

**Citation Structure: An Analysis of the Literature Cited in the  
*Journal of Applied Communications* from 1997 to 2006**

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## **Citation Structure: An Analysis of the Literature Cited in the *Journal of Applied Communications* from 1997 to 2006**

### **Abstract**

*The Journal of Applied Communications (JAC) has been a primary outlet of agricultural communications publishing and research dissemination. The purpose of this study was to assess ten years of JAC to determine literature cited. The study used a quantitative content analysis design. Analyzed in the study were 91 research and/or professional articles with research methodologies published from 1997 through 2006. There were 1,732 cited literature works identified in the journal. The average number of citations per article was approximately 19. Cited works from premier agricultural education journals were tracked for citation frequencies, in terms of author(s) and year of publication. A total of 143 references were made to journals identified as premier in agricultural education. The most frequently cited journals were from journalism, communications and mass communications sources. Additional cited works are defined. Citation analysis indicates that JAC relies heavily on books, journals, conference proceedings and other literacy works outside agricultural communications. JAC does not exhibit compactness, indicating that it reaches past its citation boundaries and into interrelated areas of other disciplines. However, it does exhibit weak self-identity meaning it does little to build upon research previously cited in JAC.*

**Keywords:** *Journal of Applied Communications*, cited literature, content analysis, citationology, interrelatedness to agricultural education, interrelatedness to journalism and communications

## Introduction

The *Journal of Applied Communications (JAC)* has undergone numerous changes since its conversion from a newsletter to a journal in 1990. Some of those modifications have included a change in format and frequency of publishing and content. During *JAC*'s lifespan, a number of researchers have examined various publishing and research aspects of the agricultural communications and agricultural education professions. One focus has been placed on previously cited literature (Miller, Stewart, & West, 2006; Moore, 1991; Radhakrishna, 1995; Radhakrishna, Eaton, Conroy, & Jackson, 1994).

In 1994, research indicated the explicit need to analyze citation characteristics in agricultural education (Radhakrishna et al.). The research further noted "a number of researchers in various scientific disciplines have considered citation structure as a good indicator of the nature of scientific activity" (p. 61). Furthermore, quoting additional experts whom indicated analyses of citation structures "characterize a field of study, define its boundaries, and explain how a discipline is interrelated with other fields of study" (p. 61). Citations can be used as an indicator of scholars' behavior because it reflects an author's debt to earlier works. The frequency of cited literature can provide a framework of important references and can be a means by which authors anchor their work and relate it to earlier research (Garfield, 1998).

In 2006, Miller, Stewart, and West's research identified the need to review literature and track citations to maintain a clear sense of the disciplines research agenda. In a reply to Doerfert's (2003) essay, Tucker (2004) made further comments to support the need for those in agricultural communications to take notice of research citations. As the discipline progresses forward with research, after the development of a *National Research Agenda [NRA]*: *Agricultural Education and Communication 2007-2010* (Osborne, n.d.), it is important to

understand how agricultural communications has moved forward with citations within the discipline. Are we primarily citing works created in our field, or do we rely on other disciplinary areas as literary staples? In 1994, a content analysis of the *Journal of Agricultural Education* indicated that the agricultural education discipline appeared to have a strong self-identity (building on other researchers work within the discipline of agricultural education) and compactness (citing from few “core” journals) (Radhakrishna et al.). However, a 1995 study indicated agricultural education should expand their focus to include other areas of research interests for professionals in the field (Radhakrishna). Little research has focused on literature citations in agricultural communications specifically how agricultural communication literature feeds into the broader umbrella of agricultural education. There is a need to determine the level self-identity and compactness represented in literature cited in *JAC*.

As agricultural communications continues to expand in knowledge pursuit, development, and examination, it is important to analyze the dimensions and frequencies of citations in its premier journal, the *Journal of Applied Communications* (Edgar, Edgar, Briers, & Rutherford, 2008). *JAC* should also be examined to determine the level and depth of literature citations being made to previous *JAC* articles, to other premier journals identified in the agricultural education discipline, and to other journals that support the field such as mass communications and journalism. Besides *JAC*, premier journals in agricultural education include: the *Journal of Agricultural Education*, the *Journal of International Agricultural and Extension Education*, the *North American Colleges and Teachers of Agriculture Journal*, the *Journal of Extension*, and the *Journal of Leadership Education* (Edgar et al., 2008). With the development and embracing of the *NRA* it is important for the agricultural communications field of study to understand how other established premier journals are being utilized within the field. Citation structure has been

used to characterize a field of study and explain how a discipline is interrelated to other fields (Narin, Carpenter, & Berlt, 1972).

