David DuBois, Ph.D.
Community Health Sciences
University of Illinois at Chicago
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Writing Tips and Guidelines

Writing is hard work. A clear sentence is no accident. Very few sentences come out right the first time, or even the third time. Remember this as a consolation in moments of despair. If you find that writing is hard, it's because it *is* hard. It's one of the hardest things that people do (*On Writing Well: An Informal Guide to Writing Non-Fiction*, William Zinsser, p. 13).

On writing. Omit needless words. Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts (William Strunk, Jr.).

1. Organization. A coherent organization and clear, logically structured argument are essential ingredients of a well-written paper. In many instances, however, papers may be lacking in both organization and logical structure. Put more in the vernacular, they simply do not "tell a good story", one with a clear beginning, middle, and end. One useful strategy for enhancing clarity of organization is to present the reader with a clear "road map" or primer at the beginning of the paper as to what information or line of argumentation will be presented (and in what sequence) in the remainder of the paper. It also should always be evident what central question, issue, or argument is being addressed in a given section of a paper. Relatedly, information that provides support for a given argument or conclusion should be included in the most appropriate location or section in the paper and thereby not be "buried" or obscured from the reader in terms of its intended relevance (e.g., consider placing key references to supporting evidence in the primary paragraph in which the corresponding argument is developed). Finally, paragraphs themselves need to have clear internal organization and structure (i.e., topic sentence, sentences providing supporting information, and concluding/summary sentence which, of course, should be more than just a restatement of the topic sentence!). Oftentimes, beginning writers seemingly lose track of their focus within a given paragraph such that tangential material or issues ends up becoming the focus of their exposition within the paragraph rather than the topic that is of primary concern (e.g., beginning a paragraph focusing on prevalence rates of depression and ending up focusing more on limitations of the medical model that underlies current diagnostic systems in mental health). That is, the writing seems to "wander" off track.

   To enhance the organization and logical structure of any paper, it is strongly recommended that you prepare an outline of the paper before attempting to write the first draft. The outline can provide an organizational aid to help your writing progress logically throughout the paper on an "issue by issue" and "point by point" basis. An outline typically will have at least three or four "nested" levels, each identified by a series of Roman numerals, letters, or Arabic numbers (e.g., I. A. ii. might refer to the second specific point, i.e., "ii", that you want to make with regard to the first topic, i.e., "A." underneath an initial major heading or section of the paper, i.e., "I"). Many word processing packages, such as WordPerfect, include an outline feature and thus can be of great help in using this technique to improve your writing. At this point in the writing process, key points and ideas should be expressed in brief, "telegraphic" form rather than as complete, grammatically-correct sentences–the latter approach will bog down the process of developing the outline and also tends to create excess verbiage which makes the final outline less useful.

   As a general rule, an effective system of headings and subheadings also should be utilized in one's final paper; this practice will help to preserve and accentuate for the reader the intended logical structure and organization of the paper as reflected in the paper's outline. Care should be taken to be consistent and accurate in both the formatting and logical nesting of headings and subheadings within a paper; for subheadings, take care also to avoid repeating unnecessarily the content of the heading within which the subheading is nested (e.g., do not use the subheading "Measures of Problem Behavior" under a "Measures" heading, but rather simply "Problem Behavior" because the "measures" portion of the subheading is implied). The Publication Manual of the American Psychological Association (5th edition) provides a helpful discussion of the appropriate use of headings, including different formatting schemes to use depending on the number of levels of headings and subheadings that is required for a given paper.

2. Writing for Clarity and Accuracy. Even when writing is grammatically proper, it is important to edit and re-edit (and re-edit, etc.!) to insure clarity and accuracy. This type of editing is especially important when engaging in

technical, non-fictional writing, such as research manuscripts, clinical reports, and so on. A good strategy for editing in this regard is to read the paper out loud, as if you are delivering it as a presentation. Listen for phrases that are awkward or unclear, sentences that are too long to be grasped easily by the reader, excessive use of technical jargon, extraneous words, phrases, or sentences that can be eliminated without significant loss in information, etc. There is no substitute, however, for having another "set of eyes" review the paper. Ask a friend, roommate, or colleague to read the paper and critique it, identifying both aspects of the paper that he or she likes and those aspects that he or she finds confusing or unclear. You can offer to return the favor when that person has a paper that he or she would like to have reviewed.

