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An Exploratory Investigation of Frequently Cited Articles From the Early Childhood Intervention Literature, 1994 to 2005

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Abstract

The authors explored frequently cited articles across four peer-reviewed journals in early intervention (EI) and early childhood special education (ECSE). The Social Science Citation Index was used to examine journal articles from 1994 to 2005 in: *Early Childhood Research Quarterly*, *Infants and Young Children*, *Journal of Early Intervention*, and *Topics in Early Childhood Special Education*. Results for the most frequently cited EI/ECSE journal articles are reported.

Key Words: early childhood special education, early intervention, citation analysis, citation trends

A body of literature for a given field (e.g., special education) should do at least three things for consumers. First, scientific literature should inform practice. Professionals should be able to go to the literature base to: learn about the latest research and ideas related to practice, read results from studies and commentaries from experts in their field, challenge their thinking about practice related issues, and answer questions and develop new ones. Second, the body of literature should provide a map of where a field has been, where it currently exists, and where it plans to go in the future (Odom & Wolery, 2003). Third, literature should reflect the lively exchange of conversations taking place in a field. By examining frequently cited articles, a better understanding of the literature base can be developed, and gaps can be found in the existing research (McLeskey, 2004; McLeskey & Landers, 2006; Macy, Pool, McManus, & Noh, 2006).

In the field of special education, researchers have explored citation trends across at least two topical areas: (a) mental retardation (Heller, Spooner, Enright, Haney, & Schilit, 1991; Spooner, Enright, Haney, & Heller, 1993) and (b) applied behavior analysis (Carr & Britton, 2003; Critchfield, 2002; Dunlap, Clarke, & Reyes, 1998; Dymond, Clarke, Dunlap, & Steiner, 2000; Dymond & Critchfield, 2001; Laties & Mace, 1993; Poling, Alling, & Fuqua, 1994). Additionally, many studies can be found related to classic or prominent articles that have shaped the special education field (Heller et al., 1991; McLeskey, 2004; McLeskey & Landers, 2006; Patton, Polloway, & Epstein, 1989; Spooner et al., 1993; Swanson, Hughes, & Nicholes, 1988; Swanson, Plank, & Still, 1988). Some work has been done in the area of authorship trends (e.g., increase in “veteran” authors, decline in unfamiliar or new authors, cross- and self- citation; Dunlap et al., 1998; Dymond et al., 2000; Dymond & Critchfield, 2001; Poling et al., 1994).

Compared to the field of special education for students ages 6 to 21, early intervention (EI) and early childhood special education (ECSE) are younger both in terms of children served and existence as professional fields. A body of early childhood intervention literature has been created in a short time, particularly in comparison with the field of special education. The purpose of the current study was to examine EI and ECSE literature (Carta, 2002; Casto &

Mastropieri, 1986; Guralnick, 2002; McWilliam, 2002; National Research Council and Institute of Medicine, 2000; Odom & Wolery, 2003; Shonkoff, 2002; Smith, Strain, Snyder, Sandall, McLean, Ramsey, & Sumi, 2002; Wolery & Bailey, 2002).

McLeskey (2004, 2007) examined frequently cited articles in the field of special education and created an anthology of classic work organized into a collection. Having a compilation of what many considered seminal pieces of work is convenient in order to (a) understand the historical context of special education and research traditions, (b) develop a knowledge base of the literature (which could be used to study for graduate comprehensive exams), (c) find interesting conversations taking place related to interest areas (e.g., inclusion), and (d) look for patterns, trends, and gaps in the literature. Similar to McLeskey's work, in this study, we sought to explore articles that are frequently cited in EI and ECSE journals.

The goal was to examine articles from EI and ECSE journals and record the frequency with which articles were cited to gather articles that have made contributions to the EI and ECSE field. The frequency with which an article is cited can be considered a proxy for the impact it has (Heller et al., 1991; Patton et al., 1989; Swanson et al., 1988); however frequency does not necessarily indicate the quality of the work (McLeskey, 2007). The primary research question was, What are the most frequently cited articles in the early childhood intervention body of literature for the years 1994 to 2005?

