

*Reviewing the Literature:
Tips for Reading and Understanding the Quality
of MCH-Related
Research Findings*

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Overview

- Reasons for Reviewing the Literature
- Overview of DAAFI: A Framework for Reviewing Research
- Application of DAAFI to an Individual Study
- Application of DAAFI to a Literature Review
- Concluding Comments

Objectives

- By the end of this presentation participants will be able to:
 - Identify 3 reasons why it is important to review research literature
 - Identify the 5 main components that go into an informed review of a research report (DAAFI)
 - Describe the major questions to ask in applying the principles of DAAFI to both (a) an individual research study and (b) a review of research literature

Reasons for Reviewing the Literature

- Evidence-based decision-making in practice and policy
- Strengthen evaluation and research initiatives
- Increase effectiveness of funding applications

Overview of DAAFI

- ***D***esign
- ***A***ssessment
- ***A***nalysis
- ***F***indings
- ***I***nterpretation

Overview of DAAFI (continued)

- General Considerations

- Quality of study is likely to be lower the more questions posed by DAAFI that can't be answered from the published report
- Quality of studies in well-respected, peer-reviewed research journals is likely to be higher
- Quality should be assessed with regard to issues that have a logical bearing on the major conclusions or potential applications of the study
- Consult colleagues with relevant methodological and substantive expertise (and other resources) as appropriate to enhance assessments of study quality
- The best indicator of quality may be replication of findings, ideally by different investigators using substantively different methods

Overview of DAAFI (Continued)

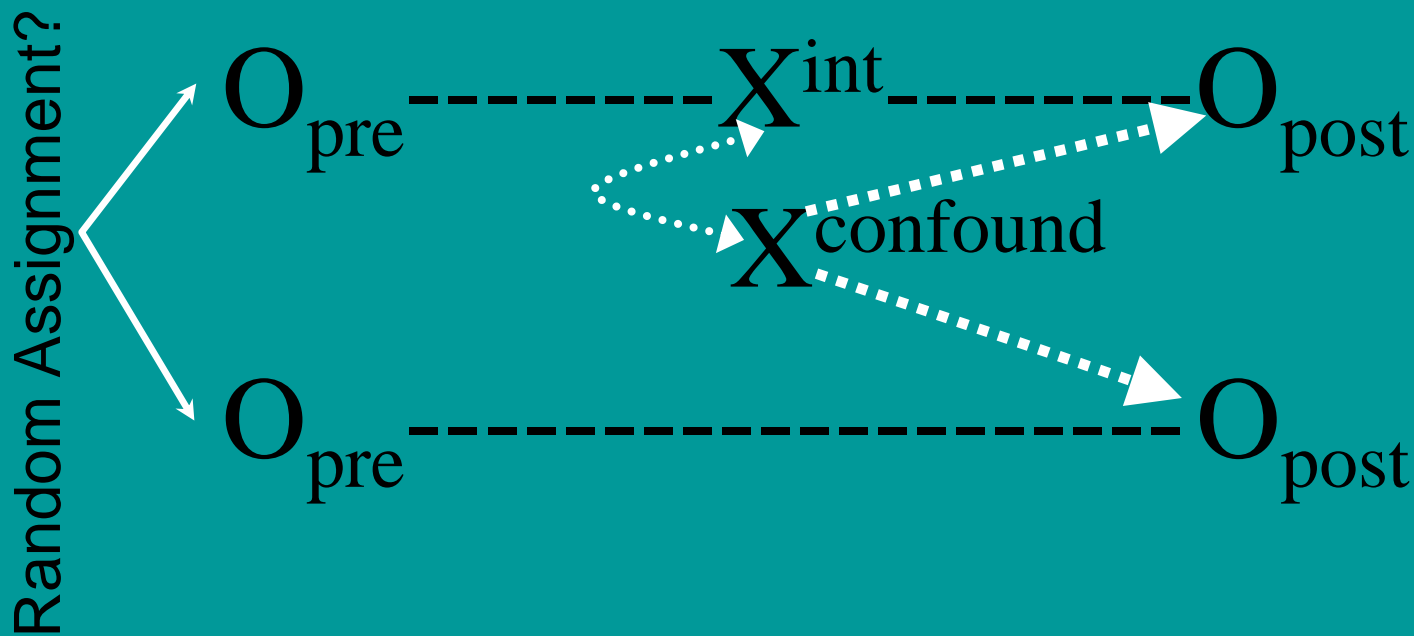
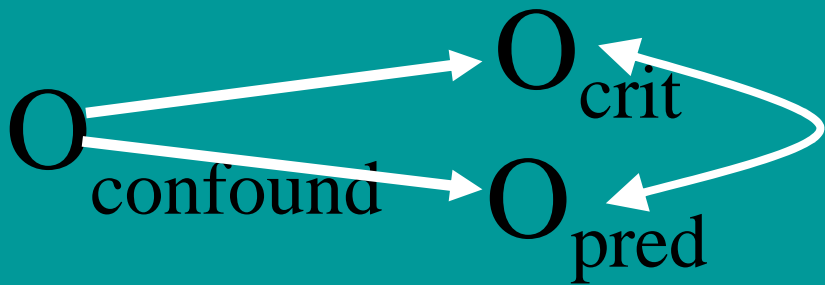
- ***D*esign**

