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ECOLOGICAL MODEL IN SCHOOL PSYCHOLOGY: WHAT ARE THE
HISTORICAL TRENDS IN SCHOOL PSYCHOLOGY RESEARCH?

By

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Ecological Model in School Psychology: What Are the Historical Trends in School Psychology

Research?

Abstract

More than 25 years ago, Conoley and Gutkin (1995) asserted the need for more adult-focused research and related practices in school psychology. In commemorating the 25-year anniversary of Conoley and Gutkin in a special issue in *School Psychology (SP)*, Conoley et al. (2020) revisited some of their prior assertions, such as school psychology practitioners and researchers would benefit from “adopting an ecological or public health approach ” (p. 369). They have preserved their position on the importance of adult-focused research and related practices in order to develop and maintain health-promoting systems for students. Conoley et al. concluded that school psychology has not moved from individual-focused practices and has continued to miss the mark in providing optimal services to students from a systems perspective. The current study aims to determine the prevalence of research focused on the ecological model (advocated by Conoley et al., 2020) in school psychology journal articles.

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Models of School Psychology Research and Practice

School psychologists are, in part, renowned for having an extensive professional “toolbox” of skills. This toolbox customarily entails competencies in teacher and parent consultation, counseling, psychoeducational assessment, student-centered therapy, classroom- and home-based behavioral intervention, and direct academic intervention. School psychologists routinely provide direct educational and mental health services to students in conjunction with collaborating with parents, educators, and other professionals to foster a protective and nurturing learning environment for students (National Association of School Psychologists [NASP], 2010). With this goal in mind, school psychologists deliver specific services based on students’ unique needs, such as direct and indirect interventions centered on mental health, socialization, learning, and academic skills. School psychologists utilize their knowledge in psychology and education when consulting and collaborating with others. Respectively, school psychologists are accustomed to schedule modifications and changes in circumstances that frequently compel alterations in stance and daily outlook.

Accompanying school psychologists’ extensive professional toolbox of skills are established systems of service delivery in school settings. The two most prominent service delivery models are the medical model and the ecological model. They are discussed in the following two sections.

Medical Model

The medical model, or individual-focused service delivery model, was founded on scientific thinking about health and disorder. Professionals employing this model view students who grapple with mental health and academic problems as persons who are sick and need treatment (Reiter, 2000). The model is based on the view that “all learning problems are the

result of organic disorder or disease” (Massoumeh & Leih, 2012, p. 5802), and it focuses on the student largely in isolation. Usually, school psychological activities consistent with this model are planned around services delivered to the individual student, or direct services. Käser (1993) described direct service to students as “psychological tasks that includes personal encounters between the school psychologist and the student diagnostic work and/or therapy: interviews with the student, play observation, testing, and, should the need arise, follow-up treatment” (p. 7). In an academic sense, direct service delivery helps to foster student-centered learning principles by encouraging the development of self-regulated learning, including the ability to set individual learning goals, designing a learning process to achieve those goals, and assessing outcomes to determine whether the goals have been achieved. Furthermore, direct services often comprise a plethora of student-centered supports, such as intervention and instructional support to develop academic skills and interventions and mental health services to develop social and life skills. This description further highlights school psychologists’ wide repertoire of professional skills, as they often engage in comprehensive and integrated school psychological services.

With this in mind, the amount of time school psychologists spend on direct services is subject to variation per school district, school, school day, and even more so, the roles and functions of school psychologists that have changed across the past several decades. A number of surveys targeting the role and function of school psychologists found that they reported spending more than half of their time for psychoeducational assessment, about a quarter in interventions (e.g., counseling and remediation), about one-fifth in consultation, and a negligible amount in research and evaluation (D. K. Smith, 1984; D. K. Smith & Mealy, 1988; Reschly & Wilson, 1992). Reschly and Wilson (1995) investigated role changes from 1986 to 1991-1992. In this study, they found in a 40-hour work week, over half the time was spent on

psychoeducational assessment. A later study by Reschly (1998) made comparisons between the 1992 data and data from a 1997 survey and essentially found similar percentages of time allocation. More recently, a study by Bramlett et al. (2002) found that school psychologists' allocated most of their service time to direct services that are assessment oriented but continued to focus on direct services like counseling as opposed to parent training. Nevertheless, over the past few decades, research findings appear to reflect a consistent pattern of school psychologists' activities and services provided. Based on the research, it is indisputable that school psychologists spend a large amount of time in assessment-related services (e.g., administering psychological and educational tests, conducting observations and interviews, and gathering relevant information in the assessment of students experiencing learning and adjustment problems) and less time engaged in consultation.

