Applying for Research Grants

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It’s easy to win research grants. Simply form a good idea, develop a plan of action, be willing to expend highly focused effort, find several appropriate funding agencies, be willing to tolerate initial setbacks, and then persevere until you receive an award.

Despite the ease of winning grants, most young scholars fail to seek research grants primarily because they fear failure, not because of the quality of their ideas. Those who seek grant support but don’t succeed usually lack perseverance in the face of their initial failure. From this perspective, the major reason for not winning the grantsmanship game is rooted in the personal-motivational aspects of scholarship, not the conceptual or intellectual.

This chapter provides suggestions about applying for research grants, with a special focus on creating the motivation necessary to follow through the long process until an award is received. First, we develop a rationale for submitting research grants and then present a mental model of grant writing, and finally offer practical suggestions that provide some direction in writing your first grant or doing a better job the second time around.

Why Write a Research Grant?

I doubt if there will be a single PhD in the United States in the decade ahead, aspiring to succeed in academia or professional life, whose career won’t be significantly advanced by writing, and winning, a research grant. The case in the academy is straightforward: Tenure committees are impressed by assistant professors who have developed a solid track record in grantsmanship. Some senior faculty and most administrators maintain that a successful grant record is as important as the record of research publications, including the dean whose financial flexibility is enhanced by the return of indirect costs associated with grants and the vice president for research, whose research portfolio will bulge a bit more if it contains your award.

The important reason, however, for developing and submitting research grants is the unique framework they provide for carrying out a long-term research plan that is more integral, thoughtful, and systematic than would otherwise be the case. With a grant, you’ll find that you’re more invested in research and devote more time to it; your research will reflect your higher level of commitment and competence gained from the months of grant preparation because of your increased intellectual investment.

For instance, you might choose to “buy off” a course each semester for three consecutive years, thus providing more time and energy for research. Certainly, you’ll benefit from hiring more helping hands. The additional graduate and undergraduate students budgeted in your
A final reason for applying for a research grant is related to the quality and scope of your ideas. There are very few simple ideas left to pursue in most areas of contemporary psychology. More than likely your model idea will be theoretically complex, multifaceted, process-oriented, and perhaps longitudinal in nature. If this is the case, its corresponding research program will require a large undertaking, with many component parts and several collaborators involved. It may become an undertaking so large in scope that it necessitates grant support for successful completion. Although in some areas of psychology it is still possible to mount a sustained research campaign without external grant support, there is no doubt that the energy and competence you bring to your project will be enhanced through grant support.

Many young, aspiring clinicians and counselors believe that knowledge of grant writing is irrelevant for their future careers. I tend to disagree, in large part because I’ve seen so many professionals move rapidly up the administrative ladder in mental health organizations when they have the skills necessary to obtain grant support for their organization’s demonstration, planning, and evaluation programs. Every new idea for treating patients or preventing problems in homes, schools, or clinics needs careful documentation, in terms of implementation, accuracy, and the range of resulting outcomes.

Possessing the skills (and the will) necessary to write a research grant is a major advantage for almost all professional psychologists. It would not be surprising to learn that we always recommend that talented students in graduate training to become counselors and clinicians take the full complement of statistics and research methods courses (not the bare minimum as is sometimes the case) and that they learn the art of grant writing. Forewarned is forearmed: It is often too late to return to graduate school to pick up missing computer, quantitative, and research methods courses. For most aspiring professionals as well as scholars, this knowledge base and requisite research skills, together with an understanding of the grant-writing process, will be useful, perhaps essential, for career advancement.

Most people form mental models of the world around them to understand and interpret reality. For instance, expert teachers often form models of what constitutes good teaching, including knowledge about best instructional practices and effective disciplinary techniques. These models not only summarize what a teacher knows about classroom practice but also guide future practice, which can, in turn, reshape the original model. In this sense, mental models are dynamic. Similar mental models can be formed about the process of grant development and can be useful in several respects: They succinctly summarize the most important steps in successful grant writing; they simplify the writing process; they serve to energize the writer; and they can be easily revised and updated as new, relevant strategies about grant development are learned.

