Guidelines

FOR
GRADUATE STUDENT
THESIS RESEARCH

MA students taking CPSY 518 in Summer 2016

Graduate Program in
Counselling Psychology

TRINITY WESTERN UNIVERSITY
School of Graduate Studies

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Invitations to Scholarship & Thesis Work …

The heart of research – curiosity – is sometimes neglected, it seems, in research training. Intimidation or elitism or fearful drudgery have more to do with bad politics than they do with research. I want to welcome us all to an exciting & evolving enterprise – the blossoming realms of scholarship in counselling, psychology, family studies, and related fields! If that sounds cheesy or superficial for a procedures and policies document, I invite you to join me in proving that impression wrong in our time together! Traditionally, much research in our fields has been restricted to empirical investigation – gathering and interpreting a systematic set of observations ("data") pursued to "discover" or clarify some feature of life or tidbit of understanding. Increasingly, scholarship is expanding beyond this groundwork in discovery and is transforming to include complementary strategies for scholarship: transforming our understandings to promote social justice; cultivating social practices to meet community needs and to promote well-being; and bridging diverse or disconnected ways of life and forms of understanding. Increasingly scholarship invites international and intercultural collaboration, and even locally-focused projects can take on multilingual activities and directions. Scholars and professionals in applied fields, for instance, often encounter situations where they can partner with community members to move forward through systematic reflection and research.

The approaches to research and scholarship promoted most strongly in our MA program highlight pluralist strategies—and there are growing resources available, now to support these directions. Typical forms of research and scholarship can be supplemented and transformed in light of multicultural values, inter-professional cooperation, and dynamic connections among professional practice, community engagement, and scientific integrity. As a faith-affirming Christian university community, TWU invites and hopes for collaboration with all people of goodwill in promoting vital scholarship and community well-being. And that helps research.

These broad ideals provide a crucial backdrop for the procedures and "nitty gritty" guidelines outlined in this document. To embody these ideals as the heart of scholarship, what we do together, and how we come together, can make all the difference between negative forms of bureaucracy on the one hand and life-giving intellectual work. The "dryness" of much of this material in this document won't change on its own. But when we draw on this text in the service of addressing research questions embodied in communities of inquiry, then it all comes alive – as flashlights, tools, and windows into fascinating horizons of research. So guidelines like these can support us by putting "feet" on our dreams. Please join in, helping us all to unpack a few more inspiring possibilities with practical "how to" resources and strategies.

A fellow traveller & itinerate tour guide,

Marvin "Mac" McDonald, Ph.D.

Summer, 2013

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Thesis Procedure: A Brief Outline of Processes

The following administrative outline combines selected policies and procedures from the MA program in counselling psychology, the Faculty of Graduate Studies, and the University. This summary is not intended to be comprehensive. Thesis students are responsible to inform and organize themselves on a continuous basis. Changes in policy or procedure are made from time to time and are communicated to graduate students through their campus e-mail accounts. Questions regarding policies and procedures may be directed to the MA program office &/or the Office of the Graduate Dean after careful review of this document & related resources.

1. **Complete all Prerequisite Courses** – CPSY 501—Advanced Statistics, CPSY 502—Research Design, & CPSY 518—Research Seminar. Occasionally, students may begin their thesis and register for Thesis I concurrently with CPSY 518, but this requires the permission of the Research Coordinators in consultation with the program committee. For the summer of 2016, Derrick Klaassen and Mihaela Launeanu are serving as the Research Coordinators, thus providing coordination and supervision for thesis work in the CPSY program.

   1.1. ***Complete the Application to Conduct a Thesis*** – Students must apply for program approval to conduct a thesis. This involves completing the application form, including providing a brief description of the proposed thesis and obtaining the signed agreement of a thesis supervisor. To select a thesis topic and supervisor, find out about the research areas of the various faculty members and affiliated faculty, and think of potential projects in which you are interested. (To continue to find out about research interests and available research projects, talk to faculty, look on the web-site, sit in on research team meetings, review previously completed theses in the Wong Research Centre, and talk to other students).

   Note that approval to conduct a thesis is not automatic. Students who have demonstrated limited ability to complete a thesis (through their poor performance in any of CPSY 501, 502 or 518), or who cannot find a suitable supervisor for a thesis topic, will normally not be accepted for a thesis and will then be asked to register in the non-thesis track. Once accepted into thesis, students will normally be supported through the completion of an approved project. For instance, if a supervisor or committee member becomes unavailable for some reason, thesis coordinators will typically make arrangements for alternative committee members.

   If you hope to use an existing data set (e.g., that is part of your supervisor's larger program of research), your topic and areas of literature must be sufficiently distinct from all previous theses and publications that have used the same data set. Be sure to ask your supervisor or collaborator about the topics that have already been covered by other students using the data set. For information on alternative types of theses, please see below.

2. **Register for CPSY 603 (Thesis I)** – Students may register in Thesis I any time within the year after they have successfully completed CPSY 518 and have been granted departmental approval to conduct the thesis. Once registered in Thesis I, students must maintain *continuous enrolment* in thesis courses (i.e., register in CPSY 604 -Thesis II- the semester after completing CPSY 603, and register in CPSY 605 - Program Continuation- for *every subsequent semester* until the thesis is completed).

3. **Thesis Proposal Meeting** – Students work closely with their thesis supervisor to develop a formal research proposal based on the proposal completed in CPSY 518. If a student has not

passed the thesis proposal meeting by September of the year following completion of CPSY 518 (i.e., September 2017 for students taking CPSY 518 in 2016), the student will normally be required to switch to non-thesis track. After completing the proposal, students submit copies of their completed proposal to every member of their Supervisory Committee, and to at least one Thesis Coordinator. Note that committee members normally require *a minimum of two weeks* to read and review the completed proposal before a time for the Thesis Proposal Meeting can be set. A Thesis Coordinator sits as an ex-officio member of all Supervisory Committees. At the Thesis Proposal Meeting, the Supervisory Committee will decide whether the proposal is approved, requires minor revision, requires major revision, or is rejected. If a thesis is rejected or requires major revisions, a new Thesis Proposal Meeting will be required to review the new proposal draft before the Student can proceed. After the proposal receives an evaluation of 'approved' or 'minor revisions,' the Supervisor completes a *Thesis Proposal Checklist* and submits the completed form to the Associate Director to document the committee decision.

Note: *Generally, a simple replication of a prior study is not acceptable as a Master's thesis. However, replication **is** acceptable when there is a compelling rationale and/or is accompanied by an extension of knowledge in a research program.*

4. **Review by Research Ethics Board** - Following approval of the thesis proposal, all theses that involve the collection or re-analysis of data need to be reviewed and approved by TWU's Research Ethics Board. This involves completing the "*Request for Ethical Review Form*", and preparing all the required supporting documents. The ethics review process usually takes between two to six weeks (or longer if your submission is incomplete), and ***data collection cannot begin without approval from ethics*.** Note that if the study involves other institutions (e.g., school boards, other universities), they may also require approval from their own ethics review committees.

5. **Data Meeting** - Near the completion of data gathering or other key milestones, ***if*** concerns emerge about the adequacy of an analysis or a data set, a member of the committee (typically the Student or the Supervisor) may call a data meeting, to ensure that the recruitment procedures and/or data analysis are(is) adequate. This consultation normally involves all members of the Supervisory Committee.

6. **Complete the project and write up the research report.** Normally the conduct of the thesis involves regular meetings and consultation between the student, the supervisor, and any other research team members involved in the project. When complete, the project is written up in a thesis document.

   6.1. ***APA format review*.** After completing the thesis and after approval by the Supervisor, the Student will submit a send an electronic copy to the CPSY Associate Director (Laurie Donaldson) as an e-mail attachment for APA style review (this submission may be required *before* submission to the Committee, or it may be submitted *at the same time* as the draft is circulated to the Committee if the quality of the draft is strong enough for review). The APA style reviewer will briefly illustrate the kinds of corrections required and will return the draft to the student to implement needed corrections before the document goes to an external examiner. Ordinarily, a document that is well-edited will benefit substantially from a brief review at this time. If more than an hour of total time is

required for the review of APA style and editorial compliance, students will be required to pay for any additional editorial time at the rate of $25/hour.

7. **Supervisory Committee Review Meeting** (aka "departmental defence"). The Student submits the thesis draft approved by the supervisor to every member of their Supervisory Committee, for review (note: the Student is responsible for any photocopy or printing costs that may be involved). Normally committee members will have a minimum of two weeks to review the thesis document before meeting. The committee will then meet to review the thesis and determine whether it is ready to be sent to an External Examiner. If major revisions are required, these changes need to be made, then copies of the revised thesis need to be reviewed at another Supervisory Committee Review Meeting, until the committee is satisfied that the thesis meets all applicable standards.

   7.1. ***Submit Final Thesis Draft for the Oral Examination***. The Student completes all corrections required by the APA review and by the Examining Committee to the satisfaction of the supervisor. An electronic copy of the abstract and of the entire thesis document as revised is forwarded to the Graduate Studies Coordinator and copied to all members of the Committee.

   7.2. ***Appointment of an External Examiner.*** Once a thesis is approved for sending out to an External Examiner, the Supervisor needs to complete the *Supervisory Committee Approval Form* (which includes a list of potential External Examiners) and submit it to the Graduate Studies Coordinator. The Office of Graduate Studies is responsible for contacting and recruiting an External Examiner (upon recommendation from the Supervisor and/or Thesis Co-ordinator). ***It is absolutely essential that there should be no contact or correspondence between the Supervisor or the Student and the External Examiner until the Thesis Defence.*** The Examination Committee is comprised of the Supervisory Committee and the External Examiner.

      7.2.1. *Third Reader option*. For a specific project, the role of an external examiner may be transformed into a more active participant on the thesis committee (e.g., providing close supervision for sections of a thesis document). To request a third reader in place of an external examiner, they supervisory committee submits an application to the MA-CPSY research coordination team for approval. Rationale for the role adjustment and description of the relevant expertise of third reader candidates are included in the application. At least two weeks are to be allowed for processing the request.

8. **External Examiner's Review**. Once an External Examiner has been appointed, a copy of the thesis will be sent to them for review. (If the External Examiner requests a paper copy, the student is responsible to provide it to the Graduate Studies Coordinator for forwarding to the External Examiner.) The External Examiner has up to three weeks to submit a written report to the Graduate Studies Coordinator, who forwards the report to other committee members and the Thesis Co-ordinator. This report provides a detailed critique of the thesis and indicates whether it is of sufficient quality to convene a Thesis Defence. Theses that are judged to be unsatisfactory (category 4 or lower) may require the postponement of the oral defence until sufficient revisions are made. In these cases, the Thesis Co-ordinator will consult with the Supervisor and Second Reader to decide whether to accept the External Examiner's recommendations or to obtain a second opinion from another External Examiner. The Co-

ordinator's recommendation is subject to the approval of the Dean of Graduate Studies. Typically, the External Examiner's report should not be disclosed to the Student until after the Thesis Defence. An exception may emerge, for instance, if major revisions are required before the defence and the report can be used to inform revisions.

9. **Oral Thesis Examination** ("external defence"). If a thesis is judged to be satisfactory by the External Examiner, the Student can proceed with an oral Thesis Defence. The Thesis Defence normally consists of a 15 to 20 minute presentation by the Student followed by two rounds of questions from the Examination Committee. Thesis Defences are normally open to the public and are advertised on campus and other venues as appropriate. The presentation portion generally includes summaries of the context of the study, methodology, results, and implications for the field of Counselling Psychology. Questions from examiners normally focus on aspects of the written thesis, the oral presentation, and the broader implications of the Student's research. Students are encouraged to employ presentation aids during the defence (e.g., PowerPoint slides or hand-outs) and they are to be made available in advance to be forwarded to the External Examiner before the defence. At the conclusion of the Thesis Defence, the examination committee will meet *in camera* to decide what recommendations and grade to award the student and will inform the Student of their decision.

10. **Make Revisions and Resubmit**. Students will make all required revisions to their final thesis, and will submit the revised final thesis for review by their Supervisor, Thesis Co-ordinator, and any other committee members that may have been stipulated at the time of the oral defence. A statement of faculty acceptance must appear on the thesis document. When the thesis revisions have been approved, members of the Examination Committee must sign this statement on all copies of the thesis. When designated committee members are satisfied with the revisions, thesis document is deemed complete.

    10.1. ***Final Review of Document Format.*** When all revisions have been deemed complete, the Student finalizes all formatting and editorial corrections. The Student will then submit complete electronic and paper copies to the Associate Director to be submitted for review of compliance with APA editorial standards and with thesis format requirements. If more than usual time is required for the review of APA style and editorial compliance, the student will be required to pay for any additional review time at the rate of $25/hour. Once the final format review has been completed (usually within 2 weeks) and resulting changes made, the cover sheets can be released from the Office of Graduate studies and the thesis can be sent for binding.

11. **Thesis Deposit**. As of May 2013, electronic thesis deposit is being implemented by the university. Students are responsible to attend meetings called by the graduate studies office to explain the new procedures.

    11.1. ***Reports to Ethics Review Board, etc*.** After completing the thesis, the Student must submit a "Final Project Report Form" to the Research Ethics Board. This form can be downloaded from relevant University web pages. Additional reporting requirements, data deposits, and other submissions as specified by the Faculty of Graduate Studies and the MA program will also be completed by the Student.

12. **Publication**. The Thesis Co-ordinators will support efforts of the Student &/or Supervisor in efforts to publish theses of appropriate quality, even after the Student has graduated.

