Publish and Flourish:
A Practical Guide to Scientific Writing for Psychology Majors

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A Preface to Students

I really think that the great difficulty in bringing “The Valley of Decision” into final shape is the old one of not being able to see the forest from the trees. There are such a great number of trees. We must somehow bring the underlying scheme or pattern of the book into emphasis, so that the reader will be able to see the forest in spite of the many trees.

Maxwell Perkins (1942),
in a letter to Marcia Davenport

Congratulations! You have just done something very smart—something commendable.

Why are you so smart? Because in picking up this handbook you’ve just taken the first step toward preparing yourself for learning scientific writing in a refreshing, creative way. You also might have some fun in the process.

Scientific writing, fun? Give me a break, you’re thinking. Well, that’s just what we intend to give you. The book you’re holding in your hands represents a complete break from scientific writing books of the past. It’s a break from boring lessons on grammar and syntax. It’s a break from trying to memorize tedious rules on APA formatting. It’s a break from books that assume that writers are either all like the author or all like each other—or more perversely, books that assume that academicians are already accomplished writers.

Although at first the assumption that academicians are already successful writers may seem reasonable, we encourage you to challenge this view with the realization that the writing process is inherently complicated. We can tell by the number of shelves given over to books about it in libraries and bookstores. As anyone who has ever done it knows, real writing circles back and forth, moving forward a step or two, going back while at the same time anticipating stages not yet begun, then moving forward again. And scientific writing is no exception!

This handbook was born in the belief that the skills of doing and reporting research are not just learned but can also be taught. Some aspects of research can be learned only in the context of a community of scholars committed to particular topics and ways of thinking. But when such a context is not available, students can still learn important research skills through direct instruction and carry those skills into the communities they want to join.
In contrast to other handbooks, this one does not argue for a single strategy for writing. Instead, you should view the ideas and suggestions found herein as being fashioned out of clay, not stone. Our goal is to provide suggestions for ways to improve your writing process, to make it more efficient, and more likely to produce a piece of work that’s less likely to kill you in its making, a piece you’ll be proud of.

*Publish and Flourish* is arranged to parallel the actual writing process: We begin by addressing some issues that those undertaking their first project often raise—why readers expect you to write up research in particular ways (Chapter 1).

You will discover that you can write more clearly once you more clearly understand what you are writing about. In Part I, we therefore consider issues that are relevant to writers at the Prewriting stage. In Chapters 2 and 3, we discuss how effective planning and scheduling can help you gain control over your writing. We also explore the process of framing your project—how to find a topic, narrow it, outline it, question it, and justify it (Chapter 4). In Chapter 5, we discuss the nature of a good research argument and how to organize research ideas found in the Introduction, Method, Results, and Discussion sections of your paper. We conclude the prewriting discussion by considering how writing is temporally organized and how scheduling your writing sessions can enhance the actual pleasure of writing by making it more comfortable (Chapter 6).

In Parts II-IV, we lay out the steps in producing the final written report, beginning with the drafting process (Chapters 7-8), followed by revision (Chapter 9), and ending with the editing stage (Chapter 10). At the back of the handbook is a sample paper that incorporates many of the ideas discussed herein.

We do not aspire to present you with another APA Manual, chock-full of grammatical and stylistic rules. Where such specialized information might be desirable, we try instead to point you toward relevant resources. Throughout, we hope to share a potpourri of techniques which have been useful in our own writing—covering aspects as varied as overcoming writer’s block, accessing the literature more effectively, and constructing strong paragraphs. To illustrate the suggestions, we have provided abundant examples and exercises, many of which are based upon actual manuscripts (ours and others) slated for publication in scientific journals in the social sciences. Additional online information on scientific writing can be found at the following location, [http://alec4516.tripod.com/Ong/index.html](http://alec4516.tripod.com/Ong/index.html).

As for the student reading this handbook for the very first time, we told ourselves a year ago that we would view this handbook as a success if it provides you with the information needed to write effective
scientific papers and if it makes us rich and famous! Having since achieved neither fame nor fortune, we nonetheless continue to hope that this book is “a success” for you, the reader. We moreover hope that in contemplating your life as a writer you may get some perspective on your work, and in gaining that perspective, see the forest from the trees.

July 17, 2002.
1 Introduction

The life, the fortune and the happiness of every one of us depend on our knowing something about the rules of a game infinitely more difficult than chess. The chessboard is the universe, the pieces are the phenomena of the universe. The player on the other side is hidden from us. We know that his play is always fair, just and patient. But we also know, to our cost, that he never overlooks a mistake, or makes the smallest allowance for ignorance. To the man who plays well, the highest stakes are paid, with the sort of flowering generosity with which the strong show delight in strength. And he who plays ill is checkmated—without haste, but without remorse. What I mean by education is learning the rules of this mighty game.

*Thomas H. Huxley (1868), On Liberal Education,*

What is Scientific Writing?

The rules for doing research that can net the highest stakes in understanding are, to a considerable extent, the rules of good scientific writing: clarity, correctness, cohesion, coherence—not to mention, edit, edit, edit; and cut, cut, cut!

The goal of scientific writing is publication. It is not necessary for the gardener to write about tulips, nor is it necessary for the plumber to write about pipes, but the research scientist, perhaps uniquely among the trades and professions, must provide a written document showing what he or she did, why it was done, and what was learned from it.

Unlike many other forms of writing designed for entertainment, scientific writing has a different purpose: to communicate new research findings. One view of research is that scientists, starting as graduate students, are measured not by their dexterity in laboratory manipulations, not by their innate knowledge of broad or narrow scientific subjects, and certainly not by their charm or wit; they are measured, and become known (or remain unknown) by their publications. A scientific experiment, no matter how spectacular the results, is not complete until the results are published.

Perhaps a broader view of research is that scientific writing is hard work, but like any challenging job well done, both the process and results bring immense personal satisfaction. But research and its reporting are also social acts that require you to think steadily about how your work relates to your readers, about the responsibility you have not just toward your subject and yourself, but toward them as well, especially when you believe that you have something to say that
is important enough to cause readers to change their lives by changing what and how they think.
2 Getting Started

I just sit at my typewriter and curse a bit.

P. G. Wodehouse

Remember the intense anticipation that you felt as a child at the start of a new school year? Filling your notebooks with stacks of crisp white paper, sharpening pencils, and buying new books were exciting in large part because you were starting fresh. Anything could happen, and it all could be good! The start of a new year, a new job, a new class, or a new project is a special time, when you feel as if you can accomplish anything.

As you begin your research proposal or paper, we urge you to:

THINK BIG. Reflect on your problem from its broadest perspective and imagine innovative solutions.

DREAM. Dream about solving important problems, making a difference, producing significant papers, even winning the Nobel Prize!

AVOID TUNNEL VISION. Consider ideas and projects that could lead to years of research. Enjoy a time of intense creativity, and—at least for a while—think beyond your immediate research idea.

Planning and thinking about research can be stressful. Anxiety arises when we focus too much on what people will think of our work. We all have periods of insecurity, when we mistakenly believe that everything rests on the outcome of one specific project. Reducing the insecurity and uncertainty associated with developing a scientific proposal fosters the excitement and innovation that lie at the heart of science.

In the next chapter, we address one strategy that revolves around a particular aspect of the writing process that is rarely explicitly addressed in our training as writers, namely the way in which it is temporally organized.
3 The Writing Schedule

One of the problems we have as writers is we don’t take ourselves seriously while writing; being serious is setting aside a time and saying if it comes, good; if it doesn’t come, good, I’ll just sit here.

*Maya Angelou*

Setting Priorities

The first step you need to take in order to establish a regular writing routine that would actually work is to try to create a comfortable fit between your writing and the rest of your life. In order to do that, however, you need to decide how much time you wish, or are able, to devote to your writing on a *regular* basis. Because that amount is inevitably calculated relative to the amount of time that you wish, or have, to devote to other involvements in your life (your family, job, friends, hobbies), you first need to establish the relative priority of your writing vis-à-vis all those other involvements.

Because most of your commitments probably are “weekly” in the sense of occurring regularly (taking courses, working, sleeping), designing a regular weekly writing schedule would most likely allow you to establish the desirable proportion between your writing and all other routine commitments.

Especially if you have never tried to before, designing a regular weekly writing schedule may require a certain period of experimentation and adjustment. You may discover, for example, that, although you originally intended to devote twenty hours a week to your writing, the six hours per night that you allowed for sleeping leave you somewhat exhausted the following morning and may therefore prevent you from effectively keeping up with such a demanding work schedule for more than two days in a row.

Setting priorities, of course, is not entirely a matter of personal choice; we are confined by various external constraints. A writer working as a part-time waitress may find it easier to schedule time to write than a writer with a two-month-old baby. Nevertheless, we usually have much more control over our time than we are willing to admit to ourselves, and if you are seriously committed to give your writing a high priority on your schedule, you can normally manage to somehow find the time to write even under extremely difficult conditions both at home and at work.

**Exercise.** List some weekly involvements (work, classes, boyfriend) that might prevent you from devoting time to writing.
The Writing Session

Having decided how much time you are able to devote to your writing every week, you now need to break it down to units of work. In other words, you now need to establish your actual writing sessions.

Try to determine the length of what you would consider an ideal writing session. When trying to establish the length of your writing sessions, be sure to take into account two major factors: the approximate time it usually takes you to get into a creative mode and the approximate amount of time you can effectively sustain such a mode and be productive. Considering the first factor ought to help you avoid scheduling writing sessions that are too short. Considering the second should likewise help preclude ones that are too long. Establishing what you would consider to be an ideal writing session certainly entails staying away from either extreme.

Exercise. Experiment to determine the optimal length of a writing session during which you can maintain a consistently high level of creative attention and thus keep writing effectively.

A Time to Write

Now that you have established the amount of time you are willing or able to devote to your writing and have broken it down into actual work sessions, you can proceed to consider when you would like to write. Just as you try to optimize your other writing conditions by deciding where to place your desk or which particular word-processing software to use, you also need to identify the best times for your writing.

In order to design for yourself the best possible writing schedule based on such times, however, you first need to find out when you are most, as well as least, likely to be your best as a writer. In other words, you need to identify the particular times of day and days of the week in which you tend to be most, as well at least creative and productive. This may require, of course, some serious experimenting over several weeks and even months. You may notice, for example, that you happen to be one of those people who are usually not too productive on Friday afternoons or Monday mornings.
Ideals and constraints

Having now established the amount of time you plan to devote to your writing on a regular basis, broken it down into actual work sessions, as well as identified your best writing times, you can now proceed to design for yourself a regular writing schedule.

One effective way to begin this process is actually by crossing off your regular daily, as well as weekly schedule, all the time slots during which you definitely cannot write on a regular basis and which should therefore not even be considered possible writing times! Theses include all the regular daily or weekly commitments that you regard as givens, such as the times you have to walk your dog, be at work, or daydream in class. You should also cross off your schedule any other daily or weekly time slots during which you wish to be involved on a regular basis in activities other than writing—the night you go to the movies with your friends, the night you usually hit the gym, not to mention watching your favorite TGIF programs.

Admittedly, the actual degrees of freedom you will have left at this point are considerably fewer than had you not taken this step. You may now realize that you actually have only twelve hours a week to devote to your writing this quarter, instead of the thirty hours you thought you would have. Creating a regular writing schedule allows you to avoid the constant battle between your writing and your other high-priority involvements in life. And indeed, there is no reason why you should ever be in a position of having to pit your desire to write against your even greater desire to be a good parent or keep your job. Avoiding the constant battle between your writing and your other involvements also gives you a much better chance to realize your goals as a writer.

Exercise. Keep track of your effectiveness as a writer over the course of a week, noting particular days and times when you tended to be most and least creative. Below is an example:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>9-11am</td>
<td>“Monday Blues.” I found it difficult to jump-start my regular writing routine following the weekend.</td>
</tr>
<tr>
<td>Wednesday</td>
<td>1-4pm</td>
<td>I was very focused, but the session was much too short.</td>
</tr>
</tbody>
</table>

Exercise. Create a weekly schedule for your writing. Cross-off your weekly schedule the times you cannot write. This will allow you to define more realistically the times you can.
Suggested Readings

Moxley, J. M. (1997). If not now, when? In J. M. Moxley & T. Taylor (Eds.), Writing and Publishing for Academic Authors (pp. 3-18).
4 Researching Ideas
   My computer is down. I hope it’s something serious.
   Graffito

Discovering and Focusing on a Research Topic

General Suggestions
   1. Try to find a topic that truly interests you.
   2. Talk with your course instructor and classmates about your topic.
   3. Pose your topic as a question to be answered or a problem to be solved.

How do I begin to look for a topic?
   Well, your topic is not going to come to you in the wilderness or in the library. It’s too easy to get lost in those places. Think of creating, rather than finding, a topic. You may want to begin with research interests you’ve already begun ... in your job, in your graduate course work, your master’s thesis, or with other research projects you’ve been involved in.