A **GRANT-WRITING MODEL**

In a model of grant writing, there are at least five major ingredients: First, form an idea about which you are proud and excited. Of necessity, this means that you’ve developed an innovative idea that will require testing in multiple ways. It probably is a complex idea that will challenge you in its implementation at multiple levels of your proposed studies. But through it all, your commitment to the idea energizes and guides the writing process. Second, find an appropriate audience: You’ll need to match your idea to an appropriate funding agency. In other words,
your research goals require a proper home, and finding the right home for your grant proposal requires both advanced planning and creative exploration. Reviewers in the wrong home may fail to recognize the merits and significance of your idea. Third, frame the research plan so that, if at all possible, it has both theoretical and applied significance. Of the two kinds of significance, the former is the more important because it means that you hope to advance the state of knowledge in an important domain of inquiry. Fourth, do your homework thoroughly so that you have a set of refereed papers published (or in press) in respected journals. These papers lead up to the idea that is at the heart of your grant proposal. At the very least, you’ll need to have conducted a major pilot project that demonstrates the methodological feasibility of your design. Finally, you must persevere until an award is received. Hardly anyone is successful with an initial submission. The trick is to return immediately to the funding agency with an improved, revised submission that is responsive to the reviewers’ feedback. If you respond to all of the reviewers’ comments, you’ll be in good position to obtain a positive review the second time around.

SEEK AND YOU SHALL FIND

Creating Good Ideas

If we could tell you how to develop an interesting and theoretically important idea, we would probably be millionaires, or at least have formulated a few more good ideas during our own research careers. The problem is, of course, that good research ideas emerge through a somewhat mysterious integration of existing knowledge within a domain, knowledge in adjacent domains, and technical skills—welded together by inspiration, imagination, and good timing. How these ingredients, which are all necessary to form an important and researchable idea, come together in each scientist’s mind is something you may have experienced, or will experience, first-hand. We do know, however, that a sincere commitment to expanding your field, a willingness to explore the forefronts of its boundaries for its sake (not yours), a determined sense of perseverance, and a recognition that the game of science is fun and challenging will put you in good position for preparation and inspiration to unite with luck in creating an original, significant research idea.

Remember that raw ideas need to be sharpened and reshaped in order to transform them into researchable hypotheses. All too often, young scholars outline premature ideas in their grants, not theoretically refined ideas supported by the pilot data that demonstrate their plausibility. Chapter 24 of this handbook by Peterson on writing drafts is relevant. Don’t be afraid to let your ideas ferment, to share them with others, and to test them in preliminary studies. Sometimes you need to admit, perhaps grudgingly, that what you first thought was a great idea isn’t a researchable idea, or perhaps not a significant one. Continue to struggle over time to come up with your best, sharpest idea, and then pursue its implementation with vigor and determination in a series of studies designed to test interrelated hypotheses.

The Audience and the Idea

Rarely will you develop a research grant, whether designed to test a theory or conduct intervention program, without a specific granting agency in mind. You should match your idea, not only to a specific funding agency but also to potential reviewers. That is, you should ascertain with some certainty that your proposal falls within the objectives of a targeted foundation or granting agency, and if possible you should attempt to discover who will review, and ultimately judge, your grant: Write with a specific audience in mind, if at all possible.

If your project falls within the auspices of a major federal agency such as the National Science Foundation (NSF), the National Institutes of Health (NIH), or the Office of Education, then existing brochures, program officers, or both will be available to provide their mission statements and current research priorities. These agencies also have extensive Internet resources, which allow for easy access to all the information you’ll need to write your proposal. For example, the National Science Foundation (NSF, 2005) has a link, “Funding—Preparing Proposals” on its main page, and the
National Institutes of Health grants page (NIH, 2005) includes everything from funding opportunities to forms and application guidelines. If you are responding to a special initiative called a request for proposals (RFP), then the Federal Register will likely provide detailed information; your institution’s grants office likely subscribes to the Federal Register service, or you can also access the information using search features of the Federal Register Web site (Government Printing Office, 2004). Your grants officer will also have available a volume describing the range of private foundations that have interests similar to yours.