Roles of Members of a Thesis Research Team

The core function of a thesis committee is to serve as a research team mentoring a student's continued growth as an investigator. Describing administrative facets of the process here are designed to clarify expectations and thus facilitate processes of personal, professional, and intellectual development. Note that, once the once the Thesis Supervisory Agreement is signed, permission from a Co-ordinator is required to switch any members of the Supervisory Committee. And if a student wishes to switch Supervisors, it is expected that he or she will discuss the situation with, and obtain consent from the original Supervisor, prior to initiating the switch. Intellectual property issues should be addressed at the time one changes supervisors. In addition to committee members, the research team for a masters' project may include other graduate students, community collaborators, and/or other scholars.

Research Coordinator(s)

The role of the Coordinators is (a) to support Students and Supervisors in their thesis supervision relationship and activities, and (b) to maintain consistency in thesis standards and procedures. Specific responsibilities include:

1. To facilitate an appropriate match between Students and Supervisors.
2. To work together with the Supervisor and Student to recruit and appoint Second Readers.
3. To work together with Supervisors and the Graduate Dean to appoint External Examiners.
4. To liaise with the Office of Graduate Studies in planning thesis defence meetings.
5. To serve as an ex officio member of every Supervisory Committee and Examination Committee.
6. To support Supervisors in monitoring Students' compliance with any revisions required by the Thesis Defence Examination Committee.
7. To monitor editorial review procedures for appropriate formatting and the processes of submission of completed theses.
8. To promote a research environment that sustains research quality, integrity, safety, health and freedom from harassment, discrimination and conflict.
9. To help resolve any difficulties that might be experienced by Students, Supervisors, community members, and/or committee members in the course of thesis research.
10. To consult with the Graduate Dean, the Graduate Studies Coordinator, the Counselling Psychology Program faculty, and Examination Committee members as needed in the development and implementation of policy and procedures.
11. To consult with the Graduate Dean, the Counselling Psychology Program faculty, and Examination Committee members for supporting the application of standards for grading.
12. To ensure that multiple theses coming from the same program of research are sufficiently distinct, in terms of their design, topic and background literature.
13. To provide supplementary consultation regarding thesis requirements as needed.

Thesis Supervisor

The role of the Supervisor is to oversee and work with students to facilitate completion of their thesis research in a manner that meets standards of scholarship, the MA program, and university policies within appropriate deadlines. Specific responsibilities include:

1. Having sufficient expertise in the Student's intended area of research before agreeing to become their Supervisor.

2. To be accessible, and meet regularly with the Student for consultation and supervision. Students are expected to meet with their Supervisor at least once per month, and preferably once per week, throughout the duration of the project.
3. To provide guidance and encouragement in accessing logistical and intellectual resources for a successful project. To provide timely and constructive feedback to the Student's plans and written work.
4. To facilitate the Student's access to adequate research resources.
5. To guide the Student in selecting and developing a thesis project that is within their capacity to complete in a timely manner.
6. To ensure that the Student employs a research method that is appropriate to their research question, and can be carried out within the available time and resources.
7. To promote a research environment that sustains integrity, safety, health and freedom from harassment, discrimination and conflict.
8. To discuss with the Student the ethical implications of their proposed research prior to submitting the proposed study to the Research Ethics Board for approval, and to support ethical accountability throughout conduct of the project.
9. To work with the Student in developing a reasonable set of deadlines, so that thesis research can progress in a timely fashion. To guide and advise students in handling the logistics of scheduling meetings and handling administrative matters in a timely fashion.
10. To chair all required Thesis Proposal, Data, and Supervisory Committee Review Meetings, in co-operation with the Thesis Co-ordinator.
11. To prepare students adequately for the Oral Thesis Defence.
12. To provide continued supervision until the thesis is successfully completed (typically beyond the two semesters during which the Student is registered for the thesis course).

Thesis Co-Supervisor

Occasionally, a Supervisor is unable to fulfill all of the expectations outlined above. In such a situation, the Supervisor and Student, in consultation with the Research Co-ordinator(s), may decide to add a Co-Supervisor to the Supervisory Committee. The role of the Co-Supervisor is to collaborate with the Supervisor in providing thesis supervision to the student (see duties of Thesis Supervisor). The Co-Supervisor will also sit on the Examination Committee. A Co-Supervisor will normally be appointed in place of a Second Reader on the Committee.

Second Reader

The role of the Second Reader is to provide advice and consultation to students from a complementary perspective to that offered by the Supervisor. The degree of actual involvement may vary from committee to committee, but duties typically include commitments:

1. To provide suggestions and constructive criticism from the proposal stage through to the final presentation of the thesis.
2. To be reasonably accessible to students for consultation.
3. To give feedback to written work in a timely manner.
4. To participate in the Proposal Meeting, any required Data Meetings, the Supervisory Committee Review Meeting, and the Thesis Defence.
5. To participate in evaluating the oral examination and the written thesis.

External Examiner

The role of the External Examiner is to provide expert opinion regarding the quality and timeliness of a thesis. It is important that the External Examiner be a recognised authority in an area directly relevant to the research project. In order to avoid conflict of interest, the External Examiner should not have conducted any collaborative research with the Supervisor or the student in the past 5 years. Faculty who are currently teaching or who have taught at TWU within the previous 3 years may not serve as external examiners. (For a description of the Third Reader option, please see 7.2.1 above.)

There should be no direct communication between the student and the External Examiner prior to the thesis defence meeting. Specific responsibilities include:

1. To evaluate the completed thesis prior to the oral examination, and present a written report of the evaluation.
2. To question students regarding the thesis at the Thesis Defence.
3. If the External Examiner cannot attend the Thesis Defence in person or electronically, s/he must provide a set of questions that will be raised by the Co-ordinator or his/her designate.
4. If attending the defence, the External Examiner is to participate in evaluating the oral examination and assigning a final grade.

Thesis Student

A masters' thesis is a major undertaking — it is designed to be the cornerstone of MA degree and it is expected to make a substantive contribution to scholarly literature. Therefore, students need to plan to devote sufficient time and energy to thesis research. This process demands commitment and a sense of personal ownership. Although the MA program provides many supports to assist students with the process, it is ultimately the student's responsibility to complete their thesis in a timely manner, and to solve problems related to thesis completion. Specific responsibilities include the following:

1. To obtain necessary background knowledge and skills for the project, including logistical and administrative skills, software competencies, and intellectual and interpersonal capabilities appropriate for the project.
2. To develop a plan and a timetable, together with the Supervisor, towards completion of the thesis. Planning includes sufficient allowances for schedules of various members of the committees and the research team, and for everyday circumstances such as illness.
3. To work diligently to meet deadlines at each stage of the thesis process, including allowance for logistical procedures such as finding out how to schedule meeting rooms, formatting documents and graphics, gaining permissions for use of copyrighted material, learning APA style, consulting with the Research Coordinators, and so on.
4. To meet regularly with the Supervisor to consult and to report fully on progress and/or problems encountered.
5. Students are encouraged to keep a *Research Journal* to record the substance and outcome of meetings with the Supervisor. A key purpose of a Research Journal is to ensure that the Supervisor's suggestions have been properly understood and implemented. It also serves as a logbook for the development of the thesis and may include documentation of procedures for the purposes of a research audit.
6. To identify, understand and comply with program requirements, particularly those related to Thesis deadlines.
7. To identify, understand and comply with ethical responsibilities, including conflicts of interest, human research ethics, intellectual property, and the proper acknowledgement of others' ideas and assistance.

8. To register continuously, three semesters per year, in the Thesis courses and program continuation until the thesis is successfully completed. Thesis I and II should be treated as a single course and cannot be separated by a semester.

9. To maintain continuous registration at the University until the thesis has been approved by the Examination Committee. Students continuing in their thesis beyond two semesters will need to enrol in CPSY 605 (Program Continuation) for every succeeding semester, including summer semester, until the thesis has been successfully defended, bound, and submitted to the department. ***Students are responsible to maintain their own enrolment; this includes consulting with their academic advisor as needed and to ensure timely registration as defined by university deadlines.***

Thesis Proposal Outline

This outline provides a concise list of important features for proposals, focusing on empirical projects that emphasize the gathering and/or analysis of "data sets." (This outline will normally be adapted for alternative types of theses as described in the next section of these guidelines.) The purpose of the thesis proposal is to communicate two things to your committee: (a) that your research is worthwhile and (b) that it can realistically be accomplished by you within a reasonable amount of time. You need to convince your committee that your thesis has the potential to make a contribution to the literature, and that you have a good grasp of the relevant literature, the major issues involved, and the appropriate methodologies.

The thesis proposal should be written in consultation with your supervisor, to ensure that your proposed topic meets these criteria. In fact, an effective strategy is to pick a topic that is part of your supervisor's larger program of research, as long as you can ensure that your topic covers something new and different from previous theses generated from that research.

General Style and Formatting

The format of the proposal should employ the requirements of the final thesis document (see the *Formatting Requirements* section below). The required sections of the document may be adapted, depending on the nature of the thesis and special requirements of specific supervisors. Note that the proposal, like the final document, may reflect either manuscript or thesis/dissertation style formatting. The typical length of a thesis proposal is 20-40 pages.

Specific Sections

Title: should be concise and descriptive. Omit unnecessary phrases. "An investigation of . . ." could be omitted. Try to make the title catchy, evoking curiosity: a good title not only piques the reader's interest, but also predisposes him/her favourably towards the proposal.

Abstract: Summarize the research question (and hypotheses, if any), the rationale for the study, and the method (including include the design and procedure, the sample/participants, and any instruments that will be used). Maximum: 350 words. Additionally, students should include a list of up to 5 keywords (i.e., key phrases related to thesis topic), at the end of the abstract. See the appendices for a short example and browse theses in the Wong centre for range of examples with various strengths and limitations.

Introduction: The main purpose of the introduction is to define the scope and boundaries of your proposed research. This section should set the stage for the literature review, by introducing the research question in a clear way. As such, the introduction chapter should include the following sub-sections:

1. A general statement or description of the overall research topic and a description of the background context to the problem. This may include relevant historical or social background and/or a contemporary situation surrounding the problem. The description should also specify the scope of

your study: What aspects of the problem will you be addressing in your thesis, and what parts will you not be addressing?

2. An introduction to the major existing theoretical models related to the research problem, and possibly to key research programs or researchers in the field. Identify the theoretical perspective that you have selected to guide work on your study.
3. Definitions for the key constructs or principles delineating your topic. In a quantitative study, also identify what constructs will be the independent and dependent variables.

Literature Review: This section provides a more detailed and critical review of the existing literature that bears on the proposed thesis. The purpose of the literature review is to demonstrate your knowledge and understanding of the problem area, as well as justify your study. At minimum, the literature review chapter should contain the following sub-sections:

1. A paragraph introducing this chapter- what will you be covering, and in what order?
2. Separate sub-sections reviewing the existing literature for each major construct that is a part of your study. Depending on the complexity of your thesis question, you may need to address each major construct in a separate sub-section. Or, if there is sufficient existing literature, just focus on the existing research that links key constructs or principles together. Each sub-section should summarize existing empirical research that is relevant to the construct. Note that ***you are not just reporting, but synthesizing and critiquing the published literature.*** Typically, most reviews can be organized into three or four sub-sections that carefully organize relevant literature into a ***coherent overview***. The review, as a whole, **should build a rationale** for why your proposed thesis needs to be conducted.
3. A section describing the purpose of your study in light of conclusions from the review of the literature. Remind the reader of why it is important to conduct this study, making systematic links to the literature that you have reviewed.
4. Finish with a paragraph stating your specific hypotheses (quantitative) or specific research focus (qualitative), showing how the research question will be addressed.

In the literature review, you need ***to convince*** your reader that your proposed research will make a meaningful and worthwhile contribution to the field (i.e., resolve an important theoretical issue, fill a gap in the literature, or advance counselling practice in a tangible way). Also, be aware that, if you misunderstand or fail to cite the major existing studies, or if your proposed thesis tacitly contradicts the weight of the evidence in the literature, your scholarship may be called into question. Therefore, it is important to conduct a thorough, well-organized search of the literature. ***Do not limit yourself to only what is readily available through PsychINFO or any particular database*.**

Methods: The methods section of your thesis proposal should contain a description of each of the following items. (Reviewing corresponding discussions in the APA publication manual will also be helpful.)

1. The **design of the proposed study**, the underlying paradigm assumptions of that design, and the implications of those assumptions for the knowledge claims that can be made. If combinations of design / theory / procedure / paradigm are proposed, briefly explain the strategy for combination that will be used (cf. Yanchar & Williams, 2006). Finally, provide an explanation for why your chosen method is appropriate for your research question and your theoretical framework. (See, e.g., the framework for comparing research methods in Guidelines appendix to illustrate issues of "fit" between research focus and design.)
2. The **characteristics of your proposed participants**, including what specific inclusion/exclusion criteria you will be using. You need to support your choice of who the participants will be (consider issues of appropriateness, generalizability, relevance, and how easy it will be to recruit them). Also,

if relevant, how do you intend to assign people into different groups (e.g., random; pre-existing characteristics)?

3. Your plans for **recruiting** those participants: where and how do you plan on obtaining your participants? What sampling / invitation procedure do you intend to use to obtain participants (e.g., purposive; convenience- everyone who volunteers) and why you chose that procedure? Also describe how you know when you have "enough data" and how you arrived at that decision (e.g., power analysis, norms for existing studies using your method, sampling purpose). Normally a power analysis is required for a proposal. *Program evaluation* theses will also need to describe the stakeholders involved in the program, and key contexts & settings for the program.

