WRITING THE ESSAY THAT IS A CRITIQUE OF RESEARCH

By

Arne Collen, Ph.D.

There are many kinds of essays. The kind of essay that engages in the critique of a scientific research investigation, as represented in its published form of a research report, can be termed *the research essay*. Writing a research essay is a scholarly activity you will do repeatedly throughout your graduate studies at Saybrook Institute. To write the Method Essay is to write the research essay. In this case, it means an essay written in the scientific writing mode that discusses and critiques a research proposal that has been presented to the faculty to qualify as the dissertation project.

To assist you with this task, I have written this resource document. It consists of the following sections:

Contents

Organizing with Structure and Coherence

In the stacks of the library and the isles of the college bookstore, one can discover many books about how to improve writing. But the books I find most helpful are those that provide suggestions on organizing the essay and formulating argumentation. For example, Payne (1965) presents two structures (organizations) for writing the essay. They are as follows:

Structure 1
Introduction
Statement of the thesis
Concession, followed by the pro argument
Extension of the pro argument
Second concession followed by the pro argument
Third concession, followed by the pro argument
More pro argument statements

Even more pro argument statements
Further pro argument statements
Conclusion

Structure 2
Introduction
Statement of the thesis
The con argument switching to the pro argument
Statement of the pro argument
More pro argument statements
Even more pro argument statements
Further pro argument statements
Conclusion

Note these forms are general. They require some careful specification toward use for writing about research.

However, let us avoid the impression that writing the essay is entirely an exercise in persuasion, which in many forms, it is just that; more specifically, the research essay takes a more critical and balanced view of pro and con argumentation of the thesis. Perhaps one such exemplary organization will suffice:

Structure 3
Introduction
Statement of the thesis
The pro argument
The con argument
More pro argument statements
More con argument statements
Weighing the pro relative the con argument
Weighing the con relative to the pro argument
More statements weighing most favorably
Conclusion

There are many structures possible. As the researcher come author of the essay becomes more aware of paragraph organization and development, the multitude of forms becomes more visible. An instructive exercise is to examine any issue of the *American psychologist* and *Psychological Review* for the purpose of tracing paragraph development and argumentation. The learning materials and guide for the Critical Thinking and Argument Analysis course are also very helpful and relevant here too.

Presenting with Simplicity and Clarity

To present the essay to the instructor for reading and evaluation, the organization below is a proven vehicle. You may find it useful for all essays and course papers at Saybrook, and with APA format.

Title page. Title of the essay, author (also address and telephone), assignment number, course number/title, institution, and date are centered and spaced down the page. It is common practice to state the title of the essay in larger capitalized letters.

Table of Contents page. When the essay becomes greater than a dozen pages with several subtitles, this page helps the reader. Place the "CONTENTS" at the top of the page and list the chief section titles with page numbers. This page is unnecessary for shorter essays.

Introduction section. Present the purpose and topic area of the essay. Specific focus to be pursued is stated as the transition to body of the essay, usually with some general overview of what the reader can expect traversing the body of the essay. Use "INTRODUCTION" for the title of this section both in the table of contents and the text. Specifically, for the Method Essay, state the title of the research proposal to be critiqued and that the purpose of the essay is to critique this proposal. Briefly state your own one paragraph abstract of the proposed research project. Complete the introduction with a brief paragraph of what the reader may expect by way of general organization of the essay after the introduction; this is especially important when a table of contents is not provided.

Body section. Here lies the substance of the essay. Present systematically the points for and against various threads to carry the reader from the introduction to the conclusion. Major subsections of organization of content, documentation, and argumentation are key to effective communication. Replace the word "Body" with the word "CRITIQUE," then string several subsections, each with subtitle to cover various aspects of the critique. Note that the body of the paper ("Critique") can take several forms. You can cover the strengths first and weaknesses second, vice versa, or couple them for each section of the proposal. In any case, the subtitles of the body convey the chief focus of the critique at that point in the paper. Regarding the Method Essay, it is critical to select a clear structure to follow, such as the actual subtitles the researcher uses in the research proposal to be critiqued, one of the structures presented in this document, one suggested from a published model essay, or one you create. The structure of the body is like its skeleton. It gives the essay its form. It is a powerful communication tool when used effectively. Further, the critical points stated should clearly make reference to those sources drawn upon by means of APA format, with proper citation in the text and full citation in the "REFERENCES." For example, to complete the Method Essay, adequate use of the topic area, research ethics, and research methodology literatures pertinent to the research proposal are expected in order to substantively critique the research proposal.