3. Utilizing Writing Resources. The UIC Writing Center is a valuable resource for help with writing. Peer tutors can provide help with paper assignments and other writing projects to all students at UIC free of charge. Visit the Center's web site for more information; this site also contains useful tips on grammar and links to assistance with writing in APA format. The following book by William Zinsser, *On Writing Well: An Informal Guide to Writing Non-Fiction*, is another excellent resource for improving the quality of your writing (Harper Collins Publishers, 4th edition published in 1990), as is the following web site, "The 11 Rules of Writing," which provides help with specific rules of grammar as well as links to many other writing resources on the web: http://www.junketstudies.com/rulesofw/. Finally, the *Publication Manual of the American Psychological Association* (American Psychological Association, 5th edition published in 2001), referred to previously, is an excellent resource and should be utilized by any serious student of the social and behavioral sciences.

4. Paragraphs. It is not uncommon for students to write papers containing numerous paragraphs that are only 1 or 2 sentences in length. As a general rule, in non-fiction writing paragraphs should consist of at least 3 sentences. Shorter paragraphs probably either need more development (e.g., support for the topic issue) or can be better integrated with the paragraphs that precede or follow them. It also is important to avoid long paragraphs (e.g., more than 3/4 of a page). These paragraph typically would be more effective broken down into two or more separate paragraphs. Editors use the symbol ¶ to indicate locations where a paragraph break is suggested.

5. Non-Sentences. In many instances, papers of beginning (and even more advanced) writers may include one or more "non-sentences." In other words, the phrases expressed do not qualify as sentences according to rules of grammar. Non-Sentences may be designated by the abbreviation "NS" on papers.

   Problems that can occur in this regard pertain to:

   (a) **Semi-colons**. Some non-sentences occur because the writer does not include complete, "stand alone" clauses on each side of a semi-colon in a proposed sentence (i.e., each clause must be such that it by itself could constitute a sentence).

   Example: *The humanistic paradigm emphasizes the importance of free will; but the behavioral paradigm reflects a more deterministic view of human behavior.*

   Comment: The above non-sentence could be made into a sentence by deleting the word "but".

   (b) **Conjunctions**. Two types of problems cause some writers to use, or attempt to use, conjunctions in ways that lead to non-sentences. The first type of problem is using words to joint independent clauses, such as "however," that are not truly conjunctions (bona fide conjunctions that can be used to join two independent, "stand alone" clauses in a sentence include "and", "but", "yet", "or", and "nor"). The second type of problem is an attempt to place a conjunction (e.g., "But,") at the beginning of a proposed sentence, followed by a "stand alone" independent clause. The resulting "Conjunction + Clause" construction does not constitute a sentence (at least not according to formal rules of grammar, which always should be your guide in technical, non-fiction writing).

   Example: *The humanistic paradigm emphasizes the importance of free will, however, the behavioral paradigm reflects a more deterministic view of human behavior.*

   Comment: The above non-sentence could be made into a sentence by changing the word "however" to "but" (a true conjunction). Also note that a comma would then appear only preceding the word "but" (i.e., "free will, but the behavioral....").

Example: *And, the humanistic paradigm emphasizes the importance of free will.*

Comment: The above non-sentence could be made into a sentence by deleting the word "And" at the beginning of the proposed sentence.

6. Commas. It also is not uncommon for beginning writers to use commas when they are not appropriate or, alternatively, to fail to include commas when they are necessary. In general, a comma should be used *only* when it can be justified according to a specific rule or guideline. If a specific rule or guideline does not apply but a comma still seems necessary, this usually will be an indication that the sentence either needs re-writing or is too long and should be broken into two separate sentences. Acceptable uses of commas include, but are not limited to, the following situations:

(a) **Lists**. Commas should be used to separate several items in a list of objects, ideas, etc.. Note that no comma should appear preceding the first item on the list and that the comma between the next to last and last items is optional (I prefer to include it for purposes of clarity, so that all the items on the list are separated clearly; you should be consistent in how you exercise this option within a given piece of writing).

