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DETERMINING JOURNAL ARTICLE IMPACT IN THE SCHOOL PSYCHOLOGY
LITERATURE THROUGH BIBLIOMETRIC ANALYSES

by

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A Dissertation

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Abstract

Bibliometric analyses have been the primary form of examining and evaluating literature within a field of study. By focusing on citation count and source, researchers have been able to identify journal articles considered to be high impact in reach and relevance, branding them “citation classics” in a field (Garfield, 1977, 1979). As time progresses, technology, methods, and metrics for conducting these analyses have improved, and although there have been several studies designed to identify citation classics and patterns of citations supporting them in school psychology literature (e.g., Liu & Oakland, 2016; Price, Floyd, Fagan, & Smithson, 2011), none have done so in an updated, comprehensive manner. To address these limitations, the current study aims to replicate and extend these works in four major ways: (a) including all 11 primary school psychology journals (Floyd, 2018; Hulac, Johnson, Ushijima, & Schneider, 2016) in the search, (b) using three of the most common databases for literature, (c) collapsing results across these databases to accurately identify the most impactful articles, and (d) conducting bibliometric and historiographic analyses using network mapping to determine linkages within the literature.

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Introduction

History of School Psychology Journals

The term *school psychologist* first appeared in English language literature in 1898 yet did not occur in the title of a published article until 1923, a quarter of a century later (Fagan & Wise, 2000). It is at this time that the seed to become school psychology literature's longstanding history was planted, including such topics in related journals including but not limited to, *The Psychological Clinic*, *Journal of Educational Psychology*, and *Journal of Consulting Psychology*. With exponential growth on the horizon of the timeline, the first book specifically about school psychology debuted just 7 years later in 1930, called *Psychological Service for School Problems* (Hildreth, 1930). Until the 1960s, the only nationally distributed publication that was exclusive to school psychology was the American Psychological Association (APA) Division 16 newsletter. Around this time, the seed began to grow and bloom, evidenced by the development of journals that were specific to the field, and even more being added in the past decade (Fagan & Wise, 2007).

At present, 11 generalist school psychology journals have been identified (Floyd, 2018). The *Journal of School Psychology* debuted in 1963; it was the flagship journal for the field (Fagan & Jack, 2012). A year later, in 1964, *Psychology in the Schools* was founded. In 1969, the National Association of School Psychologists (NASP) began a newsletter (currently titled the *Communiqué*), and a few years later, *School Psychology Digest* began as the first official journal of NASP (retitled as *School Psychology Review* in 1980). Another newsletter, *The School Psych Scoop*, was also founded in 1972 and later retitled in 1980 as *Trainers' Forum*. The first international school psychology journal was introduced in 1979, titled *School Psychology International*. Shortly after, the next school psychology journal outside of the United States

surfaced, the *Canadian Journal of School Psychology*, in 1985. Division 16 of APA also produced a series of monographs from 1973 to 1980, but in 1986 established *Professional School Psychology*, which would change titles to *School Psychology Quarterly* only 4 years later in 1990; its title changed yet again to *School Psychology* in 2019. The journal *Special Services in the Schools* was originally founded in 1984, but it later changed its title in 2002 to the *Journal of Applied School Psychology*. *School Psychology Forum*, the second journal published by NASP, was established in 2006. Another journal to broaden focus, starting as *The California School Psychologist* in 1996, changed names to *Contemporary School Psychology* in 2011. The most recent generalist school psychology journal and second international journal, with the first issue appearing in 2013, is the *International Journal of School & Educational Psychology*. Although there are other journals commonly referenced and relevant to the field of school psychology, these core 11 journals are both associated with professional organizations and include the term “school psychology” in the name (Floyd, 2018).

Determining Publication Impact

With vast literature already existing and concurrently being expanded, it is critically important to indicate what journal articles have had the greatest impact. The use of various methods to systematically measure and analyze the different variables that signify impact, called *bibliometrics*, has been a fundamental tool for researchers and academics. The underlying framework that many of these analyses are built upon relies on the creation and referencing of scientific literature—specifically, published work completed by researchers, which includes citations of other researchers’ works and ideas that influenced the current work. Through this citation network, cardinal works accrue quantitatively more citations than non-essential literature. As such, citation count alone has been a longstanding method of assigning importance

to articles (Porter, 1977). Stemming from these basic counts (i.e., number of citations), additional indices for determining author and article impact have been suggested and implemented, including the average number of citations per publication, the number of highly cited publications, and the proportion of highly cited publications (Waltman, 2016). Notably, citation counts also contribute heavily to the determination of impact factors for journals (Floyd et al., 2011). In order to more accurately and efficiently analyze impact, increasingly sophisticated bibliometric measures have been developed to be sensitive to possible complications in relying solely on citation counts. For example, when a researcher who coins a term that all future researchers cite upon use never publishes another article following their prominent one.

One of the most well-known and commonly used citation indices is the Hirsch index (*h*-index (Hirsch, 2005), and many variations and applications have evolved from it (Alonso, Cabrerizo, Herrera-Viedma, & Herrera, 2009). The *h*-index is determined for a specific research unit (e.g., researcher, group, institution, journal, country, university), where the index *h* is calculated for all publications if each publication has at least *h* citations and the other publications do not exceed *h* citations. For example, a researcher would have an *h*-index of 15 if 15 of the researcher's 25 publications each had at least 15 citations and the remaining 10 had less than 15 citations. Shortly after the *h*-index was introduced, many other supplemental or alternative indicators were developed, such as the *g*-index (Egghe, 2006). Following the same rank order of publications from most citations to least, where the index *g* is the top number *g* of papers receive at least g^2 citations. As such, *g* is always going to be greater than or equal to *h*. This index was developed in part to apply weighting to researchers with significantly highly cited publications (Alonso et al., 2009; Egghe, 2006). In an attempt to mitigate the disadvantages of the aforementioned indices, Alonso, Cabrerizo, Herrera-Viedma, and Herrera

(2010) developed the *hg*-index, which is the geometric mean of the *h*-index and *g*-index, as an attempt to combine both measures and highlight their advantages while minimizing the disadvantages (Alonso et al., 2009).

Publications in peer-reviewed journals are held in high esteem, often leading to consideration for faculty positions or promotion to tenure-track (Harzing & van der Wal, 2008; Holden, Rosenberg, & Barker, 2005; van Aalst, 2010). As more journals shift focus to the electronic medium for publication, access, distribution, and usage of these articles is easier than ever before. Another way to consider highly cited articles in a specific field is determining which articles are considered *citation classics*, a term first coined by Garfield in 1977. It was later defined as a piece of work that either (a) exceeds a threshold of citation counts (400 citations proposed by Garfield, 1977) or (b) demarcates the “top” articles in a given field, either by a set number (e.g., top 100 most cited articles within a field) or relative to the size of the database (e.g., the top 1% of the most cited articles). Finally, considering the work of Garfield (1979) and building on the *h*-index (Hirsch, 2005), Martínez, Herrera, López-Gijón, and Herrera-Viedma (2014) differentiated between *T-classics* and *H-classics*. *T-classics* follow the aforementioned criteria for classics based on either a set number or percentage of top papers, whereas *H-classics* follow the same restrictions as the *Hirsch core* (*H-core*; Rousseau, 2006). Namely, the *H-core* is the set of articles that makes up a particular author’s *h*-index (e.g., an author with an *h*-index of 15 would have an *H-core* that included those top 15 publications), *H-classics* apply that principle for a specific category or field. As such, the *H-classics* for a particular journal with an *h*-index of 75 would contain those top 75 articles (Martínez et al., 2014; Rousseau, 2006).

Studies designed to determine citation classics have been conducted across a variety of fields and have drawn on several different reference databases and metrics. When investigating

the broad field of pediatrics, Chhapola, Tiwari, Deepthi, and Kanwal (2018) identified the top 100 articles spanning 66 years and 18 journals through ISI Web of Science (WoS) database. Baier-Fuentes, Merigó, Amorós, and Gaviria-Marín (2018) used keywords through Scopus to focus on the 50 most impactful articles in the field of international entrepreneurship from 1989 to 2015. Martínez, Herrera, Contreras, Ruiz, and Herrera-Viedma (2015) offered a citation classics analysis for the field of social work, noting 65 articles that met the criteria for H-classics, using 25 journals considered to be social work specific through WoS and cross-referenced with Journal Citation Reports (JCR). Within the past few years, many other researchers have conducted similar analyses by identifying citation classics. For example, looking at a specific field such as ecosystem services, Zhang, Estoque, Xie, Murayama, and Ranagalage (2019) used WoS to identify 132 highly cited articles from 1981 to 2017. Pena-Cristóbal, Diniz-Freitas, Monteiro, Diz Dios, and Warnakulasuriya (2018) identified the top 100 articles of a specific topic, oral cancer, between 1940 to 2017 also using the WoS database. It is important to consider that when examining classics in a field or topic, it is possible to look at that group in its entirety at that point in time and identify *legacy* articles, or those from the earliest possible date to the date of that particular analysis. This distinction is useful for identifying seminal pieces of work relative to that field or topic as a whole. In other cases, it may be useful to examine articles in a certain period of time, either a span of relevant years (e.g., the 15 years of a researchers work at a particular university) or recent years, such as the most recent decade to identify *recency* articles.

Network Analysis

As previously mentioned, one approach to a bibliometric analysis is that of impact (i.e., identifying pieces of work that meet indicators of impact, such as citation count). Another element of a bibliometric analysis is that of network mapping, making (often visual) connections

between these bodies of work and the various content they include (Gutiérrez-Salcedo, Martínez, Moral-Munoz, Herrera-Viedma, & Cobo, 2018). There are a handful of free software operations that have been used to conduct bibliometric and network analyses. Some examples include CitNetExplorer, SciMAT, and VOSviewer (Gutiérrez-Salcedo et al., 2018). This visualization step typically occurs toward the end of the overall analysis, following the design of the study, collection of data from the database, preprocessing (i.e., cleaning and normalizing) of the data, and analysis of the data (Zupic & Čater, 2015). Many times, the choice of software occurs were based on the research questions, types of data (e.g., databases selected for a particular field), and goal of the study. There are many more available resources that exceed the scope of this study, and as such, only a few of the most recent relevant options for network mapping and analysis are reviewed in this section.

CitNetExplorer. One free software tool, CitNetExplorer, was developed by Nees Jan van Eck and Ludo Waltman (2014) of the Centre for Science and Technology Studies at Leiden University (the Netherlands) for both visualizing and analyzing citation networks among a set of literature. This software was developed following the same principles of algorithmic historiography introduced by Eugene Garfield (Garfield, 2004; Garfield, Pudovkin, & Istomin, 2003). Some of the various elements that CitNetExplorer includes within a publication datapoint is *publication year* (year of publication), *citation score* (number of citations differentiated by internal or external scores represented by in-network or out-of-network citations, respectively), *marked* or *selected* (used for drill-down analyses), *group* (indicators of sets of publications represented by colors), *complete record* (a dichotomous variable indicating the wholeness of the citation or publication record), and other standard bibliographic data, such as *source*, *title*, and *author* (van Eck & Waltman, 2014). In addition to visualization of overall citation networks,

direct and indirect citation networks can be viewed through the graphical user interface as well as through additional options such as selection of publications, drill-down analyses, and different algorithmic components (e.g., clustering or core components). CitNetExplorer can import from WoS database directly, as well as other formats, and can also export to the Pajek file format, which will be discussed later (Gutiérrez-Salcedo et al., 2018).

HistCite. A free historiographic software called HistCite, developed by Eugene Garfield, takes a longitudinal approach to bibliometric analyses, focusing primarily on the most highly cited papers and subsequent linkages in the citation network (Garfield, 2004; 2009). Although HistCite originally would search straight from the WoS database, it is no longer actively supported, so importing data directly is the only way to run analyses with this software. HistCite is commonly used to answer research questions focusing on amount of literature in the field, journals or authors that cover this field, major researchers in the field, and impactful articles. Some of the unique indices defined in HistCite include production of a *global citation score* (GCS), which includes the entire citation score based on the WoS database; a *local citation score* (LCS), which is the citation count within the collected articles, the *number of cited references* (NCR), which is the amount of references mentioned by article; and *local cited references* (LCR), which include references only made within the selected collection.

Pajek. Pajek, developed by Vladimir Batagelj and Andrej Mrvar (1998), is a program primarily designed for very large databases and networks, and it primarily produces three network types including ore graphs, p-graphs, and bipartite p-graphs (Batagelj & Mrvar, 2014). This program has recently been effectively demonstrated to be useful in creating bibliographic networks, specifically (Batagelj & Cerinšek, 2013), and it is usually used in conjunction with other software such as VOSviewer, described below (Batagelj & Mrvar, 2014).

SciMAT. Another free science mapping software tool, the Science Mapping Analysis software Tool (AKA SciMAT; Cobo, López-Herrera, Herrera-Viedma, & Herrera, 2012) was developed following the approach to science mapping and analysis as first presented by Cobo, López-Herrera, Herrera-Viedma, and Herrera (2011). SciMAT is designed to carry out all the steps of science mapping workflow, offer useful data preprocessing tools (for data organization, removal of duplicate entries, etc.), handle large databases and complex networks, produce strong visualization outputs, and include many indicators in the output. Further, along with many of the aforementioned attributes, SciMAT also includes a wizard for configuring analytic components. SciMAT can import from WoS and other databases saved as RIS and CSV formats. A few of the main elements of SciMAT software include bibliographic sources, preprocessing, unit of analysis, bibliographic relations, normalization of the bibliographic network, clustering algorithms, document mappers, visualization techniques (e.g., evolution maps, overlapping maps, strategic diagrams), as well as many of the common bibliographic indices such as total citations, average citations, *h*-index, *g*-index, *hg*-index, and the q^2 -index (Cobo et al., 2012).

VOSviewer. The final software discussed for network analysis, VOSviewer, was designed for construction and visualization of bibliometric maps. It was also developed by Nees Jan van Eck and Ludo Waltman (2010). The foundation of this free tool follows that of a framework called *visualization of similarities*, and it is able to extract bibliographic data from various databases including WoS and Scopus, as well as from other RIS formats (Gutiérrez-Salcedo et al., 2018). VOSviewer can also export into Pajek format. Although VOSviewer does not provide as many outputs as the other programs, the specialty and focus of this free software lies within its ability to provide detailed graphical representation of these complex bibliometric maps (van Eck & Waltman, 2010).

Examples of software in the literature. As mentioned previously, several different software packages may be used together to enhance any particular analysis. For example, van Eck and Waltman (2017) used both CitNetExplorer and VOSviewer to cluster publications and analyze the results. In another case, Deus, Bezerra, and Battistelle (2019) used CitNetExplorer and VOSviewer, as well as HistCite, to provide a complete bibliometric analysis for a specific topic within their field. Finally, regarding a topic of relevance to school psychology, Ersozlu and Karakus (2019) used VOSviewer to complete a bibliometric analysis and map the literature relating to mathematics anxiety.

Citation Classics in School Psychology

At present, only two teams of researchers have completed bibliometric studies focused on the school psychology literature specifically, evaluating highly cited articles and their content or patterns of publication. One study conducted by Price, Floyd, Fagan, and Smithson (2011) inspected the top 100 highly cited articles in five major school psychology journals, including *Journal of School Psychology*, *Psychology in the Schools*, *School Psychology International*, *School Psychology Quarterly*, and *School Psychology Review*. Using the ISI Web of Science database, Price et al. gathered articles from these five journals spanning 1965 to the time of acquisition in November 2009. After articles were gathered, they were coded for both content and article type. In addition to presenting the legacy top 100 most highly cited articles, Price et al. conducted a supplemental citation analysis that examined the top 25 articles historically (1965-2009) and the recency top 10 most highly cited articles within the recent decade of the study (1999-2009), specifically focusing on the number of citations within school psychology journals, the number of citations by one or more of its authors across their subsequent

publications (i.e., self-citations), and the number of yearly citations following publication (to determine trends and patterns in citation rate).

Results from Price et al.'s (2011) analyses revealed that, overall, the legacy top 100 most highly cited articles accounted for only a small percentage of all articles from the five targeted journals within the Web of Science database (i.e., ~ 1%), yet these articles accounted for approximately 12% of all citations from these journals. Conversely, approximately 32% of articles across the five school psychology journals yielded zero citations in the database. Considering the top 11¹ of the legacy articles (see Table 1), half were coded as causal studies (i.e., containing at least one independent and dependent variable), and most others (36%) were narrative reviews. The majority of articles (64%) had a focus relating to assessment or intervention, including the most highly cited article authored by (Hightower et al., 1986). Of interest, this top article's citations only landed within school psychology journals 10% of the time, and it had a self-citation percentage of 14%, the highest of these top 11 articles.

Looking at the recency top 10 most highly cited articles (see Table 1), Price et al. found that half were coded as quantitative, with 30% being classified as causal-comparative (i.e., the independent and dependent variables were not manipulated), 10% as correlational, and 10% as descriptive. The other half were coded as narrative articles, with the majority of this half (40%) being classified as narrative review and the other one as an editorial. The most highly cited article from the 10 years of analysis, authored by Sheridan and Gutkin (2000), placed 13th on the legacy top 100 most highly cited articles, which also supports the argument that more recent articles may have an uphill battle to be considered a citation classic, despite Hightower et al.'s (1986) article having peak citation counts in the late 1990s, with a decline following.

¹ Top 11 due to a tie at the tenth spot.