Conclusion section. Restate the purpose of the essay. Recap of the highlights of the essay, coming back full circle to its purpose. This important portion is the final summarizing section which integrates various points. It also includes the author's final position on the focus. Use the word "CONCLUSION" to begin this last section of text. To complete the Method Essay, be sure to state your position on the readiness of the proposed research project for implementation, and summarizing the reasons for your position. In conclusion, this section brings closure to the essay; it presents your summary of the critique and ends with your position on the validity, completeness, potential contribution, and significance of the proposal.

References section. Full citation of all sources referenced in the text is provided. Use the word "REFERENCES" to title this section.

Appendices section. Include as necessary any auxiliary material to the body of the text. Use the word "APPENDIX" and list the title of its contents on the page. If there are more than one appendix, provide a title page for each. It is common to provide a copy of the report critiqued in an appendix. In the case of the dissertation proposal, the researcher's Abstract in the appendix makes it more complete.

Evaluating with Relevance and Substance

Based on their experience scoring essay examinations for licensure in the state of New York, Cohen and Ross (1986) provide this checklist for writing the "perfect research essay." They are:

1. Understanding of substantive elements of the research area.
2. Understanding of the environments in which the research will be conducted and applied.
3. Technical adequacy of experimental design and statistical treatment.
4. Valid generalizations of results.
5. Awareness of the fallacy in the "therapist uniformity myth."
6. Description of the sample or samples.
7. Description of the independent variable.
8. Monitoring of the administration of the independent variable.
9. Description or definition of the dependent variable or criterion.
10. Demonstration of how the reliability and validity of dependent measures are to be established.
11. Degree to which treatment and Ns are likely to produce results of statistical and practical significance.
12. Feasibility of the study.
13. Ethical considerations.
14. Cost-effectiveness considerations.
15. Justification of the approach used.
16. Integration of disparate elements into a coherent essay.

Thus, from their point of view, a full exposition of a research report would entail meeting all 16 criteria. Besides helping you to consider more comprehensively your critique of a proposed research project in your Method Essay for example, this list relates importantly to proposing and critiquing the broader family of research approaches that may make light to heavy use of the experimental perspective, such as correlational, evaluative, single subject (N=1) experimental, quasi-experimental, ex post facto, causal-comparative, and observational methods. However, this delimitation does not prevent one from taking value from their list in the critique of all research projects.

The Cohen and Ross checklist is a helpful starting point to develop a useful set of criteria for evaluating a research proposal. But it does not encompass the broad range of methodological approaches comprising human science research methods. To expand upon their checklist, there is the contribution of Davitz and Davitz (1967). Further, there are additional criteria in the human sciences, which must be included, especially for those methods heavily oriented toward qualitative data processing and interpretation.

Beginning from Davitz and Davitz (1967), I have taken some liberty to elaborate and add to their criteria in order to make this document more relevant to human science research and reflect my experience as a researcher. Obviously, various sources of evaluative criteria overlap, as they should, thus providing some corroboration to your task of settling upon a useful set of criteria to apply to critique a given research report.

Perhaps, most important for every research project is the matter of internal validity. At the heart of every investigation is a research design and a research plan, and concerns of their validity. There are various forms of validity, such as instrument validity and method validity. When the researcher examines a proposed project regarding its internal validity, it is instructive to pose validity type questions, such as: Does the instrument do for the inquiry what it is supposed to do? Does the method do for the inquiry what it is supposed to do?

The criteria which follow apply not only to research evaluated in the form of a research proposal, but also to published research reports. Thus, this material can be valuable in general for the formulation as well as the critique of research.

1. Focus. What is the primary focus and purpose of the inquiry? Each project has a central logic, a theme, and a core idea around which the investigation is organized. What is it in this case? Is there a clear statement of purpose stated clearly and explicitly? Is it stated early and then carried through consistently to the end?

2. Focus Within Context. Typically, there are up to a dozen key constructs that must be clearly defined in order for the researcher to communicate the research project to others. Are the central constructs of the study represented in the guiding statement of purpose and/or research question? Are the key constructs clearly defined and anchored in the literature?