Analyzing literature citations adds to understanding and the identification of the literature base of agricultural communications. In an effort to better understand where the agricultural education discipline is securing information to support the contexts of the broad disciplinary areas identified in the *NRA*, content analysis can be used to analyze literature cited. To better understand the scope and impact of agricultural communications on the agricultural education discipline, the journal identified as premier for the agricultural communications disciplinary area (*JAC*) should be analyzed (Edgar et al., 2008).

In 1994, one of the first attempts to quantify cited literature in agricultural education was conducted (Radhakrishna et al.). Since that time little to no research has focused on cited works within the field. It appears that Miller, Stewart and West's (2006) research was one of the first attempts to track literature citations in agricultural communications. Prior to and after that time, little to no research was conducted to determine cited works within agricultural communications. However, analyzing cited science literature has been important since the 1950s (Garfield, 1998). In 2006, Funkhouser completed a citation analysis of twenty-seven communication journals published during 1990. This research introduced the Journal Impact Rating system (a measure for use in comparing journals impact on the basis of citations). This rating system can be used to determine the scope and impact of literature on a field of study and to create leverage when attempting to place a scholarly communication journal into the Social Sciences Citation Index (SSCI). It is crucial for agricultural communications to examine cited works used in its premier journal in an effort to determine how it's previous works are supporting current works, how

research is supported by other premier journals in agricultural education, and identify *JAC*'s self-identity and compactness levels.

### **Conceptual Framework**

The future of agricultural education and communications depends on many variables and application and acquisition of new knowledge via research is extremely important (Dyer, Haase-Wittler, & Washburn, 2003). The conceptual framework of the study was grounded in work by numerous scholars in agricultural education and agricultural communications. Several researchers have completed various components of journal analyses in agricultural education: familiarity and quality of journals and importance of faculty publishing (Radhakrishna, 1995; Radhakrishna & Jackson, 1993); research theme areas (Buriak & Shinn, 1993; Dyer et al., 2003; Edgar et al., 2008; Miller et al., 2006; Moore, 1991; Radhakrishna & Xu, 1997; Silva-Guerrero & Sutphin, 1990); prolific authors (Harder & Roberts, 2006; Radhakrishna & Jackson, 1995; Radhakrishna, Jackson, & Eaton, 1992); statistical methods used (Bowen, Rollins, Baggett, & Miller, 1990; Dyer et al., 2003; Mannenbach, McKenna, & Pfau., 1984), and cited literature (Moore, 1991; Radhakrishna et al., 1994; Radhakrishna, 1995; Miller et al., 2006). Conceptually this study focused on cited literature. Citationology, the theory and practice of analyzing citations, allows a discipline to determine reference topology (Garfield, 1998, p. 69).

### **Purpose and Objectives**

The purpose of this study, which was a part of a larger study, was to review research published in the *Journal of Applied Communications* from 1997 to 2006 and examine the historical record of the journal to provide insight into its cited works. The specific objective was to describe and synthesize frequent literature cited in *JAC* during the ten year period by: (a)

premier journal articles (represented by author(s) and year) (premier journals were identified in previous research by Edgar et al., 2008); (b) books/texts; (c) journals; (d) proceedings, conferences, and meetings; (e) other works (dissertations, extension and university manuscripts, magazines, newspapers, etc); and (f) Web pages.

### **Research Methods and Procedures**

This study employed a quantitative content analysis design. Content analysis as a research method has existed for decades (Weber, 1990). Content analysis can be used to give researchers insight into problems or hypotheses that can then be tested by more direct methods. Content analysis is a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding (Berelson, 1952; Krippendorff, 1980; Weber, 1990).