Ecological Model

School psychologists' activities also reach the school and environmental settings and are implemented independently of any specific student (Käser, 1993). In fact, they can address influences in the student's broader ecology to alter the student's development rather than only address the student directly as an individual, as seen in the medical model. School psychologists are knowledgeable of school and systems framework, organization, and theory; general and special education; technological resources; and empirically-based school practices that support learning and mental health. Hence, school psychologists deliver services to schools and families that strengthen the competence and welfare of students, including the advancement of efficacious and safe-learning environments, practices that address emerging academic and behavioral problems across students, responses to crises, and the enhancement of family-school partnerships (NASP, 2010). Indirect activities with regard to the individual student comprise interviews with

parents, teachers, and professionals, such as the student’s physician or special education teacher. While the medical model has influenced a wide range of educational strategies and methods in special education, there has been a push for replacing it with an ecological model of human behavior.

The ecological model encompasses adult-focused service delivery, which is a shift away from the individual student or medical model to the lives of students, particularly parents and teachers. Furthermore, the ecological model includes system-level intervention and change. Käser (1993) explained that the description of “systemic” and “ecological-psychological” are equivalent, “as both emphasize the interconnection and interaction of the individual with the environment” (p. 9). This model analyzes the complexities of an individual. Essentially, it states that to understand the student, you must understand the environment (e.g., home, school, community, and culture) in which the student lives (Bronfenbrenner, 1986). Bronfenbrenner (1979) argued for the importance of being less attentive to the “social address,” meaning where services are delivered, and more attentive to how the social and psychological factors within each environment influence the lives of students in the environment.

The ecological perspective in school cultures has gained much traction. Spence and Lee (2003) notably expressed that principles from the ecological model have cultivated a better understanding of several phenomena, such as physical inactivity and school violence. As indicated, school psychologists engage in school-wide practices to promote learning, to provide preventive and responsive services, and to facilitate family-school collaboration services.

Promoting Learning

With respect to promoting learning, school psychologists collaborate with others to incorporate evidence-based strategies and practices in student discipline, instructional support,

staff continuing education, and program evaluation. Furthermore, school psychologists help to create and maintain multitiered services to support all students' progress in academic, social, emotional, and behavioral objectives. In a similar vein, school psychologists engage in designing and implementing universal screening programs to identify students who need additional instructional or behavioral support services while helping to monitor progress through systematic measures.

Providing Preventive and Responsive Services

School psychologists are knowledgeable in standards and research related to resilience and risk factors in learning and mental health, services in schools and communities to promote multitiered prevention and intervention, and empirically-based approaches for effective crisis responses. Some of the associated preventive and responsive services include participating in school crisis teams by using data-based decision making, utilizing problem resolution approaches, supplying consultation, and providing direct services in regard to crisis prevention, preparation, response, and recovery (NASP, 2010). Additionally, school psychologists support the wellbeing and resilience of students by working with other healthcare professionals, promoting environmental change that may contribute to good health and adjustment of students, and providing resources to respond to a range of mental, social, behavioral, emotional, and physical needs.

Facilitating Family-school Collaboration Services

School psychologists use their knowledge of standards and research affiliated with family systems, strengths, necessities, and culture. This includes promoting empirically based strategies to help support family support and its impact on students' learning and psychological health by also fostering the development of collaboration between families and schools. School

psychologists advocate for families and support parents in their involvement in school activities and help to identify culturally-related issues and other factors that affect family-school relationships and interactions with community providers (NASP, 2010). As in providing direct services, school psychologists are well-versed in collaborating with student influencers to help address the broader ecology of the student.