4. The **data collection procedures for *quantitative*** theses should contain sections on: description of how each variable will be operationalized / measured; justification for why those definitions and measures are appropriate; description of each instrument that will be used, including its psychometric properties (based on available information); anticipated effect size, and why you anticipate that; how information will be recorded and stored.

5. The **data collection procedures for *qualitative* theses** should contain sections on: researcher/team's self-description and expectations / relationship with the topic being studied; general description of how information will be obtained; specific interview protocol / guiding questions (if there is no interviewing, provide more specific details on what data you will be using); how information will be recorded and stored.

6. The proposed **analytical process for *quantitative theses***: identify your primary statistical analysis procedure, and the assumptions that it makes about the nature of the data (e.g., normality; minimum of 5 cases per cell). Explain why this statistical test is appropriate for your research question and data set. Briefly describe what steps will be used to "clean-up" the data prior to analysis, to score instruments, to select appropriate graphics, and to evaluate the viability of the analysis. The Guidelines appendix contains an outline of data preparation principles that can be helpful in the proposal, and is even more helpful in working with an actual data set. Identify any post-hoc tests that you are considering.

7. The proposed **analytical process for *qualitative* theses**: your transcription process (who will do it and what transcription strategy will be used); how will the data from each participant be coded?- be specific; what are your strategies for determining the overarching themes / making more general conclusions across the entire sample?; (if relevant, how will you make comparisons among different sub-sets of data?).

8. Issues of **rigour and validation for *quantitative* theses**: this should already have been integrated in to previous sections of your chapter, because it includes things such why you chose a particular sampling / assignment procedure; descriptions of the reliability and validity of your measurement instruments or experimental manipulation; and procedures for data preparation.

9. Issues of **rigour and quality for *qualitative* theses**: there should be a separate section on rigour and validation at the end of the methods chapter, where you describe what you will do to ensure the quality of the method (e.g., member-checking, bracketing, auditing). For each strategy that you will implement, explain how/why it helps with rigour. Make sure that you use rigour/validation procedures that are consistent with your paradigm.

You need to demonstrate your knowledge of alternative methods for comparison in support of your explanation about the appropriateness of your chosen method for your research question. Typically this is addressed in section #1 listed above, but it may come up in other sections of the method section for some designs.

Anticipated Outcomes: This part of your proposal should address the following points.

1. Your anticipated pattern of results and conclusions (or, in a qualitative thesis, the general types of findings that may emerge, and what kinds of conclusions you hope to be able to make). Make sure that you relate what you anticipate back to the literature, or your research design.
2. The significance of your study / potential implications for practice. This section should be realistic, and should include connections to counselling psychology in some way.
3. Any limitations or problems that you can already anticipate (make sure that the limitations fit with your paradigm), and your ideas for overcoming these potential problems.
4. A discussion of the ethical aspects of the study, including (a) potential risks and benefits to participants; (b) procedures for preserving confidentiality or anonymity during and after the study (or an explanation of why maintaining confidentiality or anonymity are not appropriate in your study); and (c) any other potential ethics issues that are relevant in your particular study (e.g., approval from other institutions, use of minors or vulnerable populations; pre-existing relationships between researcher and participant; use of deception; issues with online data collection).

In this section, you need to communicate a sense of enthusiasm without exaggerating the merits of your proposal.

Alternative Thesis Types & Formats

The information presented in these guidelines focus on projects that involve an original empirical thesis that involves collecting and analysing a new set of "data." However, a student may wish to pursue an alternative type of thesis, and alternatives normally require some modifications to the thesis procedure and/or proposal. Note that this is different from the two thesis formats that students may use for reporting the outcomes of any type of research.

Program Evaluation Thesis

Although a program evaluation thesis needs to be conducted rigorously, the standards and requirements of applied program evaluation research are somewhat different from the standards of traditional research theses. As a result, standards for qualitative, quantitative and mixed-methods proposals may need to be altered in some ways when the proposed study is a program evaluation. Additionally, the institution that is running the program may also have requirements that must be fulfilled.

Therefore, extensive discussion and consultation with your supervisor and any external agencies involved is required prior to writing the proposal, to ensure that everyone has similar expectations of (a) what aspects of the program will be evaluated, and what will not be evaluated as part of the thesis; (b) what standards will be used to judge the success of the program; (c) any alterations to research-based criteria of adequate sample size, levels of statistical significance (e.g., using *p*-values of .001 instead of .05), or strength of effect.

In the thesis proposal, these sets of information and clarification may be presented in a distinct section at the beginning of the methods section, or integrated into the different specific sections of the proposal.

Theoretical Thesis

Standards for theoretical psychology are less widely disseminated than the standards for empirical theses, and alternative conceptual approaches may involve adaptation of frameworks for evaluation. Therefore, an additional component of all theoretical thesis proposals is to identify appropriate criteria or frames for conducting *and evaluating* the thesis.

Prior to writing a full proposal, the student will consult with a potential supervisor and they will jointly draft a 2-3 page application to conduct a theoretical thesis. The application will (a) briefly outline a tentative focus for investigation; (b) identify the literature providing an adequate context for that focus (if the project is interdisciplinary in nature, the relevance of psychology or counselling for the project will be specified); (c) briefly describe a framework for evaluation (including how the thesis will meet Degree Level Standards for Master's Degrees); and (d) summarize the relevant background of the student that has prepared her or him to successfully complete a theoretical thesis. This application will be reviewed by thesis coordinator(s) and program faculty and subsequently submitted to the Office of Graduate Studies.

If the theoretical thesis is approved to proceed, the student will still need to complete a full thesis proposal, and have a thesis proposal meeting, as per the general guidelines listed above.

For a theoretical thesis, the full thesis proposal should (a) identify for review relevant empirical literature in psychology and related fields; (b) formulate a theoretical focus for the proposal that will make a scholarly contribution to the literature; (c) provide a chapter-by-chapter annotated outline of the final thesis; (d) support the viability of the proposed argument by summarizing primary sources that will be drawn upon in the thesis; and (e) distinguish those aspects of the focus that may be addressed via secondary literature.

Multiple Theses Based on the Same Study or Data Set

In addition to making a contribution to knowledge, all theses must be conceptually distinct from each other. Therefore, when a student wants to use data from a larger study or to propose a secondary analysis of an existing data set, the thesis must contain at least one major concept, topic, or literature area that has not been used in any previous theses or publications based on the same study. This requirement is designed to ensure (a) that the student's literature review goes beyond what has already been covered by other students using the same study; and (b) that the thesis makes a new contribution to knowledge.

Note that it is not sufficient merely to (a) recombine variables from the previous theses without adding a new topic area; (b) use parts of a data set from a larger study that have previously not been used, without adding a new topic area; or (c) use a different methodology to study topics that have already been covered in other theses from the same study.

To ensure that theses based on the same larger study are conceptually distinct, approval from the program faculty must be obtained before beginning a second or subsequent thesis. This procedure involves:

1. Student and supervisor first discuss the proposed thesis in light of all the previous theses from the same larger study, to ensure that (a) at least one of the concepts, topics, and variables has not been used in previous theses, and (b) there is a sufficiently distinct body of literature that can be reviewed.
2. The *supervisor* applies to CPSY program faculty for approval of the new thesis. This includes supplying a written description of how the new thesis qualifies as conceptually distinct from previous theses based on the same larger study, and how he or she will ensure that the student's literature review will go beyond the topics covered in other theses that have used data from the same study (see below for details).

Note that review and approval from the program should normally be obtained as early in the thesis planning process as possible to allow for opportunities to adjust features of design and conceptualization. In any event, program-level approval is required before the student starts writing the thesis proposal.

The supervisor's application for program review of the proposed thesis should: (a) identify of the study/data set that is to be used; (b) list all previous/current theses based on that study, and the topic areas covered in their literature reviews; (c) outline the research question and topic areas to be covered in the student's literature review; and (d) highlight the conceptual distinction of the proposed thesis, and how its literature review is different from the topics covered in all the previous theses.

Clinical Case Studies

The significance of clinical case studies has been growing in recent decades, generating independent journals, a wide-ranging literature on methodology and research ethics, and emerging potential for crucial shaping of both theory and professional practice. For instance, the professional standard of tailoring therapy approaches to clients can be addressed quite directly through case study research. Case study methods and methodology can be quite complex, but modest projects, suitable for masters' level research, are sometimes possible. In addition to extensive consultation with a potential supervisor, adaptation of thesis guidelines for a case study proposal would normally be based on a published research model. Adapting available models to a well-focused research question can often begin by drawing on qualitative methodology principles and supplementing rationales as needed with principles from hermeneutic quantitative methods, theoretical sources, and/or program evaluation guidelines. Normally a student considering an in-depth clinical case study proposal is required to make a formal application in writing to the Research Coordinators ***prior to*** scheduling a thesis proposal meeting. The prospective supervisor should be consulted extensively in drafting the application to Coordinators.

Thesis Format

When completing a thesis, students will consult with their Supervisor to determine the style that their thesis should be written in, from among the two formats allowed by the APA manual: (1) a thesis written and submitted as a thesis or dissertation (traditional-style thesis); or (2) a thesis written and submitted as a manuscript for publication (manuscript-style thesis). Either format is generally acceptable; however, it is incumbent upon students to ensure that they maintain a consistent style throughout the entire document. Typically a manuscript-style thesis is most readily adopted for a quantitative empirical thesis. See the section below on *Thesis Style & Formatting Requirements* for a summary of the different requirements for these two styles.

When the type of thesis has implications for formatting requirements, conventions established by journals in the field will normally provide templates that will be adapted for thesis purposes. For instance, formatting for case studies should draw upon established publications as adapted by the student and supervisor in consultation with a Coordinator. The journal *Clinical Case Studies* list the following headings, for instance: (1) Theoretical and Research Basis for Treatment, (2) Case Introduction, (3) Presenting Complaints, (4) History, (5) Assessment, (6) Case Conceptualization (this is where the clinician's thinking and treatment selection come to the forefront), (7) Course of Treatment and Assessment of Progress, (8) Complicating Factors (including medical management), (9) Access and Barriers to Care (if any), (10) Follow-Up (how and how long), (11) Treatment Implications of the Case, and (12) Recommendations to Clinicians and Students.

Thesis Submission

1. **Electronic Thesis Deposit (ETD):** Please see graduate office guidelines for procedure and policy.
2. **Data Set and Ancillary Documentation:** A number of items must be submitted to the department for retention and storage. The details of this procedure are under development as coordination with the ETD procedures unfolds. These deposits include:
    - All original copies of participant informed consent forms (note that this does not apply to theses where passive consent or electronic consent was used instead of obtaining participants signed consent).
    - All quantitative data: in SPSS .sav file formats with complete & accurate labelling of all variables (including scale items & derived scores), accompanied by a separate document with definitions of all variables and value labels for scores within each variable. Typically two files

are required, a master file (all cases, with missing data coded) and an analysis file (excluded cases, missing data imputations included).

- All transcripts of audio- and/or video-recordings. Transcripts should be archived with identifying information removed. Pseudonyms are used, or other code identifiers. Actual tapes must be completely destroyed by students, and not submitted to the department.
- Any other qualitative data used in the thesis (e.g., drawings, sculpture, diaries) or other data protocols must also be submitted for qualitative studies.

For further details on how your thesis data is to be retained, see "Retention of Data" in the section on *Ethical & Integrity Considerations* below.

Thesis Defence Procedures

A date will be set by the Graduate Studies Co-ordinator in consultation with a Thesis Co-ordinator for the Thesis Defence meeting shortly after receiving a positive written evaluation by the External Examiner. The Examination Committee consists of the External Examiner, the Co-ordinator, the Second Reader (if applicable), the Supervisor, and Co-Supervisor (if applicable). The time allotted for the defence is to be no more than 2 hours. Thesis defences are normally open to the public. Generally, the Thesis Defence meeting consists of the following steps:

1. The Chair of the defence will briefly explain the Thesis Defence process, introduce the Student and the External Examiner to the audience, and generally guide the defence process.
2. The Student will make a 20 minute oral presentation of the thesis. The presentation should be delivered effectively without relying too heavily on notes. The Chair will ensure that students do not simply read notes.
3. Students will then answer questions from the Examination Committee and audience. Typically, there are two rounds of questioning. In each round, the sequence is: External Examiner first, then the Second Reader, and finally the Supervisor/Co-supervisor. (If the External Examiner is not present at the defence, the Chair will typically read his/her comments and questions). If time permits, the audience will then be invited to question the student. The Chair guides the proceedings a manner to support effective exploration of the student's mastery of the project. For instance, the chair should ensure that: (1) no examiner should take more than one half hour for each round; (2) that no examiner will pursue relentlessly a single line of questioning when it is clear that the candidate has a satisfactory answer.
4. At the Masters level, students are not expected to be an authority on the thesis topic so Students should feel free to admit that they do not know an answer, to ask for explanation from the questioner, or to indicate that they will follow-up and find out more about the question. In other words, the oral defence is both evaluative and educational.
5. After the Oral Examination the student and the audience will be asked to leave the room so that the Examination Committee can deliberate on the evaluation. After a decision has been made, the student will be asked to return to the room, to be informed of the Examination Committee's recommendation.

Thesis Evaluation

The Examination Committee and Chair will discuss and evaluate the Student's thesis. The role of the Chair is to facilitate the discussion. The Chair does not have a vote for either the Recommendation or the Grade, unless he or she is acting in place of a committee member.