Content validity was maintained using previous research as a guide. Research journal articles from 1997 to 2006 in the *Journal of Applied Communications* were used as the frame for the study. The principal investigator and a peer independently reviewed the material and formed a checklist of information required during the review of each journal article. The researchers compared notes and reconciled differences on their initial checklists via negotiations. Researchers used a consolidated checklist to independently apply coding. The researchers then checked for agreement in coding; if reliability was not acceptable, then the previous steps were repeated. Once reliability had been established, coding was applied on a large-scale basis. The final stage was a periodic quality control check (Weber, 1990). Inter-coder reliability was completed with at least 10% overlap for the reliability test. Final reliability was calculated using a random sample of 5% of the analyzed articles. Reliability was assessed using Spearman's rho statistical analysis. Spearman's rho is a statistical calculation that takes two rankings and

produces a numerical relation from 1 to -1 (A score of 1 means that the lists are identical, a -1 means that the lists are reversed, and 0 (zero) score means that there is no relation whatsoever between the two lists). Reliabilities met or exceeded the minimum standard of .70 (Bowen et al., 1990; Tuckman, 1999).

## Findings

All research and/or professional articles with research methodologies ( $N=91$ ) published in *JAC* from 1997 to 2006 were analyzed for cited literature. A total of 1,732 cited works were identified. The average number of citations per article was approximately 19. Premier agricultural education journals were tracked for their literature cited in *JAC*, in terms of author(s) and year of publication. A total of 143 references were made to premier journals in agricultural education. Representing approximately 8.25% of the total cited literature in *JAC*. There were 36 cited works from previous publications of the *Journal of Agricultural Education (JAE)*. Lindner, Murphy and Briers (2001) were the most frequently referenced *JAE* authors identified in the 10-year analysis of *JAC*. Their article was cited in more than 8% of the referenced *JAE* articles. Additional frequently referenced *JAE* articles, identified by the author(s) and year of publication, cited 5.6% or more are identified in Table 1.

Table 1

*Frequently Cited Journal of Agricultural Education Authors Referenced in JAC 1997–2006 (n=36)*

Journal Author(s) and Year of Publication	<i>f</i>	<i>P</i>
Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001)	3	8.3
Birkenholz, R. J., Harbstreit, S. R., & Law, D. A. (1990)	2	5.6
Cano, J., & Martinez, C. (1991)	2	5.6
Clason, D. L., & Dormody, T. J. (1994)	2	5.6
Rollins, T. J. (1990)	2	5.6

Table 1 (continued)

Journal Author(s) and Year of Publication	<i>f</i>	<i>P</i>
Rudd, R., Baker, M., & Hoover, T. (2000)	2	5.6
Torres, R. M., & Cano, J. (1995)	2	5.6
Vestal, T. A., & Briers, G. E. (2000)	2	5.6
Whittington, S. (1995)	2	5.6
Whittington, S. (2000)	2	5.6

The 10-year content analysis of *JAC* yielded one citation to the *Journal of International Agricultural and Extension Education (JIAEE)*. The cited article was authored by Rivera (1996).

There were 37 citations referencing to works from the *Journal of Extension (JOE)* represented in *JAC*. Miller and Smith (1983) article was the most frequently cited. Their article was referenced in 16.2% of the identified *JOE* articles. Table 2 contains a list of frequently cited *JOE* articles, identified by the author(s) and year of publication, referenced 5.4% or more.

Table 2

*Frequently Cited Journal of Extension Authors Referenced in JAC from 1997–2006 (n=37)*

Journal Author(s) and Year of Publication	<i>f</i>	<i>P</i>
Miller, L. E., & Smith, K. L. (1983)	6	16.2
Caffarella, R. S. (1982)	2	5.4
Jackson, D., & Smith, K. (1999)	2	5.4
Obahayujie, J., & Hillison, J. (1988)	2	5.4
Tennessee, D. J., PonTell, S., Romine, V., & Motheral, S. W. (1997)	2	5.4

There were five citations referencing works from the *North American Colleges and Teachers of Agricultural (NACTA) Journal* identified in *JAC*, for the 10-year content analysis. Each of the five *NACTA* articles was referenced once. The referenced author were: Diebel, P. L.,

McInnis, M. L., & Edge, W. D., 1998; Miller, G., 1997; Nehiley, J. & Sutherland, J., 1995; O'Kane, M. & Armstrong, J. D., 1997; and Woirhaye, J. L. & Menkhaus, D. J., 1996 (20%).

