Running head

The running head is an abbreviated title typed flush left at the top of the first (title) page but below the manuscript page header. It is typed in all uppercase letters. It is an abbreviated title of not more than fifty characters in length, counting letters, punctuation, and spaces between words.

Title

The title should be centered on the upper half of the first page of the manuscript and typed in upper- and lowercase letters. It should state the main topic of the study and concisely identify the variables or theoretical issues under investigation. A typical title length is ten to twelve words.

Authors' names and institutional affiliations

The names of the authors in the order of their contribution to the study appear immediately below the title typed in upper- and lowercase letters and centered on the page. The preferred form is to list first name, middle initial, and last name, with titles and degrees omitted. The institutional affiliation where the study was conducted is centered under the author's name on the next double-spaced line. Affiliations outside the United States should include the city, state or province, and country.

Running Head: VIRTUAL REALITY

Virtual Reality Exposure Therapy for the Treatment of Fear of Flying: A Controlled Investigation

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University of Connecticut

Introduction

The text of the research report begins on a new page with the title of the paper typed at the top center of the page. The introductory text is not labeled because of its position in the paper. The introduction is funnel shaped in the sense that it is broad at the beginning and narrow at the end. It should begin with a very general introduction to the problem area and then start to narrow by citing the results of prior works that have been conducted in the area and that bear on the specific issue that you are investigating, leading into a statement of the variables to be investigated. In citing prior research, do not attempt to make an exhaustive review of the literature. Cite only those studies that are directly pertinent, and avoid tangential references. This pertinent literature should lead directly into your study and thereby show the continuity between what you are investigating and prior research. You should then state the purpose of your study and your hypothesis. The introduction should give the reader the rationale for the given investigation, explaining how it fits in with, and is a logical extension of, prior research.

Virtual Reality Exposure Therapy for the Treatment of Fear of Flying: A Controlled Investigation

Virtual reality exposure (VRE) therapy is a potential alternative to traditional behavioral interventions for anxiety disorders. As in conventional behavioral treatments for anxiety disorders, the central component of VRE is exposure to the feared stimulus situation. The main difference between VRE and other exposure-based treatments is that VRE involves exposure to a computer generated rather than an actual or imagined feared stimulus. Stimuli are presented as part of a virtual environment that is interactive and allows patients to become immersed enough that they react to virtual scenarios as though they were real (Nash, Edwards, Thompson, & Barfield, 2000; Regenbrecht, Schubert, & Friedmann, 1998).

In theory, VRE offers a number of advantages over in vivo or imaginal exposure (Rothbaum, Hodges, Smith, Lee, & Price, 2000). Because VRE can be administered in traditional therapeutic settings, it may be more convenient, controlled, and cost-effective than in vivo exposure. It can also isolate focal concerns more efficiently than in vivo exposure. For instance, in treating fear of flying, if takeoff is the most anxiety-producing component of flight, takeoffs can be repeated quickly and as often as necessary without having to wait for the airplane to land. Finally, VRE may provide a more concrete exposure

gains on self-report measures were maintained or improved on for both treatment groups. In addition, 79% of VRE participants and 69% of SE participants reportedly had flown spontaneously since the post-treatment test flight.

In comparison to previous interventions for fear of flying, the Rothbaum et al. (2000) study yielded posttreatment rates of flying that are consistent with systematic desensitization (82%; Howard, Murphy, & Clarke, 1983), systematic desensitization where exposure was delivered by video (65%; Denholtz & Mann, 1975; 70%; Solyom, Shugar, Bryntwick, & Solyom, 1973), stress inoculation training (82%; Beckham, Vrana, May, Gustafson, & Smith, 1990), and imaginal–in vivo exposure hybrid treatments (91%; Haug et al., 1987).

The fear-of-flying outcome studies reported above have been criticized by Öst, Brandberg, and Alm (1997) for not including both pre- and posttreatment test flights. Öst et al. argued that, as the majority of flight phobics can already fly, studies without a pretreatment test flight would overestimate treatment effectiveness by not excluding participants who would have flown without treatment.

