The Retrospective Record Review: A Methodological Option for Educational Research

Patricia S. Buxton, EdD, smedleybuxton@gmail.com or pbuxton@bridgeport.edu

College of Engineering, Business and Education, University of Bridgeport

The abundance of student records housed in K–12 schools across the country represents a largely untapped resource in the study of behavioral phenomena among children. Careful review of these existing records affords educational researchers an alternative to the heavily used survey method of data collection. While record review studies are common in medical research, scant evidence of their application in educational research can be found in the literature. This paper details the unobtrusive nature of the retrospective record review (RRR) as a method that yields insight into the behavioral patterns of children. This article highlights the design, limitations, and possible misuse of RRR research in a school setting.

Keywords: document review, educational research, file review, record review, research methodology, retrospective study, school records

From kindergarten through graduation, K–12 schools gather vast amounts of information on children, e.g., academic performance, school attendance, school discipline, and program details regarding specialized instruction. While these records are protected by The Family and Education and Rights Privacy Act (FERPA), there are conditions by which schools may release information from students' education records to researchers (34 CFR § 99.31). However, it is important to note that this offers no real choice for the study participants who may not want their behaviors studied. Buxton (2018) took this into consideration and went a step further to obtain consent to use the participants records. While school records are not collected for research purposes, they do contain data that offer valuable insight into behavioral phenomena among children (Hess, 2004). It is the examination of these cumulative files that can add new meaning to a child's school behavior.

When Should a Retrospective Record Review be Considered?

A retrospective record review (RRR) uses document review as a data collection method for evaluation (Centers for Disease Control and Prevention, 2018). Similarly called a retrospective chart review (RCR) or medical record review (MRR), the method should be used when the investigator wishes to look "back" in time at events which have already occurred to collect information that answers one or more research questions (Schwartz & Panacek, 1996, p. 119). Primarily used to generate original research in the medical and clinical fields, the process involves the extraction of relevant data from patient records by analyzing the many documents found within each patient file, e.g., physician and nursing notes; diagnostic tests; and admission and discharge documentation (Gearing et al., 2006; Hess, 2004; Worster & Haines, 2004). Conversely, a student's cumulative file contains administrative records, child study team records,

education information, program data records, special education, and related service records (Connecticut State Library, 2005).

A valid and useful methodology, RRR research is based on assumptions about the validity of the contents in the record (Eder et al., 2005). Therefore, the quality of the study depends heavily on the integrity of the record and the presenting data (Findley & Daum, 1989). There is an abundance of literature that speaks to the practicality and useful nature of retrospective studies (Gearing et al., 2006; Hellings, 2004; Hess, 2004; Nagurney et al., 2005; Schwartz & Panacek, 1996); yet, retrospective research is "often undervalued and, hence, underutilized" (Gearing et al., 2006, p. 126).

In clinical research, chart reviews help to interpret descriptive information about the activities of client populations or clinicians and "can provide a valuable source of data for historical and discourse analyses" (Roberts et al., 2003, p. 184). The act of data abstraction or pulling the facts and pieces of information from the record, requires knowledge of the institution maintaining the records; and, how and why the documents within the record were created (Centers for Disease Control and Prevention, 2018; Gearing et al., 2006). The retrospective data gathered informs future, larger prospective studies (Vassar & Holzmann, 2013).

According to Hess (2004) there are three kinds of retrospective studies (a) case series, (b) case control, and (c) matched case-control. A retrospective case series is used to report information on researcher identified self-selected similar cases. A case control study is comprised of subjects with and without the condition of interest. The degree of exposure to a possible risk factor is then retrospectively compared between the two groups. A matched case-control study is comprised of subjects that match certain characteristics (e.g., age, comorbidity, severity of disease). No matter which kind of study, the process requires diligence and constant

attention to detail (Schwartz & Panacek,1996). For example, Buxton (2018) conducted a retrospective case series study to investigate, via a trauma-lens, the types of behavioral responses recorded in the IEPs of emotionally disturbed (ED) children. The theoretical orientation for the study was heavily based on the framework for school-based psychological evaluations identified by Tishelman et al. (2010). Using the retrospective record review methodology, this exploratory study confirmed existing research on the behavioral responses of ED children and added to the literature by detailing preliminary evidence of behavioral responses associated with three of the four functional core domains in which children may display trauma-related difficulties in school.