There are also several Web-based search engines that are designed to locate a variety of funding opportunities (from both federal and private agencies) to match your particular interests. It is often helpful to develop a list of key words to use in your search that includes some very general words (i.e., psychology) as well as words that are more specific to your topic. The Illinois Researcher Information Service (IRIS; 2003) is hosted by the University of Illinois at Urbana-Champaign, and the Community of Science (COS, 2003) is a private resource for subscribers only (though it is likely that your university will have a subscription to COS). Both search engines allow you to choose the type of award you want to search for, as well as keywords to describe your areas of interest. They both have funding alert features that enable you to set up an automatic alert every time a new funding opportunity arises that meets the specifications of your search.

If your proposal is headed to a private foundation, you should take several preliminary steps: Ensure that their priorities match your research interests by reviewing the annual report for the foundation’s most recent funding decisions; develop a short two- or three-page abstract that outlines your proposal in relation to the foundation’s objectives; and most important of all, try to get your foot in the door: Initiate phone contact with the relevant program officer to whet the foundation’s appetite prior to the arrival of your abstract (do it yourself or enlist a well-chosen colleague). It is rare that unsolicited grants, presented without prior personal contact, are awarded by a foundation. If you have no direct connection to the foundation, it may be worth paying an in-person visit so that officers can get to know you and hear the enthusiasm you have for your idea.

The point of this discussion is to make you aware of the need to shape your general idea in such a way as to make it appealing to potential reviewers. Your proposal ought to reflect your excitement and enthusiasm for your research. You also need to follow the agency or foundation’s guidelines without deviation (e.g., do not exceed page limits for any section; do not burden reviewers with excessive materials in an appendix). Remember to present your ideas in accord with the unique goals and specific format of the granting agency.

Framing the Research Plan

Generally, research plans evolve in your mind over time. Start with a tentative outline of the body of the proposal early in the game. Modify it frequently as you churn the idea and its ramifications over and over in your mind. Be flexible in your attempts to locate your project in terms of a narrow context (e.g., testing a specific theory), as well as a context that reveals its long-term applied, or practical, significance. As socially oriented priorities emerge from federal agencies as well as private foundations that formerly funded only basic research, the day may come when it is simply impossible to fund theoretically oriented research ideas without their potential long-term, applied significance being adequately addressed.

Of the two goals in your research plan— theoretical importance and potential significance— the former should be of greater concern. You simply must convince the reviewers that your research will advance the current state of knowledge and understanding in an important domain of inquiry. You do this in at least three ways: (a) Present a logical and coherent argument for your theoretical position, showing clearly how it differs from the prevailing view(s); (b) Discuss your aims, objectives, and general hypotheses in sufficient detail and with a clear sense of how they interrelate; (c) Present the background literature, especially your own recent work in this area.

The final step—showing your research competence— is essential, because you must present convincing evidence of the quality of your own scholarship (e.g., recent, relevant publications) or
at least strong pilot data showing your experimental savvy and the feasibility of the methodological approach. In the case of a large-scale clinical demonstration or intervention project, the documentation of your scholarship might consist of a pilot study dealing with a mini version of the proposed intervention or individual case studies demonstrating that the full program can indeed be implemented, with reasonable potential for changing deviant or delayed behaviors. As you end this initial section of the proposal, be sure to outline specific hypotheses (although only the major ones), as well as corresponding predictions about major outcomes that are expected to result from your studies or intervention.

**The Research Specifics**

The second major section of most grants deals with Proposed Research. This section mirrors, in many respects, the Methods section of a journal article and is made up of the following subsections: Participants, Design, Materials, Procedures, and Proposed Statistical Analyses. If the proposal contains multiple experiments (as is usually the case), you’ll need to repeat similar procedural and analytic information for each study, unless there is redundancy across the series of studies. A table can demonstrate such redundancy and reinforce the interrelated network of your hypotheses.

**Participants**

The number of participants and their most important characteristics need to be described, often in considerable detail. For instance, if the population under study is composed of juniors and seniors from a particular college, then little additional information will be needed except the number of subjects, gender distribution, and any special considerations about their abilities or academic achievements. On the other hand, if you are studying children with disabilities, then you would likely include the number of participants, their sex, age, mental age (or IQ), types of disabilities, relevant motor or visual disabilities, grade level or reading capacity, medication history, and other essential characteristics.

