

Editorial: Bridging Research-to-Practice: Enhancing Knowledge through Abstracts

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The abstract is often the only part of the article that is read and is arguably the article's most important element. Thus, in this editorial, we examine the role of the abstract, discuss the quality of abstracts using empirical research, and provide recommendations to authors, editors, and publishers of the Publication Manual of the American Psychological Association for increasing the quality of abstracts. We conclude that for all types of manuscripts, the abstract should contain: theoretical framework/background, statement of the problem, purpose/objective/research question/focus of study, conclusions, and implications and applicability to practice. We make additional recommendations for 5 types of manuscripts. Suggestions for editors and publishers include abstract submission recommendations (e.g., increased word length) and the endorsement of structured abstracts.

What is expected from research? Generally, the expectation is that research will increase what is known and this knowledge can be used to improve the quality of life (Greenwood & Maheady, 2001). More specifically, educational research should "make a difference in what students learn, what teachers know, and how they teach" (Greenwood & Maheady, 2001, p. 334). Some educators have questioned the value that educational research has for practice (Greenwood & Maheady, 2001). As noted by Greenwood and Maheady (2001), "Unfortunately for classroom teachers, many education researchers see the role of research to be advancing theory rather than knowledge application" (p. 336). In the same vein, many practitioners do not fully understand how they can use research in their professions (Greenwood & Maheady, 2001).

The problem of translating research into meaningful information that can be used in practice (i.e., the research-to-practice gap) is not a new dilemma. Great difficulty often exists in ensuring important research findings reach practitioners who

might be able to apply the findings (Ad Hoc Working Group for Critical Appraisal of the Medical Literature, 1987; Haynes, Mulrow, Huth, Altman, & Gardner, 1990; Hayward et al., 1993; Huth, 1987; Kulkarni, 1996; Mosteller, Nave, & Miech, 2004; Murray, 2009; Proctor, 2004; Tramer, 2001). Thus, the research-to-practice gap results in a substantial amount of research findings that are unknown and/or unused by those persons in the field (Murray, 2009).

In the English language alone, more than 20,000 articles are published in more than 1,000 education journals each year (Miech, Nave, & Mosteller, 2005; Mosteller et al., 2004). This deluge of information that grows exponentially over time has consequences for those individuals who want to keep pace with the ever-increasing literature base (Daniel & Onwuegbuzie, 2007; Rosen, Greenberg, Stone, Olchanski, & Neumann, 2005). Meich et al. (2005) suggested a threefold requirement for research-to-practice: (a) Practitioners must have access to research (e.g., bibliographic databases), as well as the (b) time and (c) inclination to sort through potential references of interest. It is within this threefold context that a "bottleneck" is created which blocks the dissemination of research to practitioners (Miech et al., 2005, p. 397). If practitioners get past the first roadblock (i.e., access), then they must be inclined to sort through often-limited information provided

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through bibliographic databases on the potential volumes of studies related to their topics of interest. For full-text articles that are retrieved, practitioners then are faced with combing through what are often studies that are written for a technical and not a practitioner audience (Miech et al., 2005; Murray, 2009).

Purpose of Editorial

The purpose of this editorial first is to examine the role of the abstract specifically within the context of how the abstract might be contributing to the research-practice gap. Next, we discuss the quality of abstracts using results of research conducted by Hahs-Vaughn and Onwuegbuzie (2010). Finally, we provide recommendations for increasing the quality of abstracts, including suggestions for authors as well as for editors and the publishers of the *Publication Manual of the American Psychological Association* (APA), hereafter referred to as the *Publication Manual*.