How do I know when I have a good topic?
   Some criteria for evaluating a topic are:
   1. Is it manageable, given your time frame, resources, and availability of data sources?
   2. Is it significant in practical or theoretical terms?
   3. Has it already been done?
   4. Does it take you where you want to go?

Finding, Selecting, and Reading Sources

What kind of sources should I use?
   After you have decided on a topic, you will need to look at the following types of sources:
   1. Electronic databases, periodical indexes, bibliographies, suggestions from your instructor.
   2. Primary and secondary sources.
   3. Journals, books, other documents

What kind of readings lead to good ideas
   Strive for a deep understanding of the issues involved in a relatively small area of psychological research. After choosing a topic that piques your interest, you might begin pursuing the references that
your textbook cites, and pursue the references most frequently cited in those references.

In pursuing references from textbooks, however, you should keep in mind that the lag between the writing and publication of a journal article, much less a book, may be at least a year. Most of the information published in articles and textbooks are therefore often out of date.

As a rule of thumb, begin your reading with a review or theoretical article that compares the major theoretical positions on the issue you’ve chosen. Reports of individual experiments will make more sense to you if you are first acquainted with the research context in which they were done. Below are several review journals and electronic sources you might consider:

1. Psychological Bulletin
2. Psychological Review
3. Annual Review of Psychology
4. PsycInfo
5. [http://www.calstatela.edu/academic/psych/html/deptmenu.htm](http://www.calstatela.edu/academic/psych/html/deptmenu.htm)

**Exercise.** Using *PsycInfo*, lookup a current issue, for example, a social problem (alcoholism, child abuse, or prison reform). Locate a review article from one of the journals suggested above.

**Suggested Readings**

5 Organizing Your Ideas

A bad beginning makes a bad ending.

Euripides

In Chapter 4, we discussed what kinds of readings lead to good ideas. But how you read is as important as what you read. More specifically, how you organize major ideas as you read has a direct effect on how those ideas are organized in your mind and ultimately communicated to the reader on paper. If the organization of ideas is not clear to you, chances are they won’t be clear to the reader either. In this chapter, we illustrate some principles that govern the organization of a scientific paper. We suggest you immediately implement these principles to help organize major ideas in the readings you encounter. As an illustration of these principles, we provide sample excerpts from an actual article published in the Journal of Social Psychology (Ong & Phinney, 2001).

INTRODUCTION

The introduction seems to present special problems for most students. Perhaps it is the realization that finally they have to begin. Perhaps it is the fear of making a false start. More likely, it is the problem of simply not knowing how to start. What do you include in the Introduction—and in what order? There is a general pattern found in most scholarly published work. It goes like this:

1. General background
2. Problem statement
3. Significance of the study
4. Purpose
5. Organization
6. Literature review
   a) Theoretical review
   b) Empirical review
7. Hypotheses/Questions

The remainder of this section examines each of these components.

What is the big picture?

This section is intended to provide a context for your study. It answers the question “What special factors were at work that might possibly have influenced the conceptualization of the study?” Examples of special background factors include:

1. Societal background: developments and changes in the society that made the problem seem important.
2. **Intellectual background**: major intellectual and philosophical movements of the time that provided a special context for the study.

3. **Professional background**: developments in the field that made the problem seem worth studying.

4. **Research background**: new methods that seemed worth using or new theories that seemed to need testing; gaps in existing knowledge.

**Sample General Background**

A growing body of evidence suggests that Vietnamese immigrants experience multiple problems in adapting to life in the United States, including downward occupational mobility, intergenerational conflict, and increased rates of clinical depression (Hinton, Chen, Du, & Tran, 1993; Hinton, et al., 1998; Hinton, Tiet, Tran, & Chesney, 1997). Less acculturated Vietnamese immigrants report proportionally more problems related to prearrival trauma (Hinton et al., 1997), separation from family and learning a new language (Tran, 1993), and seeking employment and rebuilding social supports (Nicholson, 1997). Like their immigrant parents, Vietnamese-American youth also report relatively high levels of depression and anxiety compared to their European-American peers (Felsman, Leong, Johnson, & Felsman, 1990; Tran, 1993; Webb, McKelvey, & Strobel, 1997).

**What is my research problem?**

The problem statement is a very brief section, perhaps only one-half page in length, in which you state the problem as clearly as possible. Though brief, it is a crucial section, because the way you state the problem will directly influence the way you present and summarize the results. The problem statement should identify the limits of the target population, variables, and setting.

**Sample Research Problem**

Despite the suggestion of a link between ethnicity and depression, there has been little attention to possible theoretical mechanisms; that is, missing from these data is a conceptual understanding the relationship between ethnicity and depression. In the absence of a theoretical framework, several researchers have posited that in addition to being confronted with the developmental transition from adolescence to adulthood, Vietnamese-American youth also must cope with adjustment problems as immigrants and children of immigrant parents (McKelvey, Webb, & Mao, 1993; Nguyen, Messe, & Stollak, 1999; Nicholson, 1997) as well as intercultural conflicts
caused by the immense value differences between Eastern and Western cultures (Nguyen & Williams, 1989; Phinney, Ong, & Madden, 2000).

Why is my study important?
With the problem stated, you should next turn to the section concerned with the significance of the study. Your purpose here is simple: to answer the question “Why did you bother to conduct the study?” In answering this question, your tone is important. You do not want to claim too much. Statements of this sort make readers bristle. Here are some ways in which you can argue for the study:

1. The general problem has intrinsic importance, affecting organizations or people.
2. Previous studies have turned up conflicting evidence concerning the specific issue that you have chosen to study.
3. The study develops theory or expands on current knowledge or fills a gap in previous research.
4. The method you have chosen for your study has not been widely used in your profession, and your study will likely yield some useful methodological findings.

Sample Significance
The self-concordance model, derived from self-determination theory (Deci, 1975; Deci & Ryan, 1985), may provide an alternative framework in which to understand the relatively high levels of depression reported by Vietnamese-American young adults. The model organizes and integrates a number of related research findings in the fields of motivation and well-being (Sheldon & Kasser, 1995; 1998) and an assortment of recent findings from cross-cultural research (Dinh, Sarason, & Sarason, 1994; Herz & Gullone, 1999) into a single conceptual and causal model.

What is the purpose of my study?
Your Introduction should contain a clear statement of the study’s purpose. If there is a theory, the relation of the purpose to underlying theory should be made clear. And operational definitions of the major variables should be explicitly formulated in this section.

Sample Purpose
In the present research, we examine how the relationship between ethnicity and depression occurs, that is, the mechanism of the effect. In applying the self-concordance model to our predictions, we posited that the relationship
between ethnicity and depression is not necessarily a direct one, but rather is mediated through goal self-concordance. According to Baron and Kenney (1986), demonstration of a mediated model requires three steps: (1) that ethnicity is related to depression; (2) that ethnicity is related to goal self-concordance, and (3) that the relationship between ethnicity and depression is significantly reduced once goal self-concordance is accounted for in the equation.

How can the organization be made clear?
Following the purpose section, you should have a paragraph that looks ahead to the rest of the introduction, indicating to readers what they may expect.

Sample Organization
In the following sections, we describe the rationale for why goal self-concordance, derived from self-determination theory (Deci & Ryan, 1985), might mediate the relationship between ethnicity and depression. Thus, our purpose in testing the mediated model is to go beyond documenting the relationship between ethnicity and depression, and, instead, to explore the pathways of mediated effects. In building the case for mediation, we focus on how previous research has provided information on the proposed mediational process.

How can I organize my literature review?
The review of literature is provided in the introduction for a very specific reason. It presents to the reader the knowledge base upon which your study is built. This purpose reflects a time-honored tradition of scientific research: It acknowledges its indebtedness to the past and shows clear linkages between what was known in the past about the topic and what was discovered in the present research.

The literature review can be divided into two major parts: a theoretical review and an empirical review. If your study draws upon a theory, the theoretical review should outline the theory and describe its relation to the problem.

Where there is no theoretical base to draw upon, you should mention the empirical studies closest to the problem and discussed why, if it is not self-evident, they fall short. The evidence for your empirical review should be organized by topics or ideas rather than by author.

Sample of Theoretical Review
Self-Determination Theory
According to Deci and Ryan’s (1985, 1991) self-determination theory, intentional behaviors differ in the degree
to which they are autonomous (i.e., self-determined) versus controlled. Autonomous behaviors are those which have an “internal perceived locus of causality” (deCharms, 1968). In contrast, controlled behaviors are those which have a locus of causality that is external to the self. Controlled activities can become more autonomous as a function of a growth process referred to as “organismic integration” (Deci & Ryan, 1985, 1991). Deci and Ryan (1985) maintain that one manifestation of organismic integration is the tendency for individuals to “internalize” extrinsic values, and then “integrate” those values with other aspects of the core self.

Deci and Ryan (1991) further distinguish four distinct classes of intentional behaviors, which differ in the extent to which they reflect integration of values within the self (cf. Ryan & Connell, 1989). Two of these refer to controlled behaviors. The most controlled behaviors are those guided by external reasons. These behaviors are compelled or pressured by some influence outside the self. External pressures are eventually internalized, giving rise to introjected self-regulation. Introjected behaviors are guided by internal forces, but these forces consist of pressures such as anxiety or guilt, or a desire to please others. These behaviors are less controlled than those guided by external forces, but they still are relatively controlled. The difference is that the controlling aspect of the self-regulation has been moved inside the person.

Two additional classes of intentional behaviors are characterized as autonomous; these behaviors come in two forms: identified and intrinsic. Identified behaviors are engaged in because the person genuinely believes they are valuable. Behavior of this sort is relatively autonomous or self-determined. Finally, some behavior is guided by intrinsic reasons. Such activities are of interest in their own right. Although it is possible to distinguish these four categories conceptually from one another, the most important distinction appears to be between controlled and autonomous motivation (cf. Grolnick & Ryan, 1987; Kasser & Ryan, 1996).

**Sample Empirical Review**

**Goal Self-concordance and Well-being**

Derived from self-determination theory, the self-concordance model posits that goals are self-concordant when they are pursued for autonomous reasons (Sheldon et al., 1999). Considerable research now attests to the qualitative advantage of autonomous, relative to controlled, goal pursuit. Numerous studies have demonstrated that when people act autonomously, they display more cognitive flexibility and depth of processing (Grolnick & Ryan, 1987), greater creativity (Amabile, 1996), and greater maintained weight loss (Williams,
Grow, Friedman, Ryan, & Deci, 1996) than when their actions are controlled. Moreover, placing strong relative importance on self-concordant aspirations has been found to be positively associated with well-being indicators such as self-esteem and self-actualization and negatively associated with anxiety and depression (Kasser & Ryan, 1993, 1996).

**Culture and Goal Self-Concordance**

The internalization of values that encourage self-concordant goal pursuit is, to a considerable extent, influenced by the affordances of one's sociocultural context. One distinction that emerges between members of Western and Eastern cultures is the extent to which the self is defined in relation to others. This distinction has been referred by cultural researchers as individualism versus collectivism (Triandis, 1995), independence versus interdependence (Markus & Kityama, 1991), and egocentric versus socioentric selves (Shweder & Miller, 1991). As such, the Western view of self has typically held as an ideal the characteristics of autonomy, independence, separateness, and individualism, in contrast to an Eastern self more deeply embedded in collective cultures that emphasize social roles within a hierarchy and subordination of the self to group goals.

Vietnamese culture, based in Confucian and Buddhist roots, is strongly collectivist; the family structure is typically patriarchal, with children expected to obey their parents and fulfill their obligations within the family (Matsuoka, 1990; Nguyen & Williams, 1989; Rosenthal, Ranieri, & Klimidis, 1996). When culture and parenting style are considered together, researchers have found that lower levels of acceptance and higher levels of control characterize the parenting style observed in the Vietnamese culture as compared to Western cultures (Herz & Gullone, 1999). This control is manifested by parents’ high expectations of their children for doing house chores and succeeding academically, which Vietnamese-American youth reported in one study as the two highest family stressors (Tran, Lee, & Khoi, 1996).

Despite cross-cultural differences in self-construal, recent research suggests similarities in underlying processes that lead to the development and expression of self-determination. For instance, Kasser and Ryan (1993, 1996) found that whereas self-reported attainment of intrinsic goals was positively associated with well-being, attainment of extrinsic goals was not. Moreover, Ryan, Chirkov, Little, Sheldon, Timoshina, and Deci (1999) replicated these findings in a Russian sample, attesting to the potential generalizability of the findings. Other studies have examined the relations between need satisfaction and well-being in specific settings, finding, for example, that employees’ reports of satisfaction of their needs for autonomy, competence, and relatedness in the
workplace were related to self-esteem and general health (Ilardi, Leone, Kasser, & Ryan, 1993), not only in the U. S. but also in Bulgaria (Deci, Ryan, Gagne, Leone, Usunov, & Kornazheva, 2000). The above research suggests that although individuals may pursue goals for different reasons within cultures that hold different values, only when such values have been fully integrated would people be expected to pursue goals autonomously. Accordingly, we suggest—in line with the self-concordance model—that the reason why a person pursues a goal is as important as the goal itself. We tested this idea in the study reported here.