This literature also varies widely on inclusion of comparison control conditions. Wait-list or no-treatment control conditions were most commonly used (e.g., Beckham et al., 1990; Howard et al., 1983; Rothbaum et al., 2000), although several investigations (Denholtz & Mann, 1975; Haug et al., 1987; Öst et al., 1997) did not use control groups. One investigation (Solyom et

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Participants

The participants subsection should tell the reader who the research participants *were, how many there were,* their characteristics (age, sex), and how they were selected and assigned. Any other pertinent information regarding the participants should also be included, such as how they were assigned to the experimental condition, the number of participants that were selected for the study but did not complete it (and why), and any inducements that were given to encourage participation. If animals were used, their genus, species, strain number, and supplier should be specified, in addition to their gender, age, weight, and physiological condition.

tical Manual of Mental Disorders (4th ed.; *DSM-IV* American Psychiatric Association, 1994) criteria for specific phobia, situational type; agoraphobia; or panic disorder with agoraphobia, *where* flying is the primary feared stimulus, and (b) refusing to fly during a pretreatment screening test. Forty-five participants meeting these criteria were randomly assigned to VRE therapy or an attention-placebo GT.

Demographic and pretreatment characteristics of the sample were consistent with those reported in other studies (Rothbaum et al., 2000; Wilhelm & Roth, 1997b). Participants ranged in age from 20 to 72 years, with a mean of 45.34 years. They were relatively wealthy and well educated, with a median income of $80,000 and a mean level of education of 16 years. The majority were women (79%, $n = 34$), Caucasian (95%, $n = 41$), and married (72%, $n = 31$).

On average, they had been scared of flying for 18.6 years and had not flown for 4.9 years. Participants averaged 18.8 lifetime roundtrip flights and 7.2 roundtrip flights since their fear of flying began. Seven percent ($n = 3$) had never flown because of their fear. A total of 65% ($n = 28$) were diagnosed with specific phobia, situational type, 12% ($n = 5$) with agoraphobia without panic disorder, and 23% ($n = 10$) with panic disorder with agoraphobia. Twenty-eight percent ($n = 12$) had previously received treatment for fear of flying.

Multiple analyses of variance (age, years of education, income, years scared of flying, total flights, total flights since

VRE Therapy

VRE was conducted by the graduate student therapists and consisted of five individual treatment sessions spaced over 3 weeks. Session 1 lasted 90 min and consisted of an orientation to the rationale for VRE, anxiety management skills, and an introduction to the virtual reality equipment. Participants also were given an educational handout on the safety and mechanics of flight. They were encouraged to read it but received no didactic instruction on these topics. Anxiety management consisted of imaginal relaxation/progressive muscle relaxation and the development and use of rational responses to counter anxiety-producing thoughts and images about flying. Specifically, participants were taught relaxation skills for 20 min and were asked to practice relaxation twice a day during the study. They were then guided by the therapist to list anxiety-producing thoughts they typically had about flying and to develop rational responses to use during flight. To aid immersion during the exposure phase of treatment, patients ended the session with a brief introduction to the virtual environment.

Sessions 2 through 5 lasted approximately 50 min each and were devoted to graded exposure to flying in the virtual environment. The virtual flying environment consisted of 10 hierarchical levels: an empty hallway devoid of flight-related cues, the airport terminal, walking to a small general aviation airplane, entering the airplane, engine start, taxiing to the runway,

ineffectiveness at reducing fear of flying (Greco, 1989; Solyom et al., 1973; Walder, McCracken, James, & Brewitt, 1987).

GT was designed to control for nonspecific treatment effects. It consisted of education about the safety and mechanics of flight and elicitation of each participant's flying history and fears about flying. Participants were encouraged to comment on each other's stories and otherwise engage in group process. No behavioral techniques were used and the therapists made no references to exposure or anxiety management skills. GT was matched to VRE for number and length of treatment sessions. Groups consisted of 4–6 members. The treatment rationale given to participants was that learning the facts about flying, sharing one's fears among understanding peers, and the interpersonal process inherent to group therapies helps to alleviate anxiety.

Measures

Flight Anxiety Situations Questionnaire (FAS). The FAS (Van Gerwen, Spinhoven, Van Dyck, & Diekstra, 1999) is a 32-item self-report questionnaire assessing on 5-point Likert scales the degree of anxiety experienced in different flying-related situations. Three subscales are derived from the FAS: (a) Anticipatory Flight Anxiety, measuring anxiety in anticipation of flying; (b) In-Flight Anxiety, assessing anxiety experienced during a flight; and (c) Generalized Flight Anxiety, assessing generalized fear about flying when no flight is planned. Examples of generalized anxiety include fearful reactions to hearing airplanes fly

if any, anxiety levels during any flights, and treatment-seeking behavior.