The Role of the Abstract

A number of factors contribute to the gap between research and practice. One such factor might be the construction of abstracts of articles with inadequate format and content, which might prevent wider dissemination and use of research (Miech et al., 2005). The abstract is a key element within an article. As stated in the sixth edition of the *Publication Manual* (APA, 2010),

An abstract is a brief, comprehensive summary of the contents of the article; it allows readers to survey the contents of an article quickly and, like a title, it enables persons interested in the document to retrieve it from abstracting and indexing databases... A well prepared abstract can be the most important single paragraph in an article. Most people have their first contact with an article by seeing just the abstract, usually in comparison with several other abstracts, as they are doing a literature search. Readers frequently decide on the basis of the abstract whether to read the entire article. The abstract needs to be dense in information. (pp. 26-27)

Although requirements for formatting publications vary from journal to journal, consistent elements of published manuscripts include the title of the publication, the name of author(s) and institutional affiliation(s), abstract, and body of the article. Ideally, the abstract should inform readers in determining whether reading an entire article is relevant to the need at hand (Dupuy, Khosrotehrani, Lebbe, Rybojad, & Morel, 2003). The information contained within the abstract is critical because it

might be the only part of an article, with the exception of the name of the author(s) and article title, that is publicly accessible through computerized bibliographic databases (Haynes et al., 1990; Miech et al., 2005; Mosteller et al., 2004). Additionally, and perhaps partly because of its accessibility, in reality, the abstract is often the *only* component of an article that many people read (Editors, 2004; Haynes et al., 1990). Thus, the abstract is arguably the most important element in an article (Editors, 2004; Pitkin, Branagan, & Burmeister, 1999). As such, it is critical that the abstract conveys the key elements of the article so that the reader can both interpret it and determine its applicability to practice (Rosen et al., 2005). As the editor for the *British Medical Journal* stated,

In practice, I suspect, most readers are content to read a paper's title and abstract, casting an eye over the remaining sections. The abstract, then, has a pivotal role...in being able to stand on its own as a packet of information. (Lock, 1988, p. 156)

Not only is it important that the abstract contain all the key elements of the published article, but these elements should reflect accurately the work conducted (Pitkin et al., 1999). Unfortunately, the quality of abstracts varies, with many abstracts providing little valuable information and some even providing misleading information (Altman & Gardner, 1987; Daniel & Onwuegbuzie, 2007; Pitkin et al., 1999).

Quality of Abstracts

Although some research exists in which the accuracy of abstracts in published research has been examined (e.g., Pitkin et al., 1999), little is known about the quality of abstracts contained in manuscripts that are originally submitted for consideration for publication. Until recently, no researcher has rigorously examined the quality of abstracts among manuscripts submitted for possible publication to a journal. To this end, Hahs-Vaughn and Onwuegbuzie (2010) conducted a mixed research study examining 74 manuscripts representing empirical (i.e., quantitative, qualitative, or mixed) research studies submitted to *Research in the Schools* (RITS) over a 2-year period. These manuscripts represented more than 50% of all the manuscripts (i.e., empirical, theoretical, review, methodological) submitted to the journal over this period.

For each of the submitted manuscripts, information provided in the abstracts was examined. More specifically, all 74 empirical research manuscripts were classified according to whether they contained each of the five components specified in the *Publication Manual* (APA, 2001), namely: (a)

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problem/purpose/objective/research question/focus of study; (b) sample/population size/characteristics; (c) method (e.g., data-gathering procedures, intervention, research design); (d) findings; and (e) conclusions/implications/recommendations.

Abstracts that contained all five components specified by APA (2001) were classified as developed abstracts. Underdeveloped abstracts were those abstracts missing at least one of the five required APA elements. In addition, information on the number of authors of each manuscript, gender of the first author, type of institution to which the first author belonged, and length of manuscript also was gathered. Information presented in the abstract also was compared to the information provided in the body of the manuscript.

Of the 74 manuscripts reviewed, 11 manuscripts were accepted for publication, 21 manuscripts were

provided the opportunity to be revised and resubmitted, and 42 manuscripts were rejected with no further option to be revised. Findings revealed that a large proportion (i.e., 35 of the 74 manuscripts or 44.3%) of manuscripts submitted to *RITS* contained an underdeveloped abstract (see Figure 1). Approximately one half (51%) of the abstracts contained errors of omission relating to the sample/population size/characteristics, with the vast majority of these abstracts omitting information about the sample size and/or group sizes. Approximately one third (31%) of the abstracts did not contain information about the problem/purpose/objective/research question/focus of study. A small percentage of abstracts contained insufficient information on the methods (9%) and/or conclusions/implications/recommendations (6%).