Expanding on the Price et al. (2011) study to examine the school psychology literature on an international level, Liu and Oakland (2016) searched the WoS database using HistCite, expanding to all possible publication years, yielding results from 1907 to 2014. Rather than allowing the focus of the analysis to center around the articles from specific journals (as did Price et al., 2011), Liu and Oakland's search criteria for inclusion were based on related terms to the field (i.e., "school psycholog*", where the asterisk represents possible other endings to the root search term such as "school psychologists"). Based on these criteria, articles from *Journal of School Psychology*, *Psychology in the Schools*, *School Psychology International*, *School Psychology Quarterly*, and *School Psychology Review* were included in the analysis (like Price et al., 2011). In addition, articles from 15 other journals were considered. From these results, Liu and Oakland highlighted not only numbers of citations for these articles but also the patterns of citations across time. In addition to the citation counts, whereas Price et al. (2011) inspected the patterns of citations to the citation classes, examining self-citations, and citations by year, Liu and Oakland (2016) focused on author impact both in the global and local citing scores, university productivity, and specific articles that were impactful both by descriptive drill-down examination and network analysis. In order to complete these additional analyses, Liu and Oakland (2016) first utilized HistCite to gather and analyze the articles and then used Pajek to conduct network mapping analyses to detect paths among these highly cited articles.

One of Liu and Oakland's (2016) primary indices was HistCite's total GCS, which is generated based on citations to all other documents in the totality of Web of Science. This metric is one most commonly used by other studies, highlighting overall impact of a particular article, regardless of field or use. The other primary index used was the total LCS, which represents the number of citations linked to other articles within the pool of gathered articles ($N = 3,260$). The

latter index is comparable to Price et al.'s (2011) analysis of citations solely within the five journals. Based on the results of Liu and Oakland's (2016) analyses, some of the most frequently used keywords were *children*, *school psychology*, *students*, and *intervention(s)*, and the top three journals were *Journal of School Psychology*, *Psychology in the Schools*, and *School Psychology Review*. Further, the top two authors based on publications were T. Kratochwill and T. Fagan with 49 and 33 articles, respectively, and the university whose faculty and students authored the most articles was the University of Minnesota, Twin Cities, with a total of 86 articles (Liu & Oakland, 2016).

Although the total GCS is comparable to the "times cited" variable used by Price et al., the top 10 articles based on the total LCS that Liu and Oakland identified (see Table 1) is consistent with Price et al. (2011)'s recency search from 1999-2009, where Sheridan and Gutkin (2000) remained at the top of the list. Considering the inclusion of 15 other journals in Liu and Oakland's findings, as well as an increase in years searched (both extending to 1907 as well as updating Price et al., 2011, by 5 years), it is conceivable that some articles remain relevant and gain impact as time progresses. It is also worth noting that of the nine articles in Liu and Oakland's legacy top 10 most highly cited articles that were from journals searched by Price et al. (2011) and that four were identified in Price et al.'s top 10 from either legacy or recency list. These results suggest some consistency even when different year ranges, search terms, and methods are used. However, the total LCS calculated from Liu and Oakland's search would be affected by the limited range—although Price et al.'s search covered a fraction of journals and half many years, they yielded two and a half times the number of articles as Liu and Oakland ($N = 8029$).

An element that Liu and Oakland (2016) incorporated in their citation analysis that Price et al. (2011) did not include was network mapping (Gutiérrez-Salcedo, Martínez, Moral-Munoz, Herrera-Viedma, & Cobo, 2018). Liu and Oakland utilized HistCite to explore linkages between the 30 articles with the highest citations. Among these, four articles from their top 10 most highly cited articles (Table 1: L-O rank 2, 3, 6, and 8) were identified by largest nodes in the historiograph for a more in-depth drill-down analysis. Further, Liu and Oakland used HistCite historiographic data and Pajek to develop an integrated development path of nine articles that share the common theme of outlining the field of school psychology (which include three of the four previously identified in the drill-down examination). This path begins with two articles by Jack Bardon in (1968) and (1976), followed by those three of the aforementioned articles (Meacham & Peckham, 1978, Smith, 1984, and Reschly & Wilson, 1995, ranked fourth, second, and third, respectively). Building on these articles, Curtis, Walker, Hunley, and Baker's (1999) article (ranked ninth by Liu & Oakland, 2016) describes demographic characteristics and professional practices of school psychologists on a large scale. Following this work, another framework for training in school psychology is presented by Nastasi (2000). Finally, two pieces of work by Kratochwill and Stoiber (2002) and Kratochwill and Shernoff (2004), conclude this path highlighted by the historiograph, both about evidence-based practice in the field of school psychology.

Limitations of Previous Analyses

There are four limitations associated with the Price et al. (2011) and Liu and Oakland (2016) studies. First, both studies only utilized one database, Web of Science (WoS). Although this is one of the foremost research databases for psychology, it is possible that some pieces of literature are accounted for based on when they were added to the database or how far back this

database reaches. For example, Price et al. were unable to include articles prior to 1990 for *School Psychology Quarterly*, based on the availability through WoS. Further, by omitting the use of a comprehensive database like Google Scholar, which includes much more literature than only articles such as dissertations, unpublished documents, conference proceedings, it is likely there are many pieces of the school psychology literature that may be missed entirely. A second limitation was the breadth of coverage for article criteria. Specifically, Price et al. only searched five school psychology journals. Although Liu and Oakland extended the criteria to include variations of the search term for school psychology, expanding the possible journals, this subsequently introduced more variability in how school psychology exists in the psychology literature rather than focusing on the school psychology literature itself.

A third limitation is related to the recency of these previous studies, for example, Price et al.'s study is a decade old, and the metrics and understanding of bibliometrics have developed in recent years. Specifically, updated software for more sophisticated data acquisition, analyzation, and mapping (Gutiérrez-Salcedo et al., 2018; Waltman, 2016; Zupic & Čater, 2015). The fourth and final limitation presents itself when considering elements of the three previous limitations. The databases used, search criteria included, and recency of the work, all compound and affect the criteria for which articles—and as such the indices that dictate them—are selected and analyzed. Although bibliometric analyses are merely a snapshot of the literature as it currently presents itself, by increasing the global and local networks (i.e., databases used and broader search criteria) used in comparison, as well as increasing the years examined (in recency by updating or in history by accessing older articles unavailable in prior studies), allows for a both a more complex and comprehensive understanding of the literature.

Purpose of the Study

The purpose of this study was to update and extend the work as completed by the aforementioned studies (Liu & Oakland, 2016; Price et al., 2011). Specifically, along with Institute for Scientific Information (ISI) Web of Science database used by Price et al., the present study additionally utilized Scopus and Google Scholar (GS), described by Waltman (2016) “the three most important databases available for performing citation analyses” (p. 367). Further, by adding the various elements of Google Scholar, it was possible to complete an updated and comparative analysis of these citation analyses (Harzing & van der Wal, 2008; Li, Burnham, Lemley, & Britton, 2010; Martín-Martín, Orduna-Malea, Thelwall, & Delgado López-Cózar, 2018; Meho & Yang, 2007; van Aalst, 2010). Notably, these databases have varying total citation count based on availability of literature and total size of database (e.g., GS contains more “gray literature” like dissertations, that add citations that might be missed in another database). This study also aimed to remedy this disagreement by statistically calculating z-scores for articles in each database.

Concerning search criteria, in addition to the five school psychology journals included in the Price et al. (2011) study (i.e., *Journal of School Psychology*, *Psychology in the Schools*, *School Psychology International*, *School Psychology Quarterly*, and *School Psychology Review*), the present study included an additional six journals (i.e., *Journal of Applied School Psychology*, *School Psychology Forum*, *Contemporary School Psychology*, *Canadian Journal of School Psychology*, *Trainers of School Psychologists*, and *International Journal of School and Educational Psychology*) indicated as the complete collection of the generalist journals in the field of school psychology (Floyd, 2018). The current study also searched timelines that are inclusive of all available databases (from earliest available article to 2019), as well as a focused

search on the most recent decade (2009 to 2019). Thus, the current study aimed to extend the literature by identifying citation classics, coding the type and content of the studies, and examining the variables that influence and predict research that is impactful in the field of school psychology.

Method

Identification of Articles

Articles were collected at the beginning of 2020 and ended on the 26th of January. The full history of articles from the following 11 school psychology generalist journals were identified: *Journal of School Psychology*, *Psychology in the Schools*, *School Psychology International*, *School Psychology Quarterly*, *School Psychology Review*, *Journal of Applied School Psychology*, *School Psychology Forum*, *Contemporary School Psychology*, *Canadian Journal of School Psychology*, *Trainers of School Psychologists*, and *International Journal of School and Educational Psychology*. These articles were identified using the three databases previously mentioned: ISI Web of Science (WoS), Scopus, and Google Scholar (GS). Specifically, each journal title was included in the search bar (e.g., “source” or “journal”) for the respective database or search engine with quotes around the title as to limit articles to that journal specifically (and not an article with the same words in the title from another journal). In addition, within the GS database, the ISSN was entered as a selection field to further discern extraneous and unrelated journals with similar titles (e.g., when searching for “*Journal of School Psychology*” with quotes on GS, “*Canadian Journal of School Psychology*” is also returned). No other restrictions were outlined, so any publication featured in the journal was included in the analysis (e.g., editorials, commentaries, reviews, or research articles).

Databases

Web of Science. ISI Web of Science (previously known as Web of Knowledge) is a research and academic search engine hosted by Clarivate Analytics that contains multiple databases and indices that connect various journals, articles, papers, and conference proceedings across hundreds of disciplines. The *Web of Science Core Collection* is a completely indexed database that produces various analytics (total publication count, h-index, self-citation number, number of times cited per year, etc.) that covers the range of 1965 to present. It indexes articles from 7 of the 11 generalist school psychology journals, excluding *School Psychology Forum*, *Contemporary School Psychology*, *Trainers of School Psychologists*, and *International Journal of School and Educational Psychology*.

Scopus. Scopus is an abstract and citation database hosted by Elsevier that primarily covers life, social, physical, and health science disciplines. Included are book series, conference proceedings, trade publications, and journals, dating back as far as the 1800s. Articles from 8 journals, including *Journal of School Psychology*, *Psychology in the Schools*, *School Psychology International*, *School Psychology Quarterly*, *School Psychology Review*, *Journal of Applied School Psychology*, *Canadian Journal of School Psychology*, and *International Journal of School and Educational Psychology* are indexed in Scopus. Only *Trainers of School Psychologists*, *School Psychology Forum* and *Contemporary School Psychology* are not indexed.

Google Scholar. In 2004, Google Scholar (GS) debuted as a search engine and citation database specifically for scholarly research and literature. One of the biggest appeals of GS was that it was free and also provided access to gray literature that often is omitted in other databases. Because GS does not allow for a mass export of articles and citations (Meho & Yang, 2007), a software called *Publish or Perish* (Harzing & van der Wal, 2008) was developed that not only

could systematically and efficiently conduct and export searches through GS, but would also calculate many of the aforementioned indices based on citation count. As such, articles through GS were gathered using *Publish or Perish 6 (PoP6)*; Harzing, 2007). In addition, it is possible to search and access articles from the 11 generalist school psychology journals.

Citation Analysis

Citation classics. Articles gathered within each database had their own citation count. Previous studies, when identifying classics, did so based on the citation counts within a particular database (Cobo, Martínez, Gutiérrez-Salcedo, Herrera, & Herrera-Viedma, 2014). Some studies have completed comparisons across databases to identify strengths, weaknesses, and discrepancies (Harzing & Alakangas, 2016; Li et al., 2010; Mongeon & Paul-Hus, 2016; Roales-Nieto & O'Neill, 2012). Thus, to make it feasible to synchronously consolidate and evaluate indices for articles contained in journals that are accessible via multiple databases (which would subsequently have conflicting citation counts), four steps were followed. First, means and standard deviations for total citations across articles, across journals, and within each database were obtained. Next, *z*-scores were calculated across articles, across journals, and within each database (using the means and standard deviations obtained during the previous step). Following this step, the *z*-scores for articles within each database were summed and averaged across the three databases in a master database, if there are at least two databases in which they are included; articles included in only one database were excluded. Finally, the master *z*-scores were sorted from highest to lowest, where the legacy top 100 and recency top 25 period-specific articles were identified (i.e., the recent decade from 2009 to 2019 comparable to Price et al.'s, 2011, recent decade from 1999 to 2009).

Content coding. The legacy top 100 and recency top 25 most highly cited articles were coded by article type following the same system introduced by prior studies (Bliss, Skinner, Hautau, & Carroll, 2008; Strein, Cramer, & Lawser, 2003) and adapted by Price et al. (2011). Specifically, articles were coded broadly as empirical (quantitative and qualitative research) or expository, both containing subcategories. Subcategories within quantitative empirical research articles include *descriptive* (only reporting descriptive statistics), *correlational* (reporting correlations between variables), meta-analysis (using statistics to synthesize and re-analyze previous findings), causal-comparative (including at least one independent and dependent variable where the independent variable *was not* manipulated), and causal-experimental (including at least one independent and dependent variable where the independent variable *was* manipulated). Qualitative subcategories were coded as either *ethnography* (an in-depth description and interpretation of the culture of a group or people) or *case study* (an intensive description and analysis of single individual, organization or event). Finally, expository articles were classified as *expository reviews*, *theoretical*, or *professional development articles* (stemming from an idiosyncratic process to synthesize previous findings from research articles), *editorials* (with the editor, guest editor, or series editor writing a commentary or introduction to a special or themed issue), *commentary*, *comments*, *reaction articles*, or *letters to the editor* (with someone other than the editor, guest editor, or series editor writing a response to or comment about an article or a special or themed issue), *assessment instrument reviews* (test reviews), *book reviews* (narrative reviews of a book or treatment manual), *obituaries* (the chronology of a person's life and contributions published soon after the person's death), *historical articles* (a detailed summary of the history of an organization, phenomenon, or effects of a person's efforts), and *award addresses* (writing from the recipient of an award). If the article did not fit

well into quantitative research, qualitative research, or narrative, it was coded as *other* (Price et al., 2011).

In addition to coding the articles for type, they were coded for content classification. The different content areas coded for were *assessment* (with a goal of developing clinical diagnoses through test development and other data-gathering), *intervention* (focusing on direct approach to improvement of daily functioning in a child or family unit), *consultation* (focusing on a problem-solving relationship and interaction between two parties such as parent and professional or professional and professional, with a specific goal in mind), *professional issues* (focusing on those in the profession and subsequent responsibilities), *explicative* (addressing two variables or phenomena and their relation, or more broad concepts that do not neatly meet the criteria for another category) and *other* (Aylward, Roberts, Colombo, & Steele, 2007; Price et al., 2011).

Similar to Price et al. (2011), articles were independently coded by two research assistant raters that attended a training session conducted by the first author where coding criteria was explained. Following this session, both raters independently coded 20 articles selected by the trainer based on their diverse content. The trainer created a coding key to determine coder accuracy and raters independently coded all articles once their accuracy met or exceeded 90% based on the trainer's key. Disagreements were identified by the trainer and resolved by consensus. Initial coding produced an overall inter-rater agreement value of 87.5% and kappa was .85.

Network analysis. For the network analysis, the legacy top 100 most highly cited articles identified above were entered into a master dataset, cleaned, and preprocessed for network analysis and visualization in CitNetExplorer and VOSviewer. To maximize the output produced by CitNetExplorer, a complete citation record is required to highlight citation links outside of

identified articles. To complete this task, the entire Web of Science database matching the search criteria was downloaded. Using this master network, the legacy 100 articles were marked and subsequent drill-down and cluster analyses were performed to highlight important connections and trends, as well as the recency 25 articles. Given VOSviewer's macro approach to datasets, only the legacy 100 articles were imported for text-based content analysis. Further, the legacy top 100 were also imported into HistCite for further analysis and historiographic representation.

Results

Descriptive Statistics

Databases. Articles collected from each database varied across databases. Google Scholar (GS) yielded 12,851 articles with a total of 502,769 citations (range = 0 to 2,709, $M = 39.12$, $SD = 96.46$), Scopus returned 10,392 articles with a collective 171,392 citations (range = 0 to 981, $M = 16.49$, $SD = 37.40$), and Web of Science (WoS) contained 10,739 articles with a combination of 155,120 citations (range = 0 to 884, $M = 14.44$, $SD = 32.86$). GS search results included journals that are not indexed in the other databases, so the following descriptive statistics focus primarily on using the GS dataset as it was more encompassing than the other two databases.

Journals. Across all 11 journals that were used as search criteria through GS, the following articles were retrieved in order of most to least: *Psychology in the Schools* (PITS, $N = 4,276$), *Journal of School Psychology* (JSP, $N = 2,188$), *School Psychology Review* (SPR, $N = 2,006$), *School Psychology International* (SPI, $N = 1,463$), *School Psychology Quarterly* (SPQ, $N = 866$), *Journal of Applied School Psychology* (JASP, $N = 605$), *Canadian Journal of School Psychology* (CJSP, $N = 554$), *Contemporary School Psychology* (CSP, $N = 411$), *International Journal of School & Educational Psychology* (IJSEP, $N = 258$), *School Psychology Forum* (SPF,

$N=157$), and *Trainers of School Psychologists* (*TSP*, $N=67$). The total citation counts for these journals followed approximately the same order, except for *SPR* that yielded a total of 124,896 citations compared to *JSP*'s 110,588. In addition, despite *SPQ* yielding almost half of the articles as those in *SPI*, the citation count for *SPQ* exceeded *SPI* with a total of 59,113 citations compared to *SPI*'s 44,467. *SPR* and *SPQ* both had the highest average citation count per article (62.26 and 68.26, respectively). The full statistics for each journal in GS can be found in Table 2.