There were 64 citations referencing works from previous *JAC* articles. Reisner's (1990) article was the most frequently cited *JAC* publication in *JAC*. The article was cited in slightly more than 6% of the referenced articles. Table 3 contains a list of frequently cited *JAC* articles, identified by the author(s) and year of publication, cited 3.1% or more.

Table 3

*Frequently Cited Journal of Applied Communications Authors Referenced in JAC from 1997–2006 (n=64)*

Journal Author(s) and Year of Publication	<i>f</i>	<i>P</i>
Reisner, A. (1990)	4	6.3
Banning, S. A., & Evans, J. F. (2001)	3	4.7
Miller, G., & Carr, A. (1997)	3	4.7
Ten Eyck, T. A. (2000)	3	4.7
Bielema, C. L. (1997)	2	3.1
Boone, K. M., Tucker, M., & McClaskey, J. M. (2002)	2	3.1
Bruening, T. H. (1991)	2	3.1
Caldwell, A. E., & Richardson, J. G. (1995)	2	3.1
Connors, J. J., Elliot, J., and Heinze, K. (1991)	2	3.1
Donaldson, J. L., & Thompson, J. S. (1999)	2	3.1
Reisner, A. (1991)	2	3.1
Richardson, J. (1999)	2	3.1
Richardson, J. G., & Mustian, R. D. (1994)	2	3.1
Richardson, J. G., Clement, D. M., & Mustian, R. D. (1997)	2	3.1
Sprecker, K. J. & Rudd, R. D. (1998)	2	3.1
Suvedia, M., Campo, S., & Lapinski, M. K. (1999)	2	3.1
Sweeney, S., & Hollifield, C. A. (2000)	2	3.1
Thomas, R. E. (1996)	2	3.1
Trede, L. D., & Whitaker, S. (1998)	2	3.1

The 10-year content analysis of *JAC* yielded no citations to the *Journal of Leadership Education*.

In *JAC*, there were 143 citations referencing the six premier agricultural education (AGED) journals as identified by Edgar et al. (2008). An important component of this research was identifying how *JAC* was citing other journals within the large umbrella of the agricultural education discipline. The most frequently cited referenced premier AGED journal article was produced by Miller and Smith (1983) for their work published in the *JOE*. Of all the referenced work from premier AGED journals, their work was cited more than 4%. Table 4 contains a list of frequently cited premier AGED journal articles, by author(s) and year, cited 2.1% or more.

Table 4

*Frequently Cited Premier AGED Journal Authors Referenced in JAC from 1997–2006 (N=143)*

Journal Author(s) and Year of Publication	Premier Journal	<i>f</i>	<i>P</i>
Miller, L. E., & Smith, K. L. (1983)	<i>JOE</i>	6	4.2
Reisner, A. (1990)	<i>JAC</i>	4	2.8
Banning, S. A., & Evans, J. F. (2001)	<i>JAC</i>	3	2.1
Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001)	<i>JAЕ</i>	3	2.1
Miller, G., & Carr, A. (1997)	<i>JAC</i>	3	2.1
Ten Eyck, T. A. (2000)	<i>JAC</i>	3	2.1

The 10-year analysis of *JAC* identified 584 cited books and texts. Books with multiple edition and publication dates are noted in the following table. The most frequently cited book was Dillman's (2000) *Mail and Internet Surveys: The Tailored Design Method*, which was cited in 2.74% of the total book references. Additional frequently cited books and texts identified 0.51% or more, in *JAC* from 1997-2006, are identified in Table 5.