Does School Psychology Practice and Research Focus on Systems-Level or Student-Level Services?

Based on the previous remarks, it is apparent that systems-level and student-level services are essential to the practice of school psychology and to the service of its families, schools, and students alike. This idea seems to translate to professional school psychology associations, such as NASP. System-level and student-level service types are both represented in the NASP *Model for Comprehensive and Integrated School Psychological Services*. First written in 1978 and revised in 1984, 1992, 1997, 2000, and 2010, the model operates as a guide to the organization and delivery of school psychological services at the federal, state, and local levels (NASP, 2010). Within this model, the umbrella of indirect and direct services for students, families, and schools encompasses systems-level and student-level services as delivery methods to support instructional and mental health interventions, school-wide practices, prevention and responsive services, and family-school collaboration services. Although models such as this depict the need for both service types, many school psychologists wonder which model should draw more focus.

About 25 years ago, Bradley-Johnson et al. (1995) referenced the rapid changes in special education and its push for policies that incorporate the inclusion of students with disabilities in general education classrooms while noting the role of school psychologists as

unknown. As Bradley-Johnson et al. focused on the reevaluation of school psychologists' roles and responsibilities, they emphasized their measurement expertise to assist with the development and implementation of authentic assessment, a method that links student evaluation and teaching. In this description, Bradley-Johnson et al. (1995) called for a renewed emphasis on science in school psychology.

In reaction to Bradley-Johnson et al. (1995), Conoley and Guktin (1995) concurred that school psychologists have a wide range of valuable skill sets yet were perplexed why they do not often employ the skills needed to construct system-level change for students effectively. Conoley and Gutkin derided traditional practices associated with assessment, diagnosis, and treatment of mental health disorders and emphasized that school psychologists are “preoccupied with the problems of the individuals rather than understanding the ecologies in which people function” (p. 210). They bemoaned the fact that school psychologists continue to conduct their research, training, and practice as if they are direct service professionals and asserted that “creating healthy environmental systems that reduce the incidence of ‘illness’ is a higher calling” (p. 211).

More recently, Gutkin (2012) levied some of the same arguments of Conoley and Gutkin (1995) in addressing the problems associated with the application of the medical model by school psychologists. He indicated that limitations of the medical model have led to research focused on individual-focused services rather than services that focus on populations and on remediation rather than prevention and early intervention – “unintentionally creating a severe shortage of service providers and providing treatment that lack sufficient efficacy” (p. 1). Ultimately, he conveyed that it has created “nationwide mental health and education pandemics for students and youth” (p. 1).

Purpose of the Study

More than a quarter of a century ago, Conoley and Gutkin (1995) asserted that insufficient research had been done to apply the ecological model in school psychology, and more recently, Conoley et al. (2020) indicated that there has been insufficient growth in research focused on the ecological model across time. Conclusions about the prevalence and growth, decline, or stagnation of such research should be guided by empirical evidence. The purpose of this study is not to determine whether the ecological model is correct but to conclude how prevalent research focused on this model has been in school psychology journals since the publication of Conoley and Gutkin's 1995 article.

This study includes three research questions: (a) How common are ecological model research articles published in school psychology journals since 1995? (b) Do ecological model research articles primarily address ecological principles?, and (c) What is the article content (i.e., assessment, consultation, explicative, intervention, or other) addressed in ecological model articles in school psychology journals since 1995?

Method

The research questions were addressed by identifying and comparing trends in school psychology-based ecological research publications over the last 25 years, from 1995 to 2019.

Selection of Journals and Articles

To determine publication trends pertinent to school psychology, the complete list of school psychology journals was reviewed: *Journal of School Psychology* (JSP), *Psychology in the Schools* (PITS), *School Psychology International* (SPI), *School Psychology* (SP) (formerly *School Psychology Quarterly*), *School Psychology Review* (SPR), *Journal of Applied School Psychology*, *School Psychology Forum*, *Contemporary School Psychology*, *Canadian Journal of*

School Psychology, *Professional Psychology: Research and Pedagogy* (formerly *Trainers of School Psychologists*), and *International Journal of School and Educational Psychology*. From this more extended list, journals were selected that (a) were continuously published since 1995 and (b) produced impact factors for more than five years (Floyd, 2018; Floyd et al., 2011; Hulac et al., 2016). This procedure yielded five school psychology journals: JSP, PITS, SP, SPI, and SPR.