**What are my hypotheses or research questions?**

The conclusion of your introduction should contain a section outlining the study’s hypotheses or research questions. The hypotheses or questions should in turn follow from the purpose; that is, the relationships among the variables—first introduced in the purpose section—should be clearly explicated in the hypotheses/question section.

In addition, there is a logical relationship between the literature review and hypotheses or questions. Finally, the hypotheses or questions should be stated specifically enough that operational definitions may be formulated (i.e., identification of independent and dependent variables).

**Sample Hypotheses**

We predicted that goal self-concordance would mediate the relationship between ethnicity and depression. Thus, when self-concordance is statistically controlled, ethnicity was hypothesized to no longer account for significant variance in depression. This prediction was therefore tested as a mediational hypothesis in the present research. Because the model adopted in the present study is cross-sectional, we cannot rule out bidirectional relationships, particularly between self-concordance and depression. Our intent here, however, is to focus on self-concordance as an intervening variable between ethnicity and depression.

**Exercise.** Find an empirical article from one of the APA journals listed below, and critique the article’s introduction.
Alphabetical Listing of Journals

A–F

American Psychologist
Behavioral Neuroscience
Clinician's Research Digest
Contemporary Psychology
Developmental Psychology
Experimental and Clinical Psychopharmacology

G–L

Health Psychology
Journal of Abnormal Psychology
Journal of Applied Psychology
Journal of Comparative Psychology
Journal of Consulting and Clinical Psychology
Journal of Counseling Psychology
Journal of Educational Psychology
Journal of Experimental Psychology: Animal Behavior Processes
Journal of Experimental Psychology: Applied
Journal of Experimental Psychology: General
Journal of Experimental Psychology: Human Perception and Performance
Journal of Experimental Psychology: Learning, Memory, and Cognition
Journal of Family Psychology
Journal of Personality and Social Psychology

M–R

Neuropsychology
Prevention & Treatment
Professional Psychology: Research and Practice
Psychological Assessment
Psychological Bulletin
Psychological Methods
Psychological Review
Psychology and Aging
Psychology of Addictive Behaviors
Psychology, Public Policy, and Law
Rehabilitation Psychology
Review of General Psychology

Suggested Readings


METHOD

The greatest invention of the nineteenth century was the invention of the method of invention.

A.N. Whitehead

The main purpose of the Methods section is to describe (and if necessary defend) the experimental design and then provide enough detail so that a researcher can repeat the experiments. Careful writing of this section is critically important because the cornerstone of the scientific method requires that your results, to be of scientific merit, must be reproducible.

Who are my participants?

In this section, you need to provide specific information about all those who participated in the study. In most quantitative studies, they are identified as subjects; in most qualitative studies, as participants. The description of the population and sample gives a good clue to the generality of the findings. The characteristics of the population define the group to whom the study’s results may be expected to transfer. This generality also depends on other factors:

1. Is the population to be sampled consistent with the problem statement?
2. Is the basis for stratification or other controls given?
3. Are circumstances under which individuals participated described (e.g., for pay, for course credit, etc.)?
4. In describing the participant population, does the writer give sufficient detail which might affect the outcome of the study (e.g., gender, age, education)?

Sample Participants

Participants were 276 (155 European-American and 121 Vietnamese-American) students between the ages 18-25 (124 females and 152 males) who were enrolled in introductory psychology courses at the University of Southern California. The mean age of participants was 24 years old. There were no age differences between the two groups. Participants took part in a semester-long study in exchange for class credit. All participants were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

A survey item on family structure indicated that 35% of the participants were living with two biological parents, 24% were in a single-parent constellation (mostly single mothers, sometimes with relatives), 7% were in a blended family, with one biological parent and one stepparent, and 34% were living independently (with no guardians). Data on parental
education indicated that 79% of fathers had education through high-school, 15% had some college education or were college graduates, and 3% had post-college education; data were similar for mothers. Preliminary analyses revealed that the family structure of Vietnamese and European-American students did not differ significantly from each other. However, the level of parental education was found to be significantly lower for Vietnamese than for European-American participants, $\chi^2 (4, N = 276) = 12.53, p < .05, \phi = .21$.

**Does my study have an explicit design?**

Many forms of data analysis can lead to the same conclusion when a study is well designed, but even the most intricate and powerful data analysis methods can not extract a dependable basis for understanding when a study is poorly designed. Design is critical. A good design will control for variables that might otherwise be confused with experimental effect. It permits an experimental effect to be satisfactorily measured. A good design should answer the following questions:

1. It is clear which variables are expected to produce the experimental effect (independent variables) and which will be measures of it (dependent variables).
2. If the independent variables are to be manipulated in experimental fashion, the writer has shown how this will be done.
3. Are contaminating variables indicated and their method control described?
4. When variables are left uncontrolled (as is necessarily the case since each design is a compromise between what ought to be and what can be done), is the nature of this compromise explained and its rationale given?

**Do I have an apparatus or measure(s)?**

In this section, the measures and observations used in gathering data should be detailed and the following questions should be addressed:

1. Are the operational definitions given for all important terms in the hypothesis?
2. Have the appropriate data for essential psychometric characteristics such as validity, reliability, and objectivity been cited.
3. Have measures of objectivity been indicated or provisions for their development made (i.e., scoring of protocols, standardized interviews, and so on)?
Sample Materials

Measures

**Personal goals**

To assess personal goals, we used the personal striving construct (Emmons, 1986). Specifically, participants were instructed to brainstorm a set of personal goals that they would be usually or characteristically trying to reach during the upcoming semester, following Emmon's (1986) procedures and instructions. Examples of participant responses included “to try to improve academically,” “to learn to relax and manage stress more effectively,” and “to try to quit smoking.” Next, participants selected the five most important goals from their set of candidate goals. Participants then completed a variety of ratings on each personal goal.

**Goal self-concordance**

To assess the degree of self-concordance of participants' goals, we asked them to rate their reasons for pursuing each goal in terms of each of the four reasons outlined in self-determination theory: external, introjected, identified, and intrinsic. These four reasons sample a continuum of perceived locus of behavioral causality (Ryan & Connell, 1989), ranging from noninternalized to completely internalized. The external reason was “you pursue this goal because somebody else wants you to or because the situation demands it.” The introjected reason was “you pursue this goal because you would feel ashamed, guilty, or anxious if you didn’t.” The identified reason was “you pursue this goal because you really believe it’s an important goal to have.” The intrinsic reason was “you pursue this goal because of the fun and enjoyment that it provides you.”

Ratings were made on a 1 (not at all for this reason) to 9 (completely for this reason) scale. A self-concordance score was created for each personal goal by summing the identified and intrinsic scores and subtracting the introjected and external scores (c.f. Grolnick & Ryan, 1987; Grolnick, Ryan, & Deci, 1991; Sheldon & Kasser, 1995). An aggregate self-concordance score was created for each participant by summing across the five personal goals ($\alpha = .68$).

**Depression**

We assessed individual levels of depression using the Center for Epidemiological Studies Depression Scale (CES-D). The CES-D is a 20-item measure of current depressive symptomatology, with an emphasis on the affective component—depressed mood (Radloff, 1977). Items represent the following major components of depression: depressed mood, feelings of guilt and worthlessness, feelings of helplessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance.
Responses are based on a 4-point Likert-like scale (0 = rarely or none of the time and 4 = most or all of the time). The scale has been shown to be internally consistent, with coefficient alphas of .85 in the general population and .90 in the patient sample (Radloff, 1977). Test-retest reliabilities ranging from .51 to .67 were found with retest intervals of 2 to 8 weeks (Radloff, 1977).

The CES-D correlates strongly with both the Raskin Rating Scale (r = .75) and the Hamilton Clinician’s Rating Scale (r = .69) after 4 weeks of inpatient treatment. Summing the scores on all 20 items produces a range of 0 to 60, with higher scores indicating greater depression. Cutoff scores of 16 have been used to screen for depression in community samples (Radloff, 1977). The CES-D scale had satisfactory internal consistency in the present study (Cronbach’s alpha = .72).

**How should I describe the procedure section?**

The procedure section describes what was done to carry out the study. You are required to explain the procedures in sufficient detail for two reasons: First doing so enables other researchers to replicate the study. Second, doing so enables potential consumers to determine if your findings can be trusted. The procedure section identifies the following steps:

1. A chronological description of what happened to participants is given (e.g., instructions to participants, formation of groups, specific experimental manipulations).
2. Control features of the design are adequately described (i.e., randomization, counterbalancing).

**Sample Procedure**

Data were obtained through a self-report questionnaire administered to students in a laboratory by project staff. The questionnaire took approximately 40 minutes to complete. The staff followed a standardized protocol in giving instructions to students. The survey was administered under anonymous conditions. Respondents received class credit for their participation. The completion rate (number of surveys completed/total number of participants) was 96%.

**Exercise.** Critique your article’s Method section.
Suggested Readings

RESULTS

Results! Why, man, I have gotten a lot of results. I know several thousand things that won’t work.

_Thomas A. Edison_

If the Introduction is the expression of the problem, then the Results is the response to that problem. One follows from the other. The first sentence in a results section gets right to the point, giving the results that respond to the problem. Do not think of the results as an assembly of numbers of data, but as arguments for the research problem.

Results should always begin with data evidences that respond directly to a research problem; anything else is inappropriate for the results section. In particular, aspects of method and procedure do not belong in the results section.

Descriptive and inferential evidence are the two forms of evidence given in scientific argument. Description is a faithful reporting of what actually occurred (sample observations or descriptive statistics—means, proportions, standard deviations, etc.). Inference is a generalization extending from sample observations to an specified population.

Descriptive evidence comes first. Suppose you witnessed a car accident on the street; a crowd gathers, and the police arrive. A policeman will ask you what happened, and you must decide what to say and in what order. You can begin correctly by describing what you saw, or you can make the mistake of forming inferences and give these first. It would be wrong to say, “The blue car was at fault.” Logically, one must know the facts before making inferences. The same is true in research reports; give the descriptive evidence first.

What belongs in my results section?
1. Descriptive evidence for or against a hypothesis/question.
2. Inferential evidence for or against that same hypothesis/question.

What does not belong in my results section?
1. Reliability evidence
2. Validity evidence
3. Test of statistical assumptions
4. Loss of subjects or other unexpected threats to the validity of the study
5. Anything procedural in carrying out the study
How do I present my descriptive evidence?

1. Two Classes of Descriptive Evidence
   a. Numerical description in text, table, or figure
   b. Central tendency (mean, median, mode)
   c. Dispersion (standard deviation, variance, range)
   d. Frequency (number of observations)
   e. Proportion or percentage
   f. Correlation coefficient (but not its probability—p-values)

2. Verbal description
   a. Narratives
   b. Ethnography

Interpreting Descriptive Evidence

1. Use words that interpret descriptive statistics as agreeing or disagreeing with your questions/hypotheses.
2. When your evidence is intrinsically complicated, say what is necessary to help a reader understand what is in a figure or table.
3. Direct a reader's attention to a location in a table if such a location reveals the essence of a result.
4. Point out to particularly favorable or unfavorable evidence if you think a reader is likely to miss it.
5. In any of the above, use words that limit your interpretation to description of a sample. Avoid generalizations.
6. Never place the same evidence in more than one of the following forms of presentation: (a) text, (b) table, or (c) figure.

What is Inferential evidence?

1. Always preceded by descriptive evidence, the primary evidence.
2. Often gained by calculating an inferential statistic, such as a t or F, and interpreted according to how unusual that statistic is.
3. Represented by p, a probability.

How to Write Inferential Arguments

1. Place inferential evidence after the specific descriptive evidence it supports.
2. Write hypotheses as timeless generalizations; that is, use present tense.
3. Use a separate heading to reveal each hypothesis and its inferential result. In the heading, express your judgment that an inference is justified. If not inference is justified or if only weak evidence is presented, say so.

4. Separately, under each hypothesis, organize different lines of inferential evidence, with the most important first. Subordinated headings should precede each separate line of evidence.

5. Place all related information together so that readers will not have to jump around to understand intentions.

Sample Descriptive Evidence

CES-D and Self-Concordance characteristics of study sample

The average CES-D score in the study sample was 10 (SD = 6.5). Overall, 34% (n = 93) scored above the cutoff for depressed mood (16 or greater). Preliminary analyses revealed that depressed mood was more prevalent in Vietnamese-American students (36%) than Caucasian students (9%), χ² (1, N = 121) = 30.97, p < .001, φ = .51. Depression was not associated with gender or parental education.