Moreover, each study must be viewed within the context of a line of inquiry representing the cumulative development of knowledge about a given problem area. Does the introduction give the reader a clear description of the focus of the research in its context or place in the field? What is the relation of the focus of the study to other research and theory? Does the introduction to the study explicitly and clearly integrate the logic of the proposed investigation within the broader framework of relevant theory and research?

It is not enough simply to review mechanically an area of research or theory. A mere catalog of previous studies and theoretical statements does little to advance the argument of a research proposal if this material is not conceptually integrated within the logic of the proposed investigation. The same point applies to a published research report of a completed investigation. In general, at each step, one must make explicit the relation between other work and the particular study being evaluated.

3. Simplicity, Clarity, and Parsimony. Is the proposal or report written in as clear, concise, and uncomplicated language as possible, and with a minimum of esoteric jargon? If the researcher proposes "to utilize the discursive symbolization systems of Anglo-American discourse," it would be better "to use the English language." Or when the researcher states "the F ratios were generated from the SPSS multifactor ANOVA data processing run, which revealed only one three group treatments main effect," it would be clearer simply to state that "the analysis of variance yielded a statistically significant F ratio for the main effect of the treatment and control groups."

Write clearly, simply, and use the active voice when choosing the verb.

4. Logical Consistency. Does the introduction lead logically and consistently to the specific questions posed or the hypotheses presented? Research questions or hypotheses of a research project represent a step beyond current knowledge; otherwise, there would be little sense in doing the research.

A gap always exists between previous work and immediate research. This gap is bridged through research that is explicit and logical.

5. Researchable Questions and Hypotheses. Are the research questions and hypotheses clearly articulated? Are the questions or hypotheses researchable? Whether in the form of a question or hypothesis, since the research question creates the focus and sets the priority to guide the inquiry, a researchable question must be stated in precise language and form that gives both continued focus and continued direction to the inquiry. Further, a researchable question must logically connect various aspects of the method to the problem area of the inquiry.

Central to researchability is the notion: Can the question be answered? The choice of method will be determined in part by the form of the question. Can the question(s) be answered on an empirical basis, or can rational solutions be generated via non empirical means of inquiry? Is the task developed by the thesis open for completion?

6. Specificity of Questions and Hypotheses. Descriptive definitions of key concepts composing the questions are prerequisite to choice and development of method. Concepts are typically defined through consensus or operational definition. Common understandings among researchers build up over their investigations and communications, such that a consensus is eventually reached regarding the descriptive and researchable definition of a concept. Are the questions and hypotheses specific enough to enable investigation to proceed?

In cases where key concepts are conceptualized as variables which are made "operational" by means of instruments, measures, and procedures, the concepts become operationally defined and the questions and hypotheses become more researchable. But are the variables under investigation and the nature of the relationships among variables clearly and concretely stated? Can every term in the questions or hypotheses be referred either directly or indirectly to observable, empirical events? Do the variables stated in the questions and hypotheses refer to a particular set of internally consistent observations that are capable of being defined operationally and objectively, or consensually?

A mark of the mature, productive researcher is the capacity to focus researchable questions at a concrete level of specificity which permits expedient movement of the research process from its initial formulation to the conduct of the inquiry itself. For example, the researcher cannot expect to evaluate all aspects of therapy, but what can be studied are the effects of certain aspects of the therapy on specific behavior manifested by particular kinds of clients under as given set of circumstances.

7. Hypothesis Testing, Hypothesis Generating, and Descriptive Research. Given the current state of knowledge in the line of inquiry under focus, is the most productive study at this point likely to be: a) affirmative research testing specific hypotheses bearing on a theory of the problem area under study; b) descriptive research aimed at delineating the characteristics, boundaries, and conditions of the phenomenon under study; or c) exploratory research aimed at generating researchable questions and hypotheses for future study? Stated conversely, the exploratory, descriptive, affirmative development to research on a particular focus typifies the trend in research, though a single investigation may serve more than one category. If the investigation is primarily of exploratory or descriptive value, is every reasonable effort being made to present the limits of the questions posed, and to make as concrete and definite as possible the nature of relevant observations and variables to be studied? Is the study likely to contribute to theory, knowledge, and questions and hypotheses for continued inquiry?