Method

EI and ECSE articles appear in a variety of journals from many different fields or disciplines (e.g., speech and language, occupational and physical therapy, behavior, etc.). The following four journals were selected: the *Early Childhood Research Quarterly* (ECRQ), *Infants and Young Children* (IYC), *Journal of Early Intervention* (JEI), and *Topics in Early Childhood Special Education* (TECSE). Criteria for selecting journals included the following: (a) a journal is peer reviewed, (b) the journal is indexed in the Social Sciences Citation Index (SSCI), and (c) articles are of diverse topics of interest to a variety of EI and ECSE professionals and disciplines. We excluded articles that were book reviews, tributes, letters to or from the editor, and errata.

The SSCI provides access to past and current bibliographic information, author abstracts, and cited references found in social science journals. The journal selection process was influenced by the work of Gargiulo, Jalongo, and Motari (2001) who described the wide array of representative journals in early childhood intervention. The four journals are varied in their audience readership and topics, but all include work related to EI and ECSE.

Information about ECRQ, IYC, JEI, and TECSE was obtained from Ulrich's Periodicals Directory (ProQuest, 2006), a bibliographic database providing comprehensive information on published serials. ECRQ provides information for researchers, practitioners, parents, and others interested in research, academic treatment and concerns related to the education of children birth to 8 years old. It is the research journal for the National Association for the Education of Young Children. IYC is dedicated to the clinical management of children birth to 3 years of age, or at risk for, developmental disabilities. Current applications of educational, therapeutic, diagnostic, and family support models are presented. JEI presents research and practice articles for family involvement, personnel preparation, collaborative efforts, legislation, and technology for professionals and practitioners. Interventions for infants and young children with special needs and their families are featured. JEI is the research journal for the Division for Early Childhood of the Council for Exceptional Children. TECSE presents issues related to personnel preparation, policy, and strategies for including professionals and families. Professional educators and practitioners are the target audience. Table 1 shows information about each of the journals.

< Table 1 here >

Each article, across the four journals published between 1994 and 2005, was examined using SSCI. The 1994 starting point was determined because that was the year that all four of the journals were first indexed in the SSCI; IYC the last journal to appear in the SSCI system. Citation data were examined by counting the number of times an article was cited. We took each journal's table of contents and input the name(s) of each article's author(s) in SSCI to determine the number of times that article had been cited. The process was repeated for each volume and each issue. Interrater agreement checks were conducted on the citation frequency for each article in July 2006, and agreement and the top 10 were rechecked in October 2007. The citation counts reported in the results are from this time frame.

Findings were cross-referenced using SSCI for the purposes of treatment fidelity. A total of 50% of the total articles were validated by issues for each year. For example, all articles published in the even issues were checked for 1994 (i.e., Volume 7, Number 2, and Volume 7, Number 4, for IYC).

Four researchers, three with an earned doctorates and one doctoral student, collected the data for this citation investigation. All the researchers were affiliated with an EI and ECSE program at a university in the Pacific Northwest. The university has a state-of-the-art library with access to electronic journals and SSCI. The librarian consulting on this project specializes in education.

Results

Each volume and issue of ECRQ, IYC, JEI, and TECSE from 1994 to 2005 was counted. ECRQ had a total of 323 articles, with 12 volumes and 47 issues. The range of volumes reviewed for ECRQ was Volume 9, Number 1 (1994), to Volume 20, Number 4 (2005). IYC had a total of 349 articles, with 12 volumes and 45 issues. The range of volumes reviewed for IYC was Volume 7, Number 2 (1994), to Volume 18, Number 4 (2005). JEI had a total of 264 articles, with 11 volumes and 41 issues. The range of volumes reviewed for JEI was Volume 18, Number 1 (1994), to Volume 28, Number 1 (2005). TECSE had a total of 251 articles, with 12 volumes and 48 issues. The range of volumes reviewed for TECSE was Volume 14, Number 1 (1994), to Volume 25, Number 4 (2005). A total of 1,187 articles were examined across the four journals and decade. The complete citations of the frequently cited articles across the four journals are noted with an asterisk in the reference lists. The 10 most frequently cited articles for the four journals are shown in Table 2. Articles are listed alphabetically.