Identified Articles

Legacy articles. The top 104 articles were selected based on their averaged z -scores across databases. Four articles were only included in one database, so were excluded from the final ranking and subsequent analyses but are included in the comprehensive list (see Table 3). The citation count in the legacy top 100 ranged from 123 (found in WoS) to 2,709 (found in GS). Total citations of the legacy top 100 articles were the highest in GS ($N=79,666$, $M=796.66$, $SD=409.26$), followed by Scopus ($N=27,210$, $M=272.1$, $SD=164.55$), and finally WoS ($N=24,014$, $M=240.14$, $SD=142.47$). Across these articles, 5 were published in the 1980s, 18 were published in the 1990s, 69 were published in the 2000s, and 8 were published within the last decade. Although journals included in the analysis needed to be available across only two of the databases, all journals included in the legacy top 100 were available across all three databases. Specifically, *SPR* had the most articles ($N=33$) in the legacy top 100, followed closely by *JSP* ($N=29$). Both *PITS* and *SPQ* had the same number of articles in the legacy top 100 ($N=14$), and the fewest number of articles in the list were published in *JASP* ($N=2$) and *CJSP* ($N=1$). Overall, 251 authors contributed to the legacy top 100 articles and 28 authors were involved with more than one paper. E. Scott Huebner had the greatest contribution with a total of 6 articles, followed by Christine K. Malecki, Michelle K. Demaray, and Sandra L. Christenson with 4

articles. Of note, Malecki and Demaray (of Northern Illinois University) were co-authors on 3 of those 4 articles published in 2002-2003 in three different journals (*PITS*, *SPR*, and *SPQ*).

Regarding content coding for the legacy top 100 articles, the overwhelming majority were classified as explicative ($N = 63$). The rest of the articles largely fell in the intervention ($N = 15$) or assessment ($N = 14$) category, whereas other ($N = 4$), consultation ($N = 2$), and professional issues ($N = 2$) shared a combined total that accounted for the smallest content percentage when compared to the other three categories.

In addition to content, the legacy top 100 articles were coded for type and subtype. Most of the articles were classified as quantitative ($N = 70$) research articles and the others were considered narrative ($N = 29$) articles. Only one article met the criteria as a qualitative research article, specifically, a case study (rank #38; Cleary & Zimmerman, 2004). Further inspection of the 29 narrative articles revealed almost all of them fell under the subtype category of narrative reviews, theoretical, or professional development article ($N = 27$). The other two were considered an editorial (rank #5; Espelage & Swearer, 2003) and a historical article (rank #71; Rutter & Maughan, 2002). The top two subtypes identified within the quantitative articles were causal-comparative ($N = 35$) and correlational ($N = 24$). Hierarchically, meta-analyses ($N = 6$) were considered a step beyond purely correlational analyses, yet not to the empirical rigor that causal-comparative articles provided through examination of independent and dependent variables. Interestingly, less than 8 percent ($N = 5$) of all quantitative articles met the criteria to be considered causal-experimental, which tends to be the uppermost level of experimental rigor when considering research methodology. Of these five causal-experimental articles, only one distantly approached the top articles at a rank of 27, whereas the other four congregated tightly around the middle of the legacy top 100 articles at rankings 50 and 52 through 54.

In the same vein as Price et al. (2011), the top 10 of the legacy 100 articles were further examined to greater detail, which highlighted some semblance the overall sample yet revealed an interesting trend. As such, the majority were classified as explicative ($N = 8$), while one of the additional articles focused on assessment. The remaining article was coded as other, as it was a statistical article that introduces modern missing data analyses (rank #7; Baraldi & Enders, 2010). Again, mirroring the overall sample, the most of these 10 articles were quantitative ($N = 7$) research articles, and the remaining three were narrative articles, including the previous statistical article as a theoretical article and an explicative article focusing on student engagement with school (rank #6; Appleton, Christenson, & Furlong, 2008). Finally, the last of the three narrative articles was the single editorial article identified (Espelage & Swearer, 2003).

Recency articles. Following the framework presented by Price et al. (2011), the recency top 25 articles from the past 10 years (i.e., 2009-2019) were additionally selected and examined—a complete catalog of these articles is available in Table 4. The citation count in the recency 25 ranged from 86 (found in WoS) to 1,346 (found in GS). Total citations of the recency 25 articles were the highest in GS ($N = 12,988$, $M = 519.52$, $SD = 298.65$), followed by Scopus ($N = 5,456$, $M = 218.24$, $SD = 149.04.55$), and the fewest in WoS ($N = 4,634$, $M = 185.36$, $SD = 142.21$). The highest nine articles were also included in the aforementioned legacy top 100 articles, two of which were within the 10 highest ranked. A total of 94 unique authors were involved in these articles and three individuals, Anne Gregory, Catherine Bradshaw, and Mark Greenberg, authored two papers each—with the latter two also sharing a publication together. Two of the most recent articles were from 2013, and 3 articles were from 2012. The rest were published between 2009 and 2011.

Similar to the content breakdown of the legacy 100 articles, the majority of the recency 25 articles were classified as explicative ($N = 14$, 56%), and the minority were classified as other ($N = 3$, 12%) or professional issues ($N = 1$, 4%). However, compared to the legacy top 100 articles where 15% focused on intervention, the percentage of intervention articles represented in the recency 25 nearly doubled ($N = 7$, 28%). None of the top 25 articles from the recent decade were coded as consultation.

Additionally, following the trend represented by the legacy top 100 articles the article type of the recency 25 was largely quantitative research ($N = 19$, 76%) compared to narrative ($N = 6$, 24%). All of the narrative articles were classified in the narrative reviews or theoretical category. As briefly discussed earlier, three were coded as other and primarily dealt with statistics, whereas the other three focused on intervention and were mainly theoretical. In contrast to the legacy top 100, the recency 25 had an overall increase in meta-analyses ($N = 5$, 20%) and decrease in causal-correlation articles ($N = 4$, 16%). The percentage of correlational ($N = 7$, 28%) and causal-experimental articles ($N = 2$, 8%) remained commensurate with the those represented by the legacy top 100. Not observed in the legacy top 100, there was one article (rank #15; Cassidy, Jackson, & Brown, 2009) in the recency 25 that met the criteria solely as a descriptive article.

Again, the 10 highest ranked articles of the recency 25 were investigated more closely to emphasize patterns within this subsample. As mentioned, the articles that were ranked 1 and 2 in this subsample were already featured as they were also included in the top 10 of the legacy 100 (ranking at 4 and 7, respectively). Thus, the subsequent 10, ranked 3 through 12, were reviewed. The two most recent articles were both published in 2012, and the others were published from 2009 through 2011. Almost half ($N = 4$) of these 10 articles focused on intervention; three were

coded as explicative and two as other. The only professional issues article within the recency 25 (ranked 7 on the recency 25 and 73 on the legacy 100) was about supporting children's mental health in schools focusing on teacher's perspective (Reinke, Stormont, Herman, Puri, & Goel, 2011). This was one of the two total professional issues articles coded in the entire study and also a causal-correlational article. Yet again, all narrative articles in the recency 25 were narrative reviews, theoretical, or professional development, including those in this subset ($N = 3$). Of the quantitative articles in this subset ($N = 7$), they were fairly evenly distributed across the subtype categories with two in each except for none coded as descriptive and only one classified as causal-experimental. This article by Flook et al. (2010), one of two causal-experimental articles out of all the recency 25, was an intervention article that focused on mindful awareness practices on executive functions in young schoolchildren and secured a ranking of #5 on the recency 25 and #53 on the legacy 100. This is a noteworthy feat, considering the article was also missing a citation count from WoS, negatively impacting its overall z -score.

Network Analysis

CitNetExplorer. The entire WoS database (i.e., all available indexed journals and articles identified for this study) compiled with all articles that included a full citation network was imported into CitNetExplorer for further analysis. In order to focus on the field of school psychology directly, the "included non-matching cited references" option remained unchecked, so that any publications in non-school psychology journals cited by the generalist school psychology journals used in the study were not included in the citation network. In sum, a total of 10,622 publications with 30,134 citation links were included in the current citation network. All available articles identified in the legacy top 100 ($N = 94$) were marked and grouped for easy identification.

The citation network was opened with visualization set to 70, where the legacy top articles identified by this study were marked and subsequent predecessors and successors selected. A drill-down analysis based on this selection was conducted, including a minimum number of citations links set to 2, maximum distance set to 1, and “add intermediate publications” checked. An expand function was then used on this subset, with any predecessors and successors containing 2 minimum citation links and intermediate publications included. This new output yielded a subsample of 4,650 publications, including the 94 legacy articles and their direct predecessors and successors ($N = 2367$). Following this, a cluster analysis was performed with resolution set to 5.00, minimum cluster size set to 10, and “merge small clusters” unchecked. Given these parameters, 67 total clusters were identified, and 3,403 publications do not belong to a cluster (See Figure 1 for visualization). Publications are presented with the last name of the first author where the chronological order of years are represented on the x axis and placement across the y axis is based on relevance. Squares indicate a legacy article, circles are selected articles, and groups are defined by color.

The top 12 largest groups each received a in depth analysis to determine if clustering was a result of content, citation linkage, or authorship. Groups that did not have at least five publications represented on the visualization or at least one of the legacy articles included in the group were excluded from the subsequent analyses. The six groups that met the criteria as represented by Figure 1 are as follows: group 1 (blue, 416 publications); group 2 (green, 384 publications); group 3 (purple, 343 publications); group 4 (orange, 322 publications); group 5 (yellow, 312 publications); and group 8 (cyan, 265 publications).

Bully group. Within group 1 (blue) there were 250 selected publications based on the 94 marked legacy top articles. After skimming the titles of the 15 legacy articles included in this

group, it was clear that the general theme of this group related to bullying, cyberbullying, peer victimization, or vulnerability. This group's horizontal location proximally left of the other groups, indicates that the size of this group is due to the closeness of related content and impact of the articles overall (i.e., many of the 15 included legacy articles were toward the top of the ranking list, which carried a lot a weight for this particular group).

CBM group. Within group 2 (green) there were 217 selected publications based on the 94 marked legacy top articles. After reading the titles of the six legacy articles included in this group, the theme of this group appeared to focus on curriculum-based measurements, early literacy assessment, and preventative measures for reading difficulties. One particular article, a meta-analysis by Reschly, Busch, Betts, Deno, and Long (2009), was also included in this group and ranked #16 in the recency top 25 articles. This meta-analysis (about CBM oral reading as an indicator of reading achievement) demonstrated particular impact in this group yielding a strong citation score from strong connections with both predecessors and successors.

Professional issues group. Within group 3 (purple) there were 125 selected publications based on the 94 marked legacy top articles. There was one legacy article included in this group ranked #78 and authored by Sheridan and Gutkin (2000), titled "The ecology of school psychology: Examining and changing our paradigm for the 21st century." Reviewing the titles of the other included selected publications, the primary content of publications included in the group were largely involved with professional issues related to the overall field of school psychology.

Teacher-child relationship group. Within group 4 (orange) there were 194 selected publications based on the 94 marked legacy top articles. After skimming the titles of the 21 legacy articles included in this group, the majority of these articles discussed the teacher-child

relationship, peer or parental relationships, student engagement and motivation at school, or perceptions and expectations of teachers. Also included in this group were professional issues articles related to teacher burnout or school effectiveness. Of interest, two articles included in this group, both published in 2010 and both making the legacy 100 and recency 25 list, dealt with statistics (Baraldi & Enders, 2010; Peugh, 2010). Upon closer inspection, it is visually evident that these two articles are not connected by citation directly to other publications in this group, or each other (see Figure 1).

Behavioral intervention/consultation group. Within group 5 (yellow) there were 139 selected publications based on the 94 marked legacy top articles. There was one legacy article included in this group, ranked #85 and authored by Reimers, Wacker, and Koepl (1987) titled “Acceptability of Behavioral Interventions: A Review of the Literature.” After browsing the other selected articles, this group appeared to highlight a combination of topics, primarily stemming from behavioral intervention and consultation. As noted by the closeness to group 3 (purple in Figure 1), there were many direct citation linkages to articles related to the field of school psychology.

Treatment integrity group. Within group 8 (cyan) there were 162 selected publications based on the 94 marked legacy top articles. After reading the titles of the five legacy articles included in this group and reviewing the other selected publications, this group focused on topics related to treatment integrity and teacher implementation of interventions, or evidence-based interventions, practice, and policies. Although these two over-arching topics seem conceptually bound somewhat loosely, when visually inspecting the physical proximity of this group (see Figure 1), the citation linkages are elucidated. This group is closely nested near both the behavioral intervention/consultation group (group 5, yellow), as well as the professional issues

group (group 3, purple). There were also linkages to relevant articles that were clustered in a different group that did not fit with the aforementioned groups (i.e., group 11), likely due to the resolution being set high for purposes of specificity of groups.

Drill-down of the six groups. One final drill-down analysis was performed including the six aforementioned groups to better clarify their citation relations ($N = 2,042$), represented visually in Figure 2. It is easily observed in this simplified output the very close connection between the bullying and teacher-child relationship groups (groups 1 and 4) as well as the interlocked citation web of the treatment integrity, behavioral intervention/consultation, and professional issues groups (groups 3, 5, and 8). Looking at Figure 2 holistically, one is able to identify the relation of groups 1 and 4 and groups 3, 5, and 8, which emphasizes the independence of the CBM group (group 2). To further focus on the three-group cluster, a drill-down analysis was completed by selecting predecessors and successors with a minimum of 2 citation links and intermediate publications included. This very complex citation grid uncovered many multi-group citation links; however, one particular link was perhaps the most noteworthy to highlight. The sole legacy article in group 3 shared a strong link to a legacy article in each of the other two groups (see Figure 3).

Recency 25. The last analysis completed using CitNetExplorer involved identifying and marking the top 25 most recent articles indexed in WoS ($N = 24$). This drill-down was performed based on time period, yielding a total of 2,809 articles published between 2009 and 2019. With the 24 highlighted recency articles and their predecessors and successors, the total subset contained 220 articles. Another cluster analysis (resolution set to .75) revealed 4 groups, with content similar to the larger groups discussed earlier and can be seen in full on Figure 4. In summary: group 1 (blue, $N = 71$) covered bullying and contained six of the recency articles;

group 2 (green, $N = 58$) included a variety of articles covering school based interventions and also contained six of the identified recency articles; group 3 (purple, $N = 45$) included five of the recency articles, including a handful of statistics articles, as well as many articles investigating the relation between two phenomena using various statistical and analytical approaches; and group 4 (orange, $N = 33$) included four recency articles and appeared to be a bit of a “catch-all” that bridged groups 2 and 3, which included publications that discussed topics such as mindfulness, race, emotional-regulation, school climate, and various professional issues.

VOSviewer. A network map was created based on text data including titles and abstracts of articles of the legacy top 100 articles. Structured abstract labels and copyright statements were ignored in the analysis. Using a full counting method, the threshold was set for 10 minimum occurrences of a term. Of the 1,819 terms identified, 47 meet the threshold. For each of the terms included, a relevance score was calculated, and 60 percent of the most relevant terms were selected. These terms were further screened for relevance and verification, and the following terms were excluded from the analysis (with number of occurrences and relevance score reported): *analysis* (55, .86), *research* (53, .32), *article* (29, .72), *data* (23, .74), *type* (21, .59), *review* (17, 1.20), *meta-analysis* (12, 1.48), and *author* (12, 1.02).

A total of 20 items were used in the final analysis. Analysis parameters were set for normalization used the LinLog/modularity method and clustering analysis utilized a resolution of 1.00, a minimum cluster size of 3, and “merge small clusters” was unchecked. The resulting 20 items formed three clusters with 107 links and a total link strength of 1,251. A full network visualization can be seen in Figure 5. Topics are represented by circles with the major keywords visible. The size of the lines connecting the circles indicate the citation link strength and the size

of the circle represents the number of occurrences of the word or topic. Clusters are differentiated by color.

Cluster 1 (red) contained the following nine terms: *academic achievement, adolescent, life satisfaction, measure, measurement, parent involvement, quality, relation, and teacher child relations* (see Figure 5.1 for detailed cluster links). Cluster 2 (green) contained the following seven terms: *aggression, bully, bullying, classroom, peer, playground, and victimization* (see Figure 5.2 for detailed cluster links). Cluster 3 (blue) contained the following four terms: *parent, social support, support, and victim* (see Figure 5.3 for detailed cluster links). Overall, the small subset of relevant terminology from the legacy top 100 articles are able to form similar content clusters based on linkage of terms that mimic those groups created by CitNetExplorer based on linkage of citations. When considering the timing of these terms (see Figure 6), the older terms were related to *measure, measurement, and life satisfaction*, occurring in the late 1990s. The terms *playground* and *parent involvement* were used more in the early 2000s that led into the popularity of *bullying, peer, parent, and teacher child relationship*. Terms related to support, *social support, victim, and victimization*, occurred most recently toward 2004.

HistCite. A historiograph was used to analyze and display articles as circular “nodes” containing an article identifier number. The graph is set up chronologically, with years on the vertical axis, and nodes positioned proximally on the horizontal axis for optimal visual representation. Citation directions are represented by lines connecting the nodes (with an arrow indicating directionality). Although articles have a Global Citation Score (GCS; comparable to the “times cited” indexed in WoS), the size of the nodes signify the importance of an article via a Local Citation Score (LCS; i.e., how many times the article was cited within the uploaded dataset).