Exploratory and descriptive studies are often among the most difficult kinds of research to do well, for they often take the investigator into uncharted territory. In most respects, it is easier to formulate a specific hypothesis and design a study simply to test that hypothesis, because the researcher usually is not required to go very far beyond what is already known. An exploratory study makes an implicit demand for discovery.

8. Meaningful Questions and Hypotheses. Are the possible findings of the research likely to make a difference that counts in terms of theory, other research, a controversial issue, or any practical application? Thus, is the research worth doing? In the light of current knowledge, does the proposed research deal with an appropriate problem, a question or hypothesis that is likely to carry the general line of investigation forward? Are there other questions that should be investigated before the proposed problem is confronted? Has this problem essentially been resolved in earlier research? What specifically is the study to contribute to theory, knowledge, and questions and hypotheses for continued inquiry?

9. Strategy. Is the method chosen appropriate to address the question or hypothesis posed? Does the method chosen fit with all the questions? Does the method include considerations of procedures to process the data, be it quantitative or qualitative analysis? Once the data collection period has been completed, can the data be analyzed and what precise steps will be taken to do so? Has the researcher chosen an appropriate overall strategy for the inquiry? Does the strategy show the steps that connect the outcomes of the analysis to the questions and hypotheses? Are there any questions and hypotheses not addressed by the strategy? Within the analysis phase of the inquiry, be it qualitative and/or quantitative data being processed, has the researcher followed an internally consistent strategy which makes it possible to interpret the results in relation to the research question(s) and context of inquiry?

10. Logic and Validity of Procedures. Is the method clear cut and logically connected to the central focus of the research? Can the method reasonably be expected to lead the researcher to information that will answer the questions posed? Do the research procedures, such as manipulations of the independent variable or measurements of the dependent variable, provide a valid test of the hypothesis? Is there internal consistency among the questions posed, the methods, and the treatment of data?

11. Practicality and Feasibility. Is the method practical within the realistic limits in which the researcher must work? For example, the availability of participants, the amount of time required for making observations, the money required for conducting procedures, and related expenditures of resources must be confronted in the conduct of the study in the real world. Is the study feasible? Practicality and feasibility include such aspects as the development of procedures which are consistent with the abilities of the participations to follow and complete them.

12. Rationale. What reasons does the researcher give to justify the expenditure of time and resources on the research project? Do the reasons interrelate and form a coherent basis for conducting the study? The rationale is usually one of the more difficult portions of a research proposal, because it must integrate various considerations, such as purpose, social context, the focus of the problem, chosen method, participation of human beings, monetary support, potential significance of the findings, and use of material resources into an effective

and convincing argument. Is the rationale (the cogent and coherent use of logic and reasoning) clearly articulated?

13. Sample Size. Does the researcher intend to collect much data on few persons or little data on many persons? How many subjects does the researcher need to provide enough data to address the questions posed? Is the size of the sample appropriate to the method of inquiry? To decide on sample size, the research has to consider relevant issues, such as the methodological approach, the strategy for data analysis, and previous research. For example, hypothesis testing via quantitative analysis demands a power analysis, which considers the power of the statistical test, probable variability among participants in the sample, the anticipated magnitude of the effect to be assessed, and the likelihood of Type 1 and Type 2 statistical errors.

14. Population. What is the population of participants sampled? Is the population clearly defined? Are the pertinent characteristics of this population known and clearly stated? Does the researcher show adequate awareness of the limits of generalizations to be made on the basis of the research?

15. Sampling Procedures and the Sample. Are appropriate plans of randomization and control used in selecting the sample? What sampling plan is used to assign participants to the research design? Is sampling used to select other aspects of the study, such as types or levels of the independent variable(s), the set of measures of the dependent variable(s), periods of observation, the application of blocking variables in executing the design? What specific sampling plans are used and for what aspects of the study?

16. Appropriateness of Sampling. Does the sample fit the population as defined by the researcher? Is the sample adequately described? Can the sample represent the population for purposes of generalizability? Are the participants appropriate for the research? Note: availability should not be the sole criterion for participation, and volunteer participants often do not represent the population as defined.

17. Research Ethics. Can a treatment be reasonable and justifiably withheld from some participants? Must deception be used to disguise the true nature of the research? Have adequate precautions been taken by the researcher to safeguard as much as possible the psychological and physical risks to the participants? Are the procedures employed ethical?