Articles published triennially from 1995 to 2019 (i.e., 1995, 1998, 2001, 2004, 2007, 2010, 2013, 2016, and 2019) across journals were identified, and their titles, abstracts, and keywords were accessed from PsycINFO and Scopus. Articles were identified in PsycINFO for all journals, except for articles appearing in *SP* and *SPR* in 1995. Scopus was accessed to obtain the titles, abstracts, and keywords for their 1995 articles. Precisely, 1,856 articles from the five journals across the nine targeted years were identified. This total includes 324 articles from JSP, 604 articles from PITS, 264 articles from SP, 318 articles from SPI, and 346 articles from SPR.

Coding System

A three-section coding system was employed. First, the coding system addressed whether the articles were research articles based on an extension of systems introduced by prior studies (Bliss et al., 2008) and adapted by Price et al. (2011). Research articles included quantitative research articles (e.g., descriptive, correlational, and meta-analysis studies) or qualitative research articles (i.e., ethnographic studies). Non-research articles, such as expository reviews, editorials, assessment instrument reviews, obituaries, and commentaries, were omitted from further coding as this study focused on research published in school psychology journals (and not all articles published in these journals).

Second, the coding system addressed whether research articles reflected the ecological model. This section of the coding system was developed based on five methods. The principal investigator reviewed five articles written by Conoley, Gutkin, Bradley-Johnson, and colleagues (Bradley-Johnson et al., 1995; Bradley-Johnson & Dean, 2000; Conoley & Gutkin, 1995; Conoley et al., 2020; Gutkin, 2012) and identified definitions and keywords or phrases directly from their texts that addressed features of the ecological model. Next, the principal investigator and faculty advisor examined these lists of keywords or phrases to eliminate redundant items and otherwise clarify the items. From these first two steps, a preliminary coding manual was developed. In the next step, using these definitions and keywords or phrases and the resulting coding guidelines, the principal investigator and faculty advisor coded all the articles from issues 1 and 2 of the 1994 and 2020 volume years with the highest impact factors: JSP, SP, and SPR. Based on their notes during the coding of articles, the principal investigator and faculty advisor modified the coding guidelines to increase their clarity. Next, the coding guidelines were shared with three university professors who are active in school psychology research and who contributed commentaries to SP in response to the Conoley et al. (2020) article. They reviewed coding guidelines, while practicing coding of five articles, and offered suggestions for deletions, additions, and revisions. Finally, the principal investigator reviewed the feedback from the reviewers and revised the coding guidelines while consulting with the faculty advisor.

Using this coding scheme, ecological model articles focus their research questions on school psychologists supporting school-based systems and organizations along with school and home collaborations through practices such as parent training, universal screening, positive behavior support, effective classroom management, and school-wide intervention and prevention. Shifting away from the individual student or medical model to the lives of students,

the ecological model embodies adult-focused service delivery that embraces system-level intervention and change. This model analyzes the complexities of an individual by underlining the interconnection and interaction of the individual with their environment. Essentially, it states to understand the student, you must understand the world (e.g., home, education, community, and culture) in which the student lives (Bronfenbrenner, 1986). Keywords identified with ecological model articles are *ecological, prevent, system(s), consult or consultation, organization, training, collaboration, community, adult, parent(s), family, teacher(s), and indirect service*. Non-ecological model articles do not incorporate key features of the ecological model in their hypotheses or research questions.