Recommendation

The Examination Committee will discuss and evaluate all parts of the thesis (the written document, the oral presentation, and the student's response to questions), coming to a consensus decision about what recommendation to make. Recommendation categories are:

1. The thesis merits the award of the degree and is acceptable as is, or with only minor editorial revisions of the text. Any revisions must be made to the satisfaction of one member of the Examination Committee.
2. The thesis merits the award of the degree, subject to revisions of the text affecting the content of the thesis. Revisions must be made to the satisfaction of at least two members of the Examination Committee.
3. The thesis merits the award of the degree, subject to major revisions. Revisions must be made to the satisfaction of the entire Examination Committee, including the External Examiner.
4. The oral exam is failed. An additional examination is necessary before the degree may be awarded.
5. The thesis is failed in its entirety. It does not merit the award of the degree and is not of sufficient merit to warrant re-submission after further work.

For categories 1 – 3, the title page of the thesis will then be signed by all members of the Evaluation Committee. (When the External Examiner is not present, the Chair, the Co-ordinator, or the Graduate Dean will sign on his/her behalf.) The Office of Graduate Studies will hold the signed title pages until revisions have been made to the satisfaction of those Committee members designated to review the revisions. Once the revisions have been approved and final formatting has been completed, the title pages will be released to the student for binding.

For category 4, all signatures will be withheld until another Oral Examination defence takes place.

For category 5, the student will need to switch to non-thesis in order to complete their degree.

The Chair (or a designate) will submit a written report, which will include a description of the student's performance and the committee's evaluations, recommendations and evaluations.

Grade

Theses are graded on a pass/fail basis. Exceptionally high quality theses may also receive a commendation, which will take the form of a letter that will be submitted to the student's file. The following rubric will be used to determine whether the thesis receives a fail, pass or commend:

Standard for "Pass" Grade

To earn a passing grade, the thesis needs to meet the following standards:

Literature & conceptual framework: Student understands the areas of literature that are directly relevant to the thesis. This includes describing relevant existing research in the written document, with no major inaccuracies or missing areas. There needs to be clear effort to link thesis material to other areas of counselling psychology research (e.g., in discussion and/ or applications for practice sections of the written document). Organization of the review needs to be conceptually coherent and plausible in light of existing literature.

Methodology & analysis: The chosen design is appropriate to address the research questions and the student is able to understand *why* that design is an appropriate one to use. The analysis process is organized, systematic, and free from major errors. The student had demonstrated growth in understanding and in conducting research for the chosen kind of project. Conclusions are consistent with and warranted from the data set, literature, and research strategy.

Originality, contribution to the literature: The thesis demonstrates some degree of originality, going beyond simple replication of existing research, professional practice, or conceptual formulations. The thesis has identified a contribution to some area of scholarship, showing connections and potential for further development. If a hypothesis-oriented study failed to yield the anticipated findings/results (e.g., relationships were non-significant), the student needs to have demonstrated efforts to make some contribution through additional analyses, consideration of methodological contributions and/or additional exploration of literature for advancing research in the area.

Standard of writing: The thesis document is written in a coherent, cogent manner, to a standard expected of maters' level professionals. APA style (6th edition) and departmental/graduate school thesis formatting standards are required. The submitted document needs to have adequately addressed any major changes required by committee members, both from the proposal meeting and based on feedback from any previous drafts of the document.

Oral exam performance: The oral summary of thesis needs to be presented in a clear and articulate manner, with clear effort made to meet time limits. The student must be able to respond adequately to questions from the examiners, drawing on information from the thesis and from related literature.

Theses that fail to meet the criteria for a passing grade will receive a failing grade.

Standard for "Pass (with Commendation)" Grade

Commendations are reserved for those few students who have performed well above expectations in all aspects of the thesis, including (a) the process of conducting the research and investigation, (b) producing a high quality written document, and (c) performing at a high level during the oral defence.

To earn a commendation for excellent performance, the thesis needs to meet all the following standards:

Literature & conceptual framework: Student needs to demonstrate mastery of areas of literature that are directly relevant to the thesis, in both the written and oral portions of the thesis. This includes comprehensive description of relevant existing research, including successful synthesis of different studies and topics. The theoretical framework guiding the project needs to integrate the literature, methodology, and overall purpose of the project. There needs to be an awareness and understanding of other areas of counselling psychology research and how they relate to the thesis topic, in both the written document and in responses to exam questions.

Methodology & analysis: The student has presented a compelling argument for why the chosen design is appropriate to address the research questions, including consideration of alternatives. All phases of analysis are conducted in an exemplary manner, with explanation of the decisions that have been made and identification of areas growth as a research scholar. Conclusions are consistent with and warranted from the data. The student demonstrates some familiarity with the range of different methods for conducting counselling psychology research.

Originality, contribution to the literature: The thesis clearly demonstrates originality in conceptualization and execution. The student has described how the study contributes to existing knowledge and counselling practice, including a synthesis of study results and current literature that also demonstrate potential for guiding further investigation. If a hypothesis-oriented study failed to yield the anticipated findings/results (e.g., relationships were non-significant), the student needs to (a) understand how and why this pattern of results occurred, and to (b) have further a program of research through additional analyses, consideration of methodological contributions and/or additional integration of literature for advancing research and practice in the area.

Standard of writing: The thesis document is written in a coherent, cogent manner, to a standard more typical of doctoral-level rather than master's-level work. The document needs to be substantially free from errors in APA style and departmental thesis formatting requirements. The submitted document

needs to have thoroughly addressed all changes required by committee members, both from the proposal meeting and based on feedback from any previous drafts of the document.

Oral exam performance: Oral summary of thesis needs to be presented in an articulate manner that provides depth or complexity of formulation while still managing time well. The student must be able to respond confidently and accurately to questions from the examiners, demonstrating not only mastery of the thesis material, but also a good understanding of the broader literature in the field of counselling psychology.

Creative "initiative" or "independence" of work: The student should be a primary contributor to all stages of the thesis process. If the initiative and organization in the thesis were primarily those of the supervisor's, or if the student required a great deal of support (a) to conceptualize the study; (b) to conduct the data collection and analysis; or (c) to produce a high quality written document, then this criterion has not been met, *even if the final product is of high quality*. Collaboration in a thesis project does *not* disqualify a student from fulfilling this criterion since collaborative inquiry can be readily engaged in manners that are mutually or synergistically inspired.

Normally theses that are awarded a commendation are also those that receive a category 1 recommendation, although some category 2 theses may be worthy of commendation, if the changes to the substance of the written document are minor, and the student has otherwise performed in an outstanding way. Conversely, it is possible to receive a category 1 pass without receiving a commendation (e.g., written document is exemplary, but the oral defence was merely typical, or if the thesis does not meet the independence of work criterion).

The final grade should reflect the consensus opinion of the Examination Committee. If the committee is unable to reach a consensus, the following alternative criteria may be used: (1) the grade that reflects the opinion of a clear majority of the Examination Committee; or (2) the average of all the Examination Committee's opinions. Normally, the thesis co-ordinator will debrief and consult with the other CPSY thesis co-ordinator (or her/his designate) regarding all committee decisions (a) for pass with commendation, (b) for fail, or (c) for decision without consensus.

At the end of the thesis defence meeting, the Chair will report the decision made by the Examination Committee to the Graduate Dean/Office of Graduate Studies.

Thesis-Related Expenses

A thesis subsidy totalling a maximum of $350 for direct costs related to carrying out thesis research is available to each student. Direct costs includes inter-library loans, fees for psychological testing materials, fees for transcription, printing of surveys and letters to subjects, blank video and audio tapes to record interviews, monetary incentive for recruiting subjects, and other direct costs, as defined by current federal guidelines. A link is provided below from national funding agencies to illustrate guidelines for eligible expenses. Direct costs do *not* include duplicating and binding of the thesis, costs for shipping theses or thesis materials to the department, travel to campus for thesis supervision meetings or thesis defence, and conference registration fees or travel expenses. The final decision of what does and does not qualify for subsidy is made by the program committee, not the student.

This subsidy will normally be paid when the bound thesis is submitted to the department. All claims must be approved by the program committee or their designate. See *"Reimbursement for Thesis Related Expenses Form."* Any non-disposable equipment or material that is purchased with this subsidy (e.g., test manuals, recording equipment) must be returned to the department before the subsidy requests will be processed. It may be of interest to consult parallel principles as they unfold in the wider research community.

Tuition Fees and Thesis Completion

All students must pay fees for every semester until the bound thesis & thesis documentation is turned in, and all other program requirements are complete (internship documentation, CPCE exam, etc.). As stated in the academic calendar, students who complete their last requirements during an academic term can apply to the University for a partial refund of tuition fees for that term. Note that this is a university-wide policy and applies to any tuition fees, not just Program Continuation fees.

Additionally, sometimes a situation arises when a person's completion of degree requirements are delayed through unusual circumstances beyond their control (e.g., car accidents, health crises, illness of an external examiner). In these situations, delays are evaluated on a case-by-case basis, through a two-step process. First, the graduate applies to the CPSY program in a letter or e-mail that identifies the extenuating circumstances, the delays caused by those circumstances, and requests a reimbursement of continuation fees associated with the extra delay. The CPSY program faculty review the request, responds to the graduate, and, when appropriate, the program director forwards the graduate's request for reimbursement to the appropriate university office.

Ethics & Integrity Considerations

For more detailed coverage of formal documentation, please refer to the TWU Research Ethics pages maintained by the Office of Research. Major references include the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (2nd edition, 2010, is the current version) and *Trinity Western University Research Ethics Board Policy and Procedures—Ethics of Human Studies* (2012), available online at the TWU Research Ethics pages. Other policies and references for research ethics and integrity of scholarship are listed on university and course webpages and in selected references at the end of this document. Some ethical principles are generally applicable while others are directly associated with specific features of research design, topic, research partners, or local circumstances.

General Standards & Principles

All research in psychology, counselling and education should be conducted with high regard for research participants and the broader community. Furthermore, it is essential that thesis students maintain full

integrity of data gathering, recording, and reporting. For university policies on research integrity and related principles, please consult the Office of Research pages and documents. Research requires collaboration between investigators, research participants, and the broader community in shared efforts to benefit our lives. Formal principles and standards are embedded within worldviews promoting human well-being and apply to all levels of research processes. Additional considerations arise when working with "vulnerable" participant groups (e.g., children) or with participants or communities who have had troubled histories with research (e.g., aboriginal communities, other groups who have been marginalized). Similarly, advocacy approaches often enhance research practice, including engagement with power dimensions of social class, universities, and relationships between students and faculty.

All human research requires informed consent by participants and/or guardians. Guidelines for how to construct an adequate consent form are available on the Research Ethics page. Please note that an unsigned consent form and a copy of the REB certificate are included in the appendixes to the final thesis document as a requirement.

Benefits of Research & Research Design

Controversies arising from abusive research practices and from academic politics have made it inappropriate for researchers to "take for granted" the social value of all research. Researchers are accountable to the broader community to carefully consider the contributions made by research participants to the advancement of our understanding and to minimize the costs arising from their contributions to research projects. Therefore, ethical practice requires review of potential "harms and benefits" for research participants (see *Tri-Council Code*, 2010). Personal benefits to research participants can include an opportunity for self-reflection on matters of interest and import. In qualitative investigations, in particular, participants often have an opportunity to tell their story in a supportive atmosphere, a process that is frequently experienced as beneficial. When the topics being discussed are sensitive or potentially distressing, research participants often hope that others can learn from their experience or are simply thankful a chance to share their experience with someone who wants to understand their point of view. The overall pattern of harms and benefits is typically distinctive for each project, so spelling out that pattern helps research teams to figure out specific strategies to implement in their project. Research designs shape a profile of harms and benefits because procedures are selected to provide and overall best approach to the research questions being investigated, where "best" includes the promotion of well-being of all project participants and can ideally enhance interests of other stakeholders as well. This process of shaping is one important reason that researcher often seek consultation with stakeholders as key informants during the design process.

Research Ethics Board Review

Students must submit a "Request for Ethical Review" to the Research Ethics Board after the thesis proposal has been accepted and prior to beginning any study that involves data collection. When the thesis is completed, a Final Project Report must also be submitted. Current policies and forms are available on the university website.

Retention and Management of Data

1. Archives of research data are normally to be kept (in anonymous form) by the MA program office. Data sets are also typically retained by students as "principal investigators" and supervisors as part of their research program. Generally, anonymized data sets need to be maintained for at least five years after publication of research. Depositing data sets into public access archives is also encouraged (see item 'f' below). Given the potential social value of systematically gathered information, the specific social value if participants are members of groups that are difficult to access, and the responsibility to honour the contributions of research participants, it is usually preferable to retain data sets indefinitely.

(a) Quantitative data sets, including biological measures, items from scales, etc.: responses are kept in SPSS files with participants identified only by an anonymous code number. The code must also be kept on the signed Informed Consent forms, which are stored separately. At least two copies of the data set are to be retained: a complete raw data set including all data from all participants, and an analysis data set that includes missing data replacements (if applicable), deleted cases (if applicable), all derived scores, and so on. Both SPSS data sets are to be clearly and completely labelled, including variable labels, value labels (except for scale items), and missing data codes (as appropriate). Labels in the SPSS files must correspond directly and clearly to coding information (see 'd' below).

(b) Interview data: for transcribed interviews, the original recordings are typically destroyed after successful defence of the thesis. Transcripts are generally archived with identifying information replaced by pseudonyms or code identifiers. Research participants (or their guardians) may request copies of transcripts of their own interviews as long as identifying information is on file. Photo ID or notarized written permission is required for participants to request a copy of a transcript.