For each participant, a self-concordance variable was formed by summing the identified and intrinsic scores and subtracting the introjected and external scores. The mean self-concordance score for the entire sample was 6.91 (SD = 2.04, α = .76). On average, European-American students reported significantly higher goal self-concordance (M = 8.52, SD = 3.29) than Vietnamese students (M = 4.84, SD = 3.21), F (1, 274) = 209.82, p < .001, η² = .43. Analysis of each of the four reasons of goal pursuit (i.e., external, introjected, identified, and intrinsic) revealed that Vietnamese-American participants endorsed on average significantly higher “introjected” reasons for goal pursuit (M = 7.63, SD = 2.03) than European-American participants (M = 1.86, SD = 1.84), F (1, 274) = 186.12, p < .001, η² = .39. No significant differences were observed on any of the three other reasons for goal pursuit.

Sample Inferential Evidence

Mediational Analysis

Linear regression models were used to examine the independent effects of ethnicity and goal self-concordance on depression. Baron and Kenny (1986) have discussed four steps in establishing mediation: (1) The predictor variable must be correlated with the outcome; (2) the predictor variable must be correlated with the mediator; (3) the mediator affects the outcome variable; and (4) when controlling for the mediator variable, the previous relationship between the predictor and outcome variable is greatly reduced or nonsignificant. The
effects in both Steps 3 and 4 are estimated in the same regression equation (Baron & Kenny, 1986).

Using the criteria described above, we found that goal self-concordance mediated the relationship between ethnicity and depression. The complete path is shown in Figure 1. Controlling for parental education, the complete model is characterized both by a direct effect of ethnicity on depression and by an indirect effect via self-concordance. Specifically, separate linear regression analyses showed the after controlling for parental education, ethnicity predicted both depression, $F(1, 274) = 189.36, p < .01, R^2 = .13$ and goal self-concordance, $F(1, 274) = 168.12, p < .01, R^2 = .09$. Moreover, when depression was regressed simultaneously on both ethnicity and goal self-concordance, the significant correlation between ethnicity and depression was eliminated. This complete path model accounts for almost twice as much variation in the depression variable as a regression that only included ethnicity as a predictor variable (see Table 1; $R^2 = .29$, compared to $R^2 = .14$). Results thereby support goal self-concordance as a mediator of the association between ethnicity and depression.

**Exercise.** Critique your article’s Results section.

**Suggested Readings**


DISCUSSION

It is the fault of our rhetoric that we cannot strongly state
one fact without seeming to belie some other.

Ralph Waldo Emerson

How should I begin my discussion?

Open the discussion by telling what you learned now that your
study is completed. Get right to the point, without unnecessary small
talk. A discussion gives the status of a research problem once the data
have been analyzed; it tells how believable, in light of the data, your
assumptions about the problem are. Specifically, the discussion should
begin with the writer:

1. Conveying the tested hypotheses.
2. Describing the extent to which the problem was satisfied
   by the results obtained.

Sample Orientation and Support

Vietnamese are one of the fastest growing ethnic
minority groups in the United States (Portes & Rumbaut,
1990). Accompanying the influx in migration is recent research
which indicates that major depression is a common mental
problem among Vietnamese immigrants who present for care
in psychiatric settings (Hinton, et al., 1993; Hinton, et al.,
1998; Hinton, et al., 1997). Consistent with this research, we
found that like their immigrant parents, Vietnamese young
adults also report high levels of depression compared to their
European-American peers (Felsman, et al., 1990; Tran, 1993;
Webb, McKelvey, & Strobel, 1997).

How do I interpret my results?

The discussion should also contain a section on explanatory
arguments wherein the writer address the following issues:

1. Interpretations stem directly from the data.
2. Patterns in the data are pointed out.
3. The extent to which the data agree or disagree with
   other’s data are described.
4. The advantage of one interpretation has over other
   interpretations for integrating findings with existing
   knowledge are explained.

Sample Explanatory Arguments

Applying the self-concordance model to our
predictions, we found support for our mediational
hypothesis. After statistically controlling for goal self-
concordance, the previously significant relationship
between ethnicity and depression disappeared. One
explanation of these data is that autonomous or self-concordant goal pursuit is a fundamental quality of human experience. Ryan and Deci (2000) suggest that like the needs for competence and relatedness, the need for autonomy is universal and thus must be satisfied in all cultures for people to be optimally healthy. Thus, by assuming that self-concordant goal pursuit is fundamental to optimal well-being, one is able to see unity (or equifinality) within broad diversities of behavior across cultures.

The findings in the present study that goal self-concordance has a positive affect on well-being across two diverse ethnic groups is consistent with the observation that although both the genesis and the focus of research concerning independence and interdependence have heretofore been cross-cultural, members of Eastern and Western cultures are capable of displaying both kinds of values (Triandis, 1995). These results parallel too the findings of other researchers who have observed similar results within Bulgarian (Deci, Ryan, Gagne, Leone, Usunov, & Kornazheva, 2000) and Russian samples (Ryan, Chirkov, Little, Sheldon, Timoshina, & Deci, 1999).

Should I describe the limitations of my study?

Relevant limitations of the study (i.e., design inappropriateness, inferential limitations, alternative interpretations) should be described, with the writer also pointing out yet unknown information and offers recommendations for resolution of limitations.

Sample Limitations

Finally, several theoretical and methodological concerns deserve attention. In applying the self-concordance model, we did not assess goal attainment. Carver and Scheier (1990) reported that goal attainment leads to enhanced well-being. However, we suspect that participants in the present study whose goals were not self-concordant would have experienced little change in well-being, no matter how well they progressed in achieving their goals. In addition, the obtained effects should be considered provisional because of the need to replicate cross-sectional findings with longitudinal research.

How should I end my discussion?

You should end the discussion section by describing the possible theoretical and practical consequences of your results. A description of the theoretical implications of the (dis) confirmed hypotheses should
also be given. And finally, practical applications of the study’s findings should be described.

**Sample Conclusion and Consequence**

Despite these limitations, we believe that the self-concordance model (Sheldon & Elliot, 1999) offers a flexible framework for studying fundamental questions in the field of cultural psychology. In particular, the model provides a way of testing explicit assumptions about the nature of goal pursuit across varying cultural groups and about the effects of such pursuits on well-being. Considerable research now attests to the qualitative advantage of self-concordant, relative to controlled, motivation across a multitude of tasks and settings (see Deci, Koestner, & Ryan, 1999 for a review). Extending these findings with other non-European participants is a promising area for future cross-cultural investigation.

**Exercise.** Critique your article’s Discussion section.

**Suggested Readings**

6 Scheduling Your Work

I returned, and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favor to men of skills; but time and chance happeneth to them all.

_Ecclesiastes_

Now that you have planned how to complete your paper, you can proceed to begin the process of designing an actual timetable for your project. Doing that, however, presupposes thinking about time not only in structural terms of “before” and “after” but also in calendar terms of weeks, months, and actual deadlines. Having broken down your paper into sections, you can now start calculating how much time you will need to spend on each section and whether you can promise to show your advisor a full draft of your thesis by next May.

**How long should my paper be? And how long will it take me to write my paper?**

The first step in designing an effective timetable for your paper involves making a comprehensive list of the various “stairs” leading to the top of the mental mountain representing your thesis or paper and estimating the approximate “height” of each stair. In other words, you first need to assign each of the constituent segments of your manuscript an estimated length.

Although at first estimating the lengths of sections within your paper may seem difficult, it needn’t be. Let’s start with some more assumptions:

1. Assume that the ideas and content found in the previous chapter (i.e., Introduction is made up of the general background, the problem statement, the significance, the purpose, the organization, the literature review, and the hypotheses/questions) each represent, more or less, a paragraph. For instance, you might think of the significance section as a paragraph.
2. Given this assumption, how many paragraphs should your Introduction contain? Seven. Well, because your literature review will probably be more than one paragraph, I would shoot for approximately a nine- to eleven-paragraph introduction.
3. Assume that a double-spaced page is made up of, more or less, 2 to 3 paragraphs. And a single-spaced page, more or less, 4 to 5 paragraphs.
4. Given this assumption, how many double-spaced pages should your Introduction be? About 3-6 pages.
5. You might think that there's "no way" you're going to be able to write a 3-6 page Introduction, but it's not that bad once you realize that your outline will do most of the work for you!

6. Finally, assume that it will take you one day, more or less, to write one page of your first draft?

7. Given this assumption, how long will it take for you to finish the first draft of your entire paper? Well, if you do the arithmetic, it would take you about a little more than two weeks. Seventeen days to be exact!

How do I keep my writing momentum?

Even beyond the level of the individual writing session, you need to be attentive to the continuous "flow" of your writing and keep it from being interrupted. When you are working on a large project (such as a class paper or a thesis), which inevitably entails numerous sessions stretching over a long period of time, it is important to pay a lot of attention not only to when but also how often you plan to write.

In order to ensure that you keep your "mental momentum" throughout the days, weeks, or even months that you may have to work on the same project, try to minimize the number of times when you have to interrupt your writing for more than a day at a time. In other words, try to write as frequently as possible. The suggestion in the previous section of trying to write a page a day can be effective once you appreciate that Michael Creichton followed this strategy when working on a obscure little book called *Jurraisic Park*, which went on to sell over a million copies and was on the bestseller's list for over a year!

Being attentive to the continuous "flow" of your writing implies, of course, making special effort to schedule your sessions back to back, so as to allow yourself long stretches of relatively uninterrupted writing. Thus, if you have the flexibility to do so, try to schedule all your regular commitments (classes, meetings, dates) and obligations (returning telephone calls, answer letters) either for the afternoon (if you like to work in the morning) or for the morning (if you like to work in the afternoon) but not for both on the same day. This will allow you to organize your writing in essentially five-day stretches (or even longer ones if you are also willing and able to work on weekends), even during relatively busy periods.
7 The Zero Draft

The zero draft is the point where it becomes possible to see the organization in your madness. But before you can get started on your first draft—before you put pen to paper or fingers to keyboard—you must be able to imagine, or discern, a shape to your material.

The organization of your paper has been discussed thus far as comprising four major parts (i.e., Introduction, Methods, Results, Discussion). Moreover, the parts comprise distinct pieces of evidence (e.g., general background, significance). But how do these smaller pieces combine with the larger parts to form a coherent message?

Few writers think of the messages they are trying to communicate in a report. We recommend trying to spell out the main message in 20 to 30 words and three or four supporting messages, each of them in 20 to 30 words. The idea is to build a hierarchy: main message → supporting messages → points (one to a paragraph) → details, examples, and comments. Most writers wallow in the details, occasionally making a point, rarely voicing a message. One reason is that it’s not easy to spell out messages.

What is my main message?

The main message is the single most important idea that you want your reader to walk away with. Answering this question forces you to boil down, into one statement, everything you know about your topic and everything you hope to achieve by writing about it. If you don’t articulate it, your reader certainly won’t be able to.

What are my supporting messages?

A short piece of writing may not have supporting messages, relying instead on a series of points to support the main message. A longer piece of writing, such as a scientific paper, generally needs supporting messages. Your supporting messages divide your argument and thus become the conceptual architecture that informs your outline. In a scientific paper, the supporting messages are already built into the paper (e.g., Introduction, Methods).

How do I create a paragraph-by-paragraph plan?

If the supporting messages represent the major parts of your paper, then the paragraphs are the pieces that make up the parts or the points that strengthen the supporting messages. Each of these paragraphs therefore can be described by the pieces (e.g., general background, organization) that support them. That is, you can think of each of the points contained in the rubrics as making up, more or less, a paragraph.
8 The First Draft

Writing is easy. All you have to do is stare at a blank sheet of paper until drops of blood form on your forehead.

*Gene Fowler*

A paragraph is unified if each sentence is clearly related to the point, coherent if you make it obvious to your reader how each sentence is linked to the point. You can make the link more obvious by repeating key words and phrases. You can also use transitional words and phrases to enumerate and coordinate a paragraph’s sentences. And you can change the structure of your sentences to reveal parallel or subordinate ideas. These techniques do more than make your paragraphs coherent—they also give them cadence.

**How many sentences make up a paragraph?**

A paragraph is well developed if its sentences unfold in a way that makes your argument perfectly clear to the reader. One of the best ways to do this is to express the point of the paragraph as a general statement in the first sentence and then to support it with detail and examples in subsequent sentences. As a general rule, a paragraph should be made up of four to six sentences. Used for perhaps two-thirds of all paragraphs in expository writing, this model is among the most common. Some other ways are to conclude with the point, to phrase the point as a question and answer, and to undermine an argument to make the opposite point. Deciding how you develop a paragraph generally depends on the details, examples, and comments you have to support your point.

**How do I unify my paragraphs around strong points?**

Pointless. That is one of the biggest problems a writer has with paragraphs: failing to tell readers the point of what they’re reading. Close behind is having a point with no support: a succession of loose, even unrelated, sentences.

The solution to the first problem is simply to add a strong point—and to make it obvious, usually by leading with it. The solution to the second problem is to make sure that every sentence in the paragraph bears on the point—and then to clarify the supporting sentences by using the traditional rhetorical devices of repeating a key term, counting the elements, signaling what’s to come, and changing the structure of sentences.

Powerful paragraphs need more than obvious subjects—they need strong points. Usually state explicitly at the start, sometimes
implied, the point is a statement of opinion or fact, which you then support with other sentences in your paragraph.