<Table 2 here>

Discussion

Most Frequently Cited EI/ECSE Articles

The articles with the highest citation counts are briefly summarized. The findings were narrowed down to the two most frequently cited articles for each journal, and what follows is a summary of the articles.

Early Childhood Research Quarterly (ECRQ)

“Family and Classroom Correlates of Head Start Children's Developmental Outcomes” by Donna Bryant, Margaret Burchinal, Lisa Lau, & Joseph Sparling (1994)

This article emphasizes the importance of quality services by examining relationships between what happens in the classroom and child outcomes among 145 Head Start children from different home environments. The results indicated that children in higher quality Head Start classrooms performed better on measures of achievement and preacademic skills, regardless of the quality of their home environment. Children from home environments that were more stimulating seemed to benefit more from classroom quality in the area of problem solving and reasoning than did children from less stimulating homes. Teacher characteristics such as education, experience, and attitudes were not associated with classroom quality in this group of 32 Head Start classrooms.

“The Role of Home Literacy Environment in the Development of Language Ability in Preschool Children from Low-Income Families” by Adam Payne, Grover Whitehurst, & Andrea Angell (1994)

This study examined home literacy environment and child language ability for 323 4-year-olds in Head Start. The results indicate there are substantial differences among low-income families in literacy environments and these differences have strong effects on children's language development. The results suggested that despite the economic difficulties and other stresses faced by the low-income families, many families still managed to engage in interactions with their children to foster long-term goals of child language and literacy.

Infants and Young Children (IYC)

“The Impact of Sensory Processing Abilities on the Daily Lives of Young Children and Their Families: A Conceptual Model” by Winnie Dunn (1997)

This article outlines a proposed conceptual model integrating neuroscience and behavioral constructs vital to understanding how young children respond to sensory stimuli in their daily lives. The author describes a continuum

of sensory thresholds corresponding to behavioral responses. Preliminary findings support the model, and further study with direct observations is expected. The model includes intervention perspectives from service providers and families.

“Controversial Therapies for Young Children with Developmental Disabilities” by Robert Nickel (1996)

The complexity of care for children with disabilities can be confusing and overwhelming. Thus, controversial therapies become attractive alternatives to finding a “cure” for a child’s diagnosis. Nickel provides brief, informative characteristics, claims, and issues to consider about specific therapies. A checklist is provided to help professionals support families’ inquiries about controversial treatments. Considering parents will seek information about controversial treatments, a list of questions is provided to assist parents in the decision making process.

Journal of Early Intervention (JEI)

“The Challenge of Inclusion” by Diane Bricker (1995)

This was a featured article in a JEI issue in which various scholars had an opportunity to respond to Bricker’s ideas about inclusion. JEI frequently has a “Feature Article” section in which the academic community can engage in discourse about a topic. Bricker begins by discussing definitions and then issues related to inclusion. Her article then shifts toward presenting a plan with long- and short-term goals, which are intended to facilitate the inclusion of young children with disabilities into community-based settings. The reader is provided the opportunity to examine an array of issues ranging from attitudes about inclusion to the types of curricula used in early childhood settings.

“Satisfaction and Struggles: Family Perceptions of Early Intervention Services” by Robin McWilliam, Linda Lang, Pat Vandiviere, Robbie Angell, Laurie Collins, & Gayle Underdown (1995)

One of the organizing principles of EI and ECSE is “family-centered” practices. EI and ECSE practices should center not only on the child but also on the family. This principle is found again and again in the body of literature on EI and ECSE and operates from the belief that a young child’s development is significantly influenced by his or her family.

McWilliam et al.’s study explored how families perceive EI services. The authors surveyed 539 families with infants, toddlers, and/or preschoolers receiving some type of EI and ECSE services in North Carolina. In addition to a survey, in-depth and semistructured interviews took place to explore family observations. Overall, families in their study reported high levels of satisfaction with the EI and ECSE services they received in North Carolina. Implications for family-centered practice, research, and policy development can be found in this article.