- Sample: Size and Representativeness are the Key Dimensions

- For size, is there likely to be enough statistical power to detect an association or effect of the anticipated magnitude/size?
- For representativeness, was sample selection random (if so, from what population?) or convenience? How many persons/units selected were not enrolled and for what reasons?

Overview of DAAFI (continued)

- Study Design: Correlational, Quasi-Experimental, or Experimental
 - If Correlational, cross-sectional or longitudinal?
 - If Quasi-Experimental, what procedures were used to ensure comparability of treatment and control groups?
 - If Experimental, at what unit of analysis did random assignment occur?



Overview of DAAFI (continued)

– Tips

- High-quality samples should be both sufficiently large *and* representative of population of interest
- Correlational studies should ideally be longitudinal design
- High-quality quasi-experimental studies should ideally not be subject to selection bias (i.e., participant decision-making should not determine whether they are in intervention or comparison condition)
- High-quality experimental studies should conduct random assignment at same level as the phenomenon being studied (e.g., individual, neighborhood, community)

Overview of DAAFI (continued)

- **Assessment**

- What constructs (predictors and outcomes) were assessed?
- What measure(s) were used to assess each construct?
- What source(s)/informant(s) were used to assess each construct?
- When was each measure administered?
- What is the reliability and validity of the measures for use with the study population?

Overview of DAAFI (continued)

– Tips

- Higher quality studies will “triangulate” assessment of key constructs using measures from multiple sources/informants
- Measures should ideally be based on multiple items/indicators and should have internal consistency (Cronbach’s alpha) and/or test-retest reliability reported for the sample utilized in the study; reliability estimates below .60 are problematic
- In quasi-experimental and experimental studies, assessments should be conducted by those lacking knowledge of participant’s intervention status
- In evaluation studies, follow-up assessments are highly desirable

Overview of DAAFI (continued)

- **Analysis**

- What procedures were used?
- Were analyses exploratory or planned?
- Were all analyses performed on full sample? If not, how many persons/units were excluded and why?
- Did procedures control for confounding variables?
- Were complex relations among variables analyzed (e.g., mediational pathways, interactions?)

Overview of DAAFI (continued)

– Tips

- Ideally, studies will conduct analyses that are organized around well-stated hypotheses derived from prior theory and research
- Analyses should include statistical controls for at least the key potential confounding variables (e.g., SES if looking at ethnicity)
- Potential bias due to study attrition should be examined
- Bias due to attrition from intervention should be addressed by conducting “intent to treat” analyses

Overview of DAAFI (continued)

- Appropriate controls for Type I error should be incorporated when large numbers of related tests of statistical significance are conducted
- Especially for small samples, statistical power information relevant to Type II error rate also should be reported
- Analyses should test underlying processes (mediation) and for variation in strength/direction of associations/effects (moderation)

Overview of DAAFI (continued)

- **Findings**

- What were the (objective) results of the statistical analyses, including statistical significance, direction, and effect size?
- Note: A result being “highly significant” as in having a low p-value (e.g., $p < .00001$) is *not* a valid indicator of a large effect size or conversely is a relatively high value (e.g., $p = .15$) necessarily indicative of a small effect size

Overview of DAAFI (continued)

– Tips

- Effect sizes should be reported, ideally both in standardized and “raw” units

Overview of DAAFI (continued)

- **Interpretation**

- Conclusions: What conclusions do the authors make regarding the meaning and importance of the findings (including applied implications)?
- Limitations: What limitations exist (e.g., small sample size, lack of potential generalization to other populations, lack of experimental design, etc.)?

Overview of DAAFI (continued)

– Your Assessment

- In view of limitations, do authors' conclusions appear warranted?
- What additional or alternative interpretations are possible?
- What are the potential implications for/applications to your professional work?