Third, the coding system addressed article content (based on Price et al., 2011) by outlining five areas: (a) assessment, (b) intervention, (c) consultation, (d) explicative, or (e) other. These content areas are based on the basic roles and functions of school psychologists, as described in Fagan and Wise (2007). Assessment is coded if the article describes “the gathering and integration of psychology-related data for the purpose of making psychological evaluation, accomplished through the use of tools such as tests, interviews, cases studies, behavioral observation, and specially designed apparatuses and measurement procedures” (Cohen et al., 1996, p. 6). Additionally, content includes measurement or evaluation of knowledge, skills, attitudes, and/or beliefs, classification of populations or problems, and instrument development or validation (Price et al., 2011). As modeled in the *NASP Model for Comprehensive and Integrated School Psychological Services*, assessment embodies data-based decision-making, which utilizes assessment methods to identify strengths and needs and design effective interventions, services, and programs. Furthermore, it helps to measure progress and outcomes within a multitiered system of supports. School psychologists systematically gather data from

various sources as a basis for decision-making at the individual, group, and systems levels, and they interpret ecological factors (e.g., classroom, family, and community characteristics) as a context for assessment and intervention (NASP, 2010).

Intervention is coded if articles focus on the development and implementation of evidence-based instructional strategies that support academic skill development or evidence-based strategies that promote social-emotional functioning. This content includes specific prevention studies, treatment integrity, treatments, counseling, or school-wide supports, evaluations of RTI systems or evaluation of intervention programs, descriptions of efforts to improve the status or functioning of a student, and procedures designed to increase or maintain appropriate behaviors and decrease inappropriate behaviors (Price et al., 2011). In collaboration with others, school psychologists design, implement and evaluate services that promote resilience and positive behavior, encourage socialization and adaptive skills, and improve mental and behavioral health (NASP, 2010).

Consultation is coded if articles model collaboration applicable to individuals, families, groups, and systems, as well as methods to promote effective implementation of services. Consultation usually refers to the collaborative problem-solving process between two or more professionals (Fagan & Wise, 2007). In alignment with the collaboration of professionals, school psychologists embrace principles and research related to family systems, strengths, needs, and cultures; evidence-based strategies to support positive family influences on students' learning and mental health; and strategies to develop collaboration between families and schools. In short, school psychologists help students indirectly by working with teachers, parents, and communities. Consultation services are often referred to as an indirect role for school psychologists, which usually consists of, but not limited to, mental health consultation,

behavioral consultation, crisis consultation, and organizational consultation (Fagan & Wise, 2007). Explicative is coded if the articles describe the relationship between two or more phenomena or variables. It includes explanations of student growth over time, explanations of the connection between different groups, and explanations of theories or models that do not fit into other categories (Price et al., 2011). The Other category reflects that an article did not incorporate key features from any of the other categories in its research questions.

Procedures

To analyze trends in school psychology ecological model research, pairs of coders, including the principal investigator and one of six doctoral student coders, independently reviewed article titles, abstracts, and keywords exported to an Excel spreadsheet.

Coding Training

Coder training began with reading three journal articles (Bradley-Johnson et al., 1995; Conoley & Gutkin, 1995; Conoley et al., 2020) for the purposes of outlining both the ecological and medical models, and coders participated in two training workshops, led by the principal investigator, focused on the coding structure. The first workshop consisted of reviewing the goals of the study, discussing the three aforementioned articles, and introducing the coding system. Coders also practiced coding four articles with the lead investigator, and errors in coding were corrected and openly discussed. Coders were then assigned ten practice articles to code independently to evaluate their preparation prior to the next coding workshop. The second workshop proceeded with reviewing their coding results and discussing discrepancies. To advance to journal article coding for the current study, coders needed to code all practice articles with at least 80% accuracy across codes.

Coding of Journal Articles

To produce the primary data for this study, coders independently coded approximately 300 articles (roughly 17%), while the principal investigator coded all articles across journals and years. Coders and the principal investigator could consult with the faculty advisor about coding but could not consult with each other. As a key aspect of this study relates to changes in the types of research published in school psychology journals across time, and coders were explicitly notified of this goal, articles were presented in the coding spreadsheet in alphabetical order by title versus in chronological order to blind them to the year of each article's publication. If classification decision could not be determined based on the review of titles, abstracts, and keywords from the spreadsheet, coders reviewed the article in question in PDF in its entirety and completed the coding. Coding proceeded for approximately one month following the second coding training workshop.