Topics in Early Childhood Special Education (TECSE)

“Parent-Child Book Reading as an Intervention Technique for Young Children with Language Delays” by Philip Dale, Catherine Crain-Thoreson, Angela Notari-Syverson, & Kevin Cole (1996)

This study examines the effect of instructing parents of children with language delays in joint book-reading techniques compared with language facilitation through more conversational instruction. Thirty-three mother-child dyads participated. The children’s ages ranged from 3 to 6 years old. Dyads were randomly assigned to either the book-reading program or the conversational program. The book-reading program was based on Whitehurst’s Dialogic Reading Training Program. Findings indicated the book-reading training has considerable potential for facilitating language development with children with language delays but that stronger interventions, monitored over a longer period of time, are needed.

“The Relationship of Parent-Child Interaction to the Effectiveness of Early Intervention Services for At-Risk Children and Children with Disabilities” by Gerald Mahoney, Glenna Boyce, Rebecca Fewell, Donna Spiker, & C. Abigail Wheeden (1998)

Four EI evaluation studies on parent-child interaction are described in this article. The intervention studies included the Infant Mental Health and Development Program, the Longitudinal Studies of the Effects and Costs of Alternative Types of Early Intervention, the Play and Learning Strategies Program, and the Family-Centered Outcome study. Parent-child interactions were measured by the Maternal Behavior Rating Scale. The results indicated that intervention effects on child development were unlikely to occur unless mothers modified their style of interacting with their children.

Two contrasting models for providing EI are the child-focused model and the relationship-focused model. In the child-focused model, there is an emphasis on the acquisition of specific skills or developmental milestones presented on the Individualized Family Service Plan and derived from tests and/or curricula. It promotes the idea that adults

are to guide or direct children to engage in motivating activities. The relationship-focused model fosters the belief that the intervention should encourage and support parents in their parenting styles. This contrasts with the child-focused model by encouraging adults to support and help sustain activities children have selected and are involved in. In general, the four intervention studies examined in this article support the relationship-focused model and the assumption that intervention effectiveness is fundamentally dependent on parent-child interactions.

Conclusion

The work summarized in these eight articles covers diverse topics that are of interest not only to EI and ECSE professionals but also across disciplines (e.g., education, psychology, medicine). The most frequently cited articles in each of these journals from 1994 to 2005 are read and cited by authors from related fields. This preliminary investigative analysis begins a discussion about trends, historical context, and research in EI and ECSE.

Citation indexing is not a new practice. Shephard's Citations, Inc. of Colorado Springs has been publishing court cases in Shephard's Citations for the legal field since the 1800s (Garfield, 1955/1983). With electronic databases, citation indexing has the possibility of being more current and up to date because of the advances in technology. The SSCI can be accessed from the Web of Science by using the Internet. SSCI is a Thomson product to which we had access to through the university library.

Limitations

Caution should be used in interpreting the results from SSCI Web of Science because of at least two issues: (1) the coverage of education literature and (2) the dynamic nature of the database (Corby, 2001; Kotiaho, 2002). Uneven coverage is a major limitation because of inconsistent citation rates for different areas of education (Corby, 2001; Kroc, 1984). Selected journals from education and related fields are included in the SSCI; however, the SSCI does not include all journals or books. Some program areas within education may not be well represented (Kroc, 1984). Only four EI and ECSE journals were chosen for our study, each with a different orientation and audience (IYC: allied health; ECRQ: early childhood; and JEI and TECSE: education). According to its product description on Thomson's (n.d.) Web site, the SSCI contains current and retrospective bibliographic information, author abstracts, and cited references found in over 1,700 of the world's leading scholarly social sciences journals covering more than 50 disciplines. [It also covers] individually selected, relevant items from approximately 3,300 of the world's leading science and technology journals.