Remember to describe participant characteristics in detail sufficient to enable the reviewer to generalize from your sample to the appropriate population. Often the method of obtaining participants—whether they are volunteers or paid, of normal intelligence or from a clinically defined population—will affect the experimental outcomes; hence, such information should be provided in detail in the proposal. Also, whether the subjects are highly trained for the task, have previous experimental participation in similar tasks, or are naive are important considerations that should be included in this section. Consideration of statistical power at this point is important (See Myors, Chapter 11, on that topic).

**Design**

If your study includes a number of independent variables, some being given on repeated occasions, it is wise to refer the reviewer to the entire set of variables that make up the design in a table. This table will make it easier for the reviewers to understand the measures you’re taking and when (and how often) they’ll be collected. Mention in the text proper, not only a description of your variables but also whether they represent within- or between-subjects manipulations. It will usually be the case in a grant proposal that you’ve developed a novel and complex design, and this section should be highlighted as a major component of your proposal.

**Methods and/or Materials**

The Methods section should describe either the type of testing instrument and/or apparatus (brand name) or, if it isn’t commercially available, its essential features and dimensions. The description of apparatus should tell what the equipment does rather than how it was put together. Include key dimensions and functional operations instead of a picture or diagram. If the to-be-presented materials are complex—such as the number and size of categorically related words in a free recall list of 30 items—then their specifications should be presented in detail so as to allow for replication. For commonly used tests (e.g., Stanford-Binet test of intelligence or the Beck Depression Inventory) less detail about reliability and validity is needed than for questionnaires and tests you have developed; in these cases, considerable detail about reliability and validity is required.
Procedures

The best way to handle the Procedures section is to place the reader in the position of the participant. Treat first things first, proceeding from the point when the participant begins the experiment to the point of the final to-be-recorded behavior. The Procedures section should describe exactly what the subject will be shown and what he or she will be asked to do. Generally, it is best to focus on the participant’s activities rather than on the movements of the experimenter. For instance, in a reaction time study, assume that the experimenter will need to reset the clock after each trial. Critical details necessary for replication, like the order of events, their timing, the instructions to subjects (paraphrased rather than reported verbatim, unless the instructions represent one of the manipulated variables), the type of response measurements, and the controlled events, should all be reported in the Procedures section. Remember, however, to report only those details essential for replication. Avoid redundancies in the Procedure section, as well as redundancies across studies in your overall project.

Data Analyses

Remember that this section is a statement of the expected outcomes backed up by the statistics you need in order to analyze the data. Use statistical techniques that are state-of-the-art, but at the lowest level of complexity necessary to analyze your data set. In other words, don’t try to be too sophisticated, unless such treatment is called for by your design and hypotheses. Be sure to focus on the key comparisons among treatment means, as well as on individual difference analyses (where theoretically appropriate). Individual difference analyses often provide secondary support for a major hypothesis that itself centers on comparisons among group means. Power calculations, which reveal the number of subjects needed to detect reasonable effects, will also strengthen this section of the proposal. Because many review panels will have a sophisticated statistician on board, it is important for this section to be reviewed by your in-house statistician.

Additional Points to Include

The final part of the Proposed Research section will likely contain a statement about the use of human subjects (including a reference to consent forms that can be found in an appendix and the appropriate inclusion of women and minorities as participants; the latter is required by agencies such as NIH).

The final subsection in the body of the proposal is likely to be titled, “Research Significance.” It represents your last chance to show the potential long-range impact of your work on the field and why it would be a wise decision to fund your project in order to benefit science, society, or both. Of course, the Reference section will conclude the body of your grant proposal. This section should be complete, accurate, and faithful to current APA style (APA, 2001). A sloppy bibliography may be viewed as an indication of a potentially sloppy researcher.

The Most Important Part of the Grant: The Summary or Abstract

The Abstract represents the initial section of the research proposal. It should summarize the major manipulated or measured variables, tasks, key procedural features, theoretical relevance, and potential significance. I intentionally saved the discussion of this first section of the grant until last in order to emphasize that, in practice, the writing of the Abstract is the final order of business in grant writing, but one of its most important. Also, it is easier to write the Abstract after all else is completed.

Conciseness, precision, and theoretical significance are the chief ingredients that characterize a successful Abstract. Of all the information contained in a well-written Abstract, the main hypotheses and how they are to be addressed are the most critical. It is difficult to accomplish this goal and simultaneously to include the essential features of the design, the major variables, and their significance in a limited space (often no more than 250 words).