Table 5

*Frequently Cited Books and Texts Referenced in JAC from 1997–2006 (N=584)*

Book and Text	<i>f</i>	<i>P</i>
Dillman, D. A. (2000; 1978). <i>Mail and Internet surveys: The tailored design method</i> (2nd ed.). New York: John Wiley & Sons, Inc.	16	2.74
Rogers, E. M. (1995; 1983). <i>Diffusion of innovations</i> (4th ed.; 3rd ed.) New York, NY: The Free Press.	8	1.37
Miles, M. B., & Huberman, A. M. (1994). <i>Qualitative data analysis</i> (2nd ed.). Thousand Oaks, CA: Sage Publications.	7	1.20
Ary, D., Jacobs, L., & Razavieh, A. (2001; 1990; 1985; 1979). <i>Introduction to research in education</i> . (6th ed.; 5th ed.; 4th ed.; 3rd ed.). Wadsworth Publishing.	4	0.68
Boone, K., Meisenbach, T., & Tucker, M. (2000). <i>Agricultural communications: Changes and challenges</i> . Ames, IA: Iowa State University Press.	4	0.68
Merriam, S. B. (1998). <i>Qualitative research and case study applications in education</i> . San Francisco: Jossey-Bass Publishers.	4	0.68
Mueller, D. J. (1986). <i>Measuring social attitudes</i> . New York: Teachers College Press.	4	0.68
DeFleur, M. L., & Ball-Rokeach, S. J. (1989; 1982; 1975). <i>Theories of mass communication</i> (4th ed.; 3rd ed.; 2nd ed.). New York: Longman.	3	0.51
Evans, J. F., & Salcedo, R. (1974). <i>Communications in agriculture: The American farm press</i> . Ames, Iowa: Iowa State University Press.	3	0.51
Fishbein, M., & Ajzen, I. (1975). <i>Belief, attitude, intention and behavior: An introduction to theory and-research</i> . Reading, MA: Addison-Wesley.	3	0.51
Gallup Organization (2000). <i>Trends in agriculture study: Large producer scorecards</i> . Princeton, New Jersey: Gallup Organization.	3	0.51
Gitlin, T. (1980). <i>The whole world is watching: Mass media in the making and unmaking of the New Left</i> . Berkeley, CA: University of California Press.	3	0.51
Glaser, B. (1978). <i>Theoretical sensitivity</i> . Mill Valley, CA: The Sociology Press.	3	0.51
Morgan, D.L. (1997; 1988). <i>Focus groups as qualitative research</i> . Newbury Park, CA: Sage.	3	0.51
National Research Council. (1988). <i>Understanding agriculture: New directions for education</i> . Washington D.C.: National Academy Press.	3	0.51
Newcomb, L. H., McCracken, J. D., & Warmbrod, J. R. (1993). <i>Methods of teaching agriculture</i> (2nd ed.). Danville, IL: Interstate.	3	0.51
Pedhazur, E. J. (1982). <i>Multiple regression in behavioral research</i> . Fort Worth: Holt, Rinehart and Winston, Inc.	3	0.51

*JAC* cited additional journals, other than those identified as premier AGED journals, 608 times. The most frequently cited journals were from journalism, communications and mass communications sources. *Journalism Quarterly* was the most frequently cited journal of all journal citations in *JAC*, this journal was referenced 4.11%. A list of frequently cited journals identified 0.66% or more (excluding the premier AGED journals) are identified in Table 6.

Table 6

*Frequently Cited Journals Referenced in JAC from 1997–2006 (N=608)*

Other Journal	<i>f</i>	<i>P</i>
Journalism Quarterly	25	4.11
Journal of Communication	14	2.30
Journalism and Mass Communication Quarterly	13	2.14
Public Opinion Quarterly	13	2.14
Public Relations Review	13	2.14
Science Communication	12	1.97
The American Journal of Distance Education	12	1.97
Agriculture and Human Values	11	1.81
ACE Quarterly	9	1.48
American Journal of Agricultural Economics	9	1.48
Educational Communications Technology Journal	6	0.99
American Journal of Clinical Nutrition	5	0.82
BioScience	5	0.82
Public Relations Quarterly	5	0.82
The Chronicle of Higher Education	5	0.82
AgBioForum	4	0.66
American Behavioral Scientist	4	0.66

*JAC* cited proceedings, conferences, and/or meetings 104 times. The most frequently referenced proceeding, conference, and/or meeting was the *Agricultural Communicators in Education Conference*. The conference was referenced 13.5% in all of the proceedings cited. Table 7 contains additional frequently cited proceedings, conferences, and/or meetings identified 2.9% or more, in *JAC* from 1997 to 2006.