Example: *The measures that participants completed included the Children's Depression Inventory, the Children's Manifest Anxiety Scale-Revised, and the Daily Hassles Questionnaire.*

Comment: Please note that there is no comma after "included" (i.e., before the first item in the list); the comma that appears after "Revised" (i.e., before the last item on the list) is optional.

(b) **Independent Clauses**. A comma can and generally should be used to separate two independent "stand alone" clauses within a sentence. This rule is frequently misinterpreted as a license to separate any two "kind of long" clauses in a sentence. Instead, each clause must be independent in the sense that, if extracted from the sentence, it could stand alone as its own sentence (this should be true at least in a grammatical sense; sometimes the meaning of a clause will only be interpretable within the context of other sentences preceding or following it). Independent clauses should be separated by an appropriate conjunction, such as one of the following: and, but, yet, or, nor, or whereas. The comma should be placed immediately preceding the conjunction (a fairly common mistake is to instead place the comma after the conjunction). Special note: "however" is not a conjunction and thus cannot be used to join two independent clauses within a sentence (see "Non-Sentences" above).

Example: *Most subjects reported clinical levels of behavior problems on the Beck Depression Inventory, but only one-third of the sample met criteria for a major depressive disorder.*

(c) **"Set-Up/Transitional" Words and Clauses**. Commas are appropriate and often necessary following a "setup/transitional" word or clause beginning a sentence. Setup/transitional words include (but are not limited to): "Nevertheless," "However," "Similarly," "Further," "Moreover," "Illustratively," "Recently," and "Additionally." Setup/transitional phrases include (but again are not limited to): "By contrast," phrases beginning with "Although...," "For example," "Despite...," "Notwithstanding...," "Regardless of....," "Irrespective of....," "In any event," and a variety of phrases beginning with verbs, such as "Building on these concerns,....". It is also often useful and sometimes necessary to place a comma after a series of two more prepositional phrases that begin a sentence.

Example: *Moreover, Freud theorized that all individuals progress through a specific series of psychosexual stages in their early development.*

Comment: Comma necessary after transitional word "Moreover".

Example: *Although there was considerable debate among researchers concerning the validity of this measure during the 1970s, there is now a general consensus that it is a useful tool in clinical assessment.*

Comment: Comma is necessary after the transitional clause beginning with the word "Although".

Example: ***In*** *the case study* ***of*** *Little Hans, Freud attributed the successful outcome of treatment to his psychoanalytic method of therapy.*

Comment: Comma is useful and probably necessary after the "double" prepositional phrase at the beginning of the sentence (the prepositions involved are underlined).

(d) **Parenthetical Phrases**. A parenthetical phrase that appears in the body of a sentence needs to be set off with commas at both the beginning and end of the phrase. Frequently, student writers leave off the ending comma, especially when the parenthetical phrase is somewhat lengthy.

Example: *Abraham Maslow and Carl Rogers, leading proponents of the humanistic paradigm during the middle part of this century are often credited with creating a "third force" in psychology separate from the dominant behavioral and psychoanalytic viewpoints of that era.*

Comment: A comma is necessary after "century" to set off the end of the parenthetical phrase "leading proponents of the humanistic paradigm during the middle part of the century".

7. Apostrophes. Apostrophes are necessary to indicate possession, but these are often not used for this purpose by beginning (or somewhat careless) writers when necessary. As a general rule, apostrophes should not be used to form contractions (e.g., don't) in formal non-fiction writing. Instead, write both words out (e.g., do not). Furthermore, whenever possible an attempt should be made to re-write a sentence containing a possessive apostrophe so that the apostrophe is no longer necessary; sentences re-written in this manner often will read more smoothly and clearly.

Example: *Cathy Henry's excessive concern with others' expectations for her prevented her from achieving self-actualization.*

Comment: Apostrophe goes after the "s" in "others", not the "r", because it is multiple "other"s that are possessing the expectations, not just one "other". Conversely, the apostrophe in "Henry's" precedes the "s" because only one "Henry" is implicated in this possessive phrase

Example: *It appears that Cathy Henry had not been successful in exercising her free will in a healthy direction during the majority of her life.*

Comment: It would not be appropriate to contract the words "had not" to "hadn't".