What are the Basic Elements of a Retrospective Record Review?

As shown in Figure 1, the first step, *Conception*, involves the formulation of the study's research questions and hypothesis (Bryman, 2008). The questions themselves may come from the primary investigator's experiences as an educator or newly implemented classroom practices (Hellings, 2004). It is important to read and think about the research because "asking the right question is the most important part of research, as how the problem is stated determines what data is to be collected, the analysis to be done, and the kind of conclusions that can be drawn" (Findley, 1989, p. 26).

As in any research initiative, searching the existing literature to critically evaluate an area of interest is a standard requirement (Bryman, 2008; Gearing et al., 2006). The purpose of a thorough literature review is to learn usable information on the study's key concepts and variables (Vassar & Holzmann, 2013). Roberts and Hyatt (2019) recommended an early visit to the library to learn what services are offered to assist in preparing and ultimately conducting the literature review. Creswell and Creswell (2018) recommended the identification of key words for

use in searching online databases for pertinent articles and books—grouping studies in what was called a "literature map" highlighting major topics and summarizing recurrent themes.

"Before designing a [research] proposal, it is important to have an idea of the general structure or outline of the topics and their order" (Creswell & Creswell, 2018). A record review research proposal should include the following: an abstract, introduction, literature review, research questions and hypotheses, methodology, significance of study, limitations, budget, references, and appendices (Gearing et al., 2006). In addition, a prospective design for future research should be noted, and study variables should be clearly defined (Allison et al., 2000; Connelly, 2008; Gearing et al., 2006; Hess, 2004; Vassar & Holzmann, 2013). It is imperative that researchers fully understand the nature and design of the data source (i.e., student cumulative file or medical record; Engel, et al., 2008).

Organization of the Data Abstraction Instrument

Creation and utilization of the instrument is what pulls information from the educational cumulative file (Gearing et al., 2006). The literature is rich in both the importance of, and recommendations in, the creation of a standardized data abstraction instrument in RRR research (Engel et al., 2008; Findley & Daum, 1989; Gearing et al., 2006; Schwartz & Panacek, 1996). The design of the actual instrument should always focus on data entry and analysis. The instrument itself can be either paper or electronic but it is imperative that it be accurate, easy to use, flow in a logical manner, and produce reliable results among abstractors (Allison et al., 2000; Banks, 1998; Engel et al., 2008; Gregory & Radovinsky, 2012; Smith, 1996; Vassar & Holzmann, 2013). Roberts and Hyatt (2019) suggested researchers develop a matrix to align the study's research questions to the instrument items to ensure the measurement of all study variables.

Developing Protocols and Guidelines for Data Abstraction

RRR study design requires the creation of a coding manual (Gearing et al., 2006). The coding manual outlines specific procedures and instructions that will ensure consistency among data abstractors (Banks, 1998; Engel et al., 2008; Gregory & Radovinsky, 2012; Vassar & Holzmann, 2013). Management of the data abstractors is key; this includes selecting abstractors who are experienced in the field of study, keeping them blind to the study hypothesis, and maintaining ongoing communication with and among abstractors (Gregory & Radovinsky, 2012; Worster & Haines, 2004). The calculation of intra-rater or inter-rater reliability is essential (Kimberlin & Winterstein, 2008; Vassar & Holzmann, 2013). The records belonging to the sample or subset of the population under study should be accurately represented to reduce sampling error (Roberts & Hyatt, 2019).