**Be sure every sentence bears on the point**
After you’ve written a paragraph, check to be sure each sentence supports the point. Too often, sentences are loosely related to the subject of the paragraph but not tied to the point.

**Repeat a key term**
Once you’ve rid a paragraph of extraneous material, try repeating a key word or phrase to bind sentences even more. Many writers have an aversion to repetition. But using different terms for the same idea simply to avoid repetition will confuse your reader.

**Count the elements**
If you have two or three discrete details to support your point, your readers may absorb them better if they are counted.

**Signal what’s to come**
Revealing the relationships between sentences, transitional words can signal continuation (and, further, furthermore, in addition, similarly), reversal (or, but, still, despite, otherwise, even so, nevertheless), and conclusion (so, thus, after all, in sum, in short, in brief).

**Stick to one verb form**
Using one verb form rather than unnecessarily jumping from one form to another is always a good way to unify a paragraph.

**How do I make my points in compelling ways?**
Few writers consider how or where to make a point in a paragraph. Most express the point in the first sentence and support it in subsequent sentences with details and examples. Although effective, this construction becomes less so when it is overused, and more so when alternated with other ways of making a point. Deciding how to make your point depends on the details, examples, and comments you have to support it.

**Lead with the point and support it**
The most common way to develop a paragraph is to state the point in the first sentence and support it, in subsequent sentences, with evidence: details, examples, and comments. When you lead with the point, your reader can identify it immediately, and a skimmer can pick up your line of argument by reading the first sentence of each paragraph. This form of development is what most of us use for our writing.

**Lead with the point and conclude with a comment**
Concluding a paragraph with a comment can inject a bit of your personality and, at times, humor. Comments can also put a paragraph
in perspective, create a bridge to the next paragraph, or reinforce your point after presenting a series of facts.

Gauge how much humor, irreverence, and personal opinion your readers will tolerate: don’t make so many comments that they distract readers from your argument.

**Lead with the point and, using conjunctions, joint details**

If you have, say, three supporting sentences of equal weight (none more important than the others), try linking them with *also* and *and* in the pattern shown here: \(X\) is ..., \(X\) is also..., and \(X\) is .... By using these conjunctions and the same pronoun in each sentence, you can stress the equality or sequence of the details, pulling your readers through the paragraph.

**Lead with the point and list disparate details**

Sometimes you can leave out such supporting conjunctions as *also* and *and* to add an edgy cadence to your details. Without conjunctions the series hits the reader in quick bursts, make each detail stand out. It also gives the impression that the list is not exhaustive.

**Conclude with the point after introducing the subject**

Occasionally, put the point at the end of a paragraph to build suspense. Do this sparingly, however, because readers tire of having to wait for you to get to the point. One way to conclude with the point: introduce a subject, discuss it, then make a point about it at the end.

Although it may be tempting, resist the urge to impose this design on perfectly sound leading-point paragraphs just to add rhetorical interest. One good place to use a concluding-point paragraph is at the start of a piece. In this prime location, concluding-point paragraphs lead readers into a piece gently.

Another place to use this pattern is when you’re trying to make a point that you know might be hard for readers to swallow. By putting the point at the end, you allow time for a softening preface and give yourself a chance to explain your position.

**Undermine a premise at the end of the paragraph**

Undermining an idea is a clever way to make your point stand out while taking the claws out of an opposing view. The decision about undermining at the beginning, middle, or end of a paragraph depends on how much information you want to give in support of the premise.

Undermining at the end of a paragraph is like concluding with the point—but in a backhanded way. It shows your understanding of an alternative point of view—then slams the direction of the argument into reverse. Undermining can, thus, highlight an opponent’s flaws or weakness, present (and refute) a common misconception, and introduce tension or create the atmosphere of debate.

The pattern of undermining a premise goes something like this:
Think of a premise you disagree with, opening it with a phrase like:
   a) It is widely believed, b) Many people think, c) It may seem, d) At first glance.
Then give the reader a few details about the premise, details that you can later turn to your advantage as you support your points. Along the way, you might intersperse such phrases as “it is argued” and “so goes the argument,” to remind readers that you are not presenting your own view. Last, shift the direction of the argument by undermining the premise, perhaps signaling the shift with: a) Yet, b) But, c) Actually, d) A closer look reveals, e) On the contrary.

**Undermine the premise immediately**
Sometimes, you may need to elaborate on the premise you intend to debunk, allowing you to attack it immediately. Undermining immediately is more abrupt than undermining at the end. It’s quick shift can also be used as a transition between paragraphs.

**Undermine a premise in the middle of the paragraph**
Undermining a premise after you’ve given readers some background allows you to fit the whole process (state premise, support it, undermine it with a point, support point) into one paragraph. That, however, can make for long paragraphs.

**Start with a question and answer it immediately**
Asking a question in the first line of a paragraph grabs the reader’s attention and sets up your point. Using an immediate, direct answer to make your point demonstrates a firm stance, emphasized by the confidence of a fragment.

Immediate answer make you seem—merely seem—unequivocal. They also engage your readers with a conversational tone. And they don’t leave the answer to the reader.

**Start with a question and answer it in succeeding sentences**
If the question defies a simple, straightforward answer, answer it in several sentences. You will still grab your audience’s attention with an opening question but will reveal the answer more slowly. This form works well for setting up a complicated or involved point, or for suggesting a point without stating it directly.

**Imply the point by presenting two sides**
Sometimes you may want to present two sides without taking a stand—either because of ignorance or diplomacy. You might also do this to suggest the complexity of a debate, thus allowing you: a) to set up your point (choosing one side) in the following paragraph, b) to avoid alienating readers when discussing a sensitive issue.
Imply the point in an analogy or syllogism

Analogies and syllogisms can make a topic more engaging. In analogies, A is likened to B: money to water. More complicated, a syllogism likens A to B, B to C, and thus A to C.

How do I link my paragraphs?

Many of the devices that bind sentences within a paragraph—Repeating a key term, counting the elements, signaling what’s to come, asking and answering questions—can do the same work across paragraphs, creating smooth transitions from one to the next.

Repeat a word or phrase from the end of the preceding paragraph

Words or phrases from one paragraph repeated at the start of the next explicitly tie the two together.

Turn the repeated word into a question

Turning the repeated word or phrase at the start of the second paragraph into a question raises an eyebrow of doubt or irony.

Signal what’s to come

Conjunctions and transitional phrases join paragraphs by signaling reversals, continuations, and restatements. Though many writers avoid opening a paragraph with a conjunction, these words are ideal transitional words; they are clear and direct, and tell readers what to expect next.

Establish pairs across paragraphs

Similar to repeating a word or phrase, mirroring elements from one paragraph to the next not only aids transition, but links the point of one paragraph to the next.

Ask a question at the end of one paragraph and answer it at the beginning of the next

Questions suggest answers. Posing a question at the end of a paragraph signals the reader to look for your answer in the next.

Count

Counting is a simple but effective transitional device to link several paragraphs.

Announce an example

Some paragraphs illustrate a previous point, opening with Take or Consider or having a for example near the front.
9 The Second Draft and Beyond

Revising for content
To see how difficult writing is, even for experienced writers, we have only to study their manuscripts: They are full of alterations, crossing out, additions, loops, arrows, blots. The apparent spontaneity of easy-reading prose is the result of work.

Those who can write a finished document and first draft at the same time are few. Revision most often is the step in scientific writing that separates the novice from the master craftsman. It’s the reason why professional writers have such big wastebaskets! They keep working on a piece until it is right.

In this chapter, some basic organizational questions are explored.

Is the title accurate and succinct?
Titles are more effective when they begin with a keyword. Subtitles, if allowed and used, should be able to stand alone. They should not duplicate the main title.
Is all of the text really needed?
Most drafts are overwritten. Can some of the first draft be discarded? Does any of the text repeat information presented elsewhere in the document. It can be difficult to be as ruthless as necessary. You may be reluctant to leave out any text when you worked so hard getting it into the first draft. Remember that your document will be judged by content, not number of words. Readers will thank you only for a paper that gets to the point, sticks to it, and presents content directly relevant to that point.
Is any needed content missing?
Sometimes—especially if a writer is interrupted while working on the first draft—important material gets left out. Keep this question in mind, and such gaps will probably jump to your attention when you read through the first draft.

Revising for clarity
The simplest writing is usually best. This does not mean that one should avoid technical words. They often are not only necessary, but the very best way to express a thought. It does mean that verbose words and phrases should not be included in a vain attempt to impress the reader with the writer’s intellect.

Clarity includes what some call “grace of expression.” People have grace when they go beyond politeness and act with an eye to the needs and comfort of others. Graceful prose is much the same. It does not offend readers or divert their minds from the message. It does not
try to impress readers with its erudition, or force them into side issues. It serves readers without imposing upon them.

How long should each sentence be?
For maximal readability, most sentences in most scientific prose should be about 15 to 20 words long. This is an easy matter to determine with a word processor program. Sentences with more than 40 words generally are too long. If sentences consistently include fewer than 12 words—a rare situation in scientific writing—consider linking and expanding some of them. Usually, a set of sentences 15-20 words long will express an idea in somewhat fewer words than a set of overly long or short sentences does.

Remember that guidelines refer to averages. Variation in sentence length and complexity helps sustain reader interest. A publication full of overly long sentences is difficult to follow, and may lose a reader entirely. A sustained string of extremely short sentences can be choppy and annoying.

How do I remove long strings of nouns?
In English, a noun can be used to modify or describe another noun. Such noun clusters are common in our language, adding variety and flexibility to writing. For example, heart disease (a two-noun cluster) and cardiac disease (an adjective and a noun) have the same meaning, and may be used interchangeably.

Two-noun clusters are acceptable, even desirable, and usually cause no problems. However, scientists have a tendency to take this ability to extremes, running together whole series of nouns (and adjectives) that modify one another and the final noun in the chain, until the reader becomes lost.

Revising for brevity
Editing for conciseness is both a matter of choosing the shorter, simpler alternative to express each word, phrase, and idea and a matter of eliminating redundancy.

How do I get rid of unnecessary verbiage?
Verbiage, which coincidentally rhymes with garbage, means the use of many unnecessary words. Often it leads to a sort of ritualistic, pompous writing style.

There are no shortcuts around a fundamental step: Line by line and word by word, check through the first draft of the text. Ask “Is this word necessary? How can this be shortened? Does this say what I really mean?”
How do I remove empty fillers?
In spoken English, many words and phrases act as “fillers.” They have little more meaning than *and-um* or clearing one’s throat. Unless they are used to excess, neither the speaker nor his audience is even aware of them.

Most “it...that” phrases, such as “it is interesting to note that,” are pointless fillers. Strike such phrases entirely. Particularly avoid those that contain thinly disguised double negatives. When equivalent alternatives exist, choose the one that takes the least space. A corollary, however, is that when clarity and brevity conflict, clarity is more important than brevity.
10 Finishing Up

“When I use a word,” said Humpty Dumpty, in a rather scornful tone, “it means just what I choose it to mean—neither more nor less.”

*Lewis Carroll*

Editing for grammar

The importance of grammatical correctness in scientific writing springs from the precision which science requires. Because more than one interpretation of a sentence or phrase is unacceptable, careful attention must be paid to both word choice and word arrangement. Most faults in grammar can be detected and corrected simply by analyzing sentences logically. Many books such as Hodges (1995), Strunk and White (2000), and Venolia (1995) deal more exhaustively with details of grammar usage.

Should I use active or passive voice?

“Voice” is the form of transitive verbs that shows whether the subject acts or is acted upon. When the subject of a sentence performs the action expressed by the verb, the voice is said to be active. When the subject undergoes the action of the verb, the voice is passive. The phrase *it was carried* is passive; *we carried it* is active.

Many scientists overuse the passive voice. They write as though it were somehow impolite or unscientific to name the agent of action in a sentence. They seem to feel that every sentence must be written in passive terms, and they undergo elaborate contortions to do so. However, in any type of writing, the active voice is more precise and less wordy than the passive voice. It is the natural voice in which most people speak and write. The active voice also adds energy to your writing, and forces you to decide what you want to say. The passive often obscures your true meaning and compounds your chances of producing pompous prose.

To convert a sentence that is in the passive voice to one in the active voice, search for the true subject, and name it. Then find the verb, and mentally drop the form of *to be*. Convert what is left of the verb to the active voice.

Passive: The relationship was studied by the researchers.

Active: The researchers studied the relationships.

How do I decide on the right tense?

The use of present or past forms of verbs has a very special meaning in scientific papers. Proper tense use derives from scientific ethics. The use of past or present verb forms is a way of indicating the status of the scientific work being reported.

Because of these conventions regarding tense use, a scientific paper usually should seasaw back and forth between the past and
present tenses. An Abstract refers primarily to the author's own unpublished results, and uses the past tense. Most of the Introduction section emphasized previously established knowledge, given in the present tense. Both the Materials and Methods and the Results sections describe what the author did and found. They appear in the past tense. Finally, the Discussion emphasizes the relationship of the author's work to previously established knowledge. This section is the most difficult to write smoothly because it includes both past and present tenses.