Articles were first classified in one of two categories (a) ecological model article and (b) not ecological model article. Non-research articles were excluded from the study. If they were coded as ecological model articles, they were also coded as primarily ecologically focused or not primarily ecologically focused based on the article title alone (and not the title, abstract, and keywords). Articles that were primarily ecologically focused emphasized the ecology of the individual or group based on the descriptions, definitions, keywords, and prototypical phrases of the ecological model. If it was not clear based on the article title alone that articles were primarily focused on the ecology of the individual or group, the article was coded as not primarily ecologically focused. Lastly, to evaluate the article content, articles were coded across five content areas: (a) assessment, (b) intervention, (c) consultation, (d) explicative, or (e) other.

Intercoder Agreement

After completing the double-coding process, the principal investigator met in a group of three (with pairs of coders) to examine and resolve discrepancies through consensus judgments. Based on the original independent coding, percentage agreement (between the primary investigator and each additional coder) was 95% for research article classification, 74% for model type, 74% for primarily ecologically focus, and 64% for article content. Kappa was .88 for research article classification, .47 for model type, .50 for primarily ecologically focus, and .50 for article content. Despite some of these low intercoder agreement values, it is important to note that all discrepancies in coding were resolved through discussion with the principal investigator and by consensus.

Results

Of the 1,856 articles coded across five journals from the nine target years, 1,339 articles (72%) were identified as research articles, and 517 (28%) were classified as non-research articles. Only research articles were included in the subsequent analyses.

Ecological and Not Ecological Articles

Of the 1,339 research articles, 65% (872 articles) were ecological model articles. Figure 1 displays the data for ecological model articles across years. A visual analysis of these data suggests an increasing prevalence of ecological model articles since 1995. Notably, in 1995, ecological model articles accounted for only 52% (41 articles) of the research articles published across journals, but in 2019, they accounted for 69% (184 articles). There is a gradual rise in ecological model articles across the years, with a slope of 1.92. Remarkably, there was an upward trend in ecological model articles until 2007 (68%), displaying a slope of 3.93 to that point. Following 2007, there were slight dips in ecological model articles in 2010 and 2016.

The percentage of ecological model articles varied somewhat by journal across years: JSP (176 articles; 68%), PITS (248 articles; 58%), SPI (178 articles; 84%), SPQ (133 articles; 65%), and SPR (137 articles, 65%). Furthermore, the lowest point across all journals and target years was for PITS in 1995 (where ecological articles accounted for only 24% of its research articles), and the peak was in 2010 for JSP (where ecological articles accounted for 95% of its research articles). Figure 2 presents the trend data for ecological model articles for each journal and target year, and it is evident that there was substantial variability across journals and years. For example, minimum and maximum values for ecological model articles were as follows by journal: JSP (range = 58% in 1995 to 77% in 2019), PITS (range = 24% in 1995 to 63% in 2019), SPI (range = 79% in 1995 to 66% in 2019), SPQ (range = 67% in 1995 to 70% in 2019), and SPR (range = 67% in 1995 to 83% in 2019).

All journals, with the exception of SPI (slope = 0.78), increased in ecological model publications from 1995 to 2019. With the greatest increase, PITS presents a slope of 3.5, while SPQ – displaying the only downward trend – has a slope of -.09. Slightly below PITS's slope are JSP (slope = 2.71) and SPR (slope = 1.15).

The ecological model articles did not fall into one content category. Across journals and targeted years, the most significant number (44%) described the relations between variables and were classified as explicative. Intervention articles composed a quarter of these articles, other articles composed 15%, and assessment articles composed 12%. To our surprise, only 0.04% of ecological model articles focused on consultation.

Figure 3 presents the frequency of ecological model articles by article content and year. It is clear that explicative articles became the dominant ecological article type beginning in 2004. The slope for explicative articles focusing on the ecological model is 2.96, and they reached a

peak in 2013, with explicative articles composing 51% of all research articles addressing the ecological model that year. Intervention articles focusing on the ecological model also increased over time (slope = 1.95), peaking most recently. Other articles focusing on the ecological model (slope = -1.23) remained fairly stable, whereas assessment articles declined from 29% in 1995 to 8% in 2019 (slope = -2.05) and consultation articles declined from 20% in 1995 to 2% in 2019 (slope = -1.65). In fact, only two research articles addressing consultation and the ecological model were published in 2010 across journals, and only two were published in 2013.