The four journals selected for the research happened to be available in the SSCI, but not all EI and ECSE relevant journals and/or articles are covered in this electronic database. Furthermore, not all of the volumes and issues for the four selected journals were covered in the SSCI from 1994 to 2005. A total of 45 articles were missing from the database across the four journals. The following volumes and issues were not available in the SSCI when we conducted our research: (a) ECRQ was missing articles in Volume 9, Number 1 (6 articles) and Volume 9, Number 2 (6 articles); (b) JEI was missing articles in Volume 23, Number 3 (6 articles), Volume 23, Number 4 (8 articles), Volume 24, Number 1 (9 articles), Volume 24, Number 2 (one article), and Volume 24, Number 3 (8 articles); and (c) IYC was missing 1 article in Volume 10, Number 3. TECSE was not missing any articles. Kotiaho (2002) suggested that biased choice of citations and citation errors make citation analysis a far from ideal way of examining a body of literature, but there currently may not be a superior approach.

The frequency counts differed across the four selected journals (e.g., IYC had comparatively lower frequency counts). This could be a result of uneven horizontal coverage. Some areas of education research may not be well represented in the SSCI because only selected journals are covered in the SSCI. Vertical coverage from the earlier years to later years followed an expected path. It seems to take an article a few years before it gains momentum and citation counts. For example, in the list of 40 most frequently cited articles (Table 2), there are only four articles from 2000, two from 2001, and none from any subsequent years included in the investigation (i.e., 2002, 2003, 2004, and 2005). It would have been best if the study went back to the first issue for each journal so that there could have been wider coverage. However, this exploratory study only went back to 1994 because that is the earliest year when all four journals were indexed in SSCI.

The SSCI database is not a fixed set of data. The list of journals indexed in SSCI is constantly changing and updated on a weekly basis (Thomson, n.d.). It would be very difficult to know exact frequency counts across every single scientific journal related to EI and ECSE and every article printed in every issue of every journal. The validity of the SSCI as a measurement tool must also be questioned (Corby, 2001). Dubious results can have significant

consequences for authors, journals, practice, research efforts, funding sources, and more. This study did not examine the dimensions of article impact, which would be an important contribution. Also not examined were author characteristics, article attributes, methodological rigor, or conceptual and theoretical contributions.

Future Directions

Future work in the area of analyzing the body of literature in EI and ECSE could take at least four directions. One direction could be to examine authorship trends. Possible areas to investigate related to authorship would be (a) university or professional affiliation, (b) department or program affiliation, (c) number of coauthors, (d) professional role of coauthors (e.g., parents, practitioners, researchers, policy makers), (e) information about training, (f) topic or subject area, (g) funding sources and mechanisms, and (h) social capital. Social network theory can be used to examine links between people.

Percentages of new and returning authors to behavior journals have been studied (Dunlap et al., 1998; Dymond et al., 2000). Dunlap et al.'s (1998) and Dymond et al.'s (2000) findings suggest that there was a declining trend of new authors and an increase for familiar and frequently contributing authors of the *Journal of Applied Behavior Analysis* and *American Journal on Mental Retardation*. It would be interesting to apply this line of research to EI and ECSE.

The second direction for future EI and ECSE research would be to investigate self- and cross-citation analysis (Elliott, Morgan, Fuqua, Ehrhardt, & Poling, 2005; Poling et al., 1994). Cross-reference articles refer to journal articles that cite articles from outside journal sources. An example of cross-referencing is the JEI article by Diane Bricker (1995), which was cited by authors who published articles in *Topics in Early Childhood Special Education*. Self-reference articles are journal articles that were self-cited. For example in that same 1995 JEI article, citations that referred to Bricker's work came from other authors who also published articles in the JEI. In a study by Poling et al. (1994), using reference lists from 1983 to 1992, *Journal of Applied Behavior Analysis* cross-citation (2.4%) and self-citation (22.6%) referencing results were reported.

The third direction would be to examine journal impact factors (Garfield, 1999). The following information could be useful to authors and readers: (a) journal audience, (b) circulation, (c) journal content (e.g., theme issues, types of articles), (d) publishing requirements, and (e) journal characteristics (e.g., review process, average number of solicited and unsolicited manuscripts, number of pages per issue, feature-length articles) (Gargiulo et al., 2001). The contribution to EI and ECSE literature might be in the form of narrowing down the core of journals in which significant scientific literature can be found.