For a complete representation of the total local network, the full WoS database (used in CitNetExplorer) was imported to HistCite. The available articles from the legacy top 100 articles ($N = 94$) were marked and tagged for further analysis (see Figure 7 for full historiograph). Articles that were isolated (i.e., not connected directly to any of the other legacy articles) were unmarked and removed from the historiograph (see Figure 8). The following 59 articles were grouped into six different groups based on breaks in citations between groups. Clusters of articles that were disconnected from the other citations that contained less than 10 articles were excluded. These clusters can be found on the right side of Figure 8. The furthestmost right group of four articles were all related to CBM, the three articles immediately to the left of that group were all authored by S. Jimerson, and the six articles directly under that group were related to a combination of school-wide interventions and student motivation. The remaining three groups were all examined individually in their own historiograph.

Left group. The left group ($N = 17$) overlapped almost completely with articles in the “teacher-child relationship group” identified in CitNetExplorer. The first published article as represented by the top of the historiographic map of this group (node # 3334, see Figure 8.1), was published in 1986 (rank #28; Hightower et al., 1986), whereas the most recent article was published in 2008 and is located at the bottom left-most corner of the map (node #7568; rank #49; McKown & Weinstein, 2008). Birch and Ladd (1997) contributed the most to this group as evidenced by the largest node in this group (#5252), yielding a Local Citation Score (LCS) of 96—defending their ranking of #2 on the legacy top100 list.

Center group. The middle group ($N = 16$) contained articles that were also included in the “bully group” as clustered by CitNetExplorer. In this historiographic display of the legacy articles related to bullying (see Figure 8.2), the uppermost node (#4615) indicates the eldest

published article (rank #36; Batsche & Knoff, 1994) that was cited by two other legacy articles in this group. The most recent publication (rank #63), located at the bottom of the map (node #8388), was a meta-analysis published in 2012 that cited four other legacy articles in this group and also ranked #6 on the recency top 25 list (Polanin, Espelage, & Pigott, 2012). The largest node (#6372) based on a LCS of 57 was the editorial authored by Espelage and Swearer (2003), arguably the anchoring factor of this group as demonstrated across analyses.

Right group. The right group ($N = 16$) contained a combination of articles that intersected with articles from the “treatment integrity group” ($N = 3$), the “behavioral intervention/consultation group” ($N = 1$), and the “professional issues group” ($N = 1$). As noted in the CitNetExplorer section these three groups showed considerable overlap—most likely due to the high ranking or citation linkage of those main articles. For example, the largest node (#5779; located on the right side of Figure 8.3) was the article by Sheridan and Gutkin (2000) with a LCS of 104 and surrounded by similarly scored articles that were across the three aforementioned groups. However, the articles on the left side of the historiograph were not included in any groups by the cluster analysis in CitNetExplorer. The entirety of these articles focused on life-satisfaction or quality of life in adolescents.

Discussion

The broad purpose of the current study was to identify citation classics and their impact in the field of school psychology. More specifically, there were three primary objectives of this study: (1) to update and extend the work of similar preceding studies (Liu & Oakland, 2016; Price et al., 2011), (2) to increase the search criteria to allow for twice as many journals, as well as additional databases with more expansive indices, and (3) to extended the timelines that were used in previous studies, including a focused search on the most recent decade (2009 to 2019).

Bibliometric Comparisons

Across all three databases, an average of 11,327 articles were collected with an average of 276,427 total citations. Articles from *Journal of School Psychology*, *Psychology in the Schools*, *School Psychology International*, and *School Psychology Review* consisted of over three quarters of the total article count (77.27%) with the percentage of articles from *Psychology in the Schools* (33.29%) almost doubling that of the runner up, *Journal of School Psychology* (17.02%). Due to the limited indexing of *Trainers of School Psychologists*, articles from this journal were responsible for less than 1% of all total articles. Citation counts for the top identified articles ranged from (a) 123 to 2,709 in the top legacy 100 and (b) 86 to 1,346 in the recency top 25 articles.

Content coding for the legacy top 100 articles revealed an overwhelming presence of explicative articles ($N = 67$) adjacent to a fairly even split of assessment ($N = 14$) and intervention ($N = 15$) articles. Price et. al (2011) also found that intervention and assessment articles were similar in occurrence ($N = 27$ and $N = 23$, respectively), although they were slightly higher than the present study. Alternatively, only one third of the articles were coded as explicative compared to the two-thirds at present. Interestingly, within the recency 25 articles, Price et al. classified 13 as explicative, which was commensurate with the number in the present study ($N = 14$).

Regarding article type, Price et al. (2011) noted an approximate split between quantitative (~55%) and narrative (~45%) articles, in contrast to the present study that observed an almost 70/30 split. Furthermore, the present student identified one qualitative study in the absence of any in the prior study. The breakdown of the current legacy top 100 article's subtypes was commensurate to that of Price et al.'s as far as percentages, granted they were higher in quantity.

The article type of the current recency top 25 articles shadowed the trail of the legacy top 100—two thirds majority were quantitative to narrative.

An additional trend observed in both the Price et al. (2011) and the current study was the representation of articles in the recency top 25 articles. Specifically, the most recent article identified was at least 5 years old for both studies, signifying a “latency effect” on articles before they can begin gaining traction and integrating into various citation networks. Most scholars would consider the idea that older articles are more likely to gain a high number of citations and become classic articles due to the sole fact they have had more time to accrue views and citations. Regardless, there appears to be a strong association related to a pattern of recency. Even the most impactful articles will take about half a decade to accumulate a significant count, but if they manage to do so in that amount of time, they are almost destined to earn a spot as a citation classic in the future.

When examining the overlap of recency and legacy articles in the Price et. al. (2011) study, another intriguing point surfaced. Of the 25 articles from the decade of 1999 to 2009, all but four articles also appeared on Price et al.’s legacy top 100 list, whereas only nine of the recency top 25 articles landed on the current legacy top 100 list. Despite Price et al.’s recency 25 list securing more spots on the legacy top 100, none of those articles breached the top ten ranks. In fact, Price et al.’s highest recency article on the legacy top 100 was ranked #13. Conversely, three of the nine recency articles on the current legacy top 100 list were ranked higher than that (i.e., #4, #7, and #12).

Databases. Overall, Google Scholar (GS) consistently covered more time periods, included a greater number of journals, indexed more articles with proportionally greater citation counts. Even with the assistance of the Publish or Perish software, downloading and compiling

the publication from GS introduced many errors that had to be remedied. In addition, cited references were not included in the dataset, thus the use of Web of Science's database to complete the citation network analyses (also not extremely convenient, as the browser interface only allows for downloads of 500 items at a time). As noted, there are many strengths and weakness associated with all three databases, but with the cross-combination of multiple databases via the z -score transformations, the current study attempted to ameliorate the weaknesses and accrue the most accurate overall dataset as possible.

Network mapping. Many past studies (and current academics) highly regard citation count as an indicator of publication success, much as journals focus on impact factors. As technology advances in the recent century, so have the tools to conduct sophisticated and highly complex analyses. Network mapping programs allow for scholars to analyze and visualize massive amounts of bibliometric information. Although many of the tools discussed in this study have settings that allow for publications to be weighted by an overall citation count, many of the algorithms utilize the citation network (both in subsets of data or global data) to highlight article impact and trends.

This study used CitNetExplorer and VOSviewer, two programs developed by Nees Jan van Eck and Ludo Waltman (2010) to conduct network mapping analyses at both focused and macro levels, respectively. Through CitNetExplorer, with the spotlight on the legacy top 100 and recency to 25 articles, content groups were established. Thus, the majority of the articles highlighted had topics that related to bullying, CBM research, treatment integrity, behavioral intervention or consultation, the teacher-child relationship, and professional issues. Many of these content areas were already highly popular as indicated by Price et al.'s (2011) legacy top 100 articles such as the teacher-child relationship, CBM, and treatment integrity, all highlighted

within the top 10 ranked articles. However, by paying attention to the recency top 25 identified by Price et al.—especially their intersection with the top 100—one is able to preview many of the “hot topics” that were quickly gaining popularity like those publications related to bullying and various professional issues. Further, the overall dataset underwent a text-based analyses using titles and abstracts to create a visualization of words and topics in VOSviewer, which only confirmed the content groups established earlier and emphasized the increase of certain terms over the years.

Following Liu and Oakland’s (2016) precedent, HistCite was used to create historiographic trends to examine the publications more closely. CitNetExplorer also creates maps based on chronological placement, but HistCite more specifically articulates the relations of articles focusing on the timeline as well as direction of citations. As such, HistCite’s graphing output relies heavily on the Local Citation Score (i.e., the number of citation links within the uploaded dataset), and the sizes of the publication nodes represent this weight. Regarding the highest ranked articles, only two of Liu and Oakland’s identified articles were on the current legacy top 100 list. This disconnect is likely due to the different search criteria. In the current study, publications were grouped by citation networks that essentially paralleled those groups identified by cluster analyses through CitNetExplorer. This supplementary analysis revealed examples of outliers that were not necessarily placed into groups, or alternatively, were embedded in networks that were unrelated to the content, in contrast to Liu and Oakland.

Overall, although there is considerable overlap between impactful articles identified by citation count and those by citation linkage, using solely one method or the other may overlook possibly important articles or introduce extraneous articles that merely connect a high number of articles within a sample. On a positive note, using three different tools to conduct analyses and

obtain outputs, the same dataset yielded similar results across the programs. This consistency is comforting, concerning the large size of the dataset and variability of the publications.

Ostensibly, one could use one (or a combination of) these tools to sufficiently inspect a narrow topic or sub-field with little difficulty.

Citation Classics in School Psychology

One of the overarching goals of the current study was to highlight citation classics in the field of school psychology. The list including the legacy top 100 articles is a detailed representation of impactful articles at this time, however, there are many articles that have remained on this list even a decade following the Price et al. (2011) study. For a publication to remain ranked for that amount of time suggests that it is still being circulated in the literature and continues to accrue citations at (approximately) the same rate. Three specific articles stood out on the legacy top 100 list that either stayed the same rank or moved higher since the Price et al. (2011) study. These three articles could certainly be considered citation classics in the field of school psychology.

The first article, achieving a rank of 2 on both studies, was “The Teacher-Child Relationship and Children's Early School Adjustment” by Birch and Ladd (1997). The second was Goodenow’s (1993) article titled “The Psychological Sense of School Membership among Adolescents: Scale Development and Educational Correlates,” which moved up two ranks from Price et al. to the current study (#5 to #3). Finally, the single editorial article that was classified in this study, titled “Research on School Bullying and Victimization: What Have We Learned and Where Do We Go From Here?” (Espelage & Swearer, 2003) ranked #5 on the legacy top 100 articles and was also ranked by Price et al. as #41 in their top 100 and #6 in their top 25 most highly cited articles between 1999 to 2009. This steep climb by a unique article suggests not only

that there are certain variables present to determine the successfulness of a publication but also the potential foreshadowing of an article (or topic) by its inclusion on these lists.

Limitations and Future Directions

A few general limitations have been mentioned in relation to the specific databases and software earlier. It should be noted that the databases themselves have demonstrated flaws and errors in previous research (Meho & Yang, 2007). For example, similar to an error observed in the Price et al. (2011) study, an “article” by U. Bronfenbrenner on *Google Scholar* originally made the list based on citation alone (in the top 25 with ~887 citations). Alas, after closer inspection, the article that the citation was referring to in *School Psychology Review* did contain the correct author, yet the citation count on GS was somehow linked to the author’s book. As these databases are constantly being updated and edited, understandably issues such as these may arise. Furthermore, a few journals were not indexed in some of the databases nor did the databases extend all the way to the earliest years for all journals.

Previous researchers have alluded to the “snapshot” concept of citation analyses that are driven by citation count (Aylward et al., 2007; Price et. al., 2011), and the current study is no exception. All citation count, accessibility of articles, and frequencies reported, are associated with the specific moment in time the data were compiled. Even between the initial data collection and revision of the manuscript, when the primary author would return to GS or WoS to double check a publication, the citations would already be higher! Again, it is possible to draw conclusions by comparing these snapshots across multiple studies, but the field of publication and scholarly work is ever-changing and studies such as this one should be updated periodically.

By including an open-access database (i.e., Google Scholar), this study also attempted to gauge impact of articles not just on scholars and academics but also practitioners and clients.

Certainly, GS allows for ease of access for many publications and even citations from research in the gray literature. Despite this attempt, the definition of impact outside of citation-based metrics is still difficult to ascertain and another limitation of the current study. It is wonderful that a parent has the opportunity to access a research article about interventions for their child with autism, but it is unlikely this important scenario yields a direct effect on the article's scholarly impact by means of a citation. A similar situation may occur involving a practitioner who provides reference to an article in the recommendations of a psychological report.

Implications

With scientific research being more accessible than ever through electronic means, it is crucial that scholars approach the literature systematically, as not to feel overwhelmed. The implications of structured bibliometric analyses, such as this one, permit those in the field an opportunity to familiarize themselves with the whole of the field. Specifically, it is feasible to easily follow the work of productive authors for possible collaborations or to preview topics that are trending over the years. For those less acquainted to the field or looking to begin their own line of research, starting with highly cited articles would be a prudent venture.

Even further, using the free tools referenced in the current study and following the presented framework for both collecting a bibliometric dataset and navigating the subsequent citation network, one could acquire a more intimate understanding of any topic or field. Maintaining a historical perspective while actively exploring current networks of citations and publications allows a comprehensive outlook on scientific literature. Whether the goal is searching for the full coverage of a particular research topic or following a discreet path of citations to influential articles, the current study covers several approaches to achieving these goals.

Regarding the field of school psychology, highly cited articles at present are those that are either able to adequately synthesize large amounts of information (i.e., meta-analyses and narrative reviews), or remain influential over time (e.g., the three primary citation classics recognized above). Trending topics that are steadily gaining more exposure are related to bullying, teacher burnout, and student engagement. It speaks volumes about the field that the top articles focus on the wellbeing of the students, and by proxy, teachers and family. Researchers and practitioners alike should feel a sense of pride that the hallmark of school psychology has always been—and continues to be—with a focus on the students.

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Table 1
Comparison of Top Articles between Price et al. 2011 and Liu and Oakland 2016

CITE	AU	PUB	TI	JO	P-L	P10	TC	L-O	TLCS	TGCS
200	Hightower et al.	1986	The teacher-child rating scale: a brief objective measure of elementary children's school problem behaviors and competencies.	SPR	1	-	200	-	-	-
150	Birch and Ladd	1997	The teacher-child relationship and children's early school adjustment.	JSP	2	-	150	-	-	-
137	Sheridan and Gutkin	2000	The ecology of school psychology: examining and changing our paradigm for the 21st century.	SPR	13	1	89	1	98	137
129	Reimers, Wacker, and Koeppl	1987	Acceptability of behavioral interventions: a review of the literature.	SPR	3	-	129	-	-	-
115	Wood a	1967	Psychology, science of behavior.	JSP	4	-	115	-	-	-
113	Goodenow	1993	The psychological sense of school membership among	PITS	5	-	113	-	-	-
113	Gresham	1989	Assessment of treatment integrity in school consultation and preferential intervention.	SPR	5	-	113	-	-	-
108	Hennington et al.	1998	The role of relational aggression in identifying aggressive boys and girls.	JSP	37	4	60	10	54	108
105	Witt and Martens	1983	Assessing the acceptability of behavioral interventions used in classrooms.	PITS	7	-	105	-	-	-
105	Reschly	1988	Special education reform: school psychology revolution.	SPR	10	-	101	7	52	105
104	Kahn, Kehl, Jenson, and Clark	1990	Comparison of cognitive-behavioral relaxation and self- modeling interventions for depression among middle school students.	SPR	8	-	104	-	-	-
104	Bergan and Tombari	1976	Consultant skill and efficiency and implementation and outcomes of consultation.	SPR	8	-	104	-	-	-
101	Kaminski and Good	1996	Toward a technology for assessing basic early literacy skill	SPR	10	-	101	-	-	-
86	Reschly and Wilson	1995	School-psychology practitioners and faculty: 1986 to 1991-92: trends in demographics, roles, satisfaction, and system reform	SPR	20	-	78	3	69	86
84	Smith	1984	Practicing school - Psychologists - Their characteristics, activities, and populations served	PPRP	-	-	-	2	74	84
75	Meacham and Peckham	1978	School-psychologists at 3-quarters century - congruence between training, practice, preferred role and competence	JSP	21	-	73	4	55	75
73	Hutton, Dubes, and Muir	1992	Assessment practices of school psychologists: ten years later	SPR	27	-	65	5	56	73
72	Curtis et al.	1999	Demographic characteristics and professional practices in school psychology.	SPR	60	10	49	9	51	72
72	Gutkin and Conoley	1990	Reconceptualizing school-psychology from a service delivery perspective - implications for practice, training and research	JSP	45	-	55	8	51	72
66	Reschly	2000	The present and future status of school psychology in the United States	SPR	62	11	48	6	56	66

Table 1 (Continued)

CITE	AU	PUB	TI	JO	P-L	P10	TC	L-O	TLCS	TGCS
62	Burchinal et al.	2002	Development of academic skills from preschool through second grade: family and classroom predictors of developmental trajectories.	JSP	32	2	62	-	-	-
62	Craig et al.	2000	Observations of bullying in the playground and in the classroom.	SPI	32	2	62	-	-	-
60	Kratochwill and Stoiber	2002	Evidence-based interventions in school psychology: conceptual foundations of the Procedural and Coding Manual of Division 16 and the Society for the Study of School Psychology task force.	SPQ	37	4	60	-	-	-
58	Espeelage and Swearer	2003	Research on school bullying and victimization: what have we learned and where do we go from here?	SPR	41	6	58	-	-	-
55	Stoiber and Kratochwill	2000	Empirically supported interventions and school psychology: rationale and methodological issues: part I.	SPQ	45	7	55	-	-	-
52	Deno et al.	2001	Using curriculum-based measurement to establish growth standards for students with learning disabilities.	SPR	53	8	52	-	-	-
50	Torgesen	2002	The prevention of reading difficulties.	JSP	57	9	50	-	-	-

Note. CITE = total citation count from highest source; AU = author; PUB = publication year; JO = journal; P-L = Price et al. 2011 rank in the Legacy (top 100); P10 = Price et al. 2011 rank in the recent decade (1999-2009); TC = total citation from Price et al. 2011; L-O; Liu and Oakland 2016 rank; TLCS = total location citation score; TGCS = total global citation score; SPR = *School Psychology Review*; JSP = *Journal of School Psychology*; PITS = *Psychology in the Schools*; PPRP = *Professional Psychology - Research and Practice* (Previously titled *Professional Psychology*); SPI = *School Psychology International*; SPQ = *School Psychology Quarterly*.