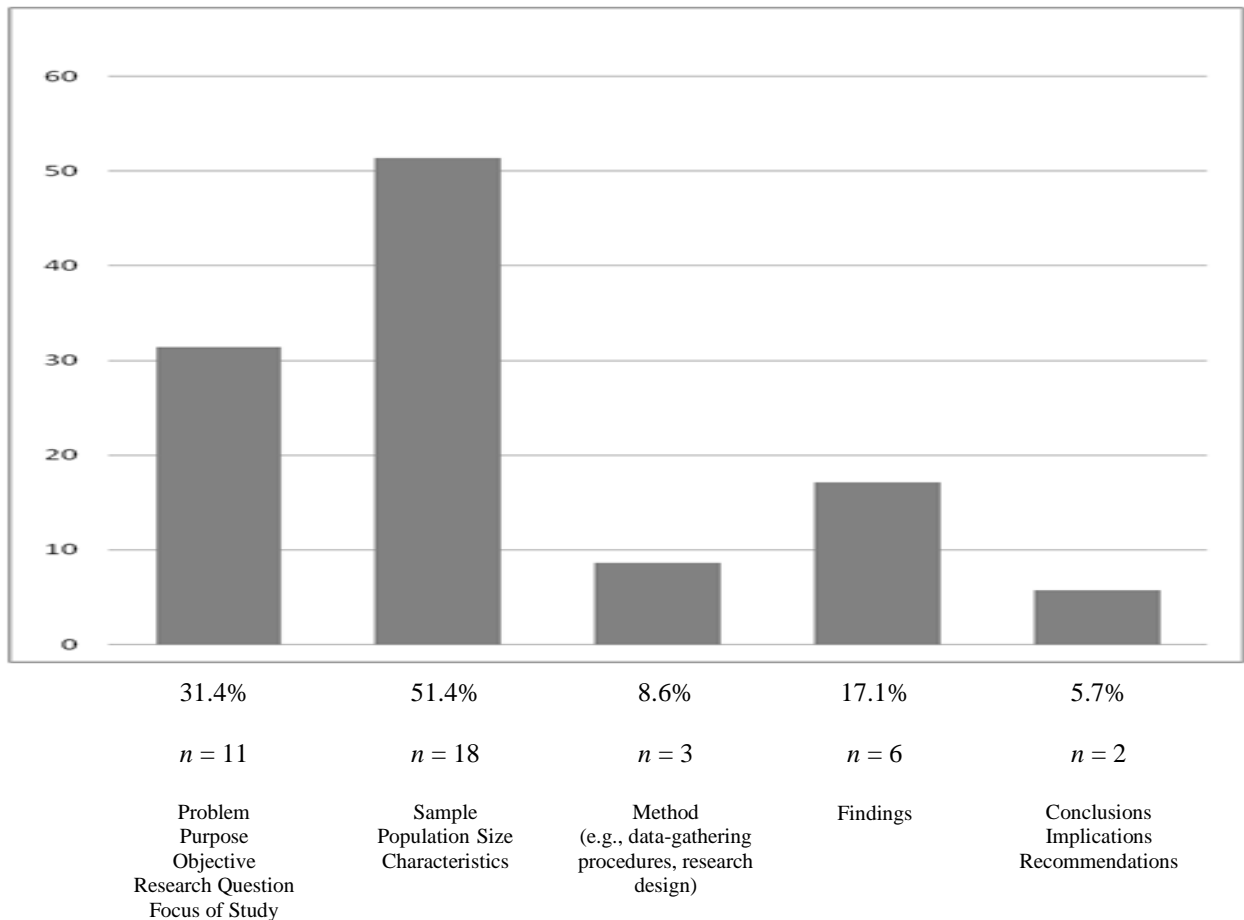


Figure 1. Frequency of omission in abstract ($n = 35$).

A 2 (i.e., underdeveloped vs. developed abstract) x 3 (accept vs. revise and resubmit vs. reject) chi-square test of association provided evidence of a relationship between abstract quality and the disposition of the manuscript. This relationship was statistically significant, with a moderate-to-large effect size (Cramer's $V = .40$). Specifically, of the manuscripts with developed abstracts, 28% were accepted for publication and 49% were rejected. In comparison, of the manuscripts with undeveloped abstracts, no manuscript was accepted and 66% were rejected. Nearly one fifth (17%) of the abstracts did not have any research findings reported.