Example: *People's prejudice is a major source of mental health problems among minority groups in this country.*

Comment: Sentence could be re-written more effectively (in my opinion) as "The prejudice of others is a major source of mental health problems among minority groups in this country."

8. Singular/Plural Agreement. It is critical to insure when writing that the singular or plural form of a given noun is consistent with the singular or plural form of any pronouns that are used in place of the noun in the same sentence. This is a frequent problem in student papers.

Example: A behaviorist would view abnormal behavior as originating from the same learning principles as normal behavior, but they would not necessarily view the two kinds of behavior as equally desirable or appropriate.

Comment: The singular noun "behaviorist" does not agree with the plural pronoun "they". The noun should be made plural ("behaviorists") or the pronoun should be made singular ("he or she").

9. Colloquial Language. Colloquial, or "conversational" language should be used sparingly in formal, non-fiction writing and generally only with a specific purpose or rationale in mind. Colloquial terms such as "pretty strong", for example, should be replaced by more accurate language such as "fairly strong" in order to avoid the potentially confusing use of terms such as "pretty" in ways that are not consistent with their actual denotative (formal) meaning. Similarly, concrete or physicalistic phrasing such as "calls", "sees", etc. should not be used when more appropriate terms are available such as "refers to", "regards", etc.

   Example: *Behaviorists could likely try to treat Cathy Henry all day long and still not have success in alleviating underlying concerns relating to her lack of self-actualization.*

   Comment: The colloquial phrase "all day long" should be replaced with a phrase such as "for a long period of time".

10. Spatial/Temporal Terms. Spatial and temporal terms should be used only in ways that are consistent with their actual meaning. Spatial terms include "where" and "here" as well as "above" and "below"; temporal terms include "while" and "since". For example, the term "where" should be used only to refer to the physical location of something, not as a substitute for a more appropriate phrase such as "in which". Likewise, "since" should only be used to refer an event that precedes another event in time and not as a substitute for "because". Similarly, "while" should be used only to refer to two events that took place at the same time, not as a substitute for "whereas" or "although".

   Example: *Since behaviorists emphasize observable behavior, they may view references to internal psychological constructs (e.g., motivations) as unnecessary and even inappropriate.*

   Comment: The word "Since" should be replaced with "Because".

   Example: Carl Rogers was advocate of client-centered therapy, while Fritz Perls was a proponent of a Gestalt approach to treatment.

   Comment: The word "while" should be changed to "whereas".

   Example: *As noted above, Jonathan needs to be provided with a consistent, caring home environment.*

   Comment: The term "above" is problematic because in the final written document there is no guarantee that the reference in question will be placed above this sentence in a physical sense; a suitable and preferred alternative term would be "previously" (and similarly "following" often be used in place of "below").

11. Adverbs Modifying Verbs. In general, adverbs should be placed after the verbs that they modify rather than before them. For example, "The boy ran slowly to the door" rather than "The boy slowly ran to the door".

   Example: The treatment quickly cured the patient.

   Comment: The adverb "quickly" should actually appear at the end of the sentence, in order to modify "cured".

12. Word Choice. It is important to use words in a manner that is consistent with their specific meaning. The guidelines for appropriate use of spatial and temporal terms provided previously (#10) illustrate this issue. If you have any uncertainty as to the meaning or definition of a word, you should look it up in a dictionary to insure that your understanding is correct. In some instances, the meaning you intend may qualify as an idiomatic use of the word. Even in this situation, it is recommended that a more appropriate word be found.

Example: Due to the patient's hallucinations and bizarre behavior, he received a diagnosis of schizophrenia.

Comment: The word "due" means to literally "owe" something (e.g., "The bill is due next month") and thus is not appropriate in the example sentence. A suitable substitute for the phrase "Due to" would be "Because of".