**Use present tense when a fact has been published**

Generalizations, references to stable conditions, and general “truths” should be given in the present tense. When scientific information has been validly published in a primary journal, it likewise becomes established knowledge. Therefore, use the present tense when writing about it. In this way, you show respect for the scientist’s work. Similarly, when previously published work is mentioned, and the author is cited parenthetically or by footnote number, the sentence usually should be written in the present tense. Several recent reports (2, 3, 6) describe similar findings. The investigations of Smith (2001) corroborate the results. When giving the author’s name non-parenthetically as a source of the information, one can use either past or present tense for the verb that is linked to the author. However, the part of the sentence which refers to the scientific work itself is still given in the present tense. Rogers (1998) showed that streptomycin inhibits growth of the disease organism. Jones (1999) does not believe that streptomycin is effective.

**Use present perfect tense for repeated events**

The present perfect tense is appropriate when observations have been repeated or continued from the past to the present. Aggressive behavior has been studied under many environmental conditions. These drugs have been shown to produce significant elevations in blood pressure.

**Use past tense to discuss results that cannot be generalized**

Some results have been obtained under such specialized conditions that they pertain only to the particular study being reported. Numerical data sometimes fall into this category. Use the simple past tense of the verb that refers to the scientific work. Kelly (1999) showed that 28% of the 343 participants in his study showed symptoms of the virus. It also would be correct to say
“Kelly (1999) reports,” but using past tense for both verbs is somewhat smoother and more consistent.

Use past tense for unpublished results
By this line of reasoning, the research being reported for the first time in the paper you are writing will not be established knowledge until after it has been published. Therefore, use past tense to describe what you have done.

In the study reported here, the drugs eliminated 95% of the symptoms.
Our data showed significant results.
When your paper is published, the results become established knowledge. Thus, in citing your own previously published work, use the present tense, just as you do for other’s work.

Use present tense to refer readers to your figures and tables
Even though these are new and unpublished material, they are explanatory aids, not research itself. Discussion of the results itself in past tense, but directives appear in present tense.

Females comprised 34% of the participants, as Table 1 indicates. See Figure 3, which illustrates the six-fold increase in aggressive behavior found in the study population.

Editing for word usage
How nice it would be if word choice was simple and easy. Instead, like the bugs that plague computer programs, flaws in word choice creep into scientific writing unnoticed. And as is true of the bugs in programs, there is more than one way to get rid of them.

What are some commonly misused words?
Above ("the above method," "mentioned above," etc.) -- Often, you are referring to something preceding, but not necessarily above; a loose reference, convenient for writers, but not for readers. Be specific. You know exactly what and where, but your readers may have to search (sometimes through much preceding material).

Accordingly – Try cutting or try using so, therefore.
Additionally – Try moreover, and, also.
Affect, effect -- Affect is a verb and means to influence. Effect, as a verb, means to bring about; as a noun, effect means result.
All of, both of -- Just "all" or "both" will serve in most instances.
A lot of – Try *much, many*.

**Alternate, alternative** -- Be sure which you mean.

**And** (to begin a sentence) -- Quite proper. You have been told not to do this in grade school. But teacher’s purpose was to keep you from using fragmentary sentences; either "and" or "but" may be used to begin complete sentences. And both are useful transitional words between related or contrasting statements.

**Apparently (apparent)** -- means *obviously, clearly, plainly evident*, but also means *seemingly or ostensibly* as well as *observably*. You know the meaning that you intend, but readers may not. Ambiguity results. Use *obvious(ly), clear(ly), seeming(ly), evident(ly), observable or observably*, etc., as needed to remove doubt.

**Appear, appears** -- Seem(s)? "He always *appears* on the scene, but never *seems* to know what to do." "Marley's ghost *appeared* but *seemed* harmless."

**Any** – Try cutting.

**As** -- Dialectal when used in place of *that* or *whether*; do not use *as* to mean *because* or *inasmuch as*.

**As follows** – Change to *as follows*.

**At the present time, at this point in time** -- Say "at present" or "now" if necessary at all.

**Available** – Try cutting.

**(A) variety of** – Try *many, several, different*.

**Below** -- See comment about *above*.

**Both** – Try cutting.

**But** (to begin a sentence) -- Go right ahead (see "And" and "However").

**By means of** -- Most often, just "by" will serve and save words.

**Case** -- Can be ambiguous, misleading, or ludicrous because of different connotations; e.g., "In the case of Scotch whiskey,...." *Case* also is a frequent offender in padded, drawn-out sentences. For "in this case," try "in this instance."

**Certain** – Try cutting.
**Commas and punctuation** -- Not precisely a word-usage matter except in relation to how words are put together. The trend is toward less punctuation (particularly fewer commas), but that demands careful writing, without misplaced or dangling elements. Do **not** omit commas before the conjunctions in compound sentences. Most journals, but not all, use final commas before "and" or "or" in series; check the journal.

**Compare with, compare to** -- Compare **with** means to examine differences and similarities; compare **to** means to represent as similar. One may conclude that the music of Brahms compares **to** that of Beethoven, but to do that, one must first compare the music of Brahms **with** that of Beethoven.

**Comparitive** – Try cutting.

**Comprise** -- Before misuse, comprise meant to contain, include, or encompass (not to constitute or compose) and still does, despite two now opposite meanings. Use and meanings now are so confused and mixed that "comprise" is best avoided altogether.

**Concerning** – Try **at, of, on, for, about.**

**Consequently** – Try **therefore, so.**

**Correlated with, correlated to** -- Although things may be **related to** one another, things are **correlated with** one another.

**Different from, different than** -- Different from! Also, one thing **differs from** another, although you may **differ with** your colleagues.

**Due to** -- Make sure that you don't mean *because of.* Due is an adjective modifier and must be directly related to a noun, **not** to a concept or series of ideas gleaned from the rest of a statement. "Due to the fact that..." is an attempt to weasel out.

**During the course of, in the course of** -- Just use "during" or "in."

**Either....or, neither...nor** -- Apply to no more than two items or categories. Similarly, **former** and **latter** refer only to the first and second of only two items or categories.

**Emphasize** – Try **stress, underscore.**

**Empirically** – Try cutting.

**Encourage** – Try **urge.**

**Et al.** – Try **and others.**
Etc. -- Use at least two items or illustrations before "and so forth" or "etc."

Examine – Try look at.

Existing – Try cutting.

Experience(d) -- To experience something is sensory; inanimate, unsensing things (lakes, soils, enzymes, streambeds, farm fields, etc.) do not experience anything.

Focus on – Try explore, examine, highlight.

Following -- "After" is more precise if "after" is the meaning intended. "After [not following] the procession, the leader announced that the ceremony was over."

For example – Compare with for instance.

Have an effect – Try affect.

Hence – Try therefore, thus, so.

High(er), low(er) -- Much too often used, frequently ambiguously or imprecisely, for other words such as greater, lesser, larger, smaller, more, fewer; e.g., "Occurrences of higher concentrations were lower at higher levels of effluent outflow." One interpretation is that greater concentrations were fewer or less frequent as effluent volume(s) increased, but others also are possible.

However -- Place it more often within a sentence or major element rather than at the beginning or end. "But" serves better at the beginning.

Hyphening of compound or unit modifiers -- Often needed to clarify what is modifying what; e.g., a small-grain harvest (harvest of small grain) is different from a small grain harvest (small harvest of all grain), a fast acting dean isn’t necessarily as effective as a fast-acting dean, a batch of (say, 20) 10-liter containers is different from a batch of 10 [1-] liter containers, and a man eating fish is very different from a man-eating fish! Grammatically, adjectives are noun modifiers, and the problem is when adjectives and nouns are used to modify other adjectives and nouns. Adverbs (usually with "ly" endings), however, are adjective modifiers.

In accordance with – Try by, under, in accord with.

In comparison to – Try in comparison with.
Indeed – Try cutting.

Individual (papers) – Try papers.

In excess of – Try over, more than, higher than.

In fact – Try cutting.

Inevitably – Try cutting.

In general – Try cutting.

In order to -- For brevity, just use "to"; the full phrase may be used, however, [in order] to achieve useless padding.

In particular – Try cutting.

In spite of – Try despite.

In terms of – Try as, at, by, in, of, for, with, under, through.

Into – Try in.

Involve – Try cutting.

Irregardless -- No, regardless. But irrespective might do.

Is indicative of – Try indicates.

It should be mentioned, noted, pointed out, emphasized, etc. -- Such preambles often add nothing but words. Just go ahead and say what is to be said.

It was found, determined, decided, felt, etc. – Try cutting.

Less(er), few(er) -- "Less" refers to quantity; "fewer" to number.

Majority, vast majority -- See if most will do as well or better. Look up "vast."

Myself -- Not a substitute for me. "This paper has been reviewed by Dr. Smith and myself" and "The report enclosed was prepared by Dr. Jones and myself" are incorrect as is "Don't hesitate to call Dr. Doe or myself"; me would have been correct in all instances. (Use of I also would have been wrong in those examples.) Some correct uses of myself: I found the error myself. I myself saw it happen. I am not myself today. I cannot convince myself. I locked myself out of the car.

Namely – Try cutting.

Notwithstanding – Try despite.
**Partially, partly** -- Compare the meanings (see also *impartially*). *Partly* is the better, simpler, and more precise word when partly is meant.

**Particularly** – Try cutting.

**Percent, percentage** -- Not the same; use percent only with a number.

**Predominate, predominant** -- *Predominate* is a verb. *Predominant* is the adjective; as an adverb, *predominantly* (not "predominately").

**Prefixes** -- (mid, non, pre, pro, re, semi, un, etc.) -- Usually not hyphenated in U.S. usage except before a proper name (pro-Iowa) or numerals (mid-60s) or when lack of a hyphen makes a word ambiguous or awkward. *Recover* a fumble, but perhaps *re-cover* a sofa. *Preengineered* is better hyphenated as *pre-engineered*, one of the few exceptions so hyphenated. Breaking pairs such as *predoctoral* and *postdoctoral* into *pre-* and *post-doctoral* "forces" hyphenation of both otherwise unhyphenated words.

**Principle, principal** -- They're different; make sure which you mean.

**Prior to, previous to** -- Use *before, preceding, or ahead of*. There are *prior* and *subsequent* events that occur before or after something else, but *prior to* is the same kind of atrocious use that attempts to substitute "subsequent to" for "after."

**Proven** -- Although a *proven* adjective, stick to *proved* for the past participle. "A *proven* guilty person must first have been *proved* guilty in court."

**Provided, providing** -- *Provided* (usually followed by "that") is the conjunction; *providing* is the participle.

**Rather** – Try cutting.

**Reason why** -- Omit *why* if reason is used as a noun. The reason is...; or, the reason is that... (i.e., the reason *is* the why).

**Rely upon** – Try *rely on*.

**Represents** – Try *is, makes up*.

**Respectively** – Try cutting.

**Since** -- has a time connotation; use "because" or "inasmuch as" when either is the intended meaning.
Small in size, rectangular in shape, blue in color, tenuous in nature, etc. -- Redundant.

Somewhat – Try cutting.

Specific – Try cutting.

Subsequently – Try later, then.

Take into account – Try take account of.

That and which -- Two words that can help, when needed, to make intended meanings and relationships unmistakable, which is important in reporting scientific information. If the clause can be omitted without leaving the modified noun incomplete, use which and enclose the clause within commas or parentheses; otherwise, use that. Example: "The lawn mower, which is broken, is in the garage." But, "The lawn mower that is broken is in the garage; so is the lawn mower that works."...That is broken specifies the particular mower being discussed, whereas which is broken merely adds additional information to the sentence.

That is – Try cutting.

That are – Try cutting.

The amount of – Try cutting.

The concept of – Try cutting.

The degree of – Try cutting.

The extent of – Try cutting.

The field of psychology – Try psychology.

The form of – Try cutting.

The level of – Try cutting.

The nature of – Try cutting.

The presence of – Try cutting.

The present study – Try this study.

The purpose of – Try cutting.

To be -- Frequently unnecessary. "The differences were [found] [to be] significant."
Varying -- Be careful to distinguish from various or differing. In saying that you used varying amounts or varying conditions, you are implying individually changing amounts or conditions rather than a selection of various or different ones.

Very – Try cutting.

Where -- Use when you mean where, but not for "in which," "for which," etc.

Which is, that were, who are, etc. -- Often not needed. For example, "the data that were related to age were analyzed first" means that the data related to age were analyzed first. Similarly, for "the site, which is located near Ames," try "the site, located near Ames" or "the site, near Ames." Rather than "all persons who were present voted," just say that "all persons present voted." Rephrasing sometimes can help. Instead of "a survey, which was conducted in 1974" or "a survey conducted in 1974," try "a 1974 survey."

Who is – Try cutting.

Who are – Try cutting.

While -- Preferably not if, while writing, you mean and, but, although, or whereas.