DSM-IV diagnostic status across the three domains associated with fear of flying, specific phobia, situational type; agoraphobia without panic disorder, and panic disorder with agoraphobia, was assessed with an unstructured interview conducted by Nicholas Maltby. The latter two diagnoses led to inclusion in the study only if flying was the primary feared stimulus.

Test flights. Test flights assessed avoidance of flying and anxiety during flight. They were conducted in small, general aviation aircraft (four-seat Piper Warrior 11s) and were provided free of charge to each participant. Each flight was broken down into seven steps: walking to the aircraft, entering the aircraft, engine start, taxi, takeoff, cruise, and landing. At each step, participants had control over whether to continue to the next step or stop. If they chose to fly, the test flight lasted approximately 10 to 15 min. Participants were flown one at a time and were accompanied by the pilot and the therapist not assigned to treat them. Refusing any step prior to takeoff was the primary inclusion criterion for participation in the study. During feedback, participants reported that the small airplane was at least as fear producing as if they had to fly commercially. Small aircraft have been used previously to assess outcome (Beckham et al., 1990; Wilhelm & Roth, 1997a) and to conduct in vivo exposure (Greco, 1989).

whether they wanted to advance to the next step, thus maintaining control over whether to continue to the next step or stop. If they chose to fly, the test flight lasted approximately 10 to 15 min. Participants were flown singly, accompanied by the pilot and the therapist not assigned to treat them.

Refusing any step prior to takeoff was the primary inclusion criterion for participation in the study. Six potential participants flew during the test flight. After flying, these 6 were debriefed and offered an alternative opportunity to receive treatment. No further assessment was conducted with this population. Potential participants meeting criteria were then randomly assigned to treatment condition and scheduled for the initial treatment session.

Both five-session treatments were conducted at a University of Connecticut-based psychology services clinic. At the end of the fifth session, participants completed posttreatment questionnaires and were scheduled for the posttreatment test flight. The posttreatment test flight was conducted according to the procedure noted above. Participants flew singly and were accompanied by the researcher not assigned to treat them.

Follow-up assessment was conducted 6 months after treatment. Participants were mailed standardized questionnaires and a brief follow-up to assess flying activities and fear of flying during the intervening 6 months. Flying during the follow-up up period was assessed by self-report rather than by a test flight.

serve your purpose. If a main effect consisting of three groups is significant, your best approach is probably to incorporate the mean scores for each of these groups into the text of the report. If the significant effect is a complex interaction, the best approach is to summarize your data by means of a figure or a table. If you do use a figure or table (a decision that you must make), be sure to tell the reader, in the text of the report, what data it depicts. Then give a sufficient explanation of the presented data to make sure that the reader interprets them correctly. When means are reported always include an associated measure of variability, such as standard deviation or mean square error. In writing the results section, there are several things you should not include. Individual data are not included unless a single-case study is conducted. Statistical formulas are not included unless the statistical test is new, unique, or in some other way not standard or commonly used.

In-Flight Anxiety Scale

Pre–posttreatment analysis of the In-Flight Anxiety Scale of the FAS yielded a significant Treatment Group × Time interaction, $F(1, 37) = 14.85$, $p < .01$, $\eta^2 = .29$. Tests of simple effects indicated that at posttreatment both groups reported significantly reduced in-flight anxiety, but VRE therapy led to significantly greater reductions with a within-group effect size of 2.43 standard deviation units compared with 0.72 standard deviation units for GT. The between-groups effect size was 0.79 standard deviation units. Clinically significant change in in-flight anxiety was achieved by 70% of VRE participants and 22% of GT participants, a difference that was statistically significant, $\chi^2(1) = 10.54$, $p < .01$. At 6-month follow-up both groups maintained their treatment gains but VRE no longer yielded significantly lower scores than GT. This resulted in 50% of VRE participants and 32% of GT participants meeting criteria for clinically significant change, a difference that was not significant.