Table 2
Descriptive information for school psychology generalist journals indexed in Google Scholar

Journal	Articles	Citations	<i>M</i>	<i>SD</i>	% with 0 citations
<i>Journal of School Psychology</i> (est. 1963)	2188	110588	50.54	133.64	15.31
<i>Psychology in the Schools</i> (est. 1964)	4276	130918	30.62	70.73	16.07
<i>School Psychology International</i> (est. 1979)	1463	44467	30.39	74.53	18.05
<i>School Psychology Quarterly</i> (est. 1986)	866	59113	68.26	133.22	7.97
<i>School Psychology Review</i> (est. 1972)	2006	124896	62.26	118.09	11.12
<i>Journal of Applied School Psychology</i> (est. 1984)	605	13740	22.71	53.09	9.75
<i>School Psychology Forum</i> (est. 2006)	157	1036	6.6	7.42	14.46
<i>Contemporary School Psychology</i> (est. 1996)	411	6490	15.79	51.31	20.68
<i>Canadian Journal of School Psychology</i> (est. 1985)	554	10015	18.08	46.01	21.12
<i>Trainers of School Psychologists</i> (est. 2009)	67	221	3.3	4.68	17.91
<i>International Journal of School & Educational Psychology</i> (est. 2013)	258	1285	4.98	7.23	23.64
Total for Google Scholar	12851	502769	39.12	96.46	15.02

Table 3
The 100 most highly cited articles from school psychology journals.

Rank	WoS	SCO	GS	Source	Authors	Title	Cont	T	Sub
1	884	981	2709	JSP	Hananken et al. (2006)	Burnout and work engagement among teachers	E	QT	CO
2	712	800	2471	JSP	Birch and Ladd (1997)	The teacher-child relationship and children's early school adjustment	E	QT	CO
3	649	729	1947	PTTS	Goodenow (1993)	The psychological sense of school membership among adolescents: Scale development and educational correlates	A	QT	C-C
4	586	676	1346	SPQ	Cook et al. (2010)	Predictors of bullying and victimization in childhood and adolescence: A meta-analytic investigation	E	QT	M-A
5	484	616	1690	SPR	Espelage and Swearer (2003)	Research on School Bullying and Victimization: What Have We Learned and Where Do We Go From Here?	E	N	ED
6	469	536	1606	PTTS	Appleton et al. (2008)	Student engagement with school: Critical conceptual and methodological issues of the construct	E	N	NR/T
7	504	545	1047	JSP	Baraldi and Enders (2010)	An introduction to modern missing data analyses	O	N	NR/T
8	397	457	1550	SPQ	Shermoff et al. (2003)	Student engagement in high school classrooms from the perspective of flow theory	E	QT	C-C
9	407	446	1486	JSP	Caprara et al. (2006)	Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level	E	QT	CO
10	384	469	1377	SPI	Li (2006)	Cyberbullying in schools: A research of gender differences	E	QT	C-C
11	342	395	1671	SPQ	Leech and Onwuegbuzie (2007)	An Array of Qualitative Data Analysis Tools: A Call for Data Analysis Triangulation	O	N	NR/T
12	503	519	864	JSP	Peugh (2010)	A practical guide to multilevel modeling	O	N	NR/T
13	395	455	1314	JSP	Appleton et al. (2006)	Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument	A	QT	CO
14	390	444	1209	SPR	Pianta and Stuhlman (2004)	Teacher-child relationships and children's success in the first years of school	E	QT	CO
15	399	430	1055	JSP	Gifford-Smith and Brownell (2003)	Childhood peer relationships: Social acceptance, friendships, and peer networks	E	N	NR/T
16	-	479	928	SPI	Huebner (1991)	Initial Development of the Student's Life Satisfaction Scale	A	QT	CO
17	331	388	1222	SPR	Skiba et al. (2011)	Race is not neutral: A national investigation of African American and Latino disproportionality in school discipline	E	QT	CO

Table 3 (Continued)

Rank	WoS	SCO	GS	Source	Authors	Title	Cont	T	Sub
18	361	413	1009	SPQ	Merrill et al. (2008)	How Effective Are School Bullying Intervention Programs? A Meta-Analysis of Intervention Research	I	QT	M-A
19	281	339	1367	SPR	Linnenbrink and Pintrich (2002)	Motivation as an enabler for academic success	E	N	NR/T
20	327	352	1036	SPR	Sugai and Horner (2006)	A promising approach for expanding and sustaining School-wide positive behavior support	I	N	NR/T
21	334	375	906	JSP	Burchinal et al. (2002)	Development of academic skills from preschool through second grade: Family and classroom predictors of developmental trajectories	E	QT	C-C
22	320	370	956	JSP	Baker (2006)	Contributions of teacher-child relationships to positive school adjustment during elementary school	E	QT	CO
23	333	353	882	JSP	Graziano et al. (2007)	The role of emotion regulation in children's early academic success	E	QT	CO
UR	–	–	877	CSP	Jimerson et al. (2003)	Toward an Understanding of Definitions and Measures of School Engagement and Related Terms	E	N	NR/T
24	315	362	765	SPQ	D'Augelli et al. (2002)	Incidence and mental health impact of sexual orientation victimization of lesbian, gay, and bisexual youths in high school	E	QT	C-C
25	269	340	878	SPI	Craig et al. (2000)	Observations of Bullying in the Playground and in the Classroom	E	QT	C-C
26	288	315	833	JSP	Froh et al. (2008)	Counting blessings in early adolescents: An experimental study of gratitude and subjective well-being	I	QT	C-E
27	283	304	824	JSP	Meece et al. (2006)	Gender and motivation	E	N	NR/T
28	334	–	611	SPR	Hightower et al. (1986)	The Teacher-Child Rating Scale: A brief objective measure of elementary children's school problem behaviors and competencies.	A	QT	C-C
29	240	277	937	JSP	Torgesen (2002)	The prevention of reading difficulties	I	N	NR/T
30	263	293	821	JSP	Urdan and Schoenfelder (2006)	Classroom effects on student motivation: Goal structures, social relationships, and competence beliefs	E	N	NR/T
31	255	306	799	SPR	Smith et al. (2004)	The effectiveness of whole-school antibullying programs: A synthesis of evaluation research	I	N	NR/T
32	–	280	825	CJSP	Craig and Pepler (1997)	Observations of bullying and victimization in the school yard	E	QT	C-C
33	257	–	776	SPR	Gresham (1989)	Assessment of treatment integrity in school consultation and prereferral intervention.	C	N	NR/T
34	270	310	651	PTTS	Goodenow et al. (2006)	School support groups, other school factors, and the safety of sexual minority adolescents	E	QT	CO

Table 3 (Continued)

Rank	WoS	SCO	GS	Source	Authors	Title	Cont	T	Sub
35	245	298	741	SPR	Bradshaw et al. (2007)	Bullying and peer victimization at school: Perceptual Differences Between Students and School Staff	E	QT	CO
36	161	–	1005	SPR	Batsche and Knoff (1994)	Bullies and Their Victims: Understanding a Pervasive Problem in the Schools	E	N	NR/T
37	271	291	647	JSP	Silver et al. (2005)	Trajectories of classroom externalizing behavior: Contributions of child characteristics, family characteristics, and the teacher-child relationship during the school transition	E	QT	C-C
38	220	238	786	PTTS	Cleary and Zimmerman (2004)	Self-regulation empowerment program: A school-based program to enhance self-regulated and self-motivated cycles of student learning	I	QL	CS
39	218	241	780	JSP	Kohl et al. (2000)	Parent involvement in school conceptualizing multiple dimensions and their relations with family and demographic risk factors	E	QT	C-C
40	196	232	855	JSP	Miedel and Reynolds (1999)	Parent Involvement in Early Intervention for Disadvantaged Children: Does It Matter?	E	QT	CO
41	232	273	633	SPR	Espelage et al. (2008)	Homophobic teasing, psychological outcomes, and sexual orientation among high school students: What influence do parents and schools have?	E	QT	C-C
42	190	252	790	SPQ	Malecki and Elliott (2002)	Children's social behaviors as predictors of academic achievement: A longitudinal analysis	E	QT	C-C
43	220	251	702	SPR	Fantuzzo et al. (2004)	Multiple dimensions of family involvement and their relations to behavioral and learning competencies for Urban, low-income children	E	QT	CO
44	222	–	677	SPR	Fuchs et al. (1993)	Formative evaluation of academic progress: How much growth can we expect?	A	QT	C-C
45	222	250	696	SPR	Elias et al. (2003)	Implementation, Sustainability, and Scaling up of Social-Emotional and Academic Innovations in Public Schools	I	N	NR/T
46	210	233	773	JSP	Jimerson et al. (2000)	A prospective longitudinal study of high school dropouts examining multiple predictors across development	E	QT	C-C
UR	–	–	654	SPQ	Christenson et al. (1992)	Family factors and student achievement: An avenue to increase students' success.	E	N	NR/T
47	–	238	684	SPI	Hoover et al. (1992)	Bullying: Perceptions of Adolescent Victims in the Midwestern USA	E	QT	C-C

Table 3 (Continued)

Rank	WoS	SCO	GS	Source	Authors	Title	Cont	T	Sub
48	230	257	590	JSP	Hughes et al. (2001)	Further support for the developmental significance of the quality of the teacher - Student relationship	E	QT	C-C
49	208	251	669	JSP	McKown and Weinstein (2008)	Teacher expectations, classroom context, and the achievement gap	E	QT	CO
50	–	226	696	JASP	Napoli et al. (2005)	Mindfulness training for elementary school students: The attention academy	I	QT	C-E
51	212	252	642	SPQ	Malecki and Demaray (2003)	What Type of Support do they Need? Investigating Student Adjustment as Related to Emotional, Informational, Appraisal, and Instrumental Support	E	QT	C-C
52	213	218	704	SPR	Kaminski and Good (1996)	Toward a technology for assessing basic early literacy skills	A	QT	C-E
53	–	222	686	JASP	Flook et al. (2010)	Effects of mindful awareness practices on executive functions in elementary school children	I	QT	C-E
UR	–	–	622	SPQ	Huebner (1991)	Correlates of life satisfaction in children.	E	QT	CO
54	217	243	570	SPR	Noell et al. (2005)	Treatment implementation following behavioral consultation in schools: A comparison of three follow-up strategies	C	QT	C-E
55	218	241	564	SPQ	Gilman and Huebner (2003)	A review of life satisfaction research with children and adolescents	E	N	NR/T
56	185	206	751	SPR	Jimerson (2001)	Meta-analysis of grade retention research: Implications for practice in the 21st century	E	QT	M-A
57	222	246	535	SPQ	Soft and Pianta (2001)	Teachers' perceptions of their relationships with students: Effects of child age, gender, and ethnicity of teachers and children	E	QT	CO
58	207	229	621	JSP	Kupernine et al. (2001)	School social climate and individual differences in vulnerability to psychopathology among middle school students	E	QT	C-C
59	220	247	524	SPQ	Card and Hodges (2008)	Peer Victimization Among Schoolchildren: Correlations, Causes, Consequences, and Considerations in Assessment and Intervention	E	N	NR/T
60	193	214	672	PTTS	Malecki and Demaray (2002)	Measuring perceived social support: Development of the Child and Adolescent Social Support Scale (CASSS)	A	QT	C-C
61	219	230	534	SPR	Suldo and Shaffer (2008)	Looking Beyond Psychopathology: The Dual-Factor Model of Mental Health in Youth	E	QT	C-C
62	200	212	577	JSP	Welsh et al. (2001)	Linkages between children's social and academic competence: A longitudinal analysis	E	QT	C-C
63	201	229	527	SPR	Polanin et al. (2012)	A meta-analysis of school-based bullying prevention programs' effects on bystander intervention behavior	I	QT	M-A

Table 3 (Continued)

Rank	WoS	SCO	GS	Source	Authors	Title	Cont	T	Sub
64	190	216	592	PTTS	Martin and Marsh (2006)	Academic resilience and its psychological and educational correlates: A construct validity approach	A	QT	CO
65	196	212	555	PTTS	Stecker et al. (2005)	Using curriculum-based measurement to improve student achievement: Review of research	A	N	NR/T
66	162	182	732	PTTS	Schunk (1985)	Self-efficacy and classroom learning	E	N	NR/T
67	–	270	412	SPI	Bracken and Barona (1991)	State of the Art Procedures for Translating, Validating and Using Psychoeducational Tests in Cross-Cultural Assessment	A	N	NR/T
68	171	228	573	SPR	DuPaul and Eckert (1997)	The effects of school-based interventions for attention deficit hyperactivity disorder: A meta-Analysis	I	QT	M-A
69	196	221	514	SPQ	Suldo and Huebner (2004)	Does life satisfaction moderate the effects of stressful life events on psychopathological behavior during adolescence?	E	QT	C-C
70	162	206	648	SPR	Demaray and Malecki (2003)	Perceptions of the Frequency and Importance of Social Support by Students Classified as Victims, Bullies, and Bully/Victims in an Urban Middle School	E	QT	C-C
71	182	223	535	JSP	Rutter and Maughan (2002)	School of effectiveness findings 1979-2002	E	N	H
72	188	215	530	JSP	Lynch and Cicchetti (1997)	Children's relationships with adults and peers: An examination of elementary and junior high school students	E	QT	C-C
73	190	208	542	SPQ	Reinke et al. (2011)	Supporting Children's Mental Health in Schools: Teacher Perceptions of Needs, Roles, and Barriers	P	QT	C-C
74	180	197	595	SPQ	Baker et al. (2008)	The Teacher-Student Relationship as a Developmental Context for Children With Internalizing or Externalizing Behavior Problems	E	QT	C-C
75	205	227	432	JSP	Glover and Albers (2007)	Considerations for evaluating universal screening assessments	A	N	NR/T
76	177	192	597	SPR	Deno et al. (2001)	Using curriculum-based measurement to establish growth standards for students with learning disabilities	A	QT	CO
77	182	209	538	SPR	Stage and Quiroz (1997)	A meta-analysis of interventions to decrease disruptive classroom behavior in public education settings	I	QT	M-A
78	179	218	521	SPR	Sheridan and Gutkin (2000)	The ecology of school psychology: Examining and changing our paradigm for the 21st century	P	N	NR/T
79	162	174	674	PTTS	Jimenson et al. (2002)	Winning the battle and losing the war: Examining the relation between grade retention and dropping out of high school	E	N	NR/T
UR	–	–	504	SPR	Bandura (1975)	Analysis of Modeling Processes	E	N	NR/T

Table 3 (Continued)

Rank	WoS	SCO	GS	Source	Authors	Title	Cont	T	Sub
84	184	–	464	SPR	Shinn et al. (1992)	Curriculum-Based Measurement of Oral Reading Fluency - A Confirmatory Analysis of its Relation to Reading	A	QT	CO
81	167	193	514	PTTS	Brackett et al. (2010)	Emotion-regulation ability, burnout, and job satisfaction among British secondary-school teachers	E	QT	CO
82	150	179	592	PTTS	McWayne et al. (2004)	A multivariate examination of parent involvement and the social and academic competencies of urban kindergarten children	E	QT	CO
83	156	188	530	SPI	Craig et al. (2000)	Prospective Teachers' Attitudes Toward Bullying and Victimization	E	QT	C-C
84	128	–	602	SPR	Keith et al. (1993)	Does Parental Involvement Affect 8th-Grade Student-Achievement - Structural-Analysis of National Data	E	QT	CO
85	187	–	411	SPR	Reimers et al. (1987)	Acceptability of Behavioral Interventions: A Review of the Literature.	I	N	NR/T
86	173	188	447	JSP	Dew and Huebner (1994)	Adolescents' perceived quality of life: An exploratory investigation	A	QT	C-C
87	161	173	512	JSP	Murray and Greenberg (2000)	Children's relationship with teachers and bonds with school an investigation of patterns and correlates in middle childhood	E	QT	C-C
88	139	172	563	SPQ	Leech and Onwuegbuzie (2008)	Qualitative Data Analysis: A Compendium of Techniques and a Framework for Selection for School Psychology Research and Beyond	O	N	NR/T
89	123	–	580	SPR	Singh et al. (1995)	The Effects of Four Components of Parental Involvement on Eighth-Grade Student Achievement: Structural Analysis of NELS-88 Data.	E	QT	CO
90	165	185	428	SPR	Davidson and Demaray (2007)	Social support as a moderator between victimization and internalizing-externalizing distress from bullying	E	QT	C-C
91	164	186	423	SPR	Rodkin and Hodges (2003)	Bullies and Victims in the Peer Ecology: Four Questions for Psychologists and School Professionals	E	N	NR/T
92	143	174	502	PTTS	McCullough et al. (2000)	Life events, self-concept, and adolescents' positive subjective well-being	E	QT	CO
93	142	182	474	PTTS	Baird (1980)	Current trends in college cheating	E	QT	CO
94	145	165	503	SPR	Greenwood et al. (2002)	Academic engagement: current perspectives in research and practice.	E	QT	C-C
95	150	161	496	JSP	Anderson et al. (2004)	Check & Connect: The importance of relationships for promoting engagement with school	I	QT	C-C