What kind of language is bias-free?

In recent years, people have become much more aware of the ways in which language shapes our thinking. Many thoughtful discussions of the topic have appeared, and many guidelines have been developed; for examples, see Schwarz (1995), Schaie (1993), Maggio (1991), and the American Psychological Association (1994).

To avoid charges of prejudice and insensitivity, language must be accurate, clear, and free from bias. Just as you have learned to check what you write for spelling and grammar, practice reading over your work for bias. Cultivate at least three kinds of awareness: (1) noting potential bias in the kinds of observations and characterizations being made; (2) recognizing the impact of various value-laden terms; and (3) being sensitive to certain biases that are inherent in the structure of the English language.

Use language inclusively, specifying only those differences that are relevant

Precision is a necessity in scientific writing. When you refer to a person or persons, choose words that are accurate, clear, and free from bias. For example, some writers use the generic masculine exclusively. This offends many readers, because it seems to be based on the
presumption that all people are male unless proven female. Using man to refer to all human beings carries the same implication, and is simply less accurate than the phrase men and women.

Another part of writing without bias is recognizing that differences should be mentioned only when relevant. Marital status, sexual orientation, racial and ethnic identity, or the fact that a person has a disability should not be mentioned gratuitously.

**Be sensitive to group labels**

In scientific writing, participants in a study frequently seem to lose their individuality. They are either categorized as objects (the elderly) or equated with their conditions (the demented). (Matters are not improved by changing this to the demented group!)

Broad clinical terms such as borderline, moreover, are loaded with innuendo unless properly explained. Calling one group normal may prompt the reader to make comparison of abnormal, stigmatizing individuals with differences (the lesbian group vs. normal women). Likewise, do not use emotionally loaded adjectives, such as “stroke victims confined to wheelchairs.” Substitute neutral wording such as “individuals who had a stroke and use a wheelchair.”

Labels such as Group A are not offensive, but they are not particularly descriptive either. The solution that is currently preferred places the people first, followed by a descriptive phrase (such as people diagnosed with schizophrenia).

**Find alternatives to sexist language**

Though it may be unconscious and unintentional, sexism is common in scientific writing. Sometimes, even nonparallel usage seems to suggest an inequality:

The study included 10 men and 16 females.

The researchers were surprised to find so many cautious men and timid women.

Avoiding sexist language isn’t always easy, because the English language lacks a gender-neutral singular pronoun. A writer always has options; listed below are four of them (adapted from Schwartz, 1995).

1. **Use plural constructions when you can.** Often, it is possible to recast a statement in the plural, thus circumventing the need to use the third person singular pronoun. Avoid breaking the rules of English grammar, however.

Sexist: A doctor should advise his patients.

Grammatically incorrect: Every doctor should advise their parents.

Better: Doctors should advise their patients.
2. Replace the third person singular possessive with articles. Avoid s/he, he/she, and his/her. These constructions look awkward and interfere with reading. If none of the other guidelines has been helpful, use the slightly less awkward forms “he or she” and “his or hers.”

Instead of: Each technician must be sure to sign his or her time card.
Better but awkward: Each technician must be sure to sign his or her time card.
Better yet: Each technician must be sure to sign a time card.

3. Address readers directly. If you can do so appropriately, substitute “you” for the third person singular pronoun. A direct instruction or command also works in many cases.

Instead of: A nurse must be sure that she uses disposable syringes.
Better: Nurses must use disposable syringes.

4. Use the passive voice.

Instead of: Each conference participant should have received his schedule.
Better (but only marginally): Schedules should have been received by conference participants.

Suggested Readings


On APA style
Manuscripts containing innumerable references are more likely a sign of insecurity than a mark of scholarship.

William C. Roberts

How do I cite references?
If you don't have time to peruse the almost 400 pages of the Publication Manual of the American Psychological Association, or if you just need to know enough of the rules to produce a paper quickly, then this chapter should provide you with the information you need. Like all documentation styles, the APA style provides a standard system for giving credit to others for their contribution to your work. The APA style calls for three kinds of information to be included in in-text citations. The author’s last name and the work’s date of publication must always appear, and these items must match exactly the corresponding entry in the references list. The third kind of information, the page number, is only in a citation to a direct quotation.

What is the proper format for a basic journal article?

What does a reference look like for a single author book?

What about a book written by more than one author?

How do I list an edited volume?

How do I handle a multiple-author article in a multiple-author volume?
How would I create a reference for information found in a doctoral dissertation?

How do I report statistics?
The following examples illustrate how to report statistics in the text of a research report.

Mean and Standard Deviation are most clearly presented in parentheses:
The sample as a whole was relatively young (\(M = 19.22\), \(SD = 3.45\)). The average age of students was 19.22 years (\(SD = 3.45\)).

Percentages are also most clearly displayed in parentheses with no decimal places:
Nearly half (49%) of the sample was married.

Chi-Square statistics are reported with degrees of freedom and sample size in parentheses, the Pearson chi-square value (rounded to two decimal places), and the significance level:
The percentage of participants that were married did not differ by gender, \(\chi^2(1, N = 90) = 0.89, p > .05\).

T Tests are reported like chi-squares, but only the degrees of freedom are in parentheses. Following that, report the T statistic (rounded to two decimal places) and the significance level.
There was a significant effect for gender, \(t(54) = 5.43, p < .001\), with men receiving higher scores than women.

ANOVA\(s\) (both one-way and two-way) are reported like the t test, but there are two degrees-of-freedom numbers to report-first the between-groups degrees of freedom, then the within-groups degrees of freedom (separated by a comma). Then report the F statistic (rounded off to two decimal places) and the significance level:
There was a significant main effect for treatment, \(F(1, 145) = 5.43, p < .01\), and a significant interaction, \(F(2, 145) = 3.13, p < .05\).

Correlations are reported with the degrees of freedom (which is \(N-2\)) in parentheses and the significance level:
The two variables were strongly correlated, \(r(55) = .49, p < .01\).
Regression is often best presented in a table. APA doesn’t say much about how to report regression results in the text, but if you would like to report the regression in the text of your Results section, you should at least present the standardized slope (beta) along with the significance level:

Social support significantly predicted depression scores,

\[ \beta = -0.34, \ p < .01. \]

Tables are useful if you find that a paragraph has almost as many numbers as words. If you do use a table, do not also report the same information in the text. It’s either one or the other.

Suggested Readings:


Personal Goals and Depression among Vietnamese-American and European-American Young Adults: A Mediational Analysis

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This research was made possible by a young investigator’s grant awarded to the first author by the National Institute of Aging (AG00156). Correspondence concerning this article should be sent to Anthony D. Ong, Department of Psychology, University of Southern California, Los Angeles,
The present study reports on preliminary findings supporting the utility of the self-concordance model (Sheldon & Elliot, 1999) as an alternative approach to studying depression among European-American and Vietnamese-American young adults. A college sample of 155 European-American and 121 Vietnamese-American college students completed measures of personal goals, goal self-concordance, and depression. Results revealed that compared to European-American participants, Vietnamese-American participants reported higher levels of depression and lower goal self-concordance. Mediational analyses showed that after statistically controlling for goal self-concordance, ethnicity no longer accounted for significant variance in depression.
Personal Goals and Depression among Vietnamese-American and European-American Young Adults: A Mediational Analysis

A growing body of evidence suggests that Vietnamese immigrants experience multiple problems in adapting to life in the United States, including downward occupational mobility, intergenerational conflict, and increased rates of clinical depression (Hinton, Chen, Du, & Tran, 1993; Hinton, et al., 1998; Hinton, Tiet, Tran, & Chesney, 1997). Less acculturated Vietnamese immigrants report proportionally more problems related to prearrival trauma (Hinton et al., 1997), separation from family and learning a new language (Tran, 1993), and seeking employment and rebuilding social supports (Nicholson, 1997). Like their immigrant parents, Vietnamese-American youth also report relatively high levels of depression and anxiety compared to their European-American peers (Felsman, Leong, Johnson, & Felsman, 1990; Tran, 1993; Webb, McKelvey, & Strobel, 1997).

Despite the suggestion of a link between ethnicity and depression, there has been little attention to possible theoretical mechanisms; that is, missing from these data is a conceptual understanding the relationship between ethnicity and depression. In the absence of a theoretical framework, several researchers have posited that in addition to being confronted with the developmental transition from adolescence to adulthood, Vietnamese-American youth also must cope with adjustment problems as immigrants and children of immigrant parents (McKelvey, Webb, & Mao, 1993; Nguyen, Messe, & Stollak, 1999; Nicholson, 1997) as well as intercultural conflicts caused by the immense value differences between Eastern and Western cultures (Nguyen & Williams, 1989; Phinney, Ong, & Madden, 2000).

The self-concordance model, derived from self-determination theory (Deci, 1975; Deci & Ryan, 1985), may provide an alternative framework in which to understand the relatively high levels of depression reported by Vietnamese-American young adults. The model organizes and integrates a number of related research findings in the fields of motivation and well-being (Sheldon & Kasser, 1995; 1998) and an assortment of recent findings from cross-cultural research (Dinh, Sarason, & Sarason, 1994; Herz & Gullone, 1999) into a single conceptual and causal model.

In the present research, we examine how the relationship between ethnicity and depression occurs, that is, the mechanism of the effect. In applying the self-concordance model to our predictions, we posited that the relationship between ethnicity and depression is not necessarily a direct one, but rather is mediated through goal self-concordance. According to Baron and Kenney (1986), demonstration of a mediated model requires three steps: (1) that ethnicity is related to depression; (2) that ethnicity is related to goal self-concordance, and (3) that the relationship between ethnicity and depression is significantly reduced once goal self-concordance is accounted for in the equation.

In the following sections, we describe the rationale for why goal self-concordance, derived from self-determination theory (Deci & Ryan, 1985), might mediate the relationship between ethnicity and depression. Thus, our purpose in testing the mediated model is to go beyond documenting the
relationship between ethnicity and depression, and, instead, to explore the pathways of mediated effects. In building the case for mediation, we focus on how previous research has provided information on the proposed mediational process.

**Self-Determination Theory**

According to Deci and Ryan’s (1985, 1991) self-determination theory, intentional behaviors differ in the degree to which they are autonomous (i.e., self-determined) versus controlled. Autonomous behaviors are those which have an “internal perceived locus of causality” (deCharms, 1968). In contrast, controlled behaviors are those which have a locus of causality that is external to the self. Controlled activities can become more autonomous as a function of a growth process referred to as “organismic integration” (Deci & Ryan, 1985, 1991). Deci and Ryan (1985) maintain that one manifestation of organismic integration is the tendency for individuals to “internalize” extrinsic values, and then “integrate” those values with other aspects of the core self.

Deci and Ryan (1991) further distinguish four distinct classes of intentional behaviors, which differ in the extent to which they reflect integration of values within the self (cf. Ryan & Connell, 1989). Two of these refer to controlled behaviors. The most controlled behaviors are those guided by external reasons. These behaviors are compelled or pressured by some influence outside the self. External pressures are eventually internalized, giving rise to introjected self-regulation. Introjected behaviors are guided by internal forces, but these forces consist of pressures such as anxiety or guilt, or a desire to please others. These behaviors are less controlled than those guided by external forces, but they still are relatively controlled. The difference is that the controlling aspect of the self-regulation has been moved inside the person.

Two additional classes of intentional behaviors are characterized as autonomous; these behaviors come in two forms: identified and intrinsic. Identified behaviors are engaged in because the person genuinely believes they are valuable. Behavior of this sort is relatively autonomous or self-determined. Finally, some behavior is guided by intrinsic reasons. Such activities are of interest in their own right. Although it is possible to distinguish these four categories conceptually from one another, the most important distinction appears to be between controlled and autonomous motivation (cf. Grolnick & Ryan, 1987; Kasser & Ryan, 1996).

**Goal Self-concordance and Well-being**

Derived from self-determination theory, the self-concordance model posits that goals are self-concordant when they are pursued for autonomous reasons (Sheldon et al., 1999). Considerable research now attests to the qualitative advantage of autonomous, relative to controlled, goal pursuit. Numerous studies have demonstrated that when people act autonomously, they display more cognitive flexibility and depth of processing (Grolnick & Ryan, 1987), greater creativity (Amabile, 1996), and greater maintained weight loss (Williams, Grow, Friedman, Ryan, & Deci, 1996) than when their actions are controlled. Moreover, placing strong relative importance on self-concordant aspirations has been found to be positively associated with well-being indicators such as self-esteem and self-actualization and negatively

**Culture and Goal Self-Concordance**

The internalization of values that encourage self-concordant goal pursuit is, to a considerable extent, influenced by the affordances of one’s sociocultural context. One distinction that emerges between members of Western and Eastern cultures is the extent to which the self is defined in relation to others. This distinction has been referred by cultural researchers as individualism versus collectivism (Triandis, 1995), independence versus interdependence (Markus & Kitayama, 1991), and egocentric versus socioecentric selves (Shweder & Miller, 1991). As such, the Western view of self has typically held as an ideal the characteristics of autonomy, independence, separateness, and individualism, in contrast to an Eastern self more deeply embedded in collective cultures that emphasize social roles within a hierarchy and subordination of the self to group goals.