Anticipatory Flight Anxiety Scale

Pre–posttreatment analysis of the Anticipatory Flight Anxiety Scale of the FAS yielded a significant Treatment Group × Time interaction, $F(1, 38) = 5.94$, $p < .05$, $\eta^2 = .14$. Tests of simple effects indicated that at posttreatment both groups reported significantly reduced anticipatory flight anxiety, but VRE therapy led to significantly greater reductions with an effect size of 1.35 standard deviation units compared with 0.62 standard deviation

tion, $F(1, 37) = 9.23$, $p < .01$, $\eta^2 = .20$. Tests of simple effects found that at posttreatment VRE therapy resulted in significant reductions in somatic anxiety with an effect size of 1.29 standard deviation units, whereas GT was unchanged with an effect size of 0.02 standard deviation units. The between-groups effect size was 1.17 standard deviation units. Clinically significant change could not be computed for this scale because the population mean was within 2.0 standard deviations of zero. Repeated measures analysis of pretreatment and 6-month follow-up scores yielded a significant main effect only for time, $F(1, 37) = 21.36$, $p < .01$, $\eta^2 = .37$. Both groups were significantly improved from pre-treatment and VRE no longer yielded significantly lower scores than GT.

Cognitive Anxiety Scale

Pre–posttreatment analysis of the Cognitive Anxiety Scale of the FAM yielded a significant Treatment Group × Time interaction, $F(1, 37) = 12.91$, $p < .01$, $\eta^2 = .26$. Tests of simple effects indicated that at posttreatment both groups reported significant reductions in cognitive anxiety, but VRE led to significantly greater reductions with an effect size of 1.78 standard deviation units compared with 0.38 standard deviation units for GT. The between-groups effect size was 0.76 standard deviation units. Clinically significant change was achieved by 35% of VRE participants and 17% of GT participants, a difference that was not

Discussion

The purpose of the discussion section of the research report is to interpret and evaluate the results obtained, giving primary emphasis to the relationships between the results and the hypotheses of the study. Begin the discussion by stating whether the hypothesis of the study was or was not supported. Following this statement, you should interpret the results, telling the reader what you think they mean. In doing so, you should attempt to integrate your research findings with the results of prior research. Note that this is the only place in the research report where you are given any latitude for stating your own opinion, and even then you are limited to stating your interpretation of the results and what you think the major shortcomings of the study are. In general, the discussion should answer the questions, (a) what does the study contribute, (b) how has it helped solve the study problem, and (c) what conclusions and theoretical implications can be drawn from the study.

Relationships Between Flying and Indices of Subjective Distress

Table 2 presents product–moment intercorrelations among the standardized measures of flight anxiety collected following treatment and point–biserial correlations between these five standardized measures and successfully flying at postintervention, separately for the VRE and GT groups. The anxiety measures were substantially intercorrelated, suggesting some overlap in the previously described analyses of means.

For VRE participants only, lower self-reported anxiety on three of the five measures was associated significantly with the likelihood of flying after treatment, specifically on the Generalized (–.48), Anticipatory (–.55), and Somatic flight anxiety scales (–.74). For GT participants, self-reported anxiety was unrelated to the decision to fly on all five dependent measures. Pairwise comparison of these correlations indicated that the biggest difference was found for the Somatic flight anxiety subscale (–.74 for VRE vs. .03 for GT participants), with this being the only significant difference between the respective coefficients, $z = 2.90$, $p < .01$.

Discussion

The present study compared VRE therapy to an attention-placebo GT designed to control for nonspecific treatment effects. At posttreatment, both conditions yielded similar rates of flying on a test flight and significant improvements on standardized

than half flew after treatment, and they were significantly improved on four of five standardized measures of flight anxiety at posttreatment and five of five measures at 6-month follow-up. Educational and nonspecific factors seem to have a relatively large impact on flying behavior and fear of flying. Nonetheless, for GT participants only, degree of anxiety reported at posttreatment was unrelated to the ability to fly successfully. In contrast, reduced scores on measures of flight anxiety for VRE participants was significantly associated with successfully flying. This differential outcome suggests that VRE participants at least believed that they would fly with greater comfort, whereas GT participants might have been influenced by other less-specific factors such as loyalty to the therapist, intervention, hope, and self-disclosure (Forsyth & Corazzini, 2000).