Table 3 (Continued)

Rank	WoS	SCO	GS	Source	Authors	Title	Cont	T	Sub
96	130	157	562	SPR	Doll and Lyon (1998)	Risk and resilience: Implications for the delivery of educational and mental health services in schools	E	N	NR/T
97	128	145	598	PITS	Choi (2005)	Self-efficacy and self-concept as predictors of college students' academic performance	E	QT	C-C
98	147	169	480	SPI	Huebner et al. (2000)	Levels and Demographic Correlates of Adolescent Life Satisfaction Reports	E	QT	C-C
99	168	187	371	SPR	Sanetti and Kratochwill (2009)	Toward developing a science of treatment integrity: Introduction to the special series	I	N	NR/T
100	124	134	625	JSP	Adams and Christenson (2000)	Trust and the family-school relationship examination of parent-teacher differences in elementary and secondary grades	E	QT	C-C

Note. UR = articles was unranked due to exclusionary criteria (i.e., indexed in only one database); WoS = citation count in Web of Science; SCO = citation count in Scopus; GS = citation count for Google Scholar; Cont = content categories; T = article type; Sub = article subtype; SPR = *School Psychology Review*; JSP = *Journal of School Psychology*; PITS = *Psychology in the Schools*; JASP = *Journal of Applied School Psychology*; SPI = *School Psychology International*; SPQ = *School Psychology Quarterly*; CJSP = *Canadian Journal of School Psychology*; CSP = *Contemporary School Psychology*; A = assessment; I = intervention; P = professional issues; C = consultation; E = explicative; O = other; QT = quantitative research articles; QL = qualitative research articles; N = narrative articles; D = descriptive; CO = correlational; M-A = meta-analysis; C-C = causal-comparative; C-E = causal-experimental; CS = case study; NR/T = narrative reviews, theoretical, or professional development articles; ED = editorials; and H = historical articles.

Table 4
The 25 most highly-cited articles from school psychology journals from 2009 to 2019.

Rank	WoS	SCO	GS	Source	Authors	Title	Cont	T	Sub
1	586	676	1346	SPQ	Cook et al. (2010)	Predictors of bullying and victimization in childhood and adolescence: A meta-analytic investigation	E	QT	M-A
2	504	545	1047	JSP	Baraldi and Enders (2010)	An introduction to modern missing data analyses	O	N	NR/T
3	503	519	864	JSP	Peugh (2010)	A practical guide to multilevel modeling	O	N	NR/T
4	331	388	1222	SPR	Skiba et al. (2011)	Race is not neutral: A national investigation of African American and Latino disproportionality in school discipline	E	QT	CO
5	–	222	686	JASP	Flook et al. (2010)	Effects of mindful awareness practices on executive functions in elementary school children	I	QT	C-E
6	201	229	527	SPR	Polanin et al. (2012)	A meta-analysis of school-based bullying prevention programs' effects on bystander intervention behavior	I	QT	M-A
7	190	208	542	SPQ	Reinke et al. (2011)	Supporting Children's Mental Health in Schools: Teacher Perceptions of Needs, Roles, and Barriers	P	QT	C-C
8	167	193	514	PITS	Brackett et al. (2010)	Emotion-regulation ability, burnout, and job satisfaction among British secondary-school teachers	E	QT	CO
9	168	187	371	SPR	Sanetti and Kratochwill (2009)	Toward developing a science of treatment integrity: Introduction to the special series	I	N	NR/T
10	154	169	431	SPQ	Rivers et al. (2009)	Observing Bullying at School: The Mental Health Implications of Witness Status	E	QT	C-C
11	142	170	402	PITS	Sklad et al. (2012)	Effectiveness of school-based universal social, emotional, and behavioral programs: Do they enhance students' development in the area of skill, behavior, and adjustment?	I	QT	M-A
12	87	103	683	SPQ	Leech and Onwuegbuzie (2011)	Beyond Constant Comparison Qualitative Data Analysis: Using NVivo	O	N	NR/T
13	138	149	396	PITS	Flaspohler et al. (2009)	Stand by me: The effects of peer and teacher support in mitigating the impact of bullying on quality of life	E	QT	C-C
14	136	157	371	JSP	Eliot et al. (2010)	Supportive school climate and student willingness to seek help for bullying and threats of violence	E	QT	CO
15	120	150	405	SP1	Cassidy et al. (2009)	Sticks and stones can break my bones, but how can pixels hurt me?: Students' experiences with cyber-bullying	E	QT	D
16	142	162	299	JSP	Reschly et al. (2009)	Curriculum-Based Measurement Oral Reading as an indicator of reading achievement: A meta-analysis of the correlational evidence	E	QT	M-A

Table 4 (Continued)

Rank	WoS	SCO	GS	Source	Authors	Title	Cont	T	Sub
17	128	142	375	SPQ	Jennings et al. (2013)	Improving classroom learning environments by cultivating awareness and resilience in education (CARE): Results of a randomized controlled trial	I	QT	C-E
18	122	154	334	PITS	Dempsey et al. (2009)	Differences between peer victimization in cyber and physical settings and associated psychosocial adjustment in early adolescence	E	QT	CO
19	138	136	291	JSP	Huang (2011)	Self-concept and academic achievement: A meta-analysis of longitudinal relations	E	QT	M-A
20	132	131	296	JSP	Wang et al. (2011)	The assessment of school engagement: Examining dimensionality and measurement invariance by gender and race/ethnicity	E	QT	CO
21	114	134	326	PITS	O'Brennan et al. (2009)	Examining developmental differences in the social-emotional problems among frequent bullies, victims, and bully/victims	E	QT	C-C
22	126	138	277	PITS	Dimitrovich et al. (2010)	Integrated models of school-based prevention: Logic and theory	I	N	NR/T
23	86	154	332	SPQ	Reynolds and Shaywitz (2009)	Response to Intervention: Ready or not? Or, from wait-to-fail to watch-them-fail.	I	N	NR/T
24	99	117	376	SPR	Allen et al. (2013)	Observations of effective teacher-student interactions in secondary school classrooms: Predicting student achievement with the classroom assessment scoring system-secondary	E	QT	CO
25	120	123	275	SPI	Owens et al. (2012)	Anxiety and depression in academic performance: An exploration of the mediating factors of worry and working memory	E	QT	CO

Note. WoS = citation count in Web of Science; SCO = citation count in Scopus; GS = citation count for Google Scholar; Cont = content categories; T = article type; Sub = article subtype; SPR = *School Psychology Review*; JSP = *Journal of School Psychology*; PITS = *Psychology in the Schools*; JASP = *Journal of Applied School Psychology*; SPI = *School Psychology International*; SPQ = *School Psychology Quarterly*; A = assessment; I = intervention; P = professional issues; C = consultation; E = explicative; O = other; QT = quantitative research articles; QL = qualitative research articles; N = narrative articles; D = descriptive; CO = correlational; M-A = meta-analysis; C-C = causal-comparative; C-E = causal-experimental; NR/T = narrative reviews, theoretical, or professional development articles; ED = editorials; and H = historical articles.

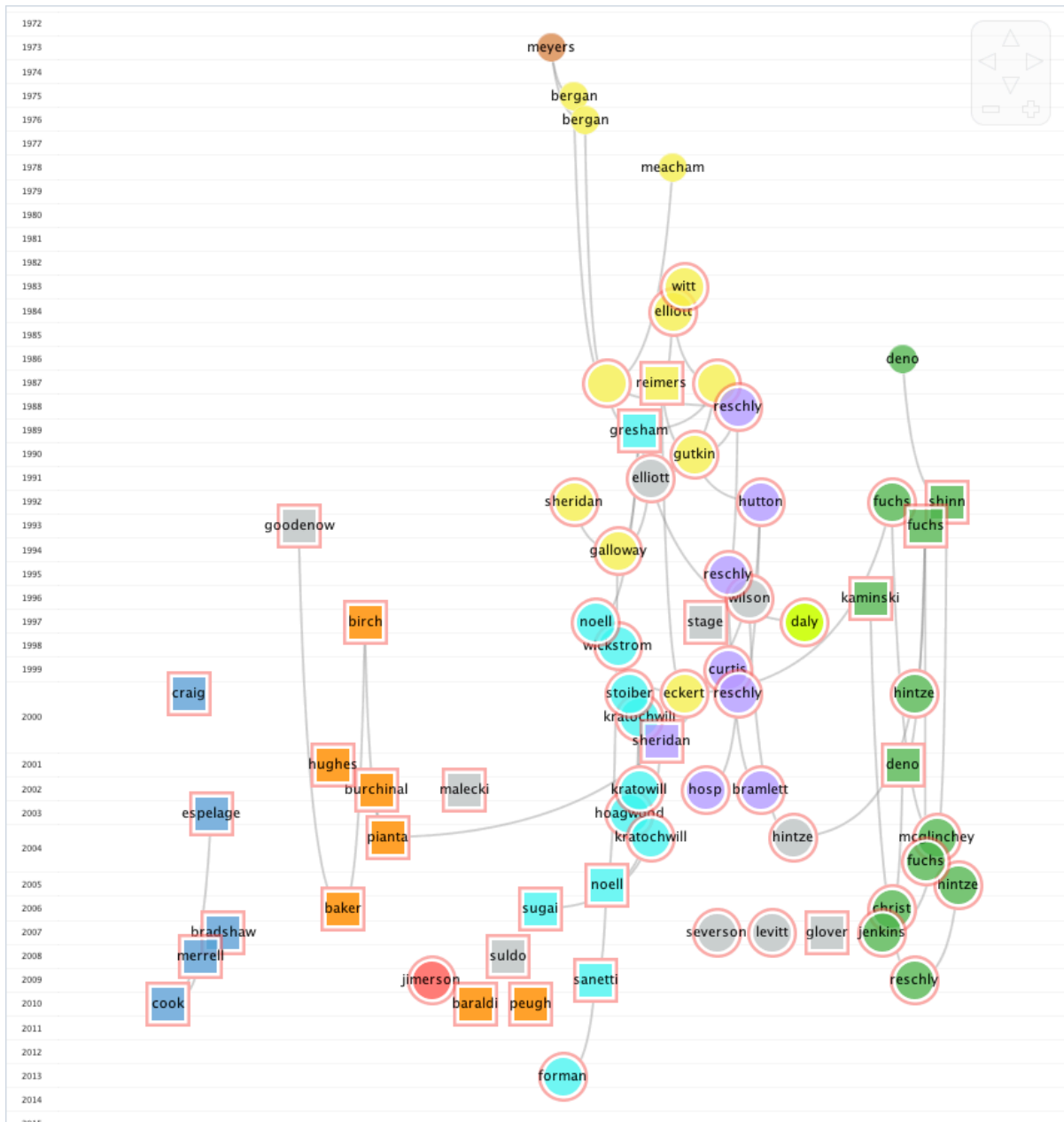


Figure 1. Citation network map of the legacy top 100 articles and selected articles (including intermediate articles). A cluster analysis placed publications into groups (represented by color) and squares highlight the legacy articles.

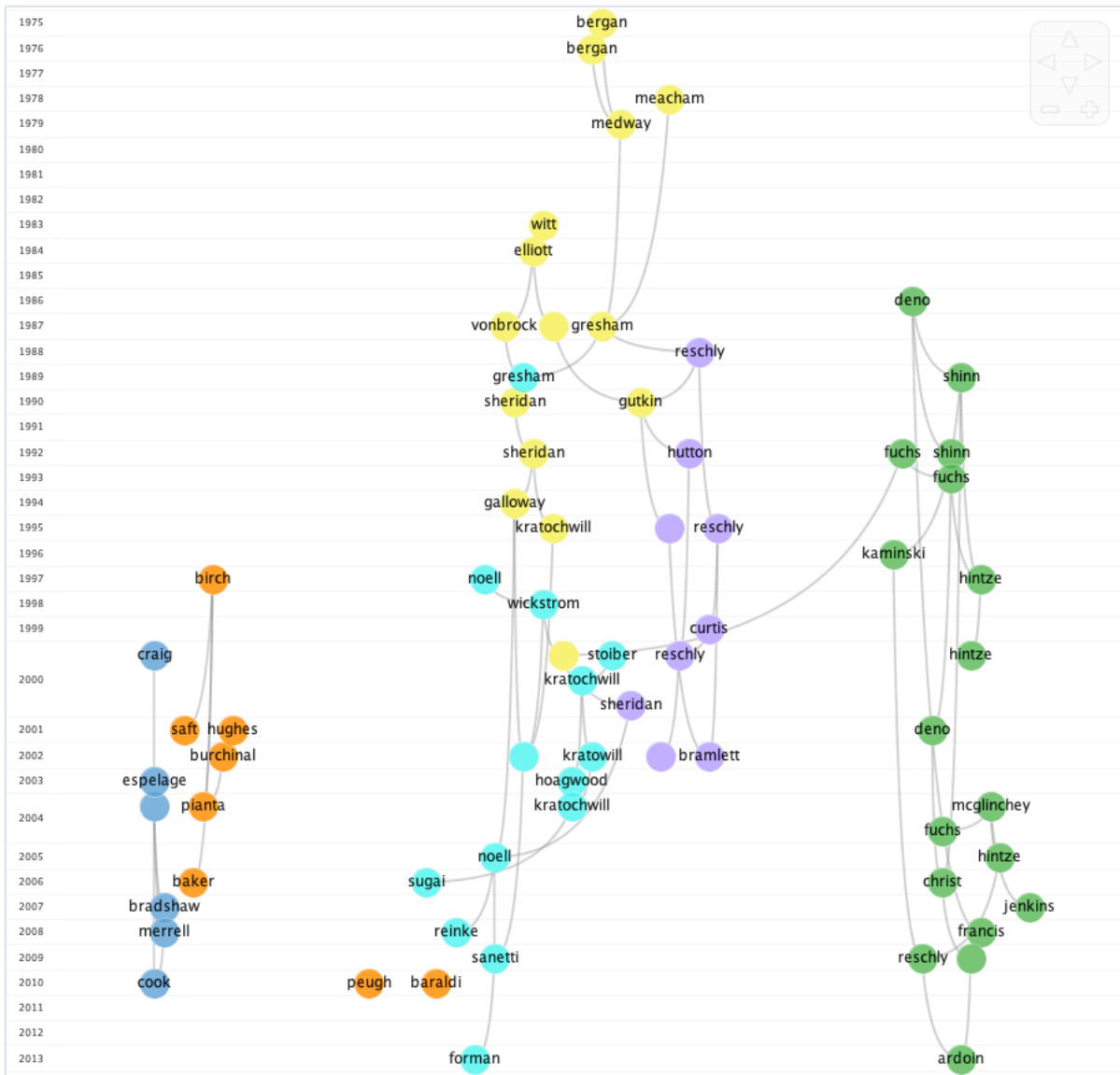


Figure 2. Output of the drill-down including just the six defined groups: group 1 (blue, bully group); group 2 (green, CBM group); group 3 (purple, professional issues group); group 4 (orange, teacher-child relationship group); group 5 (yellow, behavioral intervention/consultation group); and group 8 (cyan, treatment integrity group).