Finally, don’t overlook the fact that a good Abstract, much like the title of the proposal itself, is likely to induce the reader to peruse your proposal in greater depth, and with greater seriousness of purpose. Hence, you should construct the Abstract with carefully chosen words, sentences, and transitional phrases. It should be the most interesting section of the grant proposal. Remember that some reviewers on your
panel won’t be directly assigned your proposal; they’ll likely read only your Abstract in detail. Don’t miss the chance to impress them with the importance and scope of your project.

Preparing a Budget

Most young investigators spend an unduly large amount of time in budget preparation. Budgets should be adequate but not excessive: Your salary (for both the academic year and the summer), staff or graduate student salaries, equipment, supplies, travel, and participant costs are typical items in the direct costs portion of the budget; a reasonable increase due to inflation (e.g., 2% per year) is often used to form the budgets for additional years. Indirect costs, as determined by your university or agency, are added to the direct cost to form the total cost of the grant for each year. Indirect costs for projects funded by foundations are often negotiable with your office of grants and contracts but are usually never more than 10%. Any unusual item in the budget (such as the amount of assistance needed for collecting data) needs to be justified fully. If in doubt, spend extra time justifying budget items rather than leaving the reviewers with possible unanswered budgetary questions.

Useful Tips in the Art of Grantsmanship

How to Get Started

Grant preparation should be a constant part of your daily professional life. Keep a notebook on your desk where new ideas can be recorded for posterity and old entries reshaped and expanded. Begin modestly—with your first grant being submitted to an internal unit of your university or to a local agency. Many universities and foundations have seed grants for junior researchers that are designed to provide start-up money. A quick reading of Sternberg’s (1992) comments on winning acceptance by a psychological journal will be helpful at this point in the process. Your first grant should not be unduly time-consuming and should have a high probability of funding.

Build on your first award by publishing two or three research papers in respected journals. You’ll then be in a good position to seek your first major external award. My advice is to write this first grant proposal very quickly (e.g., in 2 or 3 weeks). First of all, you’ll be building from an existing base of scholarship that is both theoretical and empirical. Hence, the first half of the grant (Rationale, Significance, Literature Review and Background Research, and Hypotheses) will flow fast, given you have preexisting written materials to draw from. More time, perhaps, will be required for the Proposed Research section, although I suspect most of the individual studies will have already been outlined in your little black book. The reason that you should complete this first grant proposal quickly, but competently, is that you most likely won’t be funded in this first attempt at securing external funding for your research.

The Need for Perseverance

Roughly 80% of reasonably good grants are initially rejected—at both federal agencies and private foundations. Hence, rejection is a fact of life in grant development that you must learn to expect, accept, and tolerate. To paint an even bleaker picture, consider this fact: Of the 20% of grants approved by most agencies, relatively few will have been approved on the occasion of their initial submission. That is, most funded proposals are resubmissions. For instance, within NIH about 75% of funded grants occur in the second or third rounds of the submissions process. This means that although you will, in some sense, fail in your initial submission, you’ll receive valuable feedback necessary to correct and strengthen your to-be-revised proposal. If you address these criticisms earnestly and thoroughly, your chances of success will improve dramatically the second time around. If not, the third time might be your charm. Hence, a major secret—often kept hushed among successful grant-getters—is that failure breeds success. But perseverance is required! Start rewriting your grant for resubmission as soon as you receive the reviewers’ summary statement from your initial submission.

Locating Multiple Funding Sources

Although journal articles are submitted to only one journal at a time, grants can and should
be submitted simultaneously to multiple funding sources. For instance, it wouldn’t be unusual for the same grant (with minor modifications to meet specific formatting requirements) to be under review at the same time at NSF, NIH, and a private foundation. Of course, if a positive decision is received from one agency, the grant should be withdrawn immediately from further consideration at the other agencies. It may be helpful to conduct ongoing searches, either through the grants pages of federal agencies or through one of the search engines mentioned previously. Such ongoing searches can help you to assess how your research interests square with the current priorities of various agencies and organizations, thus helping to narrow your focus. Current research agendas are explained in great detail on the aforementioned Web sites.