Studies that report only average anxiety levels during test flights do not discriminate successful flyers from unsuccessful ones. To better make this discrimination, future studies should include pre-treatment test flights to provide baseline data from which to measure treatment success. In addition, use of various end-state assessments (Brown & Barlow, 1995) could provide meaningful information about the phenomenological experiences of sufferers during flights. Finally, the collection of norms for nonfearful fliers on measures such as the FAS and FAM would increase our ability to determine clinically significant change on these measures.

limited their sense of presence. Adding this feature is not reasonably done during the course of treatment. As normative knowledge increases, treatment protocols should become more comprehensive, provide a more robust menu of features, and lead to improved outcomes.

The emerging nature of virtual reality technology suggests that much of its potential is of yet unrealized. For instance, achieving a sense of presence (i.e., treating the virtual world as if it were real) may be critical to treatment success, but presence and how to best manipulate treatment components to maximize it are only rudimentarily understood (Nichols et al., 2000; Regenbrecht et al., 1998). Perhaps the greatest potential gain is in developing virtual reality applications that focus on the unique strengths of this technology.

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Footnotes

There were no footnotes in this manuscript, but if there were they would be presented on this page.

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ootnotes are numbered con-cutively, with a superscript abic numeral, in the order which they appear in the rt of the report. Most foot-tes are content footnotes, ntaining material needed supplement the informa-n provided in the text. ch footnotes are typed on eparate page, with the rd *Footnotes* centered in per- and lowercase letters. e first line of each footnote ndented five to seven ces or one-half inch, and superscript numeral of footnote should appear he space just preceding beginning of the foot-e. Footnotes are typed in order in which they are ntioned in the text.

TABLE 2

Intercorrelations Between Subscales and Flying for Each Treatment Group

Variable	1	2	3	4	5	6
			VRE (n = 20)			
1. Flew	—	−.41	−.55*	−.48*	−.74**	−.22
2. In-flight		—	.83**	.70**	.63**	.72**
3. Anticipatory			—	.81**	.81**	.68**
4. Generalized				—	.68**	.69**
5. Somatic					—	.42
6. Cognitive						—
			GT (n = 21)			
1. Flew	—	−.19	−.38	−.39	.03	−.39
2. In-flight		—	.65**	.67**	.45*	.71**
3. Anticipatory			—	.76**	.51*	.77**
4. Generalized				—	.52*	.89**
5. Somatic					—	.67**
6. Cognitive						—

Note. VRE = virtual reality exposure; GT = attention-placebo group treatment.

*$p < .05$. **$p < .01$.

ing your research, R. L. Rosnow and M. Rosnow's *Writing Papers in Psychology* is excellent. C. A. Hult's book, *Researching and Writing in the Social Science,* is also an excellent reference. Finally, some years ago H. F. Harlow published a very humorous commentary on the content and style of a research report in the *Journal of Comparative and Physiological Psychology.* (See the References for bibliographic data on all these titles.) What I give you are some general principles elaborated on in more detail in the APA *Publication Manual* (2001).

To clearly communicate the essence of a research report, you must have an orderly presentation of ideas. There must be a continuity of words, concepts, and thematic development from the beginning to the end of the report. This continuity can be achieved by the use of punctuation marks to show the relationship between ideas and by the use of transitional words, such as *then, next, therefore,* and *however.* However, some transitional words (for example, *while* and *since*) create confusion and should be used cautiously. *Since* is often incorrectly used in place of *because.* Scientific writing requires precision and use of these transitional terms should be limited and correct.

The preparation of the research report requires a smoothness and economy of expression. Smoothness of expression is achieved by avoiding ambiguity and the insertion of the unexpected, shifting topics, tense, or person, all of which add to the confusion of the reader and should be avoided. For example, an unnecessary shift in verb tense may create an abruptness that precludes smooth expression. By being consistent with verb tenses, smooth expression is enhanced. Economy of expression is achieved by being frugal with words. This means eliminating redundancy, wordiness, jargon, evasiveness, overuse of the passive voice, circumlocution, and clumsy prose as well as overly detailed descriptions of any part of the research report such as participants or procedures.