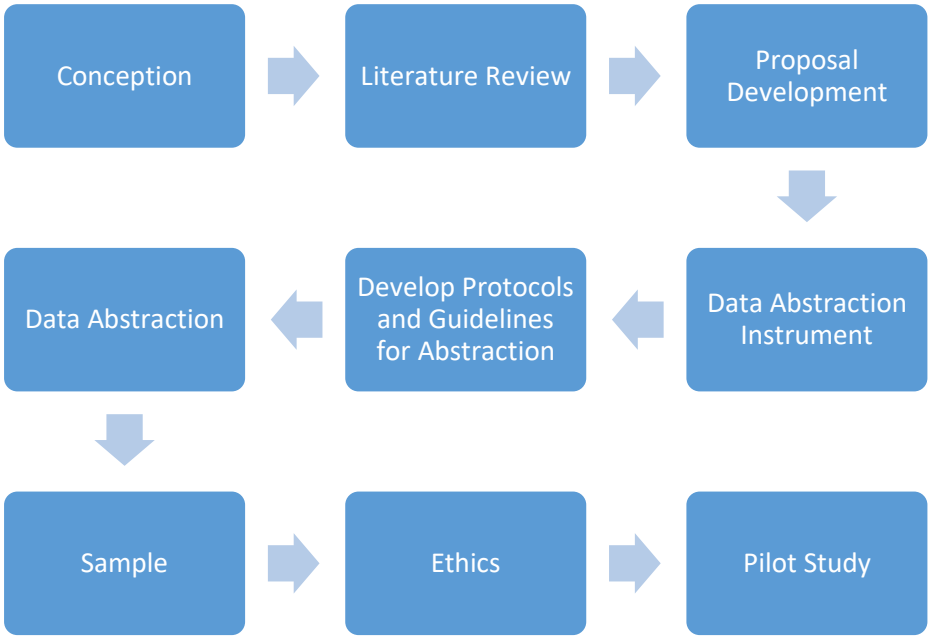
Ethical Considerations and Study Pilot

Approval from an institutional review board must be obtained and should be published in the methods section (Gearing et al., 2006). It is important to include precautions taken to maintain student confidentiality and compliance with the Health Insurance Portability and Accountability Act of 1996 (Vassar & Holzmann, 2013). When developing the research problem, research questions, method of data collection, analysis, and dissemination of findings the researcher must be cognizant of potential ethical issues (Creswell & Creswell, 2018). The final step in RRR research involves testing the proposed research on a small, random sample to uncover any unforeseen issues—this includes testing the data abstraction instrument (Gearing et al., 2006; Wu & Ashton, 1997). By running a pilot study, using a small set of comparable subjects to the members of the overall population which the sample for the full study will be taken, researchers are afforded the opportunity to revise investigative procedures before the

actual study is underway (Findley & Daum, 1989; Roberts & Hyatt, 2019; Vassar & Holzmann, 2013).

Figure 1

Nine step method for the design of a Retrospective Chart Review



Note. This figure demonstrates the design of a Retrospective Chart Review as recommended by Gearing et al. (2006).

What are the Important Methodological Details of a Retrospective Record Review?

There are several examples of RRR use in the literature (Azeem et al., 2011; Epping et al., 2010). Research conducted by Gilbert et al. (1996) examined 986 articles published in three emergency medicine journals and found 25% used chart review as the method of study. Advantages of conducting a RRR study include affordability, use of existing data, depth of information, and findings which yield valid results that help plan subsequent prospective studies (Connelly, 2008; Gearing et al., 2006; Hess, 2004; Pan et al., 2005; Schwartz & Panacek, 1996). In the health care field, RRR studies are used to examine populations exposed to harmful agents,

answer questions pertaining to vulnerable populations, improve clinical quality, and conduct longitudinal research on diseases (Gregory & Radovinsky, 2012). In education, examination of student cumulative files help improve instruction, inform policy, and design document evaluation tools (Amemiya, et al., 2018; Hoover et al., 2018; Ruble et al., 2010).

It is important to note that while RRR can generate a wealth of data, researchers must use this data effectively, careful not to force any findings of correlation or causation (El-Masri, 2014; Hess, 2004). Such care can be found in a retrospective cohort study that examined how divorce affects work-limiting health among U. S. women (Tamborini et al., 2016). While the authors noted divorce as being "associated with a significantly higher cumulative probability of a work disability… . especially among divorced women who do not remarry" they stopped short of claiming any causal mechanisms behind this finding (p. 98).

Implications

The literature reveals many limitations found within RRR research (Findley & Daum, 1989; Gearing et al., 2006; Gilbert et al., 1996; Hess, 2004; Nagurney et al., 2005; Schwartz & Panacek, 1996; Worster & Haines, 2004). Therefore, it is very important that researchers have confidence "that their data have been generated with all conceivable precautions in place against known pollutants, distortions, and biases, intentional or accidental, and mean the same thing for everyone who uses them (Krippendorff, 2013, p. 282). Due diligence must be applied, and examination of the facts and findings are necessary (Schwartz & Panacek, 1996; Wu & Aston, 1997).