Articles that are Primarily Ecological and Not Primarily Ecological

To further highlight trends in articles focusing on the ecological model, articles deemed primarily ecological and not primarily ecological were analyzed. Of the 1,339 research articles, 53% (712 articles) were primarily ecological model articles. Figure 4 displays the data trends in primarily ecological articles. A visual depiction of this data suggests a progressive incline of primarily ecological model articles since 1995. Specifically, in 1995, only 39% (31 articles) were primarily ecological model articles. A total of 12 years later, primarily ecological model articles took a perceptible lead in 2007, accounting for 57% (74 articles) of published research articles. Continuing with this trend in later years, primarily ecological model articles consisted of 59% (156 articles) of published research articles in 2019 – nearly a quarter more than in 1995.

Notably, the slope across time was 2.21.

Consistent with the ecological and not ecological model data, primarily ecological model articles were most prevalent in PITS and least prevalent in SPQ and SPR. The percentages of primarily ecologically focused articles across years were as follows by journal: JSP (147 articles; 11%), PITS (204 articles; 15%), SPI (143 articles; 11%), SPQ (108 articles; 8%), and SPR (110 articles; 8%). Figure 5 exhibits the percentage of primarily ecological model articles for each

journal by year. In 1995, primarily ecological model articles were similarly trending across all journals, with percentages ranging from 71% to 89% among ecological model articles. Contrary to its trends across other years, 100% of SPI's ecological model articles were primarily ecological in 1998. JSP produced similar findings in 2016, with 100% of its ecological model articles comprising primarily ecological articles. After a period of wide variation across journals (especially 1998), variation in the percentage of primarily ecological model articles stabilized across journals in 2019, with all journals exhibiting frequencies between 80% and 89%. After 1998, primarily ecologically focused articles remained relatively stable across journals. Yet, SPI is the only journal showing a downward trend across years (slope = -0.11) after 1998, although increasing from 73% in 1995 to 86% in 2019. In contrast, JSP (slope = 4.28), PITS (slope = 1.25), SPQ (slope = 0.61), and SPR (slope = 0.58) increased the percentage of primarily ecologically focused articles from 1995 to 2019.

Primarily ecological articles were also examined for content. Across years, their prevalence was as follows: assessment (62 articles; 9%), consultation (35 articles; 5%), explicative (316 articles; 46%), intervention (185 articles; 27%), and other (96 articles; 14%). Comparable with ecological model articles by article content, primarily ecological and explicative articles were most frequent at every time point, ranging from 32% in 1995 to 48% in 2019 (slope = 2.02). See Figure 6. Primarily ecological and consultation articles declined from 26% in 1995 to 2% in 2019 (slope = -2.24). Likewise, primarily ecological and assessment articles declined from 13% in 1995 to 7% in 2019 (slope = -0.52). Intervention articles gradually increased from 23% in 1995 to 34% in 2019 (slope = 1.65). Other articles have remained stagnant, consisting of 6% of articles in 1995 and 9% in 2019 (slope = -0.88).

Discussion

Based on Conoley and Gutkin's (1995) and Conoley et al.'s (2020) remarks regarding the need for adult-focused research and practice in school psychology, the current study examined the historical trends of ecological model articles in school psychology research since 1995. Specifically, we analyzed whether there is a pattern consistent with the ecological model across school psychology journals over 25 years—dating back to the year of Conoley and Gutkin's 1995 article. This study includes three research questions: (a) How common are ecological model research articles published in school psychology journals since 1995? (b) Do ecological model research articles primarily address ecological principles?, and (c) What is the article content (i.e., assessment, consultation, explicative, intervention, or other) addressed in ecological model articles in school psychology journals since 1995?