With respect to writing, there are a number of points I want to make that may assist you. Some people have trouble getting started. They sit down at a computer or with a pencil and pad of paper, and the words or ideas just do not develop. In such instances you can use one of two approaches. Rosnow and Rosnow (1992) suggest that you begin with the section you feel will be easiest to write. For example, this may be the method section because you should already know details such as the characteristics of the research participants you tested and the procedure followed in testing them. Once you have begun writing this section, you may find that other sections such as the introduction are easier to write. The other technique is to force yourself to begin writing a section even if you don't like what you are saying. This technique has the advantage of getting something down on paper and giving you something to work with and revise. It also forces you to move beyond the beginning point, which may cause the ideas to begin flowing. To use this technique you must accept the fact that your first draft is just that. Seldom if ever should you consider the first draft the final product. Rather, you should produce the first draft and then revise it. This process should continue until you are satisfied with the final product.

When you have completed the final product, you should let it rest for several days and then reread it. This rereading several days later should result in additional

Specific Issues These are the three guidelines that should be followed to avoid writing in a way that reflects demeaning attitudes and biased assumptions. Keeping these in mind, specific attention should be given to the following issues.

Gender. Participants should be described in such a way that avoids ambiguity in sex identity or sex role. This means that you should avoid using *he* to refer to both sexes or *man* or *mankind* to refer to people in general. The words *people, individuals,* or *persons* can be substituted without losing meaning or clarity of expression.

Sexual Orientation. Sexual orientation should not be equated with sexual preference. To avoid labeling and the possible accompanying offensive tone, the use of sexual orientation is preferred unless the implication of choice is intentional. This means that such terms as *homosexual* should be replaced with terms such as *gay men, lesbians,* and *bisexual women or men.* Sexual behavior described with terms such as *same gender, male-male, female-female,* and *male-female* is appropriate because these terms communicate specific instances of sexual behavior regardless of sexual orientation.

Racial and Ethnic Identity. When referring to racial and ethnic groups, it is important to remember that designations can become dated and sometimes negative. The APA *Publication Manual* (2001) encourages authors to ask their participants about their preferred designation. If you designate a racial and ethnic group by proper nouns, such as *Black,* make sure that they are capitalized.

Disabilities. When describing individuals with disabilities, it is important to maintain their integrity as human beings. This means that you should avoid language that equates them with their condition, such as describing participants as *stroke victims* or *depressives.* Again, the principle of specificity is important in describing these individuals. For example, describe a participant as a *person who has a stroke* rather than a *stroke victim.*

Age. The general rule to follow regarding age is to be specific in describing the age of participants and avoid open-ended definitions, such as *over 65.* People of high school age and younger can be referred to as *boys* and *girls.* Call people eighteen and older *men* and *women. Older person* is preferred to *elderly.*

The issues discussed in this section focus on ensuring that biased communication does not enter the research report. In writing this research report you have to also decide whether to use a first- or third-person writing style. Some individuals prefer a first-person writing style; others believe the research report should be impersonal and written in the third person. Polyson, Levinson, and Miller (1982) found that journal editors do not agree on which type of writing style should be used. Similarly, the *Publication Manual* does not take a specific position on this issue. Rather, the emphasis is on clarity and precision in word choice. In the final analysis, it seems as though the writing style chosen should be the one that will facilitate communication of the research study.

Method

Procedure

Meal composition

If four levels of headings are needed, use level 1, level 2, level 3, and level 4 as follows:

Experiment 1

Method

Procedure

Mode of stimulus presentation

If all five levels of heading are needed in an article, the level 5 heading appears first and this heading is followed by the other four.

Quotations A quotation of fewer than forty words should be inserted into the text and enclosed with double quotation marks. Quotations of forty or more words should be displayed in a freestanding block of lines without quotation marks. The author, year, and specific page from which the quotation is taken should always be included.

Numbers The general rule about expressing numbers in the text is to use words to express any number that begins a sentence as well as any number below ten. Use figures to express all other numbers. There are several exceptions to this rule, and the APA *Publication Manual* should be consulted for these exceptions. A second rule to follow in stating numbers is to use arabic and not roman numerals.

Physical Measurements All physical measurements are to be stated in metric units. If a measurement is expressed in nonmetric units, it must be accompanied, in parentheses, by its metric equivalent.