The researcher should be familiar with the American Psychological Association's *Ethical principles*, or their equivalent, as almost all professions and areas of research activity currently have a set of regulations covering research ethics; and the researcher should always conduct research accordingly. In addition, research is mandated to receive Institutional Review Board approval before contact with human participants. Now expected of all researchers, this must be done, regardless of the form or nature of the proposed project.

18. Potency of Impact. In research projects that apply experimental method, the independent variable is an experimental condition, treatment, or intervention of some kind. It is expected to impact the participant, hopefully in beneficial ways. In such cases, is the experimental manipulation potent enough to make a measurable difference in performance (the dependent variable)? What is the evidence that an experimental manipulation will have

the effect it is expected to have? What evidence will be obtained to determine whether it will have the expected effect? Is the treatment or intervention operationalized, such that it can make an impact on the participants?

In a broader sense, the study can make an impact on not only the participants, but also those related to, living with, and working with the participants. It may also press the researcher. Finally, it may impact ecologically, having adverse consequences on the quality of life. Are there any beneficial and adverse effects of the study on the participants, others, and the environment? This area of evaluation may importantly relate to another criteria covering research ethics.

19. Controls in the Research Procedures. Are the controls in the research procedures adequate, appropriate, and clearly specified? Are there any incidental features of the procedures that might bias the results and contaminate the data? Does the research plan take into account the participants' possible expectations, mental attitudes, perceptual sets, and interpretations of the research procedures? Has the investigator taken into account the possible influence of his/her own wishes and expectations? What kinds and sources of bias may apply in this case?

20. Opportunity for Discovery and Serendipity. In an observational study, for example, is the researcher situated to maximize the chances of being present to the phenomenon under study? Are the conditions and circumstances of the inquiry arranged, such that the phenomenon can be studied, and the focus of the research will be fulfilled? Are the procedures planned to provide an opportunity for discovery, for both the expected and the unexpected?

21. Replicability. Are the procedures and other aspects of method spelled out in enough detail to allow another trained researcher to repeat the research? Is the research study essentially replicable? Is a clear, step-by-step description of the procedures included? Is every variable defined consensually or operationally? If there are alternatives to any phase of the procedures, are means and rationale to resolve the ambiguities presented?

22. Appropriateness of Design. Has the researcher chosen the most efficient and effective design? Is it the design that will provide, within the practical limits of the investigation, the fullest answer to the questions or the most thorough test of the hypotheses posed? Is the design the best choice for the inquiry?

23. Reliability and Precision of Measurement. What is the evidence to support the reliability of every set of observations or measurements obtain in the research? Has the reliability of instrumentation been established in previous research? What procedures are used to evaluate the reliability and precision of measurement? Is the researcher aware of any special problems of reliability that might be involved in the proposed study? Are the measurement procedures consistent with the intent of the research?

24. Validity and Choice of Measures. Precision of measurement applies to establishing the validity of measurements as well. What evidence supports the validity of every measure to be used? Does previous research establish the validity of every measure? Are there choices among measures, and if so, what rationale is provided for the researcher's selection of the better measure for the study? What procedures established the validity of

all measurements? Have central issues, such as validity and reliability, been adequately addressed? Is the status of the instrumentation recognized and weaknesses considered?

25. Appropriateness of Data Processing Procedures. Many researchers rely heavily upon more quantitative forms of data processing, usually analysis, to answer research questions and test hypotheses. Some researchers prefer more qualitative forms of data processing, such as synthesis, reduction, and abstraction. While many others combine in one investigation a mix of both. What is the researcher's preference? Will the chosen procedure of data processing yield results that are pertinent to the questions asked and hypotheses to be tested? Is the treatment of the data sufficiently clear? Have the steps of the method and treatment of the data been followed appropriately?

26. Appropriateness of Statistics. Is a description of the analyses to process the data made explicit? What alternative ways of analyzing the data are suggested and which choice best fits the strategy of the research study? Does the researcher describe clearly the choices and rationale for those statistics to be used? Are the statistics chosen appropriate to addressing the questions and hypotheses of the study? Are the assumptions necessary to exercise the statistical analyses recognized and assessed? Should the assumptions be violated, what alternatives does the researcher intend to exercise to enable the data analysis to proceed? Have all statistical considerations been made where appropriate? Are the findings reported properly?