13. Latin Abbreviations. The following Latin abbreviations are used often in formal writing: etc. ("and so forth" or "and others", e.g. ("for example" or "such as"), and i.e. ("that is"). Common mistakes when attempting to use these abbreviations include (a) using e.g. when i.e. is appropriate and vice-versa; (b) not including periods after the "e" in e.g. or the "i" in i.e. or prior to "etc."; (c) not including commas after e.g. or i.e. and (d) using any of the abbreviations outside of parentheses, which is not appropriate in formal writing.

Example: Several prominent humanistic theorists, Carl Rogers, Abraham Maslow, etc., made important contributions to psychology during the middle part of this century.

Comment: The text ", Carl Rogers, Abraham Maslow, etc.," should be changed to "(Carl Rogers, Abraham Maslow, etc.)". Note that there is no comma before or after the parenthetical material. Sometimes, writers are tempted to insert such commas, especially when the parenthetical material is lengthy; this is a mistake, however, because the use of commas should be determined entirely independent of any parenthetical material in a sentence. Finally, it should be noted that the above example also could be adapted to incorporate an appropriate use of the "e.g." abbreviation: "(e.g., Carl Rogers)" or "(e.g., Abraham Maslow)".

Example: *Vicarious conditioning (e.g., modelling) is an important aspect of the behavioral/learning paradigm in psychology.*

Comment: "e.g." should be changed to "i.e." because the material in parentheses represents a restatement of the text that precedes it rather than an example.

14. Unclear Referents. Writers often use words such as "this" or "they" when the idea or subject to which the word refers is not entirely clear. This problem interferes with the clarity of one's writing and thus should be avoided. As a general rule, generic referent terms only should be used when the content term or idea to which they refer appears either in the same sentence or the sentence that immediately precedes this sentence.

Example: *Mary's recent behavior is consistent with a diagnosis of conduct disorder. Her home environment is highly chaotic and disorganized and thus lacks the structure needed to support more appropriate patterns of behavior. This disorder often is associated with involvement in high-risk behaviors such as substance use.*

Comment: "This" referent in final sentence is unclear or at least certainly could be made easier to follow by simply replacing the word "This" with "Conduct".

15. Prepositions. Sentences should not end with prepositions. It always will be possible to write such sentences more clearly in a manner that imbeds the preposition in question in the body of the sentence.

Example: *Depression is what John was seeking treatment **for**.*

Comment: Could be re-written as "John was seeking treatment *for* depression".

16. Unnecessary Articles. In addition, writers sometime include articles such as "the" or "a" when they are not necessary. This tendency introduces "wordiness" that detracts from the quality of the writing.

Example: *The behavior therapy proved to be an effective treatment for Susan.*

Comment: Article "The" could be omitted without any loss of meaning.

17. <u>More on Articles</u>. Sometimes writers experience confusion as to when "a" versus "an" should be used as an article. "A" should be used as an article preceding all words except those that either begin with a vowel (i.e., "i, e, o, or u) or a vowel sound (i.e., "h").

    Example: A interesting theory of depression was proposed by Aaron Beck.

    Comment: "A" should be changed "An" because "interesting", the word that follows, begins with a vowel ("i").

18. <u>Split Infinitives</u>. Writers often "split" infinitives, such as "will be", "has been", "could be" and others, by inserting words in between the two parts of the infinitive. This generally is regarded as incorrect syntax and thus should be avoided.

    Example: *Systematic desensitization will also be administered as part of the treatment for Harry's anxiety disorder.*

    Comment: The phrase "will also be" should be changed to "also will be" to correct the split infinitive that appears in the sentence.

19. <u>Transitions</u>. Transitional words and phrases can be an effective tool for joining keys ideas in writing. They should be used judiciously, however, and kept as brief as possible. Two particular patterns to avoid are (a) restating entire points or ideas as a means of transitioning to the next point or idea; and (b) repeatedly using transitional words or phrases to the point that they create more problems (e.g., wordiness) than benefits.

    Example: *In addition to the Wechsler Scale of Intelligence–Third Edition, the Kaufman Assessment Battery for Children, a second measure of intellectual ability, was administered to Susan.*

    Comment: This sentence could be written more effectively without restating the name of the test that was the focus of the preceding portion of the report (e.g., "Susan also was administered a second test of intellectual ability, the Kaufman Assessment Battery for Children.").