Overview of DAAFI (continued)

– Tips

- Authors' conclusions should respect the dictum that “correlation does not prove causation” and be qualified appropriately
- Implications for practice and policy should be discussed as tentative rather than absolute
- Higher quality studies will include a candid assessment of study limitations and their potential implications

Application of DAAFI to an Individual Study

- *Natural Mentoring Relationships and Adolescent Health: Evidence from a National Study* (DuBois, D. L., & Silverthorn, N.; American Journal of Public Health, 2005, Vol. 95, pp. 518-524)

Application of DAAFI to an Individual Study (continued)

- ***D***esign

- Sample

- 3,187 participants in Wave III of public-use data set of National Longitudinal Study of Adolescent Health (Add Health)
 - 1,697 participants excluded due to missing data on study measures and sampling weights and nominations of mentors who were peers (e.g., spouse)
 - Original Wave I sample nationally-representative (when appropriate weights employed) but current sample may not be due to attrition and above exclusions

Application of DAAFI to an Individual Study (continued)

– Study Design

- Correlational: Longitudinal because Wave I adjustment data included in study as controls

Application of DAAFI to an Individual Study (continued)

- **Assessment**

- Predictor: Single-item measure of having had mentor (yes/no) administered at Wave III—
"Other than your parents or step-parents, has an adult made an important positive difference in your life at any time since you were 14 years year-old?"

Application of DAAFI to an Individual Study (continued)

- Outcomes: Mixture of single-item and multi-item measures of functioning in areas of education/work, problem behavior, psychological well-being, and health all from Wave III youth interview (alphas range from .38 to .80 for multi-item scales); all dichotomized to 0/1 measures
- Controls: Demographic variables, indices of individual and environmental risk, and Wave I adjustment (where available)

Application of DAAFI to an Individual Study (continued)

- **Analysis**

- Logistic regressions with mentoring and control variables as predictors
- Conducted on full sample
- No controls for Type I error
- Odds Ratios and Population Attributable Risk reported to address effect size
- Planned tests for individual and environmental risk as moderators of predictive contributions of mentoring

Application of DAAFI to an Individual Study (continued)

- **Findings**

- Report of a mentoring relationship predictive of more favorable outcomes in all domains of functioning, but not for all measures in any domain
- PAR for mentoring relatively small and < PAR for individual and environmental risk
- Lack of consistent mentoring X individual/environmental risk interactions

Application of DAAFI to an Individual Study (continued)

- **Interpretation**

- “Findings suggest a broad and multifaceted impact of mentoring relationships on adolescent health”
- “However, mentoring relationships alone are not enough to meet the needs of at-risk youths and therefore should be incorporated into more comprehensive interventions”

Application of DAAFI to an Individual Study (continued)

– Limitations

- Mentoring not examined prospectively as predictor of later adjustment outcomes
- Mentoring measure restricts consideration to ties perceived as having a positive impact
- Outcome measures all self-report and potentially limited in reliability/validity
- Lack of control for Type I error
- Not clear which types of mentoring relationships may be most influential

Application of DAAFI to a Literature Review

- *Effectiveness of Mentoring Programs for Youth: A Meta-Analytic Review* (DuBois, D. L., Holloway, B. E., Valentine, J. C., & Cooper, H., 2002, Vol. 30, pp. 157-197)

Application of DAAFI to a Literature Review (continued)

- ***D***esign

- Sample

- 55 evaluations of the effects of youth mentoring programs on youth
 - Studies identified based on multiple search methods and defined inclusion and exclusion criteria for the period 1970-1998

Application of DAAFI to a Literature Review (continued)

– Study Design

- Experimental and Quasi-Experimental, including one group pre-post designs
- Correlational design for examination of moderators of effect size

Application of DAAFI to a Literature Review (continued)

- **Assessment**

- Studies coded for effect sizes and characteristics in 6 categories: report information, evaluation methodology, program features, characteristics of participating youth, mentor-mentee relationships, assessment of outcomes
- Reliability for coding not reported
- Indices of theory- and empirically-based “best practices”

Application of DAAFI to a Literature Review (continued)

- **Analysis**

- Fixed and random effect analyses utilized to both (a) estimate average overall effect size and (b) examine potential moderators of effect size
- Weighting by sample size
- Control for methodological features of studies

Application of DAAFI to a Literature Review (continued)

- **Findings**

- Average effect sizes of $d = .14$ (+/- .04) and $d = .18$ (+/- .07) for fixed and random effect analyses
- Several moderators of effect size, including “best practice” indices

Application of DAAFI to a Literature Review (continued)

- **Interpretation**

- “Overall, findings provide evidence if only a modest or small benefit of program participation for the average youth”
- “Program effects are enhanced significantly, however, when greater numbers of both theory-based and empirically-based ‘best practices’ are utilized”

Application of DAAFI to a Literature Review (continued)

– Applied Implications

- Need for careful adherence to literature-based practice guidelines
- Need for innovation beyond current program models

– Limitations

- Findings do not necessarily reflect causal effects of mentoring programs or moderators

Concluding Comments

- Judgments of study quality are ultimately subjective, but should be derived through a systematic and informed process in which objective criteria are utilized wherever feasible
- Ongoing professional development and education is essential for keeping pace with the evolving substantive and methodological standards of the field that form the basis for sound judgments of study quality