27. Interpretation of Results. Can various kinds of possible results be interpreted meaningfully? Can expected and hypothesized findings be integrated with previous research and theory? Can unexpected and disconfirming results still make a contribution to knowledge in the field? Will the results make a difference in the area of investigation, theory, or practice? Are the results interpretable? Does the researcher(s) make exaggerated claims or over generalize? Are the researcher(s) inferences, interpretations, and conclusions supported by the evidence and justified? Is the significance of the research and its contribution to addressing the question and advancing the field taken up in the report? Does the researcher(s) take a critical stance toward their research?

Evaluative Criteria for Phenomenological Research

The set of criteria above tend to place heavy emphasis on more traditional forms of inquiry, such as experimental, observational, correlational, and survey research. Many of the evaluative criteria may apply to phenomenological research proposal. But special consideration and modification of criteria may be necessary for phenomenological and other forms of interpretative based investigation, exploratory pilot studies, and theoretical research.

The following set of criteria illustrate the extension and modification which may be necessary for lesser known but equally important forms of disciplined inquiry. However, again, I wish to emphasize that the researcher should consider all criteria in evaluating any form of research, even if to clarify that the criterion as defined does not apply to the form under evaluation, or to redefine the criterion in terms more suited to the evaluation.

1. Variation of method. What philosophical school of phenomenology does the researcher use to develop the form of inquiry? What assumptions are being made about inquiry? Is the form of the question posed fit the logic and rationale of the inquiry? Will the phenomenon be researched by interviewing the participants or soliciting participant generated written narratives? Is a presuppositional statement from the researcher required? Does the researcher work in solo or in collaboration with other researchers and participants through the various stages of the inquiry?

2. Sampling and generalizability. Are the participants appropriately chosen for the inquiry? Do they manifest the phenomenon under study? Are they sufficient in number to permit the fullest description of the phenomenon? Is it the researcher's intent to describe the phenomenon for the few participants, even the single participant, or does the ambitions of the researcher extend to a broad based general manifestation of the phenomenon, a description incorporating all participants which convey universal aspects of human consciousness?

3. Controls. What forms of control does the researcher intend to impose on the participants and the setting during the data collection? Can the researcher conduct a guided and efficient interview of the participant to unearth numerous experiences of the phenomenon? What precautions is the researcher taking to minimize wasteful use of resources.

4. Confounding. What precautions is the researcher taking to minimize influences which may jeopardize the validity of the study? These influences consist of material contributed by participants which are irrelevant to the phenomenon but appear to be sidetracking their participation in the study. Further, events occurring over the course of data collection may provoke relevant experiences, but they may also bring forth tangential and distorted self reporting. What is the researcher doing about such confounds, and is repeated interviewing of the same participants involved?

5. Researcher bias. The researcher must take steps to minimize interview bias and employ effectively research skills of bracketing and imaginative variation during the data reduction process. Presuppositional statements are sometimes completed prior to data collection in order to sensitize the researcher to previously acquired understandings about the phenomenon. Is research bias present in some form in the study? Bracketing is insufficient to conduct interviews and data reduction.

6. Reproducibility. Can the procedures be repeated? Does the researcher provide sufficient and explicit detail to enable another researcher to replicate the study?

7. Reduction of the data. Are the steps of data reduction made explicit? Does the researcher stay with the language of the participant or re-express the protocols at some point into the psychological language of the researcher? Does the data reduction follow appropriately that variation of the method employed? Does collaboration with participants and other researchers significantly alter the data reduction? Is interrater reliability necessary? Are the essential themes apparent from the reduction? Does the final description of the phenomenon follow from the researcher's integration of the thematic elements of the reduction?

Exploratory Research

Scaled down projects and pilot studies are often used to generate hypotheses and give direction to more substantive research to follow. From a dissertation to a series of funded projects of a long range research program, exploratory research provides an invaluable means to iron out a variety of problems which make it difficult to meet many of the criteria described above. For example, exploratory pilots are commonly carried out to operationalize constructs, validate instruments, and refine research designs.