Vietnamese culture, based in Confucian and Buddhist roots, is strongly collectivist; the family structure is typically patriarchal, with children expected to obey their parents and fulfill their obligations within the family (Matsuoka, 1990; Nguyen & Williams, 1989; Rosenthal, Ranieri, & Klimidis, 1996). When culture and parenting style are considered together, researchers have found that lower levels of acceptance and higher levels of control characterize the parenting style observed in the Vietnamese culture as compared to Western cultures (Herz & Gullone, 1999). This control is manifested by parents’ high expectations of their children for doing house chores and succeeding academically, which Vietnamese-American youth reported in one study as the two highest family stressors (Tran, Lee, & Khoi, 1996).

Despite cross-cultural differences in self-construal, recent research suggests similarities in underlying processes that lead to the development and expression of self-determination. For instance, Kasser and Ryan (1993, 1996) found that whereas self-reported attainment of intrinsic goals was positively associated with well-being, attainment of extrinsic goals was not. Moreover, Ryan, Chirkov, Little, Sheldon, Timoshina, and Deci (1999) replicated these findings in a Russian sample, attesting to the potential generalizability of the findings. Other studies have examined the relations between need satisfaction and well-being in specific settings, finding, for example, that employees’ reports of satisfaction of their needs for autonomy, competence, and relatedness in the workplace were related to self-esteem and general health (Ilardi, Leone, Kasser, & Ryan, 1993), not only in the U. S. but also in Bulgaria (Deci, Ryan, Gagne, Leone, Usunov, & Kornazheva, 2000). The above research suggests that although individuals may pursue goals for different reasons within cultures that hold different values, only when such values have been fully integrated would people be expected to pursue goals autonomously. Accordingly, we suggest—in line with the self-concordance model—that the reason why a person pursues a goal is as important as the goal itself. We tested this idea in the study reported here.

Participants indicated the reasons for pursuing a set of personal goals. The reasons were designed to reflect the degree of self-concordance, as determined by either extrinsic-introjected motives (e.g., “because people will be more attracted to me,” “because it would make my family proud”) or
intrinsic-identified motives (e.g., “because it would be fun,” “because it is important to me”). We predicted that goal self-concordance would mediate the relationship between ethnicity and depression. Thus, when self-concordance is statistically controlled, ethnicity was hypothesized to no longer account for significant variance in depression. This prediction was therefore tested as a mediational hypothesis in the present research. Because the model adopted in the present study is cross-sectional, we cannot rule out bidirectional relationships, particularly between self-concordance and depression. Our intent here, however, is to focus on self-concordance as an intervening variable between ethnicity and depression.

Method

Participants

Participants were 276 (155 European-American and 121 Vietnamese-American) students between the ages 18-25 (124 females and 152 males) who were enrolled in introductory psychology courses at the University of Southern California. The mean age of participants was 24 years old. There were no age differences between the two groups. Participants took part in a semester-long study in exchange for class credit. All participants were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

A survey item on family structure indicated that 35% of the participants were living with two biological parents, 24% were in a single-parent constellation (mostly single mothers, sometimes with relatives), 7% were in a blended family, with one biological parent and one stepparent, and 34% were living independently (with no guardians). Data on parental education indicated that 79% of fathers had education through high-school, 15% had some college education or were college graduates, and 3% had post-college education; data were similar for mothers. Preliminary analyses revealed that the family structure of Vietnamese and European-American students did not differ significantly from each other. However, the level of parental education was found to be significantly lower for Vietnamese than for European-American participants, $\chi^2 (4, N = 276) = 12.53, p < .05$, $\phi = .21$.

Measures

Personal goals

To assess personal goals, we used the personal striving construct (Emmons, 1986). Specifically, participants were instructed to brainstorm a set of personal goals that they would be usually or characteristically trying to reach during the upcoming semester, following Emmon's (1986) procedures and instructions. Examples of participant responses included “to try to improve academically,” “to learn to relax and manage stress more effectively,” and “to try to quit smoking.” Next, participants selected the five most important goals from their set of candidate goals. Participants then completed a variety of ratings on each personal goal.

Goal self-concordance

To assess the degree of self-concordance of participants’ goals, we
asked them to rate their reasons for pursuing each goal in terms of each of the four reasons outlined in self-determination theory: external, introjected, identified, and intrinsic. These four reasons sample a continuum of perceived locus of behavioral causality (Ryan & Connell, 1989), ranging from noninternalized to completely internalized. The external reason was “you pursue this goal because somebody else wants you to or because the situation demands it.” The introjected reason was “you pursue this goal because you would feel ashamed, guilty, or anxious if you didn’t.” The identified reason was “you pursue this goal because you really believe it’s an important goal to have.” The intrinsic reason was “you pursue this goal because of the fun and enjoyment that it provides you.”

Ratings were made on a 1 (not at all for this reason) to 9 (completely for this reason) scale. A self-concordance score was created for each personal goal by summing the identified and intrinsic scores and subtracting the introjected and external scores (c.f. Grolnick & Ryan, 1987; Grolnick, Ryan, & Deci, 1991; Sheldon & Kasser, 1995). An aggregate self-concordance score was created for each participant by summing across the five personal goals ($\alpha = .68$).

**Depression**

We assessed individual levels of depression using the Center for Epidemiological Studies Depression Scale (CES-D). The CES-D is a 20-item measure of current depressive symptomatology, with an emphasis on the affective component—depressed mood (Radloff, 1977). Items represent the following major components of depression: depressed mood, feelings of guilt and worthlessness, feelings of helplessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance.

Responses are based on a 4-point Likert-like scale (0 = rarely or none of the time and 4 = most or all of the time). The scale has been shown to be internally consistent, with coefficient alphas of .85 in the general population and .90 in the patient sample (Radloff, 1977). Test-retest reliabilities ranging from .51 to .67 were found with retest intervals of 2 to 8 weeks (Radloff, 1977).

The CES-D correlates strongly with both the Raskin Rating Scale ($r = .75$) and the Hamilton Clinician’s Rating Scale ($r = .69$) after 4 weeks of inpatient treatment. Summing the scores on all 20 items produces a range of 0 to 60, with higher scores indicating greater depression. Cutoff scores of 16 have been used to screen for depression in community samples (Radloff, 1977). The CES-D scale had satisfactory internal consistency in the present study (Cronbach's alpha = .72).

**Procedure**

Data were obtained through a self-report questionnaire administered to students in a laboratory by project staff. The questionnaire took approximately 40 minutes to complete. The staff followed a standardized protocol in giving instructions to students. The survey was administered under anonymous conditions. Respondents received class credit for their participation. The completion rate (number of surveys completed/total number of participants) was 96%.
Results

**CES-D and Self-Concordance characteristics of study sample**

The average CES-D score in the study sample was 10 (SD = 6.5). Overall, 34% (n = 93) scored above the cutoff for depressed mood (16 or greater). Preliminary analyses revealed that depressed mood was more prevalent in Vietnamese-American students (36%) than Caucasian students (9%), $\chi^2 (1, N = 121) = 30.97, p < .001, \phi = .51$. Depression was not associated with gender or parental education.

For each participant, a self-concordance variable was formed by summing the identified and intrinsic scores and subtracting the introjected and external scores. The mean self-concordance score for the entire sample was 6.91 (SD = 2.04, $\alpha = .76$). On average, European-American students reported significantly higher goal self-concordance ($M = 8.52$, $SD = 3.29$) than Vietnamese students ($M = 4.84$, $SD = 3.21$), $F (1, 274) = 209.82, p < .001, \eta^2 = .43$. Analysis of each of the four reasons of goal pursuit (i.e., external, introjected, identified, and intrinsic) revealed that Vietnamese-American participants endorsed on average significantly higher “introjected” reasons for goal pursuit ($M = 7.63$, $SD = 2.03$) than European-American participants ($M = 1.86$, $SD = 1.84$), $F (1, 274) = 186.12, p < .001, \eta^2 = .39$. No significant differences were observed on any of the three other reasons for goal pursuit.

**Mediational Analysis**

Linear regression models were used to examine the independent effects of ethnicity and goal self-concordance on depression. Baron and Kenny (1986) have discussed four steps in establishing mediation: (1) The predictor variable must be correlated with the outcome; (2) the predictor variable must be correlated with the mediator; (3) the mediator affects the outcome variable; and (4) when controlling for the mediator variable, the previous relationship between the predictor and outcome variable is greatly reduced or nonsignificant. The effects in both Steps 3 and 4 are estimated in the same regression equation (Baron & Kenny, 1986).

Using the criteria described above, we found that goal self-concordance mediated the relationship between ethnicity and depression. The complete path is shown in Figure 1. Controlling for parental education, the complete model is characterized both by a direct effect of ethnicity on depression and by an indirect effect via self-concordance. Specifically, separate linear regression analyses showed the after controlling for parental education, ethnicity predicted both depression, $F (1, 274) = 189.36, R^2 = .13$ and goal self-concordance, $F (1, 274) = 168.12, R^2 = .09$. Moreover, when depression was regressed simultaneously on both ethnicity and goal self-concordance, the significant correlation between ethnicity and depression was eliminated. This complete path model accounts for almost twice as much variation in the depression variable as a regression that only included ethnicity as a predictor variable (see Table 1; $R^2 = .29$, compared to $R^2 = .14$). Results thereby support goal self-concordance as a mediator of the association between ethnicity and depression.
Discussion

Vietnamese are one of the fastest growing ethnic minority groups in the United States (Portes & Rumbaut, 1990). Accompanying the influx in migration is recent research which indicates that major depression is a common mental problem among Vietnamese immigrants who present for care in psychiatric settings (Hinton, et al., 1993; Hinton, et al., 1998; Hinton, et al., 1997). Consistent with this research, we found that like their immigrant parents, Vietnamese young adults also report high levels of depression compared to their European-American peers (Felsman, et al., 1990; Tran, 1993; Webb, Mc Kelvey, & Strobel, 1997).

It is quite common when examining cultural-psychological phenomena to look for associations between pairs of variables. In this spirit, a large literature has developed examining connections between ethnicity and well-being outcomes (e.g., Hinton, Chen, Du, & Tran, 1993; Hinton, et al., 1998; Hinton, Tiet, Tran, & Chesney, 1997). These connections can help identify at-risk populations. The data, however, often fail to speak to how or why such effects occur (Baron & Kenney, 1986). The search for mediators in the present research offers theoretical clarity as to why there is a connection between ethnicity and depression. By identifying mediators, we may be better able to explain why some young adults are prone to depression whereas others are not.

Applying the self-concordance model to our predictions, we found support for our mediational hypothesis. After statistically controlling for goal self-concordance, the previously significant relationship between ethnicity and depression disappeared. One explanation of these data is that autonomous or self-concordant goal pursuit is a fundamental quality of human experience. Ryan and Deci (2000) suggest that like the needs for competence and relatedness, the need for autonomy is universal and thus must be satisfied in all cultures for people to be optimally healthy. Thus, by assuming that self-concordant goal pursuit is fundamental to optimal well-being, one is able to see unity (or equifinality) within broad diversities of behavior across cultures.

The findings in the present study that goal self-concordance has a positive affect on well-being across two diverse ethnic groups is consistent with the observation that although both the genesis and the focus of research concerning independence and interdependence have heretofore been cross-cultural, members of Eastern and Western cultures are capable of displaying both kinds of values (Triandis, 1995). These results parallel too the findings of other researchers who have observed similar results within Bulgarian (Deci, Ryan, Gagne, Leone, Usunov, & Kornazheva, 2000) and Russian samples (Ryan, Chirkov, Little, Sheldon, Timoshina, & Deci, 1999).

Finally, several theoretical and methodological concerns deserve attention. In applying the self-concordance model, we did not assess goal attainment. Carver and Scheier (1990) reported that goal attainment leads to enhanced well-being. However, we suspect that participants in the present study whose goals were not self-concordant would have experienced little change in well-being, no matter how well they progressed in achieving their goals. In addition, the obtained effects should be considered provisional.
because of the need to replicate cross-sectional findings with longitudinal research.

Despite these limitations, we believe that the self-concordance model (Sheldon & Elliot, 1999) offers a flexible framework for studying fundamental questions in the field of cultural psychology. In particular, the model provides a way of testing explicit assumptions about the nature of goal pursuit across varying cultural groups and about the effects of such pursuits on well-being. Considerable research now attests to the qualitative advantage of self-concordant, relative to controlled, motivation across a multitude of tasks and settings (see Deci, Koestner, & Ryan, 1999 for a review). Extending these findings with other non-European participants is a promising area for future cross-cultural investigation.
References


Figure Caption

Figure 1. Goal self-concordance as a mediator of the relationship between ethnicity and depression. Solid lines represent first step and dashed lines second step in mediator analyses. * Represents a statistically significant path (beta) coefficient.