20. <u>Description of Empirical Findings and Theoretical Propositions</u>. The use of appropriate language when describing empirical findings is an important concern in formal scientific writing. Research in the social sciences, psychology in particular, presents special issues because of the unobservable nature of the constructs of interest and the frequent utilization of correlational (i.e., non-experimental) designs. The general problem is usually that of describing the results of a study in which the researcher has attempted to measure or manipulate levels of some theoretical construct or constructs of interest. Consider, for the sake of simplicity, the two construct case in which the constructs can be referred to as A and B. Now, one NEVER can directly assess these constructs, because they are by their nature unobservable and abstract entities. They make up the unobservable theoretical portion of the "nomological net" that Cronbach and Meehl described in their classic 1955 paper on construct validity. Note that the inability to measure or assess theoretical constructs directly is NOT a problem unique to psychology; this concern actually applies to (at least) all of the social sciences (e.g., economists are interested in constructs such as"economic growth" but these are constructs, nothing more and nothing less, that have no single agreed upon observable indicator or measure). Now, the observable measures of A and B can be referred to as C and D, respectively. A concrete example would be someone interested in whether negative beliefs about the self help to cause depression. In this example, the unobservable theoretical constructs A and B are negative self-beliefs and depression, respectively, neither of which can be assessed directly. In the nomological net, it might be posited that A causes B and that C and D (i.e., scores on the measures of negative beliefs and depression) are indicators of A and B (not perfect indicators, of course, but in some meaningful way indicators nonetheless). The situation can be represented visually as follows:

C???????D (Measured, Observable Part of Nomological Net)
* *
* *
A------->B (Theoretical, Unobservable Part of Nomological Net)

KEY: ???? denote a linkage that can be tested empirically.
*** denote an hypothesized linkage between a theoretical construct and an observed measure or experimental manipulation (e.g., A and C, respectively).
----> denotes an hypothesized causal linkage between two theoretical constructs (e.g., A and B).

The research would conduct appropriate analyses to determine if C and D are indeed related statistically; a positive result would be consistent with, but not prove our theory that A causes B (i.e., that negative beliefs influence depression). Suppose a statistically significant correlation is found between C and D. How does one describe this finding? This is a problem for many beginning writers in psychology. It is not appropriate in describing the finding itself to slip down to the theoretical construct level. Thus, it would not be appropriate to write, for example, that "negative beliefs about the self were found to be related to depression". It would be even more problematic to add a causal perspective such as in "negative beliefs about the self led to increased depression" (note that other causal terms/phrases sometimes used inappropriately in a similar manner include "cause" "affect""contributed to" "had an influence on" "impacted" and so on). (It also should be noted that the absence of a significant correlation should not be described as “proof” that a theory is not valid; such a finding could occur for a variety of other reasons, such as measures C or D not being valid or reliable or measures of A or B, respectively, lack of adequate sample size, etc.; this concern is discussed further below with reference to Type II error). Alternative, correct presentations of the finding would refer explicitly to the measured variables (i.e., the observable portion of the "nomological net"; for example, how many marks of different kinds were made on the survey form, etc.). So, one could say, "ratings of negative self-beliefs were associated with higher scores on a measure of depression" OR "reports of negative self-beliefs were correlated significantly with higher ratings of depression" OR "indices (measures) of negative self-beliefs and depression were found be associated" (note that these examples refer only to observed "ratings" or "reports" and "scores" or "indices" that are derived objectively from such ratings). In the special case of regression, one could write “measures of negative beliefs and [other construct, e.g. social skills] predicted scores on the criterion measure of depressive symptoms" or that "measures of negative beliefs and [other construct(s)] accounted for XX% of the variance in reported levels of depressive symptoms". However, it would not be appropriate to write "measures of negative beliefs and social skills each were shown to *influence* ratings of depressive symptoms" or that "measures of negative beliefs and social skills *explained* XX% of the variance in ratings of depressive symptoms"; the latter example is “borderline,” but the word "explain" really does seem to suggest that the writer is referring inappropriately to the theoretical portion of the nomological net).