As is any research study there is the possibility that confidential data may be misused (Sarkar & Seshadri, 2014). Hence, caution should be exercised while using information from school records. Prior to the start of the study, a clearly articulated definition of the study question

and rules of handling data must be established. Wu and Aston (1997) recommended proper planning of the record review process as a means of improving the reproducibility and validity of study results:

1. Before data collection begins, decisions should be made about what data is needed from the chart and why; this includes rules about where to find the data.
2. Before data collection begins, devise rules about how to handle missing information.
3. Perform a pilot study, and if a piece of information is missing from more than 10% of the charts, eliminate it from collection and identify a supplementary source for that information.
4. Test and refine data collection forms until reviewers are comfortable in their use.
5. Consider alternatives to paper-and-pencil abstraction methods, such as directly entering data from the chart into a data management program.
6. Select and train reviewers carefully and assess their performance before data collection begins; do not use reviewers that perform poorly after training.
7. Supplement data from charts with data from other sources (pp. 159–160).

The use of explicit standards, such as these, which have predetermined formalized rules make for a more reliable and valid study.

The Sample

Sampling is the method by which records are selected from a target population to find a "given effect" (Findley & Daum, 1989, p. 154). The literature lends sound insight into how specific cases are included (Findley & Daum, 1989; Gearing et al., 2006; Schwartz & Panacek, 1996). Usually in RRR studies, case selection is based on a presenting concern. However, one must be careful using this criterion, as it depends on the assumption that the individual was

correctly identified with the presenting complaint, leaving the possibility that potential cases were omitted from the study (Worster & Haines, 2004). Therefore, specific criteria are recommended to identify exactly who, what, where, when, and why an individual is being included or excluded from the study (Schwartz & Panacek, 1996).

In RRR research, the most common method by which records are selected from a target population are through: (a) convenience, (b) quota, (c) incidental, and (c) systematic sampling (Gearing et al., 2006; Worster & Haines, 2004). Findley and Daum (1989) advised that no matter the method, if the decision is made to use only some of the records, a random means of selection should be used to decide which records will be studied, thus reducing study bias. Determining the most useful sampling method depends on the epidemiological nature and prevalence of the specific condition, population availability, research budget, and time constraints (Gearing et al., 2006, p. 130).

Drawbacks for using records as a data source include incomplete documentation, missing records, and difficulty interpreting information found in the documents (Gearing et al., 2006). Wu and Ashton (1997) explained that because the data contained in the records is "soft data," sometimes obtained through an interview or physical examination, the quality of the record's contents depends on the completeness and accuracy of individual recorded accounts. Gilbert et al. (1996) pointed out difficulties such as: locating needed information, multiple conflicting entries, and vague, incomplete, or illegible record entries. Additional obstacles can include restricted data and data that is often documented in different places in the records (Connelly, 2008). The largest hindrance in using records as data sources centers on the potential misinterpretation of the initial presenting concern. If this is the case, it invalidates the use of the entire record. Additionally, the fact that each record is "composed of different interpretations of

different scenarios, often by different observers" impacts the reliability and validity of data (Worster & Haines, 2004, p. 188).

Nonetheless, the literature offers guidance in overcoming these weaknesses. Gearing et al. (2006) recommended researchers learn how the record was constructed and how information was recorded. Understanding how the record was designed helps researchers follow the information flow to better learn the documentation process. The use of templates with checklists to enhance subsequent retrospective data collection is encouraged as is the examination of the original record (Nagurney et al., 2005; Worster & Haines; 2004). As noted earlier, any information that is missing from 10% or more of the sample records should be eliminated yet caution is advised as this can introduce bias into the study (Worster & Haines, 2004).

Data Collection Instrument

Smith (1996) noted "Without a clear organized approach, chart review can be disorganized and time consuming…a tool provides orderly, analytical, and objective chart reviewing techniques" (p. 33). As noted earlier, incomplete, and/or missing documentation is cited as a significant limitation to RRR research, forcing data abstractors to make assumptions, whereby introducing bias into the study (Worster & Haines, 2004; Wu & Ashton, 1997). Therefore, variables should be inclusive of all possible options, and the investigator should consider whether the data collection instrument should include a 'missing/not noted' option (Engel et al., 2008, p. 18). The importance of reliability and validity as necessary factors in data collection and instrument design cannot be underestimated (Engel et al., 2008; Findley & Daum, 1989; Gearing et al., 2006; Nagurney et al., 2005; Schwartz & Panacek, 1996).