Table 7

*Frequently Cited Proceedings, Conferences, and/or Meetings in JAC from 1997–2006 (N=104)*

Proceeding, Conference, and Meeting	<i>f</i>	<i>P</i>
Agricultural Communicators in Education Conference	18	17.3
National Agricultural Education Research Conference	14	13.5
Southern Association of Agricultural Scientists Conference	10	9.6
International Conference of the International Federation of Science Editors	8	7.7
Southern Agricultural Education Research Conference	6	5.8
The Association for Education in Journalism and Mass Communication	4	3.8
International Consortium on Agricultural Biotechnology Research (ICABR) Conference	3	2.9
International Meeting of Association for Communications Excellence	3	2.9

The 10-year analysis of *JAC* identified other works cited 171 times. The most frequently cited works were newspapers referenced 15.8%. Additional other works cited 1.8% or more, in *JAC* from 1997-2006, are identified in Table 8.

Table 8

*Frequently Cited Other Works Referenced in JAC from 1997–2006 (N=171)*

Other Work	<i>f</i>	<i>P</i>
Newspapers	27	15.8
University Manuscript	21	12.3
Unpublished Doctoral Dissertation	21	12.3
Unpublished M.S. Thesis	20	11.7
Unpublished Manuscripts or Reports	18	10.5
Annual or Final Reports	10	5.8
ERIC Documents	9	5.3
Magazines	9	5.3
Census/Government Documents	8	4.7
Newsletter/bulletin	6	3.5
Extension Manuscript	3	1.8
Policy and Laws	3	1.8
Raw Data	3	1.8

*JAC* from 1997 to 2006 cited Web pages 122 times. *JAC* relies heavily on citations from non-profit (.org) (32%) and education (.edu) (22.1%) Additional cited Web sites referenced in 4.1% or more are identified in Table 9.

Table 9

*Frequently Cited Web Pages Referenced in JAC from 1997–2006 (N=122)*

Web page	<i>f</i>	<i>P</i>
.org	39	32.0
.edu	27	22.1
.gov	26	21.3
.com	25	20.5
Other (.ie .int, .html, .net)	5	4.1

### **Conclusions, Discussion and Implications**

“Journal analysis can provide a means of assessing key factors that usually indicate the research and publishing characteristics of a profession” (Radhakrishna et al., 1994, p. 64). This study was an attempt to identify the characteristics of literature cited in the *Journal of Applied Communications*. As stated by Miller et al. (2006), there is a need to track citations and review literature to gain a clear sense of the disciplines research agenda. This study showed an in-depth look into a premier research outlet for agricultural communications in terms of literature cited during a ten year period. Radhakrishna et al. (1994) and Garfield (1998) indicated that by identifying a discipline’s cited literature base a framework could be developed to characterize the field of study, define its boundaries and explain how a discipline is interrelated with other fields of study. This study was an attempt to identify the cited literature base in *JAC* and determine its self-identity and compactness.

All research journal articles ( $N=91$ ) published in the *JAC* from 1997 to 2006 were analyzed for cited literature. There were a total of 1,732 cited works identified. The average number of citations per article was approximately 19. In articles published in the *JAC*, from 1997 through 2006, it is evident that the discipline pulls from an expansive pool of research works. This study identified 8.26% of the total literature cited was from works published in identified premier agricultural education journals (Edgar et al., 2008). However, journals such as *JIAEE*, *NACTA* and *JOLE* were extremely under-represented or not cited in the literature. Of the 143 literature citations to premier agricultural education journals, *JAC* represented 3.7% of the total citations. This study concludes that *JAC* exhibits weak self-identity, meaning it does little to build upon research previously cited in *JAC*. However, it does not exhibit compactness, indicating that it reaches past its citation boundaries and into interrelated areas of other disciplines.

*JAE* was identified, in previous research, as the premier journal in agricultural education. Within cited literature represented in *JAC*, *JAE* was referenced about half as much as *JAC*. Does this have implications for the agricultural communications profession? It does imply that *JAC* authors rely most heavily on itself and *JAE* for literary works (when we are looking specifically at identified premier journals). Although previously identified as the second most premiere journal in the agricultural education discipline (Edgar et al., 2008), *JIAEE* research was only cited once in referenced literature in the *JAC*. Because of *JIAEE*'s standing, should we as agricultural communication authors strive to cite for this source and published articles in this venue? Similarly, *NACTA* and *JOLE* were also minimally cited in articles published in the *JAC*. It is further concluded that research published from these journals are not used with emphasis or, perhaps, thought. *JOE* was cited more (25.9%) than *JAE* (25.2%) in analyzed *JAC* articles.