Finally, it should be noted that the preceding guidelines do not apply only to the results of cross-sectional, correlational research. Rather, they also apply to both longitudinal research (including structural or so-called "causal" modelling analyses) and experimental investigations. These types of studies often help to rule out alternative explanations for observed findings and thus make one’s preferred theoretical/causal interpretation MORE LIKELY to be correct. Yet, we clearly still never have 100% certainty. Consider, for instance, that a significant correlation found between ratings of self-beliefs at Time 1 (C) and ratings of depression at Time 2 (D) could be the result of the influence of a third, unassessed construct (e.g., coming from a dysfunctional family could lead to both negative beliefs about the self and depression). It also might be the case that C and D are actually indicators of observable constructs OTHER than those that are intended.(e.g., it has been argued that self-reports of stressful events are, in significant part, an indicator of psychological symptoms, not just environmental stress at the theoretical construct level). This latter area of concern pertains to issues of discriminant validity in measurement. As for experimental studies, alternative interpretations will be available routinely because of the fact that the manipulation of the independent variable (IV) may not be tapping the theoretical construct that is intended (consider, for example, the plethora of interpretations that have been offered regarding what the classic Milgram research findings REALLY indicate in the way of theoretical constructs and their relationships).

As if the preceding problems were not enough, issues of Type I and II error also must be considered.

Specifically, it is the case that EVEN if the observed measures are tapping the intended theoretical constructs, it may be concluded incorrectly that the constructs of interest either are or are not related because of a chance association that results from drawing an atypical sample (Type I error) or because of a non-statistically significant association that results from not utilizing a large enough sample to detect a relationship at conventional p-value levels (Type II error).

Finally, in so-called causal modelling, it is important to keep in mind that there are often alternative models that, if tested, would account for the observed data just as well as the model of interest that is tested by researchers. Thus, consider a model that proposes family dysfunction-->negative beliefs about the self-->depression. EVEN if this model accounts perfectly for the observed correlations among proposed measures of these constructs, an alternative model might do just as good of a job. For example: family dysfunction-->depression-->negative beliefs about the self. This problem occurs more than you might think, so beware of studies that fail to test substantive alternative models (the "null" model in which nothing is related to anything is a "straw" alternative and not sufficient for addressing this concern).

Theoretical Propositions. Some students have inferred incorrectly from the preceding admonitions and guidelines that one should simply never employ causal language in scientific writing. Although it is understandable how they could arrive at this conclusion, nothing could be farther from the truth! Ninety-nine, if not 100 percent of what psychologists and social scientists more generally are concerned with are proposed causal relations among theoretical constructs. It is, however, critically important and necessary to be clear with yourself and the reader when you are referring to theory and when you are referring to known observable facts (i.e., the two different portions of the nomological net identified previously). So, as a “set up” to describing the empirical findings described previously, one could write something such as the following:

> Beck (1967) and others have posited (alternatives: theorized/proposed/speculated/guessed/argued/put forth the position) that negative beliefs about the self predispose individuals to depressive episodes.

Note the abundant synonyms that are available for key words such as “posit”, just as was the case when considering appropriate language for the descriptions of empirical findings. As the writer, I could then later, after describing the empirical findings, even state something such as the following:

> These findings are consistent with the theoretical views of Beck and others that were described previously.

Note that an alternative for "are consistent with" that is slightly more daring but still OK by my standards would be "provide support for". The key issue is that in either case there is no assertion that the findings actually demonstrated the truth of the theory. Although not required, it is a good idea to periodically (a) remind the reader generally that empirical findings do not, of course, provide definitive proof of the theory or theories of interest and (b) if available, note substantive alternative theoretical interpretations to the data. Thus, to continue with the preceding example:

> Other plausible interpretations are possible, however. Naysayer and Naysayer (1981), for example, argued that such findings instead may reflect an effect of depressive symptoms on negative beliefs about the self.

One other point to make is that it always should be made clear to your reader when you are describing theoretical assertions and when you are describing an empirical finding. I often review manuscripts for journals that contain vague, general assertions about an issue with a citation tacked on, such as:

> It seems that Black families may be more cohesive than White families (Doe & Doe, 1995).