Reliability and validity in data collection is the degree to which an instrument consistently measures what it claims to measure from one time to the next. The data collection

instrument must produce consistent results and the abstracted variables must be able to correctly divide subjects into different groups, thus providing "a high level of discrimination" (Allison et al., 2000, p. 125). Validity is categorized three ways: (a) content, (b) construct, and (c) criterion. A broad yet detailed data collection instrument will have higher content validity when it is more representative of the study's topic variables (Allison et al., 2000). Construct validity is based on the instruments alignment with the underlying theory or concept. Criterion validity compares one measure against another, with one measure being "a gold standard," consisting of expert clinical judgement derived through a process described as "chart adjudication" (Allison et al., 2000, p. 126; Bryman, 2008).

Data Analysis

Gilbert et al. (1996) stated medical records are informed diaries of observations, impressions, and hunches. "It is important to examine the study's variables and possible conclusions when deciding on ways to present and analyze data due to the nature of the record itself as each contains mostly verbal descriptions of people and events, and translations of these verbal descriptions into hard, quantitative data is fraught with error" (Findley & Daum, 1989, p. 308). Therefore, supplementing record data with data from other sources in the student's cumulative file is recommended (Wu & Ashton, 1997).

When analyzing data, the use of a logbook and protocol checklist is suggested. The logbook keeps track of changes in protocol and the reasons decisions were made, while the protocol checklist outlines in detail the steps taken to collect data from the source record. Keeping records when completing a record review is important as it directly affects the "quality of the study" (Findley & Daum, 1989, p. 156). Researchers should keep the original data forms until results are published.

Protection of Human Subjects

FERPA allows schools to release any information from a student's education record without consent to organizations conducting certain studies "for or on behalf of the school" (34 CFR § 99.31). However, the law is clear that in general the release of this type of data requires written permission from the parent or eligible student.

Safeguarding the rights and anonymity of the research subjects is vital to the process. The importance of confidentiality and exclusion of personal identifiers in RRR research cannot be more heavily emphasized. It is imperative that the methods section of the record review list approval from the local ethics review board and that the names and other personal identifiers remain undisclosed (Roberts & Hyatt, 2019; Worster & Haines, 2004).

Limitations

Researchers Engel et al. (2008) noted while record reviews are "often regarded as an easy, inexpensive, and quick research method" the process is difficult, and researchers must appreciate and address the associated limitations (p. 19). As in many research studies, limitations may include: sample size, methodological constraints, study time window, and response rate or access to records (Roberts & Hyatt, 2019). As stated earlier, the largest hindrance in RRR research is researcher bias. Therefore, during the data abstraction process it is recommended that a minimum of two persons, from the field of study in which the research is being conducted, be used, and that these individuals be kept blind to the purposes of the study (Gearing et al., 2006; Kimberlin & Winterstein, 2008; Vassar & Holzmann, 2013). As stated earlier, the development of a coding manual is highly recommended. The manual should list each study variable, where the variables can be found in the record, how the abstraction instrument will record each variable, and instructions on how to record the data pertaining to each variable. Protocols and

guidelines specific to the study, such as those associated with missing, confusing, or conflicting data, should also be included (Connelly, 2008; Gearing et al., 2006; Schwartz & Panacek, 1996; Worster & Haines, 2004).

Lastly, the ability to access this type of data is a major limitation but the literature does offer insight. Ruble et al. (2010) approached school systems at the district level and asked special education directors to help with teacher recruitment. Once teacher consent was obtained the research team contacted the teachers directly and asked them to submit the initials of all the students with autism on their caseload. From the list of initials the research team randomly selected one student from each teacher's caseload. The teacher then requested permission from chosen student's parent or guardian to be contacted directly by the researchers.