Approximately 16% of the total number of citations from *JOE* stem from a single article by Miller and Smith (1983) regarding non-response research methodology. This same article was identified as the most frequently cited premier agricultural education journal article represented in *JAC* citations. When looking at *JAC* citations of its own published works, there are not predominate works identified. This may be due to relatively few faculty members producing research in multiple contextual areas associated with agricultural communications.

Books and text citations are dominated by research methodologies with eight of the seventeen most frequently cited books focusing on research methodologies. Coinciding with this finding, the most common citations from *JAE* and *JOE* were research methodology citations. A large percentage of cited books also focus on communication and mass communication theory and/or media (four of the seventeen most cited books). Conversely, there is a tremendous amount of variety in cited books within *JAC*. This variety is an indication that there are multiple books being cited on a single construct of knowledge. The majority of cited books were from the 1990s or earlier and this may be affecting the literature relevance of agricultural communications.

Another journal (not identified as premier in agricultural education) referenced in research published in *JAC* was *Journalism Quarterly*, which represents more than 4% of the total journals being cited. References to the *Journal of Communications* (2.3%), *Journalism and Mass Communication Quarterly* (2.14%), *Public Opinion Quarterly* (2.14%), and *Public Relations Review* (2.14%) indicate research authors of *JAC* are using multiple communications and journalism journals to build on knowledge constructs. Not a surprise to most since agricultural communications can be seen as a sister discipline to journalism and communications.

In contrast, citations referring to conference proceedings and/or meetings are relatively diverse. With the most frequently cited conference being the Agricultural Communicators in

Education Conference (17.3%); followed by the National Agriculture Education Research Conference (13.5%). Similarly, newspapers (15.8%) and university manuscripts and unpublished doctoral dissertations (12.3% respectively) were the most referenced other works identified in this study (26.9%). It is unclear whether the university manuscripts and doctoral dissertations are being published later as research articles. There were 122 citations to Web pages. The discipline relies heavily on citations from non-profit (.org) (32%) and education (.edu) (22.1%) Web pages. How these Web pages are being used has not been determined; however it is encouraging that the majority of sites are utilizing extensions associated with trustworthy information.

Literature citations characterize a field of study. Furthermore, they define a discipline's limits and clarify the interrelatedness with other fields of study (Radhakrishna et al., 1994). *JAC* exhibits an expansive cited literature (citationology) reach focusing on multiple disciplinary areas and fields of studies. It also exhibits connectedness to most of the identified premier journals in agricultural education. Because of the nature of agricultural communications, it is often necessary for researchers to expand into multiple research outlets, in an effort to find the best "suitable" outlet for their diverse works. This necessity to publish in other venues may be helping to eliminate compactness in agricultural communications literature (specifically in *JAC*). It can be assumed, due to the lack of compactness, that agricultural communications is offering discovery in other fields of study. However, the non-compactness of the citation structure in *JAC* reveals limited published works from within itself and creates weak self-identity. Expanding the quantity of research articles produced annually in *JAC*, and encouraging agricultural communicators to cite from previous articles in *JAC* could help with this issue.

### **Recommendations**

Based on the findings of this study recommendations include:

1. Further research should be completed to determine the depth of *JAC* citations in other identified premier journals in agricultural education in an effort to further identify the scope and influence of *JAC* on the agricultural education discipline and its literary works.
2. Further research should be completed to better determine how various cited books influence agricultural communications. It would also be important to determine if cited books are seminal or out-of-date works.
3. It may prove valuable to determine if conference proceedings, university manuscripts, and doctoral dissertations progress to permanent literature.
4. Additional research should be completed to determine if this (premier) journal is being cited in other fields of study.
5. This study should be replicated at a ten year cycle to assess progress the *Journal of Applied Communications*.
6. Additional research should focus on determining what drives citations in agricultural communications. Is it primarily *who* citers know (social structure) or *what* they know (intellectual structure)?

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