It is not clear from this statement whether (a) Doe and Doe conducted an empirical study or (b) they just developed or expressed a theoretical argument with regard the possibility that is noted. It would be more appropriate to state either:

> Some empirical research has indicated that Black families may be more cohesive than White families (Doe

& Doe, 1975).

OR

Some investigators (Doe & Doe, 1975) have posited that Black families may be more cohesive than White families.

This problem really frustrates reviewers, who often do not know the specific literature well enough to know what is empirical and what is only theoretical unless the authors provide them with a clear “road map”. I emphasize this point because it is often a concern for faculty who are asked to review student papers (e.g., as a member of doctoral thesis committee).

Hopefully, the preceding comments serve to clarify some of the otherwise often murky issues concerning the appropriate language to use when describing empirical findings and theoretical propositions in psychological writing. I still struggle with these issues myself and, to be sure, there are some gray areas where reasonable and thoughtful scientists can disagree. Nevertheless, I believe that the preceding guidelines represent a consensual foundation from which you will find little (intentional) deviation in the writing of the best scientists in the best journals. Finally, if you doubt that any of the foregoing concerns really have significant implications, just consider the continual refrain of the tobacco industry that "smoking has not been proven to cause cancer". Although at this point the likelihood is all but 100 percent, they are on solid ground (unfortunately in my view) when they take advantage of this inherent limitation of our scientific methods with respect to absolute proof of causality. Perhaps the best response is a Damon Runyon-esque assertion inspired by his quote:"The fastest and strongest horse may not always win the race, but that's where I'll bet my money every time" (paraphrased).

Scientific Writing for Applied Audiences. A special note is in order concerning the application of the preceding guidelines when writing for applied audiences. Such audiences include, for example, ordinary citizens such as those who might be included in the readership of mass media (e.g., newspapers), parents and teachers for the purposes of sharing assessment findings in clinical settings, and other professionals who do not have extensive formal scientific training (e.g., lawyers). It may be tempting in these circumstances to become relatively lax in adhering to guidelines for scientific writing such as those that have been presented in this document. Possible reasons for greater laxness include space limitations, concerns that the use of phrasing that is accurate technically will seem unnecessarily “wordy” and cumbersome for the non-scientific reader, and the belief that subtle distinctions reflected in careful scientific writing may not be meaningful to or appreciated by a lay audience. It is my experience that this approach can have significant drawbacks. Indeed, I have encountered numerous parents, teachers, and professionals from non-scientific disciplines who have fully grasped and appreciated nuances and qualifications in scientific language when present and who have expressed concerns when such presentation is lacking. Consider, for example, the parent who is described in an assessment report as “demanding and occasionally hostile” in his behavior toward his son without any qualification such as “appears to be, based on findings X, Y, Z...” or “is described by both persons A and B as..”. My recommendation is to proceed with caution when deviating from accepted principles in scientific writing regardless of the background of one’s intended audience!

21. Resources for Writing

American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5th ed.). Washington, DC: Author.

Bem, D. J. (1987). Writing the empirical journal article. In M. P. Zanna & J. M. Darley (Eds.), *The compleat academic: A practical guide for the beginning social scientist* (pp. 171-201). New York: Random House.

Leong, F. T. L., & Austin, J. T. (Eds.). (1996). *The psychology research handbook: A guide for graduate students and research assistants.* Thousand Oaks, CA: Sage. [4 chapters on Research Writing, addressing writing in APA style, preparing rough drafts, revising a research manuscript, and dealing with journal editors and reviewers.]

Pyrczak, F., & Bruce, R. P. (2000). *Writing empirical research reports: A basic guide for students of the social* *and behavioral sciences* (3rd ed.). Los Angeles, CA: Pyrczak Publishing.

Strunk, W., Jr. (1999). *The elements of style* (4th ed.). New York, NY: Allyn & Bacon. [Classic text, recently updated, providing guidelines on proper English style, usage, and grammar–available for only $6.95 from Bartleby.com on the web]

The 11 Rules of Writing (2003). [On-line]. Available: http://www.junketstudies.com/rulesofw/

Zinsser, W. K. (1990). *On writing well: An informal guide to writing nonfiction* (4th ed.). New York: Harper Collins.