Consider whether an exploratory and pilot study is relevant to the proposed research. What aspect of the proposed project might benefit from an exploratory or a pilot study? Is the research necessarily exploratory and the researcher is trying to propose to accomplish more than the study can deliver? Alternatively, if the research is presented as exploratory, what bases are being presented to categorize the study as such? Is the rationale for the study clear?

Theoretical Research

A theoretical research study is considered one which does not involve direct collection of data and the making of observations from human beings. It is void of direct empirical evidence. A theoretical study serves to integrate published empirical research and make extensive use of forms of argumentation analysis to examine with a critical eye a vast body of literature. This type of study relies primarily on the cognitive skills of the researcher, the cogent and sound application of logical and rational thought to formalize, carry out, and articulate a process of inquiry. But more recently, the notion of a purely theoretical study is being blurred with the introjection of meta-analysis and its associated statistical procedures into traditional bastions of theoretical research.

Although much theoretical inquiry is done in all fields, it is common that most research projects and dissertations in the human sciences, especially psychology and related disciplines, combine theoretical with empirical aspects of inquiry. Thus in practice, one sees much of both mixed together in the published literature.

Nevertheless, when a purely theoretical inquiry is undertaken, it is still expected to make an original and significant contribution to knowledge, theory, and future research. It may be very difficult to judge from reading the research proposal whether the criteria will be met successfully. The proposed research must indicate clearly and explicitly the thesis, the thread to be developed through the theoretical material, and the potential for its contribution to the problem and the field.

Marked deliberation should be taken in seriously considering a purely theoretical dissertation. The burden of argumentation in support of such inquiry is of course on the researcher. Original and important contributions are rarely made through a single theoretical treatise at the dissertation level. This form of inquiry is considered one of the most challenging, taxing, lengthy, and difficult.

Questioning Each Major Section of a Research Report

Another approach to applying a set of evaluative criteria is to develop a set of questions pertaining to each major section of a standardized research report used in most of the

sciences. For example, in psychology, the questions are grouped according to the four principal sections of a published research report described in the *Publication manual of the American Psychological Association.* The question sets which follow illustrate this point. The quartet may be a base for tailoring it to a specific topic area, method, or research proposal.

Introduction

1. Is the problem to be investigated evident?
2. What is the researcher trying to do?
3. Is the reader given proper perspective to the background of the problem?
4. Are the particular aspects of the problem relevant to the inquiry stated?
5. Are specific research questions and hypotheses stated?
6. Are the research questions and hypotheses clearly linked to the problem and more general questions raised?

Method

1. Is the research design described in detail?
2. Are the instruments reliable and valid, and described in detail?
3. Are the selection and characteristics of the participants described?
4. Are instructions to participants stated?
5. Is the treatment and intervention described?
6. Are any apparatus, equipment, or other necessary adjuncts used in experimentation described?
7. Are the research plan and the procedures of data collection fully detailed?

Results

1. In what form is the data processed.
2. In what form are the results presented?
3. Are the results of all content and statistical analyses presented?
4. Was a clear data processing (analysis, synthesis, reduction, explication) strategy followed?
5. Were the research hypotheses tested?

Discussion

1. Can the results be interpreted in connection to the research questions and hypotheses?
2. Are the results in line with expectations?
3. Are possible implications stated?
4. Does the researcher speculate on implications for theory, practice, and further inquiry?
5. Are the results comparable with other findings in the field?
6. Are the procedures, and instruments comparable to other studies?
7. What are the researcher's conclusions and are they justified?
8. Does the researcher generalize and are the generalizations justified?
9. What other factors might account for the results?
10. Are pertinent issues discussed which may bear on the findings?
11. What sources of bias and error are evident, and has the researcher adequately addressed them in the inquiry?
12. Are the references up to date and relevant?
13. Is the report readable, or filled with jargon and unnecessarily obstruse?

Incidentally, these question sets are also useful for "interrogating" a specific published report when doing a review of the literature, preparatory to a dissertation proposal.

Detecting Faults in Experimental Design

Since so much published research makes use of experimental method, the questions below suggest very specific evaluative criteria for experiments, and they provide an effective set to scrutinize most experimental research designs. However, the set is not meant to be

exhaustive, so add other questions you may discover assist you to make a thorough assessment of the design validity of the experiment.