The fourth direction for citation analysis would be to examine characteristics (e.g., topics) of journal articles published. Themes that all four journals (i.e., ECRQ, IYC, JEI, and TECSE) had in common in this study were natural environments and inclusion and parents or caregivers and families. Examining article characteristics could provide an understanding of where gaps are in the early childhood intervention literature base.

This citation analysis provides a brief summary of a small collection of EI and ECSE articles that were most frequently cited across four peer-reviewed journals. We hope that this annotated compilation will entice readers to pick up each article to read again or for the first time. By standing on the shoulders of giants, we can discover what our field has inherited by reflecting upon the accomplishments we have made and challenges that came before and still exist, create opportunities to address today's questions, and challenge our thinking to produce new discoveries and innovation that will improve the lives of young children with disabilities and their families (Schwartz, 2000).

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Table 1

Ulrich's Periodicals Directory

	Start		Frequency	Refereed	Abstracted/	
	Year	Publishing Body			Indexed	Circulation
ECRQ	1986	Pergamon	Quarterly	Yes	Yes	1,700
IYC	1988	Lippincott Williams & Wilkins	Quarterly	Yes	Yes	2,165
JEI	1979	SAGE Publications	Quarterly	Yes	Yes	7,000
TECSE	1981	SAGE Publications	Quarterly	Yes	Yes	1,300

Note: *ECRQ* = *Early Childhood Research Quarterly*; *IYC* = *Infants & Young Children*; *JEI* = *Journal of Early Intervention*; *TECSE* = *Topics in Early Childhood Special Education*.

Table 2

Most Frequently Cited Early Childhood Intervention Articles from 1994 to 2005

Article	Citation Counts	Publication
	as of October 2007	Year
<i>Early Childhood Research Quarterly (ECRQ)</i>		
Bailey, McWilliam, Buysse, & Wesley	29	1998
Bryant, Burchinal, Lau & Sparling	49	1994
Fantuzzo, Sutton-Smith, Coolahan, Manz, Canning, & Debnam	30	1995
Howes & Smith	32	1995
Payne, Whitehurst, & Angell	56	1994
Pianta, Nimetz, & Bennett	32	1997
Raver & Zigler	33	1997
Reynolds	27	1995
Rimm-Kaufman, Pianta, & Cox	39	2000
Schweinhart & Weikart	37	1997
<i>Infants and Young Children (IYC)</i>		
Dunn	40	1997
Dunst, Trivette, Humphries, Raab, & Roper	15	2001
Gilkerson & Als	16	1995
Guralnick	20	2001
Hanft & Pilkington	18	2000
Hurth, Shaw, Izeman, Whaley, & Rogers	15	1999
Nickel	31	1996
Smith & Lovass	18	1998
Turnbull, Turnbull, & Blue-Banning	16	1994
Weston, Ivins, Heffron, & Sweet	18	1997
<i>Journal of Early Intervention (JEI)</i>		
Bricker	50	1995
Burchinal, Bailey, & Snyder	29	1994
Buysse, Wesley, Keyes, & Bailey	20	1996
Guralnick	27	1994
Guralnick	27	1999
Hemmeter & Kaiser	28	1994
McWilliam, Lang, Vandivere, Angell, Collins, & Underdown	41	1995
Murphy, Lee, Turnbull, & Turbiville	23	1995
Odom, Horn, Marquart, Hanson, Wolfberg, Beckman, Lieber, Li, Schwartz, Janko, & Sandall	20	1999
Roberts, Innocenti, & Goetze	20	1999
<i>Topics in Early Childhood Special Education (TECSE)</i>		
Bernheimer & Keogh	32	1995

Brotherson	28	1994
Bruder	29	2000
Dale, Crain-Thoreson, Notari-Syverson, & Cole	35	1996
Dinnebeil, Hale, & Rule	27	1996
Dinnebeil & Rule	28	1994
Dunst	32	2000
Mahoney, Boyce, Fewell, Spiker, & Wheeden	46	1998
Mahoney, Kaiser, Girolametto, MacDonald, Robinson, Safford, & Spiker	29	1999
McBride & Peterson	28	1997

Note: Entries in boldface type are briefly reviewed in the “Discussion” section. See the reference list for the full citation of each article.

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