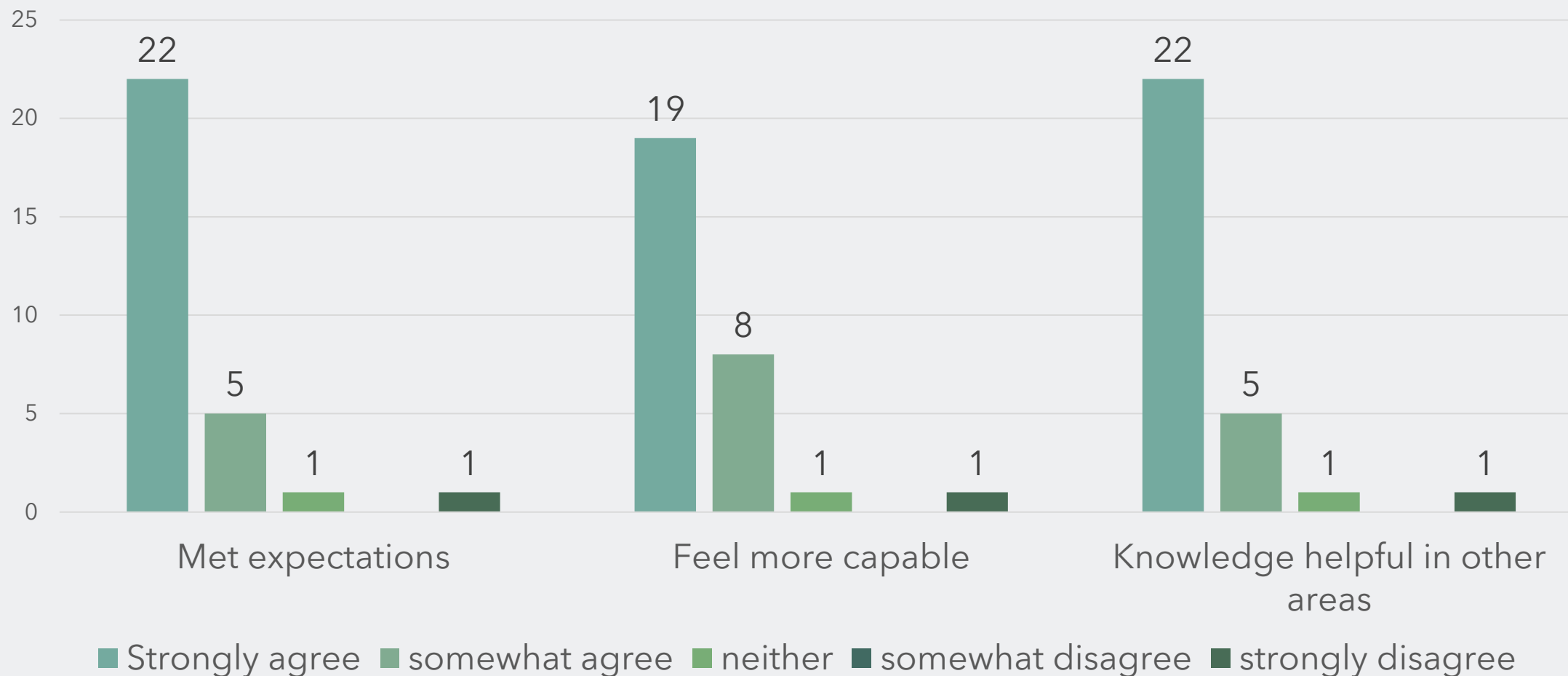
Themes from Open Ended Questions 1 & 2

Most helpful

Example articles (n=9)
Libguide/links (n=4)
Info on searching (n=3)
Handout (n=1)
Pptx (n=1)
How to document (n=1)
Answering questions (n=1)

Least helpful

Nothing; all was helpful (n=11)
A lot of information (n=1)
Other types of reviews (n=1)
Would like more info about when to do a systematic review (n=1)
Assessing articles for quality (n=1)

Themes from Open Ended Questions 3 & 4

What confused you?

- Nothing (n=9)
  - Confusion was cleared in class (n=1)
- A lot of information (n=2)
- How systematic reviews differ from lit reviews (n=2)
- Differences between other types of reviews (n=2)
- Syntax for DB search (n=1)
- When to do Sys Rev (n=1)

Other comments

- Helpful, great, etc. (n=11)
  - Well organized (n=1)
  - Would recommend to others (n=1)
- Would like recording (n=2)
- Keep providing this class / offer more often (n=2)
- Nice to be longer and provide time for application (n=1)
- Spend more time discussing other types of reviews (n=1)

Where do you go from here?

🔍	Need help knowing where to search OR developing your search	Contact the librarian for your subject area, https://libguides.auburn.edu/subjectlibrarians
✉@	Want someone to review your search	Contact me at abg0011@auburn.edu
🧑‍🏫	Want to learn how to use a reference manager	Sign up for a workshop, https://www.lib.auburn.edu/training/
❓	Systematic Review Subject Guide	http://libguides.auburn.edu/systematicreviews

Additional Follow-up Assessment

Qualtrics survey with 9 questions

1 True/False; 6 Likert (Yes; No but I intend to; No and I do not intend to); 2 open-ended

- I have attended a Systematic Review workshop at Auburn University taught by Adelia Grabowsky. (True/False)

- In the time since you attended the Systematic Review workshop, have you:

    - Begun work on 1 or more systematic or scoping reviews?. (Likert)

    - Completed one or more systematic or scoping reviews? (Likert)

    - Submitted for publication 1 or more systematic or scoping reviews? (Likert)