1. Are the independent and dependent variables clearly operationalized?
2. Are the assumptions made in stating the research hypothesis valid?
3. Are the independent and dependent variables represented in the design?
4. What kind of design is it and what between, within, mixed aspects provide the structure of the design?
5. What variables are controlled and controlled thorough the design?
6. Is the scale of measurement of the dependent variable valid?
7. What experimental and control groups or conditions are compared in the design?
8. Are the participants randomly selected and then randomly assigned to the design?
9. Are the procedures to be executed to carry out the design likely to affect performance in unexpected and undesired ways, and are they free from contaminating influences?
10. Is there a data grid for the design in which the data can be clearly organized for analysis?
11. Do the statistics chosen to analyze the data fit the design?
12. Can the proper statistical hypotheses be formulated for each research hypothesis to be tested?
13. Is the design free of sources which can jeopardize the validity of the experiment?
14. Is counterbalancing of conditions, tests, or instruments necessary?
15. Do the procedures of measurement interfere with the response being measured?
16. Does the definition and selection of variables, participants, and settings permit generalizability?

Suggestions for Writing the Critique

This section describes one strategy for completion of the research essay. The critique of a dissertation proposal is used to illustrate.

1. Selection. Select a dissertation proposal on a subject of interest in regard to your research and/or professional work. In making this decision, brace oneself to plunge into the topic area and methodology literatures of the proposal in order to sufficiently understand and critique the work..

2. Conception of the whole. Read the proposal to get a sense of the whole. Note its organization and structure, its main subject and specific focus, and its development from beginning to middle to end. Note the main concepts and principles involved in the research. State the research purpose and research questions guiding the inquiry. List the issues discussed. Your notes here consist of only those items mentioned by the authors of the report. Later you may discover other issues to use in your critique.

3. Source links. Read each section of the report carefully. Draw on the topic area, methodology, and issue literatures to establish links with each section of the proposal. Consider various evaluative criteria for their relevance to the proposed research. This legwork is essential, because it will enable you to use primary sources to weight the appropriateness and accuracy with which the report communicates to the reader each portion of the investigation.

4. Evaluative Criteria. There are many bases of critique in research. Settle on a workable set of evaluative criteria and state them in the question format. In general, the point of stating an evaluative criterion in the form of a question is to give direction and focus to the task of critiquing. The previous sections of this document provide many examples from which to choose. But additional ones can easily be created by restating a subheading of

the proposal in the form of a question. Also, many statements in the text can be challenged and scrutinized, often by posing the statement as a question for critique. For example, the researcher states that the empirical evidence supports Theory X. Well, does it? Is the evidence presented and is the presentation convincing?

Having the questions, one can proceed thoroughly and efficiently. Look for the answers as you carefully read each section of the report:

5. Clusters. Organize your critique into clusters. Each cluster should have a nucleus, that is a point of critique. The elements attached to the nucleus should consist of key references from the literatures, which pertain to statements you can make in support of the text of the report and statements in refutation of the text. For example, let us imagine that the authors reported findings based on a sample size of 5 interviews, each interview lasting one hour. Your validation of this matter has uncovered that some researchers did the same, while many other researchers conducted a second interview and used larger sample sizes with the same method and research question. We have a critical issue here: What is the better interview procedure and sample size? Pertinent information needs to be presented and cited in your critique as to whether the research report being critiqued justifiably addresses this issue, and so on for other issues.

6. Subsections. Eventually clusters will form out of the material as it becomes more organized. The clusters become the substance of each subsection of the body of the essay, that is, the critique of the dissertation proposal.

7. Initial draft. Write the initial draft of the essay using a simple, clear, proven organization, such as:

INTRODUCTION
CRITIQUE
CONCLUSION
REFERENCES

See previous sections of this document, especially "Presenting with Simplicity and Clarity" for content suggestions for each part of the initial draft.

References

Cohen, E. and Ross, A. (1986). Assessing research competence in a psychology licensing examination. *American psychologist*, **41**, 1382-1383.

Davitz, J. and Davitz, L. (1967). *A guide for evaluating research plans in psychology and education.* New York: Teachers College Press.

Payne, L. (1965). *The lively art of writing*. Chicago: Follett.

Send requests for copies and suggestions for improvements to:

Arne Collen, Ph.D.
P. O. Box 4950, Walnut Creek, CA 94596 USA
Tel/Fax: 1 510 930 9779

Rev. 1-95