A series of chi-square tests of association and independent samples t tests revealed that abstract quality (i.e., underdeveloped vs. developed) was not related to gender of the first author, type of institution (i.e., Research I/Extensive vs. Research II/Extensive) to which the first author belonged, number of authors of the manuscript, and length of the manuscript. Slightly more than one third (34%) of the manuscripts contained information in the abstract (e.g., purpose statement, sample size, sampling scheme, group sizes, population, and findings) that was not entirely consistent with the information provided in the remainder of the manuscript.

Conclusions

Based on the findings of Hahs-Vaughn and Onwuegbuzie (2010), we have presented the frequency of omission of the five APA recommended elements in abstracts submitted to *RITS*, along with results examining the extent to which editorial decision, number of authors, gender, and Carnegie Classification (The Carnegie Foundation for the Advancement of Teaching, n.d.) predicted abstract quality. Disturbingly, of the manuscripts submitted to the *RITS*, a substantial proportion (44%) contained underdeveloped abstracts. The abstract is an essential and key component of an article because it is often the only part of the article read and, along with the title of the article, is often the only component of an article accessible through bibliographic databases (Editors, 2004).

In terms of omission errors, the most frequent element excluded from an abstract was information on the sample/population size/characteristics, with approximately one half of the abstracts containing this error. For quantitative studies, the lack of reporting of sample sizes might be due to inadequate statistical power, which is rampant in the social and behavioral sciences (see, for e.g., Onwuegbuzie & Leech, 2004). Regardless, because sample size plays an important role in the rigor of a study (i.e., internal validity and external validity), it is essential that the sample size be reported in the abstract for

quantitative studies. Reporting sample size for qualitative studies also is important because it assists the reader in understanding how many voices were captured, and also allows the reader to determine which of Onwuegbuzie, Slate, Leech, and Collins' (2009) five types of generalizability is applicable, namely, (a) *external (statistical) generalizations* (i.e., making generalizations, predictions, or inferences on data yielded from a representative statistical [i.e., optimally random and large] sample to the *population* from which the sample was drawn); (b) *internal (statistical) generalizations* (i.e., making generalizations, predictions, or inferences on data obtained from one or more representative or elite study participants [e.g., key informants, sub-sample members] to the *sample* from which the participant(s) was selected); (c) *analytical generalizations* (i.e., generalizing a particular set of results to some broader theory; Yin, 2009); (d) *case-to-case transfer* (i.e., making generalizations or inferences from one case to another [similar] case; Miles & Huberman, 1994); and (e) *naturalistic generalization* (i.e., readers making generalizations entirely, or at least in part, from their personal or vicarious experiences; Stake & Trumbull, 1982). Even if one person participated in a study, the author(s) should make clear the sample size in the abstract.

It is also disconcerting that approximately one third of abstracts failed to contain information on the problem/purpose/objective/research question/study focus because readers need this information to determine the relevance of a manuscript. Almost one fifth of the abstracts failed to contain any findings. Indeed, this omission is especially disturbing for the academic community at large, when considering the research-to-practice gap. Failing to report the primary findings of a study in an abstract likely will lead to decreased dissemination to practitioners as well as to policymakers and other key stakeholders (Miech et al., 2005). Even more disturbing is the fact that approximately one third of abstracts included information that was at least partially inconsistent with information in the remainder of the article. This finding suggests the prevalence of a large percentage of manuscripts submitted to *RITS* with insufficient descriptive validity.

A moderate relationship was documented between the quality of abstracts (i.e., underdeveloped vs. developed abstracts) and the editorial decisions made by the editor. More specifically, authors who wrote abstracts that were missing vital information, as suggested by APA (2001), were more than twice as likely to have their manuscripts rejected than were their counterparts. It might be anticipated, therefore, that authors who write manuscripts with underdeveloped abstracts (and therefore lack attention to detail) might have additional flaws in

their manuscripts that lead to rejection. The lack of relationship between the quality of abstracts and the number of authors of a manuscript suggests that manuscript co-authors are not being used efficiently with respect to checking the representativeness and accuracy of abstracts. Moreover, co-authored manuscripts are just as likely to contain underdeveloped abstracts as are single-authored manuscripts. However, no statistically significant differences were present in the quality of abstracts as a function of gender of the lead author, which could be considered a positive finding because it suggests that no gender bias prevails in manuscripts submitted to *RITS*.