    - Published 1 or more systematic or scoping reviews? (Likert)

    - Completed a systematic or scoping review as a thesis? (Likert)

    - Completed a systematic or scoping review as part of a dissertation? (Likert)

- Please enter any additional information you consider relevant about numbers, types, etc. of reviews you have begun, completed or published. (open ended)

- If there were class benefits outside of completing/publishing a review, please enter that information here. (open ended)

24 usable responses
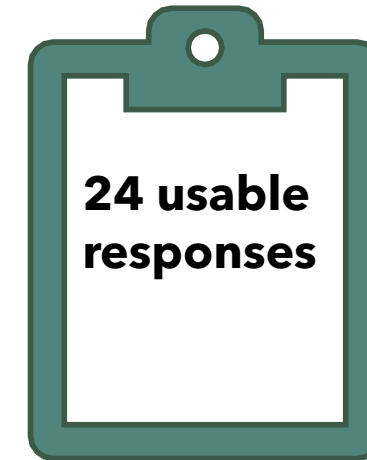
# Themes from Open Ended Questions

Additional Info

- Sent for review, rejected; added someone who took meta-analysis class; planning to resubmit.

- Working on systematic review for dissertation and to publish

- Completed a scoping review and a systematic review.

- Manuscript accepted, awaiting publication.

Other Benefits

- Impactful to have an overall understanding of how to do this; wouldn't have know how to do one without class (n=6)

- Learning about resources such as quality assessments that can be used in other ways (n=2)

- Good opportunity to start thinking about appropriate topics for this type of study.

- Helpful for writing a more general lit review for thesis.

- As faculty member, gained insight in helping students prepare systematic reviews.

- No judgment learning atmosphere; tips on efficient searching and organizing search output.

Results of Likert Questions
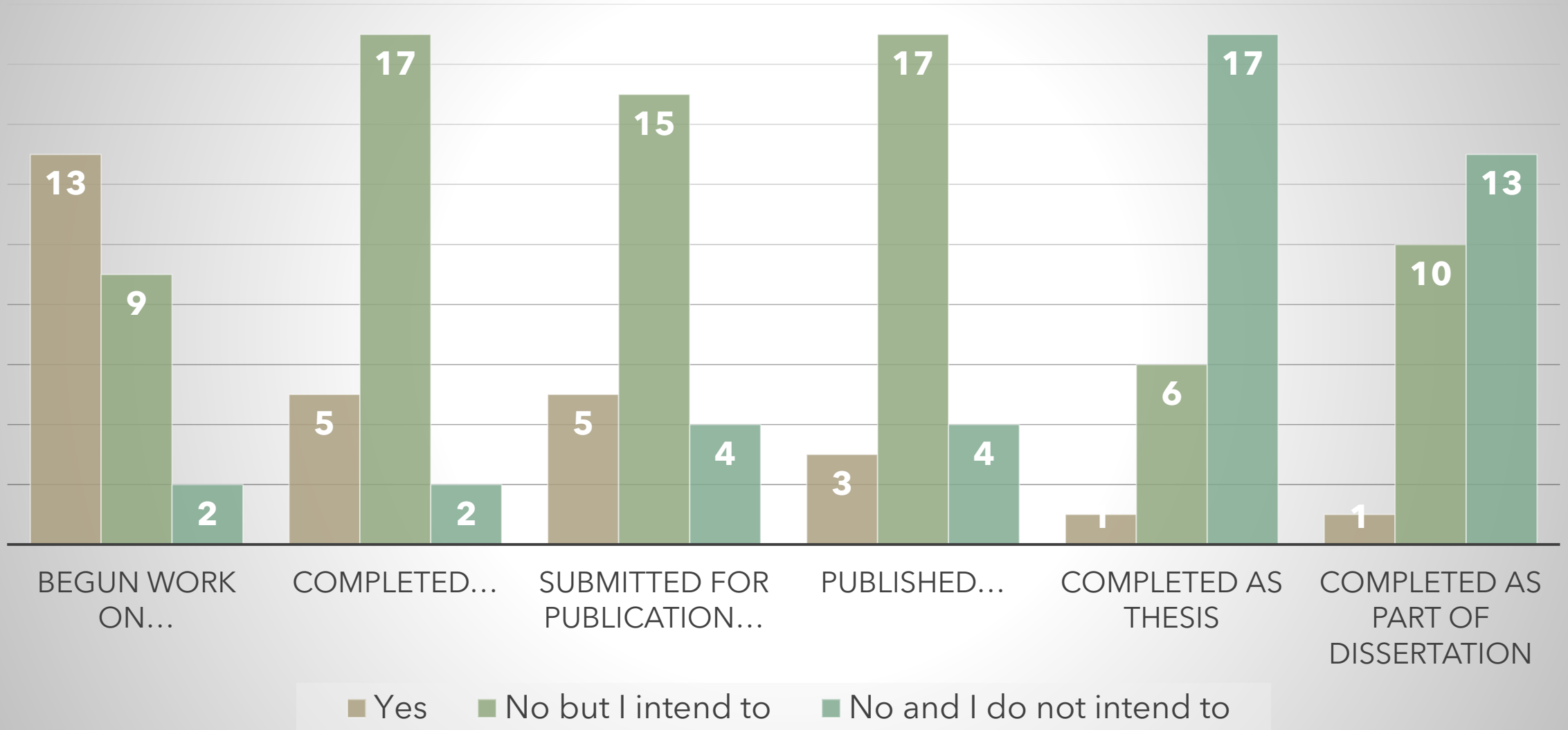
I look forward to answering your questions.