Conclusion

The purpose of this paper was to show how careful review of existing student records constitutes a retrospective record review study design—a methodological choice that affords educational researchers from K–12 institutions another vehicle by which to study the behaviors of school children. Retrospective record review research provides new insight into behavioral phenomena whereby informing educational practice. Scott (1990) noted the "handling of documentary sources such as government papers, diaries, and newspapers is widely seen as the hallmark of the professional historian while sociologists have generally been identified with the use of questionnaires and interview techniques" (p. 9). Within educational research, use of the survey dominates but it is important to know that student cumulative files also contain various types of evidence and constitute a vast repository of source material (Bryman, 2008; Wells et al. Saunders, 2015). Documents are especially valuable to researchers because they are "objective residue of the past" (Scott, 1990, p. 18). The ability to go back in time, with pre-existing data as

the primary source of information offers new insight into the behavioral patterns of children. It is without question that retrospective record review is a sound methodological option for educational research.

References

Allison, J., Wall, T. C., Spettell, C. M., Calhoun, J., Fargason, C. A., Kobylinski, R. W., … Kiefe, C. (2000). The art and science of chart review. *Journal on Quality Improvement*, *26*, 115−136.

Amemiya, J., Mortenson, E., & Wang, M.-T. (2020). Minor infractions are not minor: School infractions for minor misconduct may increase adolescents' defiant behavior and contribute to racial disparities in school discipline. *American Psychologist*, *75*(1), 23–36. https://doi.org/10.1037/amp0000475

Azeem, M. W., Aujla, A., Rammerth, M., Binsfeld, G., & Jones, R. B. (2011). Effectiveness of six core strategies based on trauma-informed care in reducing seclusions and restraints at a child and adolescent psychiatric hospital. *Journal of Child and Adolescent Psychiatric Nursing*, *24*, 11−15. https://doi.org/10.1111/j.1744-6171.2010.00262.x

Banks, N. J. (1998). Designing medical record abstraction forms. *International Journal for Quality in Health Care*, *10*, 163−167.

Bryman, A. (2008). *Social research methods*. Oxford.

Buxton, P. S. (2018). Viewing the behavioral responses of ED children from a trauma-informed perspective. *Educational Research Quarterly*, *41*(4), pp. 30–49.

Centers for Disease Control and Prevention. (2018). *Data collection methods for evaluation: Document review*. https://www.cdc.gov/Healthyyouth/evaluation/pdf/brief18.pdf

Connecticut State Library. (2005). *Municipal records retentions schedule M8*. https://ctstatelibrary.org/wp-content/uploads/2015/05/M8.pdf

Connelly, L. M. (2008). Retrospective chart reviews. *MedSurg Nursing*, *17*, 322−323.

Creswell, J. W. & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage.

Eder, C., Fullerton, J., Benroth, R., & Lindsay, S. (2005). Pragmatic strategies that enhance the reliability of data abstracted from medical records. *Applied Nursing Research*, *18*, 50−54. https://doi.og/10.1016/j.apnr.2004.04.005

El-Masri, M. M. (2014). Retrospective cohort study design. *Canadian Nurse*, *110*(3), 10.

Engel, L., Henderson, C., & Colantonio, A. (2008). Eleven steps to improve data collection: Guidelines for a retrospective medical record review. *Occupational Therapy Now*, *10*, 17−20.

Epping, A. S., Myrvik, M. P., Newby, R. F., Panepinto, J. A., Brandow, A. M., & Scott, J. P. (2013). Academic attainment findings in children with sickle cell disease. *Journal of School Health*, *83*, 548−553. https://doi.org/10.1111/josh.12064

The Family Educational Rights and Privacy Act of 1974, 20 U.S.C. § 1232g (1974).

Findley, T. W., & Daum, M. C. (1989). Research in physical medicine and rehabilitation III: The chart review or how to use clinical data for exploratory retrospective studies. *American Journal of Physical Medicine and Rehabilitation*, *68*, 150−157.

Gearing, R. E., Mian, I. A., Barber, J., & Ickowicz, A. (2006). A methodology for conducting retrospective chart review research in child and adolescent psychiatry. *Journal of Canadian Academic Child Adolescent Psychiatry*, *15*, 126−134.