(c) Other data forms (drawings, photographs, video recordings of non-verbal performances, etc.): typically, the data is digitized, identified with a participant & study ID code, and stored electronically.

(d) Qualitative analysis documentation: regardless of the data type or analytical strategy used, coding information is to be kept in an MS Word document. This can include variable specifications and value lists for quantitative data, including measurement instrumentation, settings, and protocols not included in the thesis document. For qualitative data, examples of requirements include coding schemes, full lists of themes descriptions at selected stages of analysis, transcripts with identified meaning units or critical incidents, audit reports, "I" poems, or a sequence of versions of narrative transformations. Generally, retention of full process documentation for an analysis is retained in sufficient completeness to conduct a full audit of the analysis reported in the thesis. The documentation for the analysis process is retained for at least five years after publication. Any material that is not included in the thesis document must be submitted as a separate set of electronic documents.

(e) Informed consent forms: The file is retained by the student until after the oral defence and by the department for at least five years after the submission of the thesis, or five years final publication if the study is published. Graduates may maintain a copy of the identifying information for the five year period as well, with full responsibility assumed for maintaining confidentiality of the information.

(f) Archival deposits of data sets: Normally submission of data to public archives will be a consensus decision by the student and the supervisor. Depositing of data sets must be compliant with all relevant ethical codes and informed consent procedures applying to the specific project and to the public archive. As noted above, indefinite archiving of data sets by principal investigators and supervisors / co-supervisors is encouraged to support programs of research, future training opportunities, and community-based advocacy.

2. Maintaining confidential research information: The primary investigator (student for a thesis, faculty member for other research projects) maintains all data during the conduct of the study in locked filing cabinet or an equivalent ("double lock" access is the principle of minimum security level, including an office door). The "double lock" principle also applies to electronic storage of data and confidential information, including email exchanges among members of the research team

of data or transcripts and transporting of data on electronic media such as "memory sticks." For example, emailing attachments containing research data normally requires encryption or equivalent protection in transit to establish a second level of protection. The "research team" for theses includes: the student as principle investigator, the supervisor and co-supervisor (if any), research coordinators and program director *ex-officio*, and appropriate community members or agency personnel when the data is gathered in collaboration with community partners. The research team has in principle access to the identifying information to aid in supervision & accountability. In qualitative studies of a sensitive nature, access to identifying information may be restricted further by the thesis committee to an "as needed" basis. Respect and integrity guidelines are central in these cases.

3. Retaining data for supplementary purposes: When raw data (e.g., audio- or video-recordings, photographs) are to be used for purposes other than data analysis, additional consent must be obtained from participants to use and retain the data for that specific purpose. Typically, this situation occurs when researchers want to use recordings for the purposes of training, research dissemination (e.g., to facilitate presentations at conferences), or community advocacy (e.g., contributing to online support groups).

Intellectual Property

Intellectual property in thesis work and research projects refers to "ownership" of a well-developed research question, model, protocol, or methodology (for instance), but not to unformulated interests or general ideas. Collaborative research projects frequently involve shared "ownership" of the work. In MA thesis research, key research ideas, protocols, data sets, and/or methodology typically involve substantial contributions from a Supervisor and possibly another committee member or community partner. Collaboration normally yields several implications for intellectual property. For instance, if a student decides to switch Supervisors, s/he cannot carry a partially developed project to the new Supervisor without the original Supervisor's explicit permission. (Nonetheless it is possible to start a new project with a new supervisor). Partnerships with aboriginal communities are subject to principles of respect for traditional form of knowledge, and typically involve patterns of accountability the both precede specific projects and remain in place after completion of studies. The intellectual property rights to a completed thesis are normally shared by both the student and the Supervisor, which has implications for accountability and integrity, copyright, data set responsibilities, publication and authorship. Shared intellectual properties with other stakeholders often have parallel implications. Although research participants do not typically retain intellectual property interests in their responses for a specific research project, perennial duties often accrue to research in the areas of research dissemination, community advocacy, and opportunities for withdrawal of consent for supplementary uses of data.

Publication & Authorship

Please note that "publication" refers not only to journal articles or book chapters, but to any venue where thesis material is presented, including conference posters, community presentations, media summaries, and any other means by which research results are disseminated.

For publications arising from the thesis, one important principle is that authorship should reflect the relative scholarly contribution of the research team (with intellectual content being a higher priority than time involved or other resources employed in pursuing a project). All substantial intellectual contributors to a thesis must be acknowledged as authors in publications and presentations arising from a thesis (typically, Student and Supervisor/Co-supervisor). The usual authorship sequence is for the student to be the first author and for the Supervisor to be the second author. This sequence may change depending on the relative contribution of each person. Also, if thesis material is integrated with other material (e.g., as part of the Supervisor's larger research program or in collaboration with partners beyond the thesis committee), then the authorship will be determined by the contribution of each party to the publication or combined project.

Authorship is normally discussed initially at the proposal stage and confirmed or clarified when the decision is made to publish thesis material. Each author's role and contribution and order of authorship should be finalized before completion of a first manuscript. All authors need to be a part of the decision to publish a thesis, and to review and approve of a manuscript, poster, or other dissemination format before the material is submitted or presented. Authors are normally jointly responsible for acknowledgements to collaborators and all integrity and accountability procedures.

Thesis Style & Formatting Requirements

General Specifications & Principles

In general, the thesis specifications should conform to the guidelines of the *Publication Manual of the American Psychological Association* (6th ed.) as adapted for final document, unless otherwise stated. It is highly recommended that these specifications be used in ***all*** *drafts* of the thesis, to reduce the work and time required during the later phases of the project to meet specifications.

1. *Typing/Printouts*: A laser quality printout is normally required. Inferior-quality printouts or electronic formats are not acceptable. The font type should remain consistent throughout the thesis, with Times New Roman recommended. Font sizes for the body of the text should be 12 point. The major consideration for the typestyle is readability: it must be dark and clear.

2. *Margins*: The left side of the page requires a 38mm (1 1/2 inch) margin with 26 mm (1 inch) on the remaining sides. *Note:* This requirement reflects the space needed for binding, so it may be adjusted once the details of Electronic Thesis Deposit are finalized and disseminated.

3. *Pagination*: The Preliminary Pages are to be numbered with small Roman numerals; all pages of the text are to be numbered in Arabic numerals. The Title Page is not numbered, but it is included in the count. Thus the first number will be "ii" on the Abstract page.

4. *Canadian Spelling*: Canadian spelling is required. Make sure that you switch the "language" of your word-processor from English (U.S.) to English (Canada). Otherwise spell-check functions will be working against you, perhaps enough to delay your editing and completion timeline. Recent editions (post-2000) of *Canadian Oxford English Dictionary*, the *Canadian Gage English Dictionary*, or the *ITP Nelson Canadian Dictionary* can provide some guidance on Canadian spelling. Several online resources are also available, including Dave VE7CNV's Truly Canadian Dictionary of Canadian Spelling, *http://www.luther.ca/~dave7cnv/cdnspelling/cdnspelling.html*

5. *Respectful Language*: The APA principles require all manuscripts be written in respectful, inclusive language. APA guidelines (the sections on *Reducing Bias in Language*) provide some help in fostering language the respects diversity. This is a dynamic area of development, both in academic discourse and in the larger society. If a student wants to opt for an alternative, less widely employed option as a means of fostering respect for diversity, it is necessary to consult with committee members and to add a footnote, endnote or paragraph in the text that (a) explicitly states the author's divergence from conventional APA practice, and (b) provides a rationale for doing so, while also affirming the principles of respect for diversity in language use. To illustrate, "Feminine pronouns will be used in this thesis when referring to people experiencing eating disorders because the proportion of males is relatively small and because all participants in this study were female. It is important to recognize, however, that male youth and adults also experience eating disorders."

6. *First vs. Third Person*: Referring to the author of a thesis in the third person is often considered a "default" option for many research paradigms. Note however that use of the first person is acceptable and preferred in some forms of research. Consultation with your supervisor is important to determine whether first or third person is more appropriate for a particular project. Singular ("I") rather than plural ("we") should normally be used, except when activities were carried out by multiple members

of a research team. This usage is typically taken to reflect the student's central role as "primary investigator" (PI) in the project, and thus is not taken as neglect of contributions by other members of a research team.

Occasionally, variation from these requirements may be appropriate (due to choice of paradigm or research topic; cf. #5 or #6 above). In these situations, it is necessary for the student and supervisor to discuss and agree to potential deviations from typical style prior to submitting the thesis document to a Second Reader, APA style reviewer, or the External Examiner. These alternatives should normally be described in a brief endnote or footnote to the text. Any adaptations must be fit with these Guidelines, be approved by the supervisory committee in consultation with Research Coordinators. (All style adaptations must be spelled out in a cover letter and included with the thesis draft for submission to both APA-style reviews.)

Additionally, theses may be formatted in either "traditional style" or "manuscript style," as negotiated between student and thesis supervisor. The required sections differ according to the style that is used (see below for further descriptions). A thesis must be written completely in one style or the other. It is not acceptable to take some elements from one style, and some elements from the other style. Manuscript style theses will normally be geared to requirements of journal selected as a tentative publication venue for the study and will include extra appendices that incorporate the extended literature review, extended data analyses, and other elements of a full report that are often omitted from journal articles with severe page limits. Manuscript style theses are generally only suitable for quantitative theses: the strict page limits required for most manuscript-style thesis can make it unsuitable or excessively demanding for use with qualitative, mixed-method, or theoretical theses.

Required Sections (Traditional-style Thesis)

A. Preliminary Pages should include the following elements, in the following order, with a new page for each new section:

1. *Title Page*: Use the program-specified format for thesis title page, not an APA manuscript title page. Note that the final version with supervisory committee signatures will be provided by the School of Graduate Studies. See Appendix D below for an example.

2. *Abstract*: It must include the title "ABSTRACT", the title of the thesis, the author's name, and a summary not exceeding **350** words. The longer abstract is used when recruiting external examiners.

3. *Table of Contents*: Provides a list of every section and subsection in the thesis, including appendices (see the appendices to these Guidelines for an example that illustrates formatting).

4. *List of Tables*: Provides a list of table numbers, full title, and page numbers in the order they appear.

5. *List of Figures*: Provides a list of figure numbers, a short caption, and page numbers in the order they appear. Material counting as a figure includes graphs, photographs, and other illustrative materials.

6. *Acknowledgements*: This page is normally optional, but is limited to a maximum of one page. Some forms of collaborative projects may require explicit acknowledgements in the text theses and publications, but alternatives to an acknowledgement page may fulfill such responsibilities.

B. The Main Text: A traditional-style thesis will normally contain the following sections. Each section should be treated as a separate chapter, and should start on a new page.

1. *Introduction*
2. *Literature Review*
3. *Methods*
4. *Results* (in some qualitative theses, this may be combined with the discussion)
5. *Discussion*
6. *References*

Students completing a theoretical/conceptual thesis (i.e., one that does not involve data analysis) should consult their supervisor about what text sections are appropriate.

Document length: Traditional theses may be of various lengths: there is no generic requirement for a minimum or maximum number of pages. They typically range from 50 to 150 pages in length, not counting appendices. Normally, length expectations are associated with paradigm priorities and scholarly requirements. Projects requiring more than 200 pages to report will normally require application to Research Coordinators for approval.

Tables and Figures: should be included in the *body of the text*, not at the end. Each table or figure is inserted on the page immediately following the first mention that is made to that table or figure in the text, using the following sequence: (a) The text continues to the bottom of the page when a table is referenced; (b) then the table or figure is presented, using as many pages as necessary; (c) finally, the text will resume at the top of the next page. If the table or figure is less than 2/3 of the page in size (or the final page that it is on, for tables that span multiple pages), the text may resume on the same page as the table or figure. Otherwise, the text must resume at the top of the next page. Also note that figure captions are to be placed on the same page as the figure itself.

C. Appendices should include any consent forms, protocols, surveys, copies of questionnaires with scoring keys, guiding questions for interviews, and coding schemes that were used. Permission must be obtained from the copyright holder (usually a test publisher) to include any copyrighted material in the thesis. Copyrights must be explicitly acknowledged in appendix material. If permission is denied, those items (usually published tests) must be removed from the final version.

Required Sections (Manuscript Style, presumably for Quantitative theses):

A. Preliminary Pages should include the following elements, in the following order, with a new page for each new section:

1. *Title Page.* Use the program-specified format for thesis title page, not an APA manuscript title page. Note that the final version with supervisory committee signatures will be provided by the School of Graduate Studies. See Appendix D below for an example.

2. *Abstract*: It must include the title "ABSTRACT", the thesis title, the author's name, and a summary not exceeding **150** words. (Note: a longer 350 word abstract will also be used when recruiting an External Examiner.)

3. *Table of Contents*: Provides a list of every section in the thesis, including appendices (see the appendices to these Guidelines for an example that illustrates formatting).

4. *List of Tables*: Provides a list of table numbers, full title, and page numbers in the order they appear on a separate page.

5. *List of Figures*: Includes graphs, photographs, and other illustrative materials including page numbers in the order they appear on a separate page.

6. *Acknowledgements*: This page is normally optional, but is limited to a maximum of one page. Some forms of collaborative projects may require explicit acknowledgements in the text theses and publications, but alternatives to an acknowledgement page may fulfill such responsibilities.

B. The Main Text: A manuscript-style thesis will normally contain the following sections. The sections should be continuous, with only the reference section starting on a new page.