It could be argued that the large proportion of underdeveloped abstracts (i.e., 44.3%) among articles submitted to *RITS* documented by Hahs-Vaughn and Onwuegbuzie (2010) stemmed from the fact that this journal is not considered to be a top-tier journal. However, a preliminary analysis conducted by Onwuegbuzie (2010) of a sample of articles submitted to *Educational and Psychological Measurement* (EPM), a top-tier journal, revealed that the proportion of underdeveloped manuscripts was 48.0%. This proportion is even higher than that observed for *RITS*, although not statistically significantly higher ($\chi^2[1] = 0.01, p > .05$). The findings of Onwuegbuzie (2010) pertaining to manuscripts submitted to EPM adds incremental validity to the results of Hahs-Vaughn and Onwuegbuzie (2010), suggesting that the prevalence of underdeveloped abstracts in manuscripts submitted to journals might be a widespread problem regardless of the tier of the journal.

Recommendations for Increased Abstract Quality

The findings of Hahs-Vaughn and Onwuegbuzie (2010) and Onwuegbuzie (2010) suggest a number of recommendations for increasing the quality of abstracts, which we delineate in the following sections. First, we present recommendations for authors. Second, we provide recommendations for editors and the publishers of the *Publication Manual*.

Recommendations for Authors

A well-written abstract is one that is accurate, nonevaluative, coherent and readable, and concise (APA, 2010). With respect to empirical studies, authors should strive to be clear when describing the research methodologies and statistical analyses (Bangert & Baumberger, 2005). Daniel and Onwuegbuzie (2007) recommended that authors strictly follow the *Publication Manual* during manuscript preparation. In line with this recommendation, authors also should consult the *Publication Manual* when composing abstracts. The

APA manual provides specific recommendations for constructing abstracts of empirical studies, literature reviews or meta-analyses, theoretical articles, methodological articles, and case studies (APA, 2010). For example, abstracts of empirical studies should include: (a) a one-sentence statement of the problem investigated; (b) relevant characteristics of the participants of the study (e.g., gender, age, race in the case of human subjects research); (c) key elements of the methods; (d) basic findings including effect sizes and confidence intervals and/or statistical significance; and (e) conclusions and implications or applicability. For literature reviews or meta-analyses, the abstract should address: (a) problem; (b) criteria for study inclusion; (c) type(s) of participants included in the original studies; (d) primary findings (including the key effect sizes and important moderators of the effect size); (e) conclusions and limitations; and (f) implications for theory, policy, and/or practice. Abstracts of methodological articles should include the following: (a) class of methods being examined; (b) key features of the proposed method; (c) range of application of the proposed method; and (d) when statistical procedures are used, essential elements of the procedures used (e.g., robustness or power). Theoretical articles should have abstracts that detail: (a) the theory and/or the principal on which the manuscript is based, and (b) the phenomena for which the theory accounts and linkages to empirical research. Case studies should have abstracts that outline the following: (a) the subject examined and characteristics of it, (b) nature of or solution to a problem illustrated by the case study, and (c) suggestions for future research (APA, 2010, pp. 25-26).

The recommendations in the *Publication Manual* provide a good general framework for items to include in a quality abstract. Miech et al. (2005) and Mosteller et al. (2004) provided additional recommendations that were originally proposed in the context of structured abstracts but are quite applicable to traditional abstracts as well. Further, Miech et al. (2005) and Mosteller et al. (2004) suggested the following should be included in an abstract: (a) background/context, (b) purpose/objective/research question/focus of study, (c) setting, (d) population/participants/subjects, (e) intervention/program/practice, (f) research design, (g) data collection and analysis, (h) findings/results, and (i) conclusions/recommendations. Four of these elements (i.e., background, purpose, research design, and conclusions) are applicable to all articles, and the remaining five elements (i.e., question of study, setting, population, intervention, data collection, and findings) are applicable only to some articles such as research studies (Miech et al., 2005; Mosteller et al., 2004).