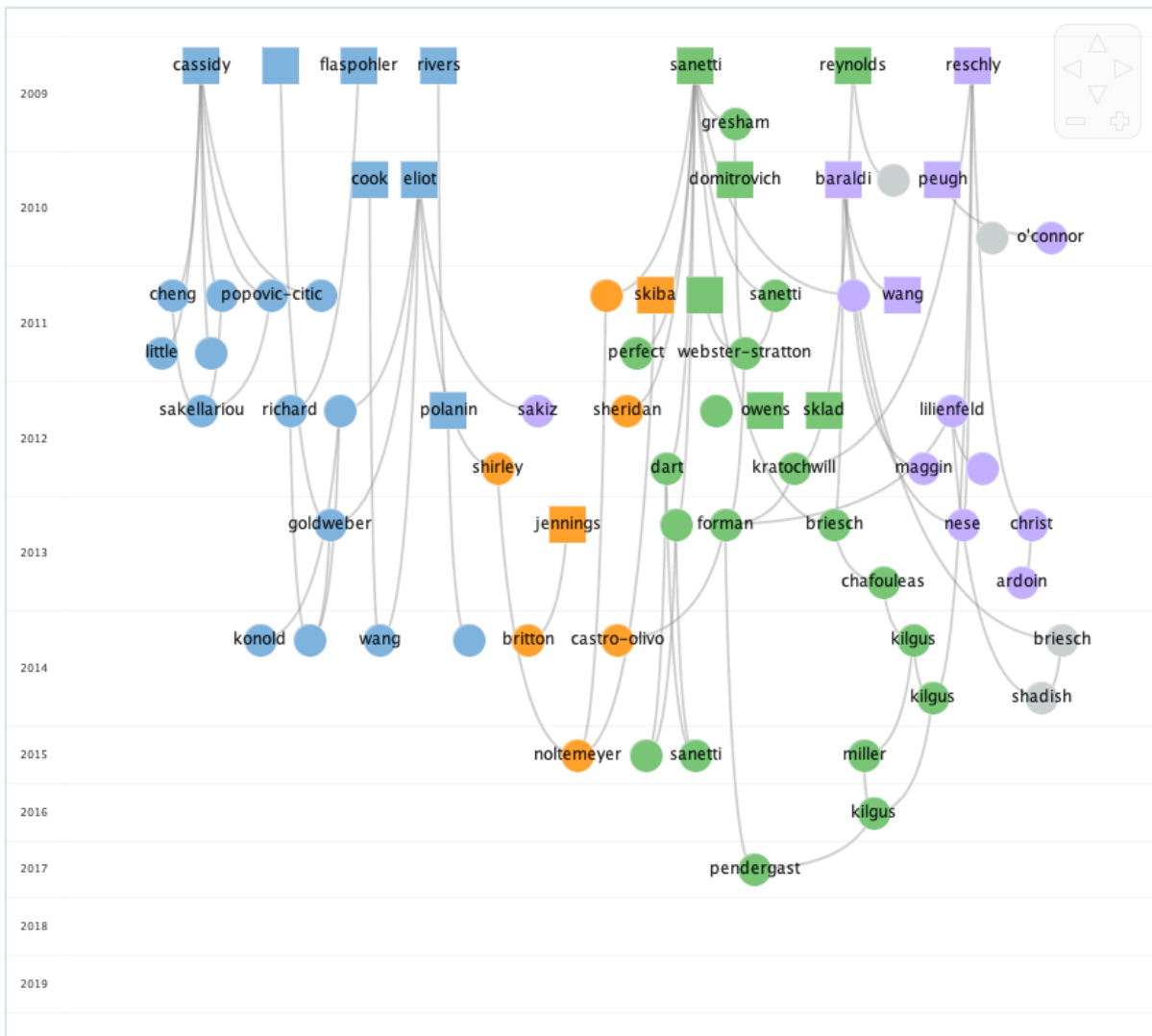


Figure 4. Citation network visualization of the top 25 recency articles. A cluster analysis identified four major groups covering: bullying (group 1, blue); school based interventions (group 2, green); statistics articles (group 3, purple); and a “catch-all” group including topics such as mindfulness, race, emotional-regulation, school climate, and various professional issues (group 4, orange).

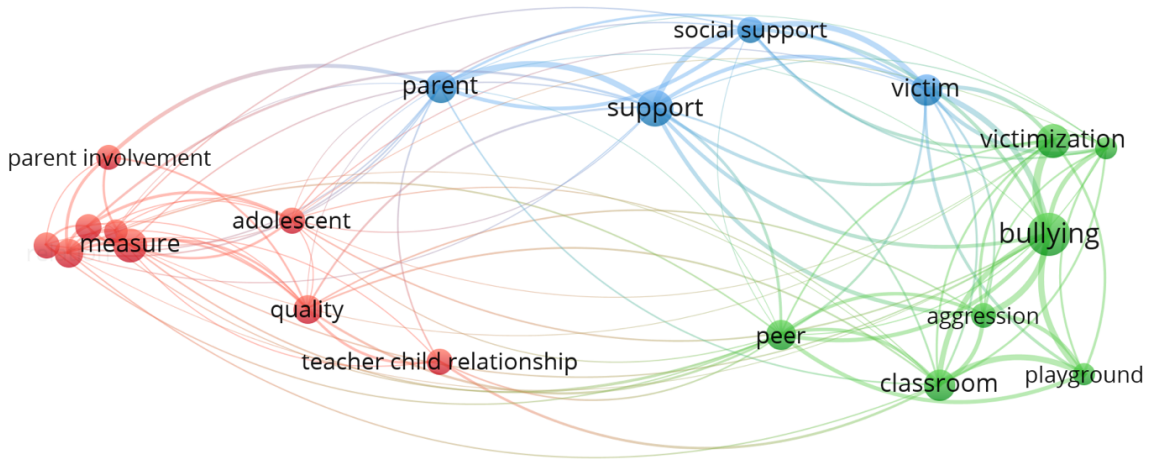


Figure 5. Visualization of a text-based network map of the legacy top 100 articles. Line width indicates the citation link strength and the circle size represents the number of occurrences of the word or topic. Clusters are represented by different colors.

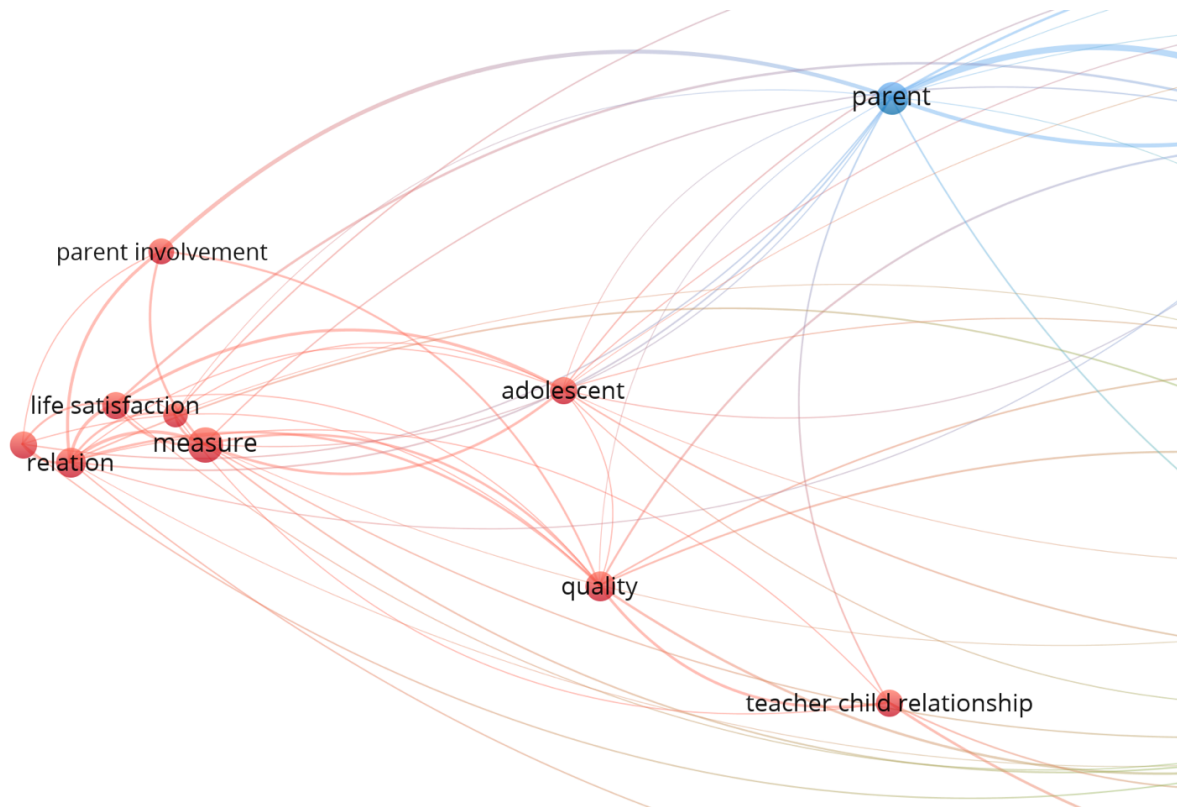


Figure 5.1. Detailed visualization of cluster 1 (red) containing these terms: *academic achievement, adolescent, life satisfaction, measure, measurement, parent involvement, quality, relation, and teacher child relations.*

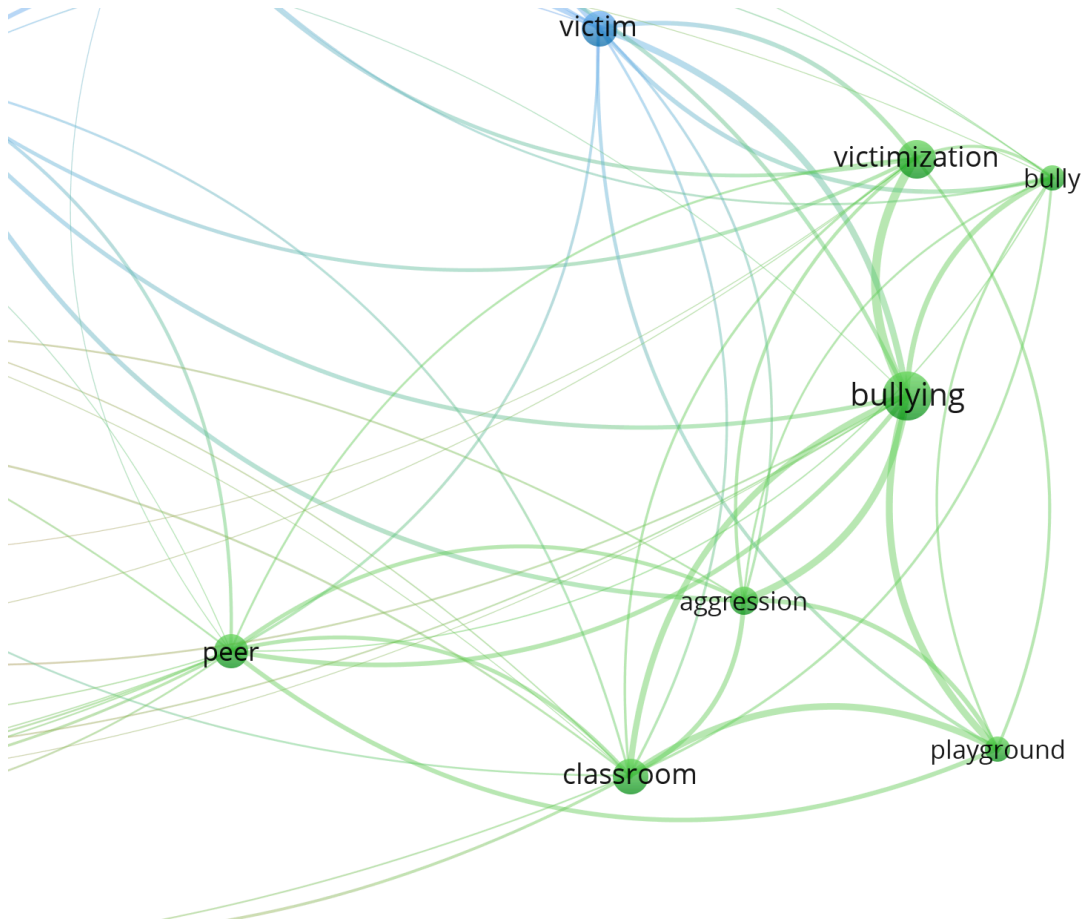


Figure 5.2. Detailed visualization of cluster 2 (green) containing these terms: *aggression, bully, bullying, classroom, peer, playground, and victimization.*

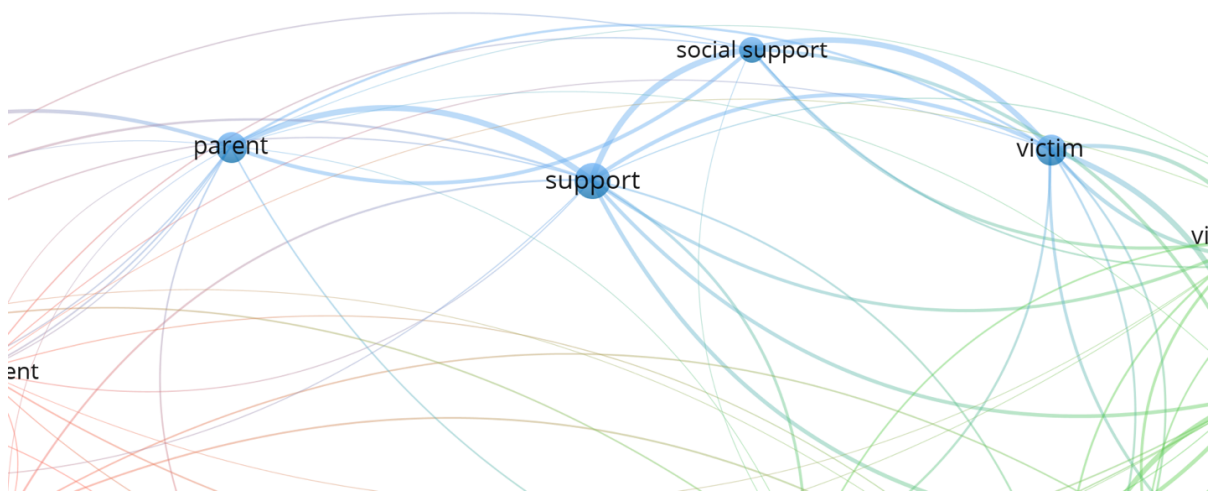


Figure 5.3. Detailed visualization of cluster 3 (blue) containing these terms: *parent, social support, support, and victim.*

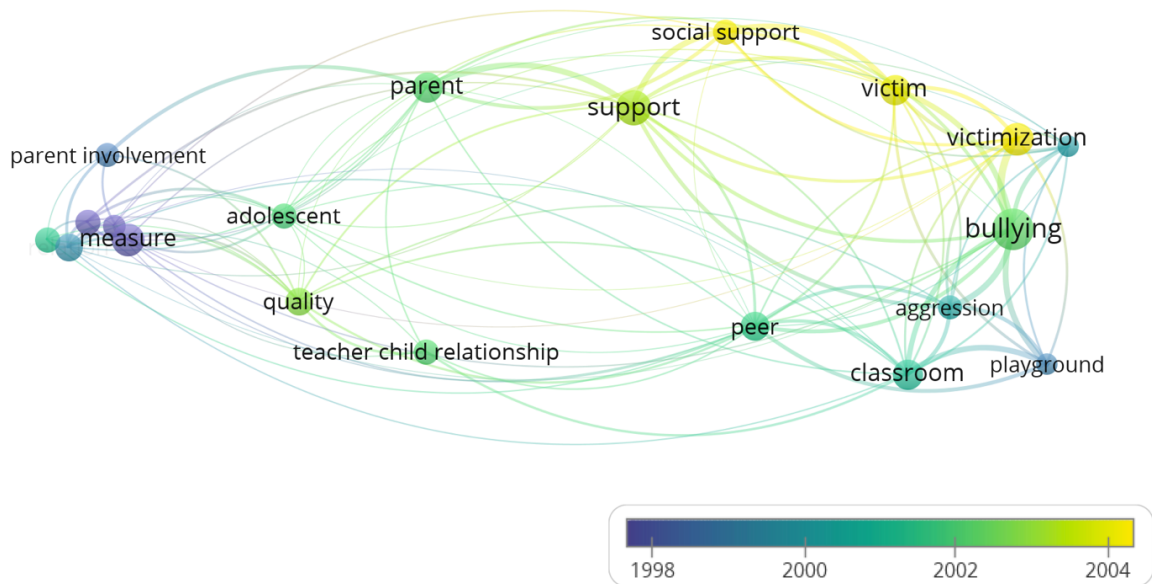


Figure 6. Legacy top 100 articles text analysis network map represented by year of topic or keyword.

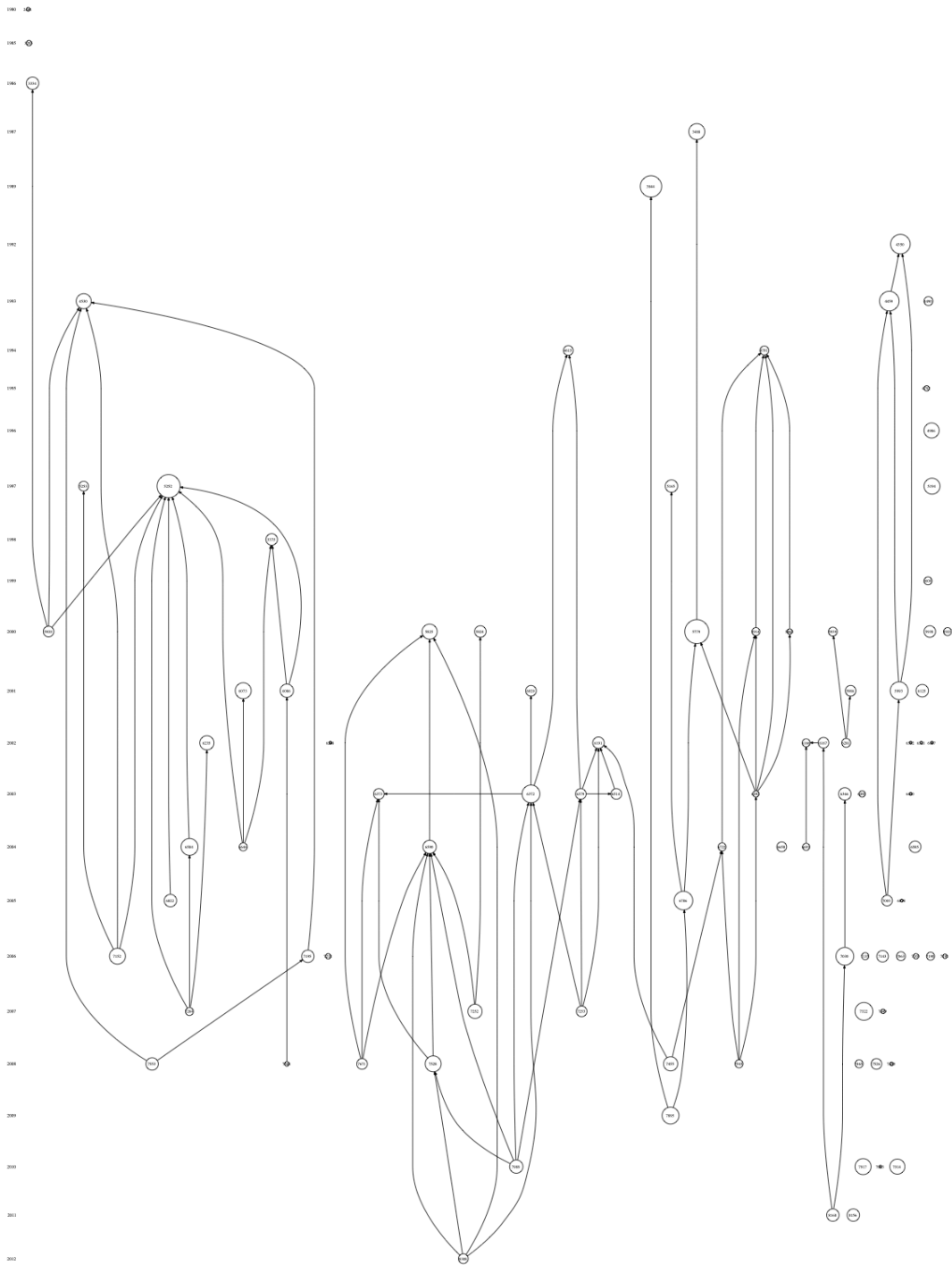


Figure 7. A full historiograph of the legacy top 100 articles. The circular nodes represent publication and the size is based on their Local Citation Score. X axis are years (more recent years at the bottom) and nodes are distributed across the y axis for maximum visibility.