1. *Introduction* (including a manuscript-length review of the literature)
2. *Methods*

3. *Results*
4. *Discussion*
5. *References*
6. *Tables & Figures*

Document length: All sections of the *Main Text*, from the Introduction to the Tables and Figures, must not exceed **40** pages. Note that the preliminary (roman-numeral) pages do not count against the 40 page limit. Additional material is included in appendices, but the manuscript must be "stand-alone" (i.e., any material in the appendices should be considered supplemental - it must be possible to understand the entire study from reading the main (40 page) section on its own.

Tables and Figures: are submitted on separate pages after the reference section (i.e., they are not in the text body) but before the appendices. Table notes and figure legends and captions are double-spaced, as per APA style requirements.

C. Appendices

1. A full review of the literature must be attached to the thesis document as an appendix. This appendix is equivalent in style and scope to the literature review chapter of a traditional-style thesis. It must incorporate any revisions required from the thesis proposal meeting, supervisory committee meetings, and oral defence.

2. There should also be separate, additional appendices for consent forms, REB certificates, protocols, surveys, copies of questionnaires with scoring keys, guiding questions for interviews, and coding schemes that were used. Permission must be obtained from the copyright holder (e.g., a test author or publisher) to include any copyrighted material in the thesis. Copyrights must be explicitly acknowledged in appendix material. If permission to include copyright material in the thesis is denied, the relevant material must be removed from the final version with appropriate acknowledgements and contact information provided in lieu of test items (for instance).

Final Preparation

1. *Electronic Thesis Deposit*: See information from the graduate studies office disseminated in the summer of 2013, beginning in May. MA program requirements will be updated to conform to the ETD procedures. Deposit of data sets, informed consent forms, and other archival information will likely be made through the program office.

2. *Associated Forms*: Complete and submit all the required forms, as spelled out in the updated ETD procedures distributed through the Office of Graduate Studies and associated adjustments from the MA program. [Amendments to these lists and associated procedures may be made from time to time by the Office of Graduate Studies or the MA program faculty.]

   - The "*Application to Graduate*" (or "*Verification of Completion*" if post-grad), and submit to the Coordinator for the School of Graduate Studies.
   - After discussing ethics issues that occurred during the thesis with your supervisor, complete the "*REB Final Project Report Form*" and submit to the Research Ethics Board Coordinator (currently Sue Funk, whose office is in Upper Stanley Nelson Centre).
   - The "*Thesis Student Reimbursement Form*," along with associated receipts, should be submitted to the program office.

Copyright

1. The universal copyright notice "©" must appear on the Title Page as indicated in the example in the appendix. The copyright is typically held by the student. For any presentations or publications arising

from the thesis project, the Supervisor is normally included as second author. (See the intellectual property section above).

2. The National Library of Canada has contracted ProQuest for ETD systems. Normally, all theses and dissertations are required to be accessible to the public. The appropriate form of permissions for nonexclusive distribution is under ongoing review at many levels, with efforts being made to support responsibilities for appropriate distribution while maintaining principles of intellectual property. Each scholar is responsible to be informed as these systems continue to develop.

3. Copyright material written by persons other than the thesis author may violate the law of copyright. Students must request *written* permission of the copyright holder(s) if the extent of copying appears to be more than the allowable "fair dealing" expressed in the Canadian *Copyright Act*, Section 17. Copyrighted material remaining within "fair dealing" must also be explicitly acknowledged, especially in appendix material. Documented copyright permissions must be submitted with the completed thesis document *before* a thesis deposit can be accepted.

Important APA Formatting Tips and Issues [double-checking for 6th edition is needed here]

Students sometimes overlook the APA style requirements. Then these requirements are noticed at the "APA review" stages of approving the thesis, possibly resulting in delays in completing the thesis and/or expenses resulted from extra editorial help. The following are some useful reminders.

1. **Use two blank spaces between sentences**. (This is a change for the 6th ed of APA style.)

2. **Maintain consistency with your heading levels**. This consistency is easier to maintain in 6th edition, but still requires careful attention.

3. **Use abbreviations properly**. Common abbreviation errors include et al. (often misspelled et. al), e.g. (often misspelled as eg.), and p. or pp. (often used without the period), but there are many other conventions in the APA manual that must be followed.

4. **Use the correct font and format throughout the thesis**. Italicize all statistical symbols in Latin letters (e.g., *p*, *F*) but not Greek letters (e.g., α). Use all straight quotes " " or all curly/smart quotes "". Use the same serif font, like Times New Roman, in a 12-point format throughout the thesis, including tables, figures, and appendices (when possible).

5. **Use the correct referencing format**. Be aware the referencing format varies according to the type of reference (e.g., journal articles, book chapters, conference presentations, electronic documents), and the number of authors (it changes if there are many authors or institutional authors). A common error is to a single reference format for all types of references, rather than changing the formatting style depending on the document in question. A full list of reference formats can be found in of the APA manual. Also remember that references need to be double spaced, with hanging indentation; that is, every line except for the first should be indented. This should be accomplished by adjusting the "indentation" or "paragraph" options in your word-processing program, NOT by inserting spaces and tabs.

6. **Use the correct punctuation**. Things to attend to include using a single space between ellipsis points (e.g., words . . . more words) and remembering to include the final period when ending a sentence with an ellipsis (e.g., sentence goes here. . . .). Use either two dashes (--), or an em dash (–) to indicate a sudden interruption in the continuity of a sentence. Place the period at the end of a quote block before the citation.

7. **Use the correct format when reporting statistics and numbers**. Things to remember include appropriate use of Greek versus italicized Latin letters in symbols (e.g., R^2; Φ^2); spaces in mathematical copy (correct: $a + b = -2$; incorrect: $a+b =-2$), degrees of freedom in *t*-tests, *F*-statistics, and so on: e.g., $F(1, 233) = \ldots$.

8. **Format lists properly**. Lists within a single paragraph are formatted using (a), (b), (c), etc., whereas separate paragraphs are listed using 1., 2., and 3. (sometimes used with hanging indentation).

9. **Cite sources properly in the text**. Use the word *and* in multiple-author citations in running text [e.g., "Domene and Arim (2005) claimed that . . ."], but use an ampersand (&) in parentheses, tables, reference lists, etc. [e.g., "APA formatting is tedious (Domene & Arim, 2005)."].

10. **Tables and Figures**: Tables should be used for presenting new material, not repeating what is in the text. Vertical lines must not be used in any tables. Numbers should be aligned according to the decimal point (in your word-processing program, use "tabs" and change their alignment to "decimal"). Table titles are presented above the table, while figure legends and captions are presented below the figure. It is strongly recommended that you use the table checklist and the figure checklist in the APA manual when creating your tables and figures.

11. **Spelling:** Use Canadian rather than American spelling (e.g., behaviour, counselling, defence).

Additional Suggestions

1. **A GOOD FIRST STEP**: Begin with an outline of your whole thesis, and then write each section as you are ready and able. You need not always start at the beginning. In fact, many people leave the title and abstract until the end.

2. **TENSE**: Past tense is used except in sections that refer to current factors, such as "Limitations to the Study".

3. **SENTENCE STRUCTURE**: Declarative, brief to moderate in length. Keep it simple.

4. **STATEMENT OF HYPOTHESES**: In experimental research, state in null form. If you have directional expectations, state exactly what you clearly expect to find in undertaking the study. Use separate hypotheses for each relationship/difference that you are testing- don't combine them into a single hypothesis.

5. **ABSTRACT**: It should grab the reader's attention and answer "What, Why, How?" etc. and clearly express the results and conclusions.

6. **REPETITION**: Try not to repeat words and phrases multiple times within a single paragraph. Watch for the overuse of any word, phrase or expression.

7. **WATCH OUT FOR WORDS OFTEN CONFUSED**: Effect vs. Affect; Theses vs. Thesis; their vs. there; etc.

Selected References

The course syllabus for CPSY 518 includes references for several specific topics. We invite program students and alumni to help prioritize an annotated list of broad resources for this guide. There is also a methodology webpage under development for MA thesis students. The following references are offered simply to illustrate some resources that emphasize broad perspectives, practical issues and/or background policy for Canada.

Cone, J. D., & Foster, S. L. (2006). *Dissertations and theses from start to finish: Psychology and related fields* (2nd ed.). Washington, DC: American Psychological Association. BF76.5 .C645 2006 [logistics & similar topics, & an earlier edition is in the library as well]

Leong, F. T. L., & Austin, J. T. (Eds.). (2006). *The psychology research handbook: A guide for graduate students and research assistants* (2nd ed.). Thousand Oaks, CA: Sage. [available as an ebook and as a paper book on reserve in the TWU library, MCDO 518 B11; several special topics are addressed in a brief introductory fashion, including ch. 5 on Program Evaluation]

Canadian Tri-Council Policy Statement: Integrity in Research and Scholarship http://www.nserc-crsng.gc.ca/NSERC-CRSNG/policies-politiques/tpsintegrity-picintegritie_eng.asp

Review of NSERC's and SSHRC's Policy Framework for Research Integrity (2008). http://www.nserc-crsng.gc.ca/NSERC-CRSNG/Governance-Gouvernance/ReviewPolicyFramework-ExamenCadreReference_eng.asp

Responsible Conduct of Research (2011). http://www.nserc-crsng.gc.ca/NSERC-CRSNG/Governance-Gouvernance/rcr-crr_eng.asp

Council of Canadian Academies (2010). *Honesty, Accountability and Trust: Fostering Research Integrity in Canada*. Retrieved from*:* http://www.scienceadvice.ca/uploads/eng/assessments%20and%20publications%20and%20news%20releases/research%20integrity/ri_report.pdf

Appendices

Framework for Comparing Purposes, Strategies, Strengths, and Limits of Different Thesis Approaches

Models or Paradigms (*focus*)	*Core Criterion for Research Programs*	*Strategies for Formulation (& quality criteria)*	*Strengths*	*Limits*
Critical Realist foci (empirical regularities)	Cumulation *(clarity & range of regularities)*	Meta-analysis *(explicitness of procedures & definitions)*	Clear Syntheses (& breadth); Regularities made visible	Dangers of reifying categories, excluding groups
Critical Theories (values & power & institutions)	Reveal power & interests *(creation of 'openings')*	Intersectional & standpoint comparisons *(reflexive, justice)*	Focuses & clarifies tacit positions, & opens negotiations	Dangers of reifying structures &/or polarizing positions
Interpretive Approaches (meaning patterns)	Shows situated meanings & key level(s) for formulation	Structures, theme & voice variations; *(narrative coherence)*	Focuses & clarifies significance & relational integrity	Dangers of reifying traditions or communities
Program Evaluation & Action Research (helping)	Incremental usefulness for specified settings	Ecological criteria *(specificity & 'thickness')*	Building empowering relationships in local focus	Dangers of reifying local settings &/or polarizing stakeholders
Project-specific inquiry models (conceptual focus is to be stated)	Spell out literature & frame & contexts for <u>this</u> project	State strategy & *criteria* for <u>this</u> project	Flexibility = better fit of inquiry to focal contexts, needs	Resource challenges, danger of isolation

Note: These "models" or kinds of approaches are NOT exhaustive, NOR mutually exclusive, NOR rigidly bounded, NOR uniform within each kind. A dynamic, flexible scheme like the one described in this table is best used to do things like (a) facilitating and focusing conceptual accountability, (b) guiding discriminations between complementarity & incommensurability, and/or (c) enhancing co-ordination or collaboration, while (d) promoting diversity in method. For instance, project-specific models can be helpful when honouring traditional knowledge projects and partners.

Sample Checklists for Statistical Assumptions

Statistical procedures make certain assumptions about the nature of the data in your data set. If one or more of these assumptions are violated, the validity of the test results may be negatively affected. Therefore, you need to check for violations of assumptions before using a test, and may need to take steps to remediate any problems that arise (e.g., transform your data, combine or eliminate variables, choose a different procedure). See your CPSY 501 notes, texts, and references in the CPSY 518 syllabus for further details. Note that these checklists are to be applied after the process of checking for missing data, outliers, and sufficient sample size have been completed. These checklists are neither exhaustive nor sufficient in scope for preparing data sets for analyses. They are offered here to support each investigator's processes of exploring, clarifying, and cleaning the data for meaningful statistical analysis. Systematic use of graphical exploration tools and primers for your specific analytic strategy will also be helpful as you learn and implement effective analytic approaches.

1) OLS/Linear Multiple Regression

- ☐ **Continuous outcome ("dependent") variable**: examine how the variable was measured and coded.
- ☐ **Unbounded / unconstrained range of scores in outcome variable**: compare the observed min/max against the possible range of outcome scores (*descriptive statistics > descriptives*)
- ☐ **Independence of scores on outcome variable**: scores on the outcome variable from each case should not be derived solely from scores from other cases
- ☐ **Continuous or categorical predictor ("independent") variables**: examine how the variable was measured and coded
- ☐ **Variability in predictor variables**: examine scores on each predictor to ensure there is some variation between cases (*descriptive statistics > descriptives*)
- ☐ **Predictors should not be too closely related to each other (multicollinearity)**: examine bivariate correlation matrices *(analyze > correlate > bivariate*), variance inflation factors and tolerance scores (*analyze > regression > linear > statistics > collinearity diagnostics*)
- ☐ **Linearity of relationship between outcome variable and combined predictors**: perform curve estimation analysis to see whether a straight line is the best fit for the data (*analyse > regression > curve estimation*) OR scatterplot the residuals (see below); curved shape indicates non-linear relationship
- ☐ **Homoscedasticity of residuals/error**: Visually examine scatterplots of residuals- should be rectangularly distributed, with a concentration of scores along the centre. Fan shapes indicate a violation (*analyse > regression > linear > plots > Y: "ZResid" X: "Zpred*)
- ☐ **Normally distributed residuals/errors**: on the residual scatterplot (see above) scores are weighted to one side of the centre line OR examine the normal probability plot to look for deviations from the diagonal line (*analyse > regression > linear > plots > normal probability plot*)
- ☐ **Independence of residuals/error**: Durbin-Watson test to examine whether there is any autocorrelation (*analyze > regression > linear > statistics > Durbin-Watson*)

Note that the checklists are to be applied after the process of addressing missing data, outliers, and sufficient sample size have been completed.