Although patterns varied across school psychology journals, this study demonstrated the novel finding consistent with an increase of ecological model articles, which showed to be consistent amongst journals since 1995. Notably, this pattern was held for JSP, PITS, SPQ, and SPR, with PITS showcasing the most notable increase in ecological model articles from 1995 to 2019. Historically, school psychology has been associated with the medical model, which is based on the view that “all learning problems are the result of organic disorder or disease” (Massoumeh & Leih, 2012, p. 5802), and it focuses on the student largely in isolation. Conoley et al. (2020) noted that school psychologists continue to be preoccupied with the individual, even after their 1995 critiques, and show little interest in organizational change that would yield ecological and adult-focused practices.

The ecological model addresses influences in the student's broader ecology, expanding school psychology activities to the general school environment, families, and community. While

having a special interest in indirect services with parents and teachers, the ecological model considers the contexts associated with the individual – a shift away from the individual’s attributes to their broader experiences in society. In presenting contradictory evidence to Conoley et al.’s (2020) assessment of the current state of affairs, this study reveals that researchers are making a gradual move to activities that reach school and environmental settings and are implemented independently of any specific student (Käser, 1993). So, what can be the contributor to the increase of ecological model research across time? Trends suggest Conoley and Gutkin’s adult-focused comments influenced — or at least co-occurred with—the publication of proportionally more ecological model research articles since 1995, with the most significant increase occurring between 1995 and 1998. Even more notable, prominent events in education, such as the reauthorization of the *Individuals with Disabilities Education Act* (IDEA) and *No Child Left Behind Act* (NCLB), should be taken into account when making conclusions about ecological model research influences. All things considered, these trends provide compelling evidence for future ecological model research in school psychology journals.

Likewise, a review of the subset of ecological model articles focused primarily on ecological principles revealed an increase from 1995 to 2019 across school psychology journals. In nearly all cases across journals and years, primarily ecological model article made up more than half of the resulting data. Remarkably, patterns persisted from ecological model data, with primarily ecological principles prevailing among PITS journal articles. Although journals similarly trended in 1995 and 2019, trends between years varied based on the journal, still displaying trends upwards across JSP, PITS, SPQ, and SPR. Illustrating unanimity, 100% of JSP’s 2016 and SPI’s 1998 data consisted of primarily ecological model principles. Once more, these trends are contrary to Conoley et al. (2020) assessments.

Recognizing the prevalence of ecological model articles in school psychology journals, this study investigated article content in ecological model articles. Articles which featured the relationship between two or more phenomena were considerably more prevalent across ecological model articles. It includes explanations of student growth over time, explanations of the connection between different groups, and theories or models that do not fit into other categories (Price et al., 2011). Notably, student growth over time can be closely associated with RTI procedures for school-wide intervention. Whereas connections between different groups can embrace an ecological model perspective, including cultural and environmental factors. By contrast and unexpectedly, assessment articles declined significantly from 1995 to 2019, despite being the cornerstone of school psychology practice. Although ecological model articles accounted for most research articles, there is an apparent lack of article content in consultation among school psychology-specific journals, which is the pinnacle and most evident branch of teacher and parent consultation, family systems, and community and school relationships. Foremost, consultation is often consistent with adult-focused practices—a key term in Conoley and Gutkin’s position. Consultation was initially created as a psychopathology preventive measure (Caplan, 1970; Meyers et al., 1979), yet school-based consultation often presents as a secondary preventative measure implemented during times of urgency. Conoley and Gutkin addressed the importance of consultation in schools as a distinguished ecological model service delivery model while noting that it is a far more essential focus of research than what seems apparent from the data.

From a research perspective, taking an ecological approach in school culture has gained considerable momentum since 1995. Yet, article content patterns appear to be less compatible with the overwhelming need for school psychologist’s involvement in consultation and more

consistent with the push for policies and school-wide interventions that incorporate the inclusion of students with disabilities in general education classrooms, such as RTI. Trends suggest Conoley and Gutkin's 1995 comments about the importance of consultation in schools appear to have not significantly impacted the publication of ecological model articles focused on consultation service delivery since 1995.

Limitations and Future Direction

The current study presents several limitations that should be considered when interpreting