What we propose for inclusion in abstracts is a combination of recommendations by APA, Miech et al. (2005), and Mosteller et al. (2004). For *all* types of manuscripts (including empirical research, literature reviews/meta-analyses, methodological studies, theoretical articles, and case studies), the abstract should contain the following five elements: (a) theoretical framework/background, (b) statement of the problem, (c) purpose/objective/research question/focus of study, (d) conclusions, and (e) implications and applicability to practice.

Due to the diversity in manuscript genre (e.g., empirical studies vs. theory-oriented vs. methodological), authors should include additional components based on the type of manuscript written. Recommendations for additional elements to address in abstracts of *empirical studies* include a description of the setting and participants, the intervention implemented, essential features of the methods, and key findings. The order in which these elements, combined with the previously mentioned features, should flow are as follows: (a) theoretical framework/background; (b) statement of the problem; (c) purpose/objective/research question/focus of study; (d) relevant characteristics of the setting and participants of the study, including sample/group size(s); (e) intervention/program/practice; (f) key elements of the methods (including research design); (g) key findings/results, including effect sizes and confidence intervals and statistical significance; (h) conclusions; and (i) implications and applicability to practice.

For *literature reviews or meta-analyses*, we recommend that the abstract include the following (this list includes the five aforementioned elements): (a) theoretical framework/background, (b) statement of the problem, (c) purpose/objective/research question/focus of study, (d) criteria for study inclusion, (e) relevant characteristics of the participants of the primary studies, (f) essential findings/results including key effect sizes and moderators of the effects, (g) conclusions, and (h) implications and applicability to practice.

Abstracts of *theoretical* articles should include the following (the five aforementioned elements): (a) theoretical framework/background, (b) statement of the problem, (c) purpose/objective/research question/focus of study, (d) phenomena for which the theory accounts, (e) conceptualization of how the theory works, (f) conclusions, and (g) implications and applicability to practice.

For *methodological* articles, the abstracts should detail the following (this list includes the aforementioned five elements): (a) theoretical framework/background; (b) statement of the problem; (c) purpose/objective/research question/focus of study; (d) class of methods being examined; (e) key

elements of the methods; (f) range of application of the method proposed; (g) for quantitative statistical procedures, how the methodology performs (e.g., robustness or power); (h) conclusions; and (i) implications and applicability to practice. Including the five features previously mentioned for all abstracts, the abstracts of *case studies* should contain the following: (a) theoretical framework/background, (b) statement of the problem, (c) purpose/objective/research question/focus of study, (d) relevant characteristics of the case study unit (e.g., person[s] or group[s]), (e) key elements of the methods, (f) key findings/results, (g) conclusions, and (h) implications and applicability to practice.

Ensuring that these elements are included in an article's abstract likely will assist in improving the quality of the abstracts by providing a concise summary of the essential elements of the study. This format will yield increased information to those individuals who access it by delineating a framework for the study and providing an adequate level of detail to determine application. By doing so, authors will more effectively inform those persons who will actually use their research results to improve practice.

Recommendations for Editors and Publishers of the Publication Manual

Editors play an important role in helping to ensure that published articles offer high quality abstracts for readers. One obvious recommendation for editors is to educate those persons who review manuscripts on the importance of evaluating *abstracts* with the same rigor as they would review the body of manuscripts. One way for editors to motivate reviewers to critique abstracts rigorously is by including one or more items on reviewer checklists/rubrics. In addition, editors have power to make manuscript submission recommendations. Specifically considering recommendations for abstracts, editors should consider increasing the word length for abstracts. The previous *Publication Manual* (APA, 2001) stated that abstracts "should not exceed 120 words" (p. 13). The current *Publication Manual* (APA, 2010) now simply states, "do not exceed the abstract word limit of the journal to which you are submitting your article. Word limits vary from journal to journal and typically range from 150 to 250 words" (p. 27). We recommend extending the word length even more, up to 400 words. Our proposed length is aligned with the recommendations of other researchers (Miech et al., 2005; Mosteller et al., 2004). Allowing authors additional length for abstracts is necessary to capture the key elements of a manuscript in a comprehensive, but succinct, manner.