2) One-way / Factorial ANOVA

- ☐ **Normally distributed outcome ("dependent") variable**: the Kolmogorov-Smirnov test may be useful (*Analyze > Descriptive Statistics > Explore > plots "normality plots with tests")*, & confidence intervals on skewness and kurtosis may be helpful. Consider test sensitivity!

- ☐ **Homogeneity/equality of variance among comparison groups**: significant results on the Levene's test indicates a violation of this assumption (*Analyse > general linear model > univariate > options "homogeneity tests*").

- ☐ **Interval level outcome variable**: look at how the outcome variable was measured to ensure that it is at the interval level.

- ☐ **Independence of scores on outcome variable**: examine the research design to ensure that scores from each person is not related to scores from other people in the sample

Be aware that tests in the ANOVA family are relatively robust to some violations of these assumptions, but not to other violations (see CPSY 501 notes and text for details for how to proceed if one or more of these assumptions are violated). Additional resources may be helpful.

3) ANCOVA

- ☐ **All the assumptions of regular ANOVA**: see ANOVA section.

- ☐ **Homogeneity of regression slopes**: run an ANOVA with the interaction term(s) between your covariate(s) and your IV(s) in your model. If the interaction block is significant, the assumption is violated (e.g., *analyse > general linear model > univariate > specify model= "custom," build term = "interaction," model = "IV * Outcome"*). The same test can be readily conducted using regression methods for fixed effects GLM.

4) Repeated Measures ANOVA

- ☐ **Normally distributed outcome ("dependent") variable**: significant results on the Kolmogorov-Smirnov test indicate a sig. deviation from normality (*Analyze > Descriptive Statistics > Explore > plots "normality plots with tests").*

- ☐ **Homogeneity/equality of variance among comparison groups**: significant results on the Levene's test indicates a violation of this assumption (*Analyse > general linear model > univariate > options "homogeneity tests*").

- ☐ **Interval level outcome variable**: look at how the outcome variable was measured to ensure that it is at the interval level.

- ☐ **Sphericity**: Find the Mauchly W score on the R-M ANOVA output. If it is substantially higher or lower than 1, the data are not spherical, so this assumption is violated.

Reminder: checklists are to be applied after the process of checking for missing data, outliers, and sufficient sample size have been completed.

5) MANOVA

- ☐ **Case to DV ratio**: examine data set to ensure that there are more cases (participants) than outcome variables *in every cell* of your design. If there are 30 or more participants per cell, then the procedure will be robust to violations of normality / equality of variance.

- ☐ **Multivariate normality**: If there are at least 20 participants in each cell of the analysis, and the *n* for each cell are approximately equal, central limit theorem suggests that multivariate normality will be preserved. If you have a smaller sample, then assess the normality of every individual outcome variable (see ANOVA for details).

- ☐ **Homogeneity of Variance-Covariance matrix**: Examine the Box's *M* test results in the MANOVA output. If $p < .001$, the matrix may not be homogenous, and the Wilk's lambda criterion scores may be inaccurate. Select a more appropriate criterion instead (e.g., Pillai's; Hostelling's)

- ☐ **Linearity of each pair of DVs**: Visually examine scatterplots of scores for each pair of DVs, to assess for linearity. *Graphs > scatter > define – "simple" > X Axis: 1st DV, Y Axis:2nd DV; repeat for every possible combination of your DVs*

- ☐ **Absence of multicollinearity and singularity**: Although SPSS will normally abort the analysis if this assumption is violated, you may also want to examine the bivariate correlations between each the DVs. Any $r > .8$ indicates possible multicollinearity. *Analyze > correlate > bivariate*

Sample TABLE OF CONTENTS [illustrated elements & guidelines]

Guidelines for default table of contents (ToC) requirements: all preliminary pages & appendices are listed in the ToC; all Headings are included in the ToC for every chapter, including *subheadings for each chapter; CAPITALS are used for chapter headings (≠ APA heading format); double-spacing is used for the entire ToC; font formatting from APA style (bold, etc.) **not** duplicated in ToC; adaptations of headings to different types of theses still follow these default formats; exceptions to thesis requirements can be made, with supervisor agreement, by providing relevant rationales in an application to the Research Coordinators. Normally, manuscript-style theses will require both 350 word and manuscript length abstracts; extended literature reviews methods, and/or analyses are typically placed in appendices.

THE TITLE OF YOUR THESIS: IT SHOULD BE HERE (SOMETIMES IT MAY TAKE UP TWO OR MORE LINES; BOLD IS NOT REQUIRED)

by

INSER T. YOURNAME

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

GRADUATE COUNSELLING PSYCHOLOGY PROGRAM

We accept this thesis as conforming to the required standard (*committee list can vary*)

……..
Xiao Constructivist, Ph.D., Thesis Supervisor

……..
Dana Statistician, Ph.D., Second Reader

……..
Carlos Faraway, Ph.D., External Examiner

TRINITY WESTERN UNIVERSITY

July 33, 2099

Sample manuscript ABSTRACT

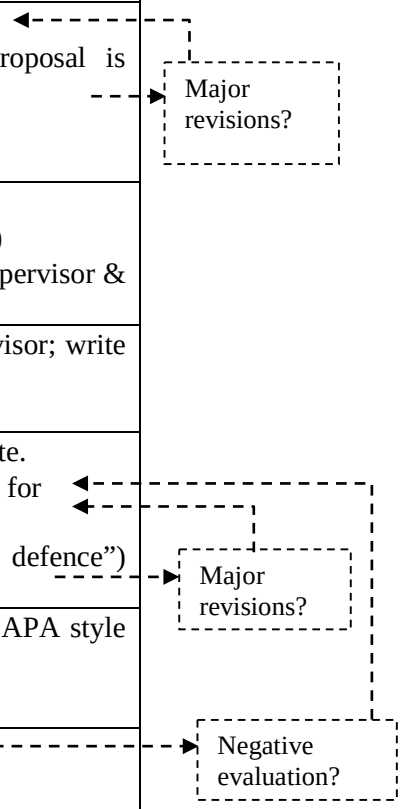
The present study explored how couples in university work together to plan for their future careers. Two questions were addressed: (a) how do emerging adult couples jointly negotiate and work to achieve their various goals; (b) what specific goals for their future career do these couples formulate? The action-project method was used to examine the career-related projects, perceived barriers and the patterns of joint engagement of six dating, married or engaged couples. Results revealed that career development was conceptualized as a mutual phenomenon, rather than an individual one: Participants framed the issue in terms of both their future career paths, trying to achieve a future that would be best for both of them, in terms of their occupations. They were actively involved in each others' career decision-making. Patton and McMahon's admonishment for researchers to frame career development in systemic, rather than individual terms, appears to be warranted from these results.

Key-words: Career development; romantic relationships; emerging adulthood

Suggested (2 year) Timeline for Thesis Requirements

A suggested thesis research timeline for full-time students is presented below. Part-time students are encouraged to speak to their program advisors to develop a personal time-line for completing thesis and other program requirements. ***Courses:*** CPSY 501 (fall), CPSY 502 (spring), CPSY 518 (summer)

1st Year, Sept-Dec	• 501: & identify areas of research interest & potential supervisors • Prepare application to SSHRC, CIHR scholarships, &/or other research funding sources (using a tentative research proposal)
1st Year, Jan-Apr	• 502: & continue talking to potential supervisors about specific research topics & how your interests connect with their research
1st Year, May-Jul	• Complete CPSY 518 (including the thesis proposal) • Find a supervisor, and, ideally, a second reader • Start regular meetings with thesis supervisor
1st Year, Jul-August	• Apply to enter the thesis track (typically at the end of 518 seminar) • Register for CPSY 603 for the fall; recruit a 2nd reader • Finalize thesis proposal & REB form
2nd Year, Sept	• 603; Submit thesis proposal to Supervisory Committee • Thesis Proposal Meeting (minimum 2 weeks *after* proposal is submitted) • Complete Research Ethics Board (REB) application
2nd Year, Oct-Nov	• 603 (continued): Submit Ethical Approval Form • (Amend research design or procedures, if required by REB) • When thesis is approved, forward certificate & email to Supervisor & CPSY office (for your file)
2nd Year, Nov-May	• Collect & analyze data with support & guidance of supervisor; write up the thesis project • Register for CPSY 604 for the Spring Semester
2nd Year, May-Jun	• Register for CPSY 605 for the summer & fall, until complete. • Submit completed thesis draft to Supervisory Committee & for preliminary APA style review • Supervisory Committee Review Meeting ("departmental defence") (minimum of 2 weeks after thesis is submitted)
2nd Year, Jun-Jul	• Upon approval of committee, make final revisions & full APA style compliance; submit revised document to department • Thesis sent out to an External Examiner by graduate office
2nd Year, Jul-Aug	• External Examiner gives positive evaluation • Thesis Defence (oral "examination" of thesis)
2nd Year, Aug-Sept	• Revise thesis as required by Examination Committee • Submit final revised copy for approval by Supervisor; Submit for final APA style review • Once revisions are approved, submit electronic copy to Graduate Office (& to CPSY office, including other forms, deposits, etc.)
Nov after 2nd Year	• Graduation Ceremony



Suggested 1 year Thesis Project Timeline – "graphic"

Thesis Completion Timeline for fall 2017 "Full" Graduation

May 30, 2017	***Suggested deadline*** **for submission of a full draft of thesis to Supervisor** • The thesis supervisor and student should work together to make corrections to content, format & full APA-style compliance before submitting to the Supervisory Committee
June 15, 2017	***Departmental deadline*** **for submission of <u>completed</u> thesis to the Supervisory Committee* (**submitted for brief APA-style review & feedback at the same time)
June 30, 2017	***Departmental deadline*** last day for **Supervisory Committee Meeting***
July 15, 2017	***Departmental deadline*** **to submit final thesis copy to the Graduate Studies Coordinator*** • A completed and approved final copy of the thesis has been reviewed by the thesis committee at the Supervisory Committee Meeting. Furthermore, the student has made all necessary revisions to the satisfaction of his/her Thesis Supervisor and Thesis Co-ordinator. • The Graduate Studies office will then recruit an external examiner (EE) with the advice of the thesis committee and will schedule the Oral Defence after a positive report has been received (usually 3 weeks after the EE received the thesis document).
Aug. 31, 2017	***Departmental deadline*** for **Oral Defence of thesis**
Sept. 30, 2017	***University Deadline*** **to submit electronic thesis and supporting materials for full graduation (providing that all other program requirements are complete)** • Changes required at the Oral Defence have been completed and approved by the Thesis Supervisor and Thesis Co-ordinator and any other committee members as required at the thesis defence. Final review for APA-style conformity is required (two weeks). • See thesis guidelines for details of all the materials need to be submitted as part of this process (forms, bound and unbound copies of theses, data sets, etc.)
Early Nov., 2017	**Graduation Ceremony** (Note that graduation dates are tentative--check with enrolment services or graduate office in summer of 2017 for confirmation of dates**)**

Note** that individual committee members and supervisors may set earlier deadlines, depending on their workloads or other circumstances and availability. Make sure that you check with your specific committee members to determine when ***you need to complete each of these stages. Some flexibility may be possible regarding departmental deadlines. However, the university deadline for submission of the bound thesis is firm and failing to meet the departmental deadline may reduce the chance that you will be able to meet the university deadline in a successful manner.

"<u>Participating" Graduation</u> Students who have met all other program requirements and have "satisfactorily completed" the final version of their thesis for external review before September 30, but have not yet defended, may be eligible to *participate* in the graduation ceremony. Please note that "participating graduates" have not fully completed their program, and are required to enrol in CPSY 605 (Program Continuation) until they have successfully defended the thesis and submitted the final thesis document through the normal electronic deposit procedure. "Satisfactorily completed" is defined as the supervisory committee must have passed the edited and APA compliant version of the thesis by September 30, the thesis document and committee report have been submitted to the office of graduate studies, and the thesis has been deemed "highly likely" to be passed by the external examiner.

AN OUTLINE OF DATA 'PREPARATION' PROCEDURES FOR QUANTITATIVE RESEARCH

Notes: see also the outlines of information to be reported in one's report in the discussion of "sufficient statistics" in the APA publication manual (5th ed.), pp. 22-26; 6th ed., pp. 33f; date retention (12), etc. (29-35). (for sources, cf. Behrens, 1997; Cohen & Cohen's books on power, general linear model for fixed effects, etc.). Current version of SPSS: v. 20 [2012]

- This checklist is useful as a list of "what" to keep in mind as we prepare quantitative data for analysis. The balances presented here presume data analysts are already grounded in the *why* of each research project & and the related research program(s). As a list, however, it does not replace conceptual summaries or overviews, like Jacob Cohen's discussions of the fixed-effects general linear model as an integrative "big picture" frame for data analysis.