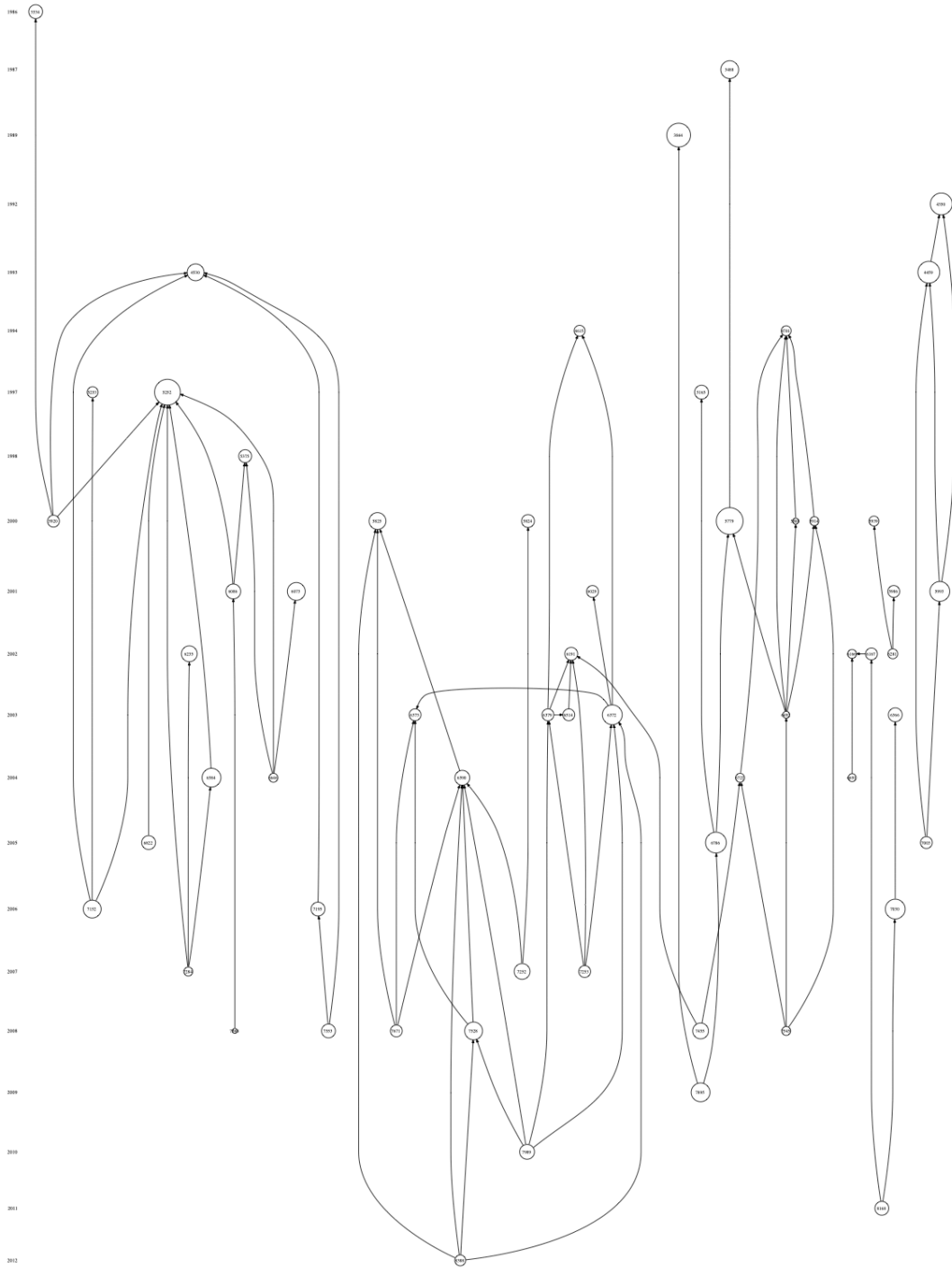


Figure 8. Historiograph of legacy top 100 articles with unconnected publications removed.

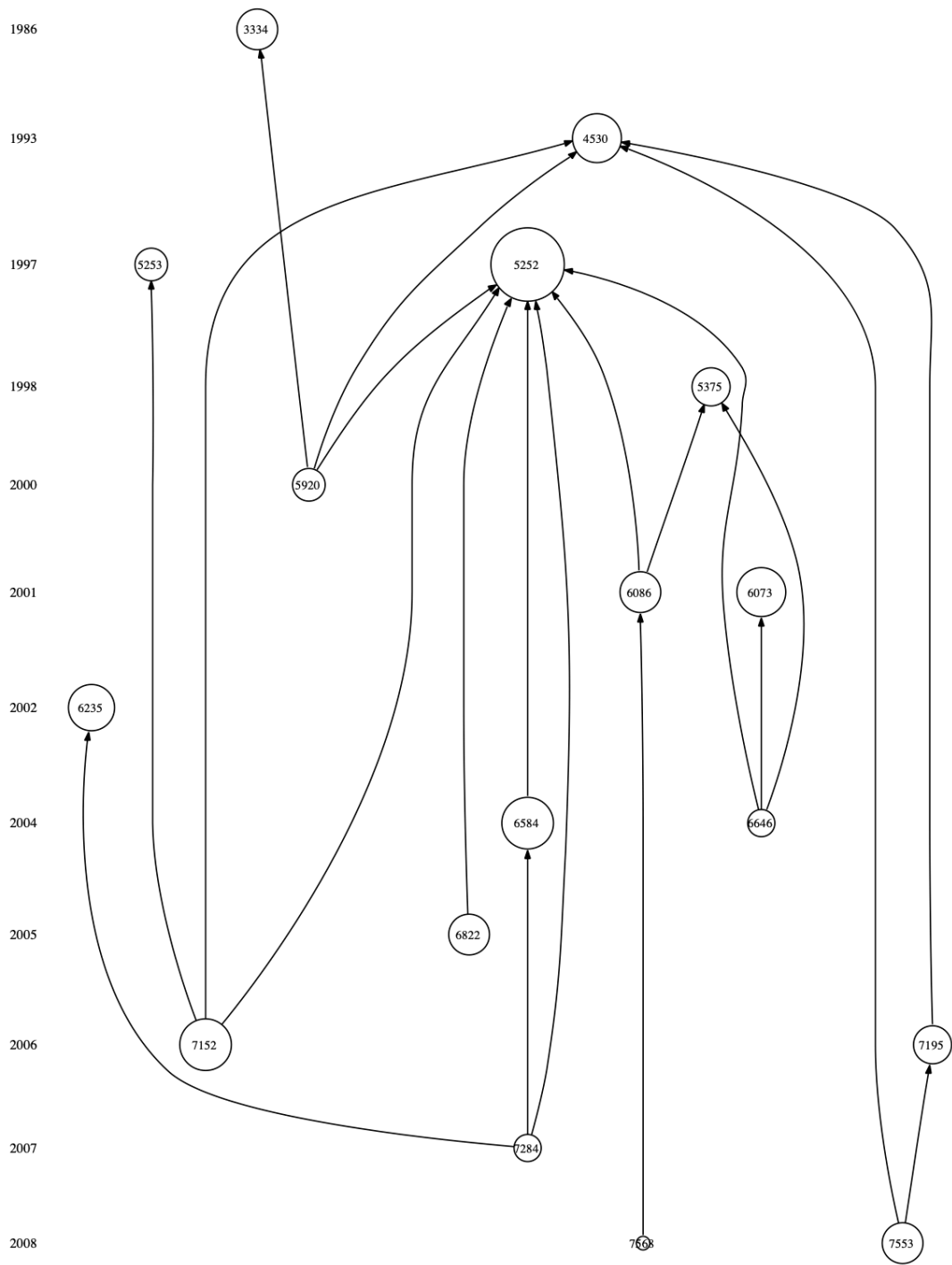


Figure 8.1. Focused view of the teacher-child relationship group (left group of Figure 8).

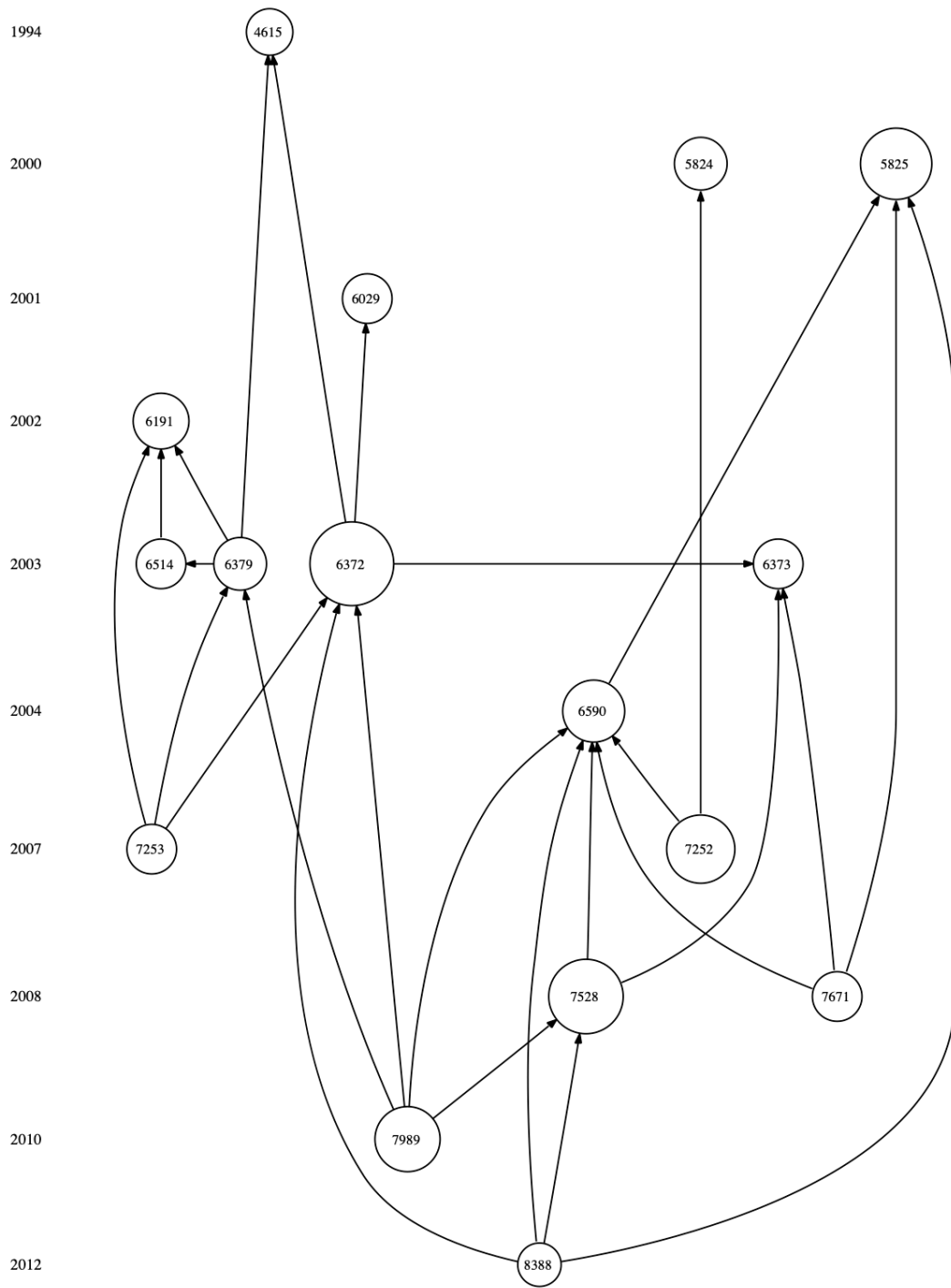


Figure 8.2. Focused view of the bullying group (center group of Figure 8).

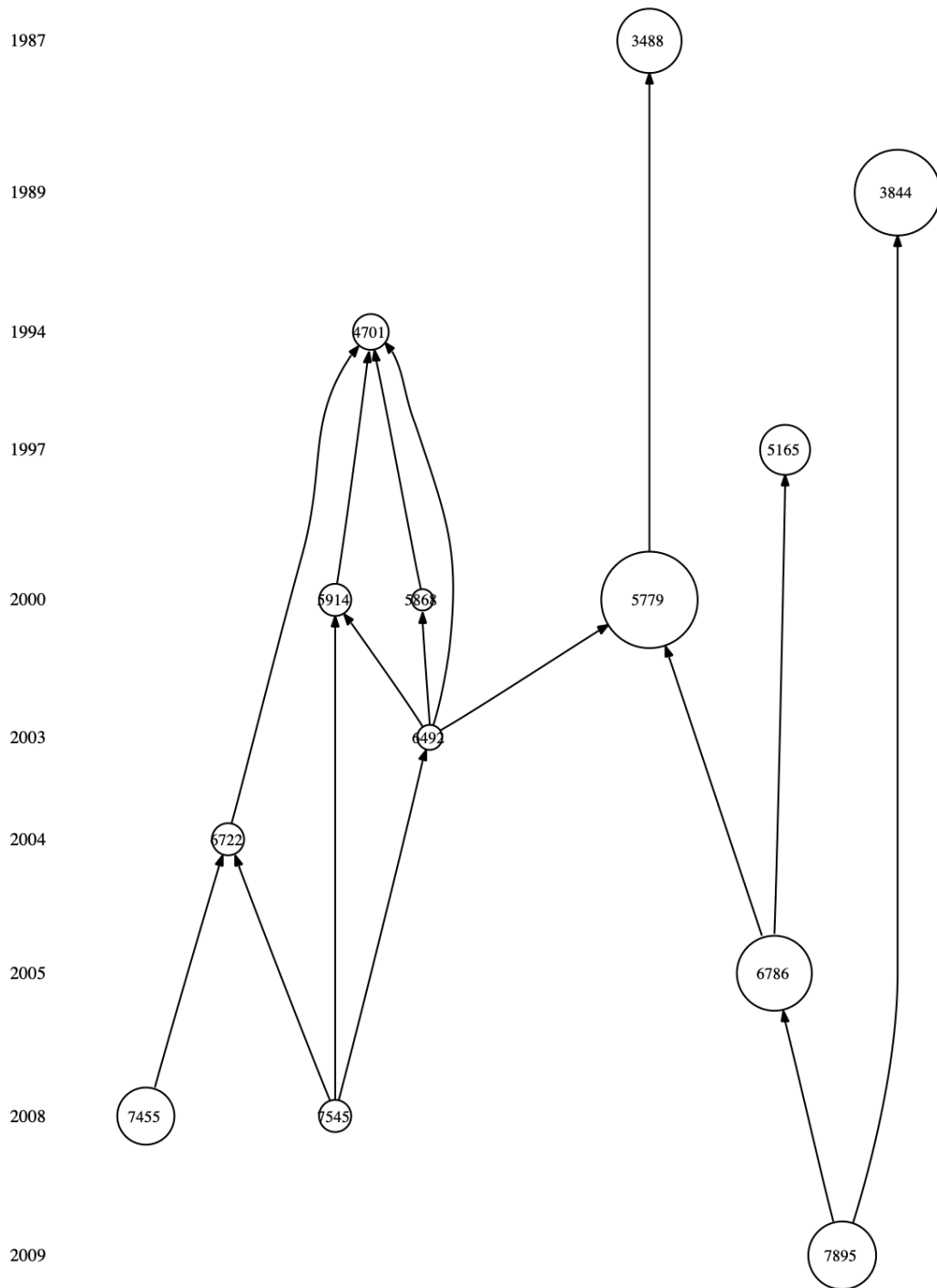


Figure 8.2. Focused view of the combination group (right group of Figure 8) containing topics on treatment integrity, behavioral intervention/consultation, professional issues, life-satisfaction, and quality of life in adolescents.