An additional consideration for both journal editors and publishers of the *Publication Manual* is to endorse structured abstracts. Structured abstracts are

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abstracts that have specific formatting and content requirements (Haynes et al., 1990). Many researchers have recommended the utilization of structured abstracts to assist with increasing the effectiveness and efficiency of research dissemination (Ad Hoc Working Group for Critical Appraisal of the Medical Literature, 1987; Hartley & Benjamin, 1998; Huth, 1987; Miech et al., 2005; Mosteller et al., 2004; Trawinski, 1989). Structured abstracts are similar to tables and figures. They have a specific structure, offer a substantial amount of information in relatively little space, and can be read and understood independent of the manuscript (Mosteller et al., 2004). (See the Appendix for an example of a structured abstract created for this article using the recommended features for an abstract detailing a theoretical manuscript.) One very positive feature of structured abstracts is the potential for authors to describe format and content information that is uniform from article to article (Ad Hoc Working Group for Critical Appraisal of the Medical Literature, 1987; Huth, 1987; Miech et al., 2005; Trawinski, 1989). The recommendations we proposed earlier for the content of traditional abstracts could very easily be applied for formatting structured abstracts. In any case, we hope that our present editorial will motivate authors, journal editors, and publishers of future *Publication Manuals* to recognize the importance of comprehensive abstracts for providing coherent and meaningful summaries of concepts, theories, and findings to the research community in general and to educational stakeholders in particular and, as a result, assist in bridging the research-to-practice gap.

References

- Ad Hoc Working Group for Critical Appraisal of the Medical Literature. (1987). A proposal for more informative abstracts of clinical articles. *Annals of Internal Medicine*, 106, 598-604.
- Altman, D. G., & Gardner, M. J. (1987). More informative abstracts. [letter to the editor]. *Annals of Internal Medicine*, 107, 790-791.
- American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5th ed.). Washington, DC: Author.
- American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.
- Bangert, A. W., & Baumberger, J. P. (2005). Research and statistical techniques in the Journal of Counseling & Development: 1990-2001. *Journal of Counseling & Development*, 83, 480-487.
- Daniel, L. G., & Onwuegbuzie, A. J. (2007). Editorial: Effective use of APA style in manuscript preparation. *Research in the Schools*, 14(1), i-x.
- Dupuy, A., Khosrotehrani, K., Lebbe, C., Rybojad, M., & Morel, P. (2003). Quality of abstracts in 3 clinical dermatology journals. *Archives of Dermatology*, 139, 589-593.
- Editors. (2004). Addressing the limitations of structured abstracts. *Annals of Internal Medicine*, 140, 480-481.
- Greenwood, C. R., & Maheady, L. (2001). Are future teachers aware of the gap between research and practice and what should they know? *Teacher Education and Special Education*, 24, 333-347.
- Hahs-Vaughn, D. L., & Onwuegbuzie, A. J. (2010). Quality of abstracts in articles submitted to a scholarly journal: A mixed methods case study of *Research in the Schools*. *Library and Information Science Research*, 32, 53-61.
- Hartley, J., & Benjamin, M. (1998). An evaluation of structured abstracts in journals published by the British Psychological Society. *British Journal of Educational Psychology*, 68, 443-456.
- Haynes, R. B., Mulrow, C. D., Huth, E. J., Altman, D. G., & Gardner, M. J. (1990). More informative abstracts revisited. *Annals of Internal Medicine*, 113(1), 69-77.
- Hayward, R. S. A., Wilson, M. C., Tunis, S. R., Bass, E. B., Rubin, H. R., & Haynes, R. B. (1993). More informative abstracts of articles describing clinical practice guidelines. *Annals of Internal Medicine*, 118, 731-738.
- Huth, E. J. (1987). Structured abstracts for papers reporting clinical trials. *Annals of Internal Medicine*, 106, 626-627.
- Kulkarni, H. (1996). Structured abstracts: Still more. *Annals of Internal Medicine*, 124, 695.
- Lock, S. (1988). Structured abstracts now required for all papers reporting clinical trials. *British Medical Journal*, 297, 156.
- Miech, E. J., Nave, B., & Mosteller, F. (2005). The 20,000 article problem: How a structured abstract can help practitioners sort out educational research. *Phi Delta Kappan*, 86, 396-400.

- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.
- Mosteller, F., Nave, B., & Miech, E. J. (2004). Why we need a structured abstract in educational research. *Educational Researcher*, 33(1), 29-34.
- Murray, C. E. (2009). Diffusion of innovation theory: A bridge for the research-practice gap in counseling. *Journal of Counseling & Development*, 87, 108-116.
- Onwuegbuzie, A. J. (2010). *Quality of abstracts in articles submitted to a top-tier journal: The case for Educational and Psychological Measurement*. Unpublished manuscript. Sam Houston State University, Huntsville, TX.
- Onwuegbuzie, A. J., & Leech, N. L. (2004). Post-hoc power: A concept whose time has come. *Understanding Statistics*, 3, 201-230.
- Onwuegbuzie, A. J., Slate, J. R., Leech, N. L., & Collins, K. M. T. (2009). Mixed data analysis: Advanced integration techniques. *International Journal of Multiple Research Approaches*, 3, 13-33.
- Pitkin, R. M., Branagan, M. A., & Burmeister, L. F. (1999). Accuracy of data in abstracts of published research articles. *Journal of the American Medical Association*, 281(12), 1110-1111.
- Proctor, E. K. (2004). Leverage points for the implementation of evidence-based practice. *Brief Treatment and Crisis Intervention*, 4, 227-242.
- Rosen, A. B., Greenberg, D., Stone, P. W., Olchanski, N. V., & Neumann, P. J. (2005). Quality of abstracts of papers reporting original cost-effectiveness analyses. *Medical Decision Making*, 25, 424-428.
- Stake, R. E., & Trumbull, D. J. (1982). Naturalistic generalizations. *Review Journal of Philosophy and Social Science*, 7, 3-12.
- The Carnegie Foundation for the Advancement of Teaching. (n.d.). Retrieved November 27, 2009, from http://classifications.carnegiefoundation.org/lookup_listings/institution.php
- Tramer, M. R. (2001). Consort, quorum, and structured abstracts--new rules for authors, new tools for readers. *European Journal of Anaesthesiology*, 18(1), 1-2.
- Trawinski, B. (1989). A methodology for writing problem structured abstracts. *Information Processing and Management*, 25, 693-702.
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Thousand Oaks, CA: Sage.

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Appendix

Example of a Structured Abstract for this Article (256 words)

Theoretical framework. The abstract is often the only part of the article that is read and is arguably the article's most important element. The abstract must convey the key elements of the article so that the reader can both interpret it and determine its applicability to practice.

Statement of the problem. There is difficulty in ensuring important research findings reach practitioners who might be able to apply them. Thus, a substantial amount of research findings are unknown and/or unused. The quality of the abstract might be one problem in this research-to-practice gap.

Purpose of the editorial. The purpose of the editorial is to examine the role of the abstract, to discuss the quality of abstracts using empirical research, to provide recommendations to authors, editors, and publishers of the Publication Manual of the American Psychological Association (APA) for increasing the quality of abstracts.

Phenomena for which the theory accounts. An important goal is to decrease the research-to-practice gap through increased readability of abstracts.

Conceptualization of how the theory works. The quality of abstracts should increase for authors and editors who adopt our recommendations. Consideration is sought for APA further to enhance recommendations for presentation of abstracts.

Conclusions. The following should be detailed in the abstracts of *all* types of manuscripts: (a) theoretical framework/background; (b) problem statement; (c) purpose/objective/research question/focus of study; (d) conclusions; and (e) implications/applicability to practice. Additional recommendations were made for five specific types of manuscripts.

Implications and applicability to practice. Ensuring that suggested elements are included in an article's abstract might assist in improving the quality of the abstracts and thereby provide increased information to those who access it, with research results more effectively reaching practitioners.