PRELIMINARY ANALYSES & PREPARING THE DATA SET

1. Data entry & Verification

   - Design your data structure & coding patterns ***before*** you input the data. (Data structures for families, couples, or social network data, for instance, can involve multiple units of analysis; see the last bullet in this section for joint project data sets & related topics)

   - *Anonymizing the data set*: Identifying information is normally separated from the rest of the data, and an "identifier" variable assigned for each case. For some designs, there may be a key that links the case identifier with informed consent forms, for instance.

   - *Data entry* – **all** items of questionnaires need to be included in the data set for the calculation of sample "internal consistency" calculations, when appropriate. In the cases of novel measures, adapted or translated instruments, extending use to new populations or assessment purposes, additional psychometric analysis of sample responses are typically required.

   - *Online data gathering* – data structure patterns may require reorganization to match the research design when data are gathered online. While some errors are minimized online (e.g., typographical errors), other errors are introduced and/or magnified in online data gathering environments. All these concerns are addressed via design considerations.

   - *Data verification*: examine the completed data set for inconsistencies, typographical or coding errors, or omissions. Briefly: (a) print out or display on-screen a clean version of your data set and visually scan for errors. Some errors are most obvious via visual inspection [e.g., double digits instead of single digits, missing values may be clear, etc.] (b) run simple descriptive statistics on all variables in the data set, listing the maximum and minimum values (this should correspond to your coding decisions). In SPSS, e.g., choose the menus Analyze→Descriptive Statistics→Frequencies (you can also choose the Descriptives menu here). In the Frequencies choose the "Statistics" button (or in the Descriptives window choose the "Options" button) and select, for instance, mean, median, maximum, minimum, standard deviation, kurtosis, & skewness.

- *Online data archives*: When downloading data sets from online databases, whether for primary or secondary analyses, the data verification process involves file download, separating identifying information, and manual confirmation/verification of the data integrity. Most online archives have data manuals and full specifications of all available data sets. If not available, the investigator(s) conducting secondary analysis is responsible for obtaining and verifying relevant specifications.
- *Joint projects, longitudinal studies, mixed-methods studies, family studies, & other complex data structures:* Many important designs in molar research areas (developmental psych, gender studies, counselling and community psychology, etc.) involve in-depth data gathering strategies that require clear conceptual grounding for design and analysis strategies. Holistic or in-depth research strategies are especially important with difficult-to-access participants (e.g., oppressed, vulnerable, or disadvantaged groups, family systems, heterogeneous groups, mobile groups, linguistically diverse groups, and so on). In most instances, the research design principles will guide strategies for modularizing data structures to maintain integrity, coherence, and analytic clarity. Each data module is then addressed specifically for each phase of data preparation and preliminary analysis, often before overall analyses can be engaged.
- *Parametric & ordinal data*: Controversies about presumed interval features of variables, measures, and constructs are dealt with, first, in the design phase of a study, with initial "feedback" emerging during data gathering. One possible strategy is to adopt parallel analytic strategies based on parametric and ordinal analytic frameworks & informed by qualitative observations arising from data gathering. This kind of approach allows for conceptual concerns to be informed by preliminary data patterns. Convergence analyses and comparative approaches in design work are made explicit to guide and clarify appropriate data gathering & data preparation procedures.

2. Preliminary analyses: including preparation of the data set for analysis, etc.
   - *Missing data*: See your stats text, & especially Cohen & Cohen (1975) chapter, etc., for orientation to basic ways to treat missing data. Each design will have implications for sorting out various patterns of missing data, and texts are normally only a starting point for identifying those considerations most important for given data set. Additional study is likely for data gathering principles specific to the project being pursued.
   - *Reverse scoring for items that are reversed*: For questionnaire data, recode using SPSS Transform→ Recode → Into Different Variables (a common practice).
   - *Reliability analyses* of all scales used in the study, including all total scores, subscale scores, etc. Depending on designs, internal consistency, intraclass correlations, IRT pattern estimation, & checking for heterogeneity patterns among subsamples may be important.
   - *Calculate scores for all questionnaires & subscales: SPSS:* Transform→ Compute. When the number of items differs between subscales, then the mean of all items for a subscale is the proper formula to use (this allows comparison of subscales and total scores). For older scales when norms are stated in summed or standardized scale scores, you may want to use sums or standard scores as well. If an instrument uses standard score conversions (e.g., T-scores) you will ordinarily use the means and standard deviations from the normative

sample, not from your sample, in calculating standard scores. The test manual & psychometric standards must be consulted on all such matters.

- *Distribution shapes*: General description of variables, subjects, & other key facets of your data. If you will use parametric statistics on quantitative variables, you should check skewness and kurtosis as indicators of the normality of the shape of the distribution. These statistics can be complemented with boxplots and/or histograms. Categorical data (with fewer than 10 categories) should be examined with frequency tables & possibly bar charts. [look at the shape of subscales scores, not necessarily items]
- *Outlier analysis*: If a distribution shows outliers, the analysis may have to be modified to take the outliers into account. The process involves a process of qualitative judgement based on the impact of the outliers on the specific analyses being conducted.
- *Transforming variables*: If non-normality is a problem with any of your variables, transformations of your variables can help correct skewness, unequal variances in different cells, etc. Cohen & Cohen (1975 & later editions of the text) provide helpful references & comments.
    - The Field textbook mentions in passing that we can't know ahead of time which transformations will serve best for any particular data set. Until you learn a solid "feel" for the math to guide your hunches, you'll have to try things out & see what happens. That will help you get a sense of the math. If you are not familiar with these functions, you will need to find graphs and try it out to get a feel for the transformation. You can find a lot of resources. One helpful exercise, "practice," is to generate a normally distributed random variable in SPSS, transform it, and graph the newly transformed variable (histogram) you can see the impact on the distribution shape. Field mentions functions as possibilities for transformation with widespread use; it's not a list of options. Any monotonic transformation is an option that is appropriate, and Field's list is a helpful starting point.
    - *Getting started*: generate a histogram of your variable/ data so you can see the shape of the distribution, and watch for the 1.0 value. Keep you output on the skewness & kurtosis of your variable Recall that for some transformations, e.g., SqRt, you loose monotonicity of the transformation if you allow the raw values to drop below 1.0. If needed, you can shift your variable by adding a constant to move the values into a viable range for transformation.
    - Transform your variable with several transformations, graph it as a histogram, and calculate the skewness/kurtosis of the transformed scores. To compare which transformed scores are more closely normal, the graph typically gives you the "big" picture and the stats give you the precise comparison (using the standard error to transform the values to z scores for comparison). These descriptions are typically much more useful than global “normality” checks. And in some situations, transformation functions can be supplemented with truncation strategies (e.g., recoding outliers to modest constant values above the next-largest values).
- *Check for assumptions behind statistical procedures*: For instance, are cell sizes large enough, normality of distributions, similar variances of DVs among all cells of the IVs, similar regression slopes of covariates for all cells of the IVs, and so on? Some of these

checks will be conducted in the first run of your analysis (e.g., sphericity of the covariance matrix in repeated measures ANOVA) or in residual analysis after the first run of your analysis (e.g., multiple regression, MANOVA, factor analysis, etc.). Check your stats texts for assumptions and SPSS help files for ways to check them. Additional sources specific to our analytic strategy are normally required.

- *Multicollinearity*: A correlation matrix among all variables can identify problems for multiple regression, factor analysis, or structural modelling. Sometimes the use of deviation scores helps in partitioning variance more clearly. See your stats consultant and text sources. However, many difficulties due to correlations among predictors are handled reasonably well with the accuracy of computers-based calculation software. In the moderate term, multicollinearity requires multiple data sets to clarify when, or if, a problem exists that needs to be addressed.

SPSS SUGGESTIONS—ALWAYS BACK UP YOUR FILES! Once any transformations are made, missing values are handled, scale scores are calculated, etc., then save a copy of the full data set and create an "analysis" copy where separate items for scales and all other variables not used in analyses are deleted. This can make your work with the data set easier to manage. Fully labelling all variables is important – you will lose hours trying to read cryptic variable names & recalculating variables if you don't label everything completely – both variable labels and value labels for all major variables. (Value labels for items are often not used, even though it is easy to copy standard labels for sets of variables.)

ANALYSES FOR REPORTING RESULTS

These sections describe the broad, overall "logic" of quantitative analyses without going into the specifics of any particular analytic design. Like the rest of the outline, it serves a "checklist" function for practical guidance, including "checking" that one has a solid conceptual overview of one's analytic strategy. So this checklist can help to get past the problems of "recipe" outlines offered in some textbooks.

3. Descriptive analyses: general descriptive statistics appropriate to your data are usually presented in research reports ('sufficient statistics') to provide necessary background for readers; some elements from this section guide decision-making in subsequent analyses

   - summary of demographics & background characteristics of your group of participants
   - means, standard deviations (& often normality descriptions) for all quantitative IVs and DVs
   - frequency tables for nominal variables
   - graphic descriptions for all key variables (boxplots, etc., as generated in outlier analyses)
   - specify missing data patterns identified found in this data set (correlations, etc.)
   - cell means, cell sizes, and cell standard deviations
   - correlation matrixes of all major variables
   - general power levels for your sample size & acceptable effect sizes (e.g., Cohen)
   - *Subgroup analyses*: for design groups (tx & ctrl), sampling groups (different recruitment strategies), or other subgroups within the data set
   - *Background factors* &/or confounding factors &/or covariate analyses: review gender, ethnicity, income, age, & other potentially important background information

4. Analyses for hypotheses & focal questions: As stated in one's thesis proposal, analyses are conducted to fit each hypothesis, while noting any modifications required by features of the complete data set, unanticipated patterns, etc.
   - Start by running 'simple' versions of planned analyses, using minimal variables; the basic analysis can serve as a base for comparison when making adjustments. When key variables are assessed with measures that have total scores and subscale scores, hypotheses are often examined first for total scores and subscale analyses are conducted for clarification or for a follow-up analysis.
   - Rerun analyses for comparison, as needed & as possible (given sample size, etc.), with any important background factors taken into account (e.g., gender, age, ethnicity, sample heterogeneity, & other background factors)
   - *Clarification*: often there is a follow-up analysis that helps places a context on the core features of the hypotheses. Some of these clarifications emerge from characteristics of the sample, or procedural issues that arose, or negative findings in a basic form of the hypothesis. Possible interactions, mediators, or moderators may need to be explored, either among IVs or among background factors.

5. Post hoc or supplementary analyses "of interest" → these should emerge from background analyses or hypothesis results, or theoretical interest, or practical concerns motivating the study. If clarifications or hypotheses ended up yielding a complex pattern of results, then post hoc analyses should be minimized to keep the focus on the hypotheses. Multivariate follow-ups to hypotheses may be pursued or more complex versions of clarification analyses. Excessive "playing" with data sets can lead to spurious "patterns" emerging with low likelihood of being replicated in a future data set. The strongest bases for exploration are conceptual grounding and previous research. The following questions help guide the selective consideration of post hoc analyses: The focus of post hoc analyses is to supplement analyses of the hypotheses for clarification.
   a. Any interaction/moderation effects typically require post hocs to clarify the shape of relationships, (non)interpretability of related main effects, etc.
   b. Are the results consistent across subgroups of participants (e.g., are effect sizes & significance levels consistent for different genders, ethnic groups, or social classes?)
   c. Was there a fairly complex analysis addressing multiple variables that was set aside to focus hypotheses on fairly simple questions? If so, post hocs allow the opportunity to follow conduct the more sophisticated analyses.
   d. Have patterns emerged in the examination of outliers, missing data, or residuals shown some meaningful relationships to study variables? If so, interpretive examination of these relationships might be important.
   e. Generally, a variety of considerations are explored in post hocs, and the most relevant results are reported. Constraints of sample size, experiment-wise error, variance reduction, "opportunistic" relationships and so on can be addressed as well.

   - Additional resources: see CPSY thesis guidelines (this document); McGrath (2011). *Quantitative Models in Psychology* (in the 518 course syllabus & below), chapt. 16 in Leong & Austin (2006), etc.

In addition to texts from your previous courses, a variety of resources are available to provide help for overviews of core topics in data preparation and as applied in particular analytic approaches. For example:

McGrath, R. E. (2011). *Quantitative models in psychology*. Washington, DC: American Psychological Association. [ebook available; an accessible introduction to the range of psychometrics topics, latent variable models, etc. – often clarifying points missed in most common texts]

DiLalla, D. L., & Dollinger, S. J. (2006). Cleaning up data and running preliminary analyses. In Leong & Austin (Eds.), above in selected references. [on reserve & ebook access]

Grimm, L. G., & Yarnold, P. R. (1995). *Reading and understanding multivariate statistics*. Washington, DC: APA. [QA278 .R43 1995] [coverage includes chapters on Principal-Components Analysis and Exploratory and Confirmatory Factor Analysis, Multiple Regression, MANOVA, and Meta-Analysis]

Grimm, L. G., & Yarnold, P. R. (2000). *Reading and understanding MORE multivariate statistics.* Washington, DC: APA. [QA278 .R32 2000] [covers additional topics beyond the 1995 volume, including Repeated Measures Analyses, Structural Equation Modeling, and Item Response Theory; on reserve in the TWU library]

McGrath: *selected comments for reflection …*

- Many psychologists often never develop a framework for understanding quantitative methods
- Bayes' theorem is not just a statistical method; it is the starting point for a completely different way of thinking about the process of inferring general conclusions from specific data sets.
    - Robust statistical methods really deserve discussion in the context of parametric assumptions
- … psychology does not really [seem to] attract people interested in the philosophical aspects of quantitative methods …
- … In fact, in terms of preparation for lifelong learning in quantitative methods, *why* may well be far more important to learn than *how*. [xi]