**On the Importance of Writing Style**

A research grant should enable the reader to comprehend and evaluate your ideas, without requiring a monumental struggle. In order to understand the project, the reviewer must be led through the initial comments on the general hypothesis to the final statements about research significance. If you are genuinely concerned with making the task of reading your proposal more manageable, you must interest and motivate the reviewer. Initially, a reader’s attention is drawn to your project because of its title and then by its Abstract. Your reviewer may be doing similar research or perhaps may find your title and general idea intriguing, although he or she may know absolutely nothing about the specific background literature or proposed methodology.

You can make the reader’s job easier by writing the proposal for the person who is not well informed about your topic, rather than for the most knowledgeable person in your research area. You must lead the reviewer from a general statement of the idea to the relevant issues and literature, the specific research hypothesis, the design and procedures, and finally to the proposed analyses and the long-range significance of the data. Good grammar, an interesting style, and neither too much nor too little detail will likely result in a high level of readability. A readable proposal will interest and attract your audience, whereas a dull or unintelligible proposal might well result in a negative judgment. A member of the National Academy of Science, chemist Ernest Ebel, who was one of the most published scientists in America, once said, “It’s not so much that I’m a better scientist than the rest, it’s just that I’m a better writer.” Your grant proposal must be readable if it is to attract and influence its target audience, the panel of reviewers.

Skills in communication, both oral and written, usually are not developed simply within the confines of your scientific training but rather are acquired and refined during the early years of your liberal education—in grade school, high school, college composition classes, or journalism activities. I find it surprising that so many aspiring young psychologists are not informed about, or do not avail themselves of, opportunities to develop general writing skills, both prior to and during graduate training. These skills are essential for winning research grants, which after all must be accurate, informative, and interesting to read in order to be successful.

In the end, the entire process of successful grant writing boils down to three simple rules: (a) Form an idea you’re proud of; (b) make a concentrated effort to write about your idea and its research implications; and (c) persevere until others see its full merits. At that point, you’ll experience a great personal satisfaction: winning your first research grant.

**Exercises**

As you consider beginning the process of applying for a research grant, here are a few exercises that can get you moving in the right direction.

1. Once you’ve decided from which agency or organization you’ll seek funding, construct a checklist of the specific requirements for that agency. This will not only ensure that you assemble a complete proposal but will also help to familiarize you with the policies of the granting agency.
2. Another task that may prove helpful in your writing is to begin with the introductory sections from two or more of your recent publications and outline the additional steps you would need to take in order to transform them into a 9- to 12-page introduction to a grant proposal. Your outlined proposal would need to include at least four sections: Rationale, Significance, Background Research (including your own work), and Research Hypotheses. This will help you start thinking about what it will take to transform your existing ideas into a complete research proposal.

3. Finally, once you’ve written your proposal, seek constructive criticism from mentors and peers. The questions they have will likely be similar to those of some of your reviewers. Being able to accept and integrate constructive criticism will generally result in a more solid proposal, with a better chance of its being funded in rounds one or two of the review process.

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**RECOMMENDED READINGS**

This chapter has laid out some tips about grant writing. A more complete description of the grant-writing process can be obtained in excellent texts titled *Research Proposals: A Guide to Success* by Ogden and Goldberg (2002); *Proposals That Work* by Locke, Spirduso, and Silverman (1999); and Lauffer’s (1997) *Grants, Etc*. These books elaborate on themes only briefly sketched in this chapter: how to get the process started, what and when to write, checking for infractions, specific contents, and the decision-making process. Many parts of the Ogden and Goldberg (2002) text will be helpful to you, particularly for preparation and development of NIH grant proposals. Even if you are not applying for an NIH grant, it may still be good practice to review their guidelines and procedures, as most agencies have similar policies. Peterson (2000) provides a companion for using the Internet to find grants and funding, and Kraicer (1997) provides a totally Web-based approach to teaching grantsmanship. Useful Web sites are operated by libraries of the University of Wisconsin (http://grants.library.wisc.edu/organizations/proposalwebsites.html) and Baylor University (www3.baylor.edu/Library/LookingForInfo/grantbibl.html). The Corporation for Public Broadcasting operates a Web site that features a basic approach to grant writing at www.cpb.org/grants/grantwriting.html. Non-profit Guides (www.npguides.org/links.htm) offers a listing of links to different grant-writing Web sites, thus operating as a portal to information.

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**REFERENCES**