Presentation of Statistical Results When presenting the results of statistical tests in the text, provide enough information to allow the reader to corroborate the results. Although what counts as sufficient information depends on the statistical test and analysis selected, in general it means including information about the magnitude or value of the test, the degrees of freedom, the probability level, and the direction of the effect. For example, a *t*- and *F*- test could be reported as follows:

$t(36) = 4.52, p = .04$

$F(3,52) = 17.35, p = .02$

- Does every column have a heading?
- Are all abbreviations, dashes, and symbols explained?
- Are the probability level values correctly identified and are table entry asterisks defined?
- Have you sequenced any notes by placing general notes first, then specific notes, and finally probability notes?
- Have you eliminated all vertical lines?
- Will the table fit on a journal page?
- Have you referred to the table in the text?

Figures Figures are any illustration other than a table and may be a chart, graph, photograph, drawing, or any other depiction. Although tables are preferred for the presentation of quantitative information, figures give an overall view of the pattern of results but require the reader to estimate values. There are, however, times when figures can convey a concept more effectively than a table can, such as when an interaction is described. If you are considering using a figure, ask yourself the following questions:

- Do I need a figure to most accurately convey the idea?
- Will a figure most efficiently present the information?
- What type of figure will most efficiently convey the information?

If you decide that a figure is needed, you can have the figure mechanically produced or computer generated. Most figures are computer generated and a glossy or high-quality laser print of a figure is acceptable. When generating a figure with a computer, do not use special effects such as three-dimensional effects. When printing a computer-generated figure, use a high-quality, bright white paper, make sure that the printer has a resolution of at least 300 dots per inch, and make sure that the final print has smooth curves and crisp lines showing no jagged areas.

Once the figures have been prepared, number them consecutively with arabic numerals in the order in which they are used in the manuscript. Write the number of the figure lightly with a pencil on the top right edge and outside the area of the figure. If the figure takes up the entire page, write the number on the back of the figure. Also on the back, write the article's short title in pencil and the word *top* to designate the top of the figure.

Figure Captions Each figure has a caption that provides a brief description of the contents and serves as a title. However, these captions are not placed on the figure but are typed on a separate page with the words *Figure Captions* centered and typed in upper- and lowercase letters at the top of the page. Flush with the left margin of the page, each caption should begin with the word *Figure* and the number of the figure followed by a period, all in italics. The caption is typed on the remainder of the line. If more than one line is needed, each subsequent line also begins flush left.

should, when possible, reference specific documents, and not home pages or menu pages, and provide Internet addresses that work. An example follows of a reference for an article published in a journal appearing only on the Internet and for a document appearing on the Internet.

Van Camp, R., & Roth, C. (2002). Role of parental discipline on classroom behavior. *Journal of Child and Adolescent Behavior, 21,* 121–132. Retrieved September, 24, 2002, from http://jcab.org/articles.html

Task force on teen pregnancy in the Southeastern Region. *Methods for reducing teen pregnancy.* Retrieved November, 12, 2002, from http://www.reduceteenpregnancy.org

There are many other items that could be included in a reference list such as book chapters, brochures, monographs, magazine articles, and many types of information retrieved from the Internet. If you have included a source not mentioned here or if you have a variation of a source mentioned here and are not sure how it should be presented, you should consult the APA *Publication Manual.*

Typing In typing the manuscript, double-space all material and select a **serif** typeface. The preferred typefaces are 12-pt Times Roman and 12-pt Courier. There should be one inch (2.54 cm) at the top, bottom, left, and right of every page. You should use the italic and bold functions on your word processor as well as other special fonts or styles of type as specified in the APA *Publication Manual.* Each page should contain no more than twenty-seven lines of text.

Serif
A typeface in which each character has small strokes at the ends of the lines that form it

Ordering of Manuscript Pages The pages of the manuscript should be arranged as follows:

1. *Title page.* This is a separate page (numbered page 1) and includes the title, author's name, institutional affiliation and running head.
2. *Abstract.* This is a separate page, numbered page 2.
3. *Text of the manuscript.* The text begins on page 3 and continues on consecutive pages through the completion of the discussion section.
4. *References.* References begin on a separate page.
5. *Author notes.* These notes begin on a new page.
6. *Footnotes.* Footnotes also begin on a new page.

bmission of the Research Report for Publication

If you have conducted an independent research project and have completed the preparation of a research report (aside from the laboratory reports that you may have prepared in this class), you must now decide whether to submit it to a journal for possible publication. Earlier in this chapter I stated that no study should be undertaken if you do not believe it is potentially worthy of publication. But even if at the outset you believe that the study you are conducting is worthy of publication, you may change your mind once the study is completed and you have pre-