Gilbert, E. H., Lowenstein, S. R., Koziol-McLain, J., Barta, D. C., & Steiner, J. (1996). Chart reviews in emergency medicine research: Where are the methods? *Annals of Emergency Medicine*, *27*, 305−308. https://doi.og/10.1016/S0196-0644(96)70264-0

Gregory, K. E., & Radovinsky, L. (2012). Research strategies that result in optimal data collection from the patient medical record. *Applied Nursing Research*, *25*, 108−116. https://doi.org?10.1016/j.apnr.2010.02.004

Hellings, P. (2004). A rich source of clinical research data: Medical records and telephone logs. *Journal of Pediatric Health Care, 18*, 154−155. https://doi.org/10.1016/j.pedhc. 2004.03.001

Hess, D. R. (2004). Retrospective studies and chart reviews. *Respiratory Care*, *49*, 1171−1174.

Hoover, J. J., Erickson, J. R., Patton, J. R., Sacco, D. M., Tran, L. M. (2018). Examining IEPs of English learners with learning disabilities for cultural and linguistic responsiveness. *Learning Disabilities Research and Practice*, *34*(1), 14–24. https://doi.org/10.1111/ ldrp.12183

Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health System Pharmacy, 65*, 2276−2284. https://doi.org/10.2146/ajhp070364

Krippendorff, K. (2013). *Content analysis: An introduction into its methodology*. Sage.

Nagurney, J. T., Brown, D. F., Sane, S., Weiner, J. B., Wang, A. C., & Chang, Y. (2005). The accuracy and completeness of data collected by prospective and retrospective methods. *Academic Emergency Medicine*, *12*, 884−895. https://doi.org/10.1197/j.aem.2005.04.021

Pan, L., Fergusson, D., Schweitzer, I., & Hebert, P. C. (2005). Ensuring high accuracy of data abstracted from patient charts: The use of standardized medical record as a training tool. *Journal of Clinical Epidemiology*, *58*, 918−923. https://doi.org/10.1016/j.jclinepi. 2005.02.004

Roberts, M. C., Kamps, J. L., & Betan, E. J. (2003). Investigating professional issues in clinical psychology. In M. Roberts & S. S. Ardi (Eds.), *Handbook of research in clinical psychology* (pp. 396-417). Blackwell.

Roberts, C., & Hyatt, L. (2019). *The dissertation journey*. Corwin.

Ruble, L. A., McGrew, J., Dalrymple, N., Jung, L. A. (2010). Examining the quality of IEPs for young children with autism. *Journal of Autism and Developmental Disorders*, *40*, 1459–1470. https://doi.org/10.1007/s10803-010-1003-1

Sarkar, S., & Seshadri, D. (2014). Conducting record review studies in clinical practice. *Journal of Clinical and Diagnostic Research*, *8*(9). https://www.ncbi.nlm.nih.gov/pmc/articles/ PMC4225918/

Schwartz, R. J., & Panacek, E. A. (1996). Basics of research (part 7): Archival data research. *Air Medical Journal*, *15*, 119−124. https://doi.org/10.1016/S1067-991X(96)90037-1

Scott, J. (1990). *A matter of record: Documentary sources in social research*. Polity Press.

Smith, A. J. (1996). Chart reviews made simple. *Nursing Management*, *27*(8), 33−34.

Tamborini, C. R., Reznik, G. L., & Couch, K. A. (2016). Work disability among women: The role of divorce in a retrospective cohort study. *Journal of Health and Social Behavior*, *57*(1), 98–117. https://doi.org/10.1177/0022146515627849

Tanner, D. (2012). *Using statistics to make educational decisions*. Sage.

Vassar, M., & Holzmann, M. (2013). The retrospective chart review: Important methodological considerations. *Journal of Educational Evaluation for Health Professions, 10*(12). https://doi.org/10.3352/jeehp.2013.10.12

Wells, R. S., Kolek, E. A., Williams, E. A., & Saunders, D. B. (2015). "How we know what we know": A systematic comparison of research methods employed in higher education journals, 1996-2000 v. 2006-2012. *The Journal of Higher Education*, *86*, 171−195.

Worster, A., & Haines, T. (2004). Advanced statistics: Understanding medical record reviews (MMR) studies. *Academic Emergency Medicine*, *11*, 187−192. https://doi.org/10.1111/ j.1553-2712.2004.tb01433.x

Wu, L., & Ashton, C. M. (1997). Chart review: A need for reappraisal. *Evaluation & the Health Professions*, *20*, 146−163. https://doi.org/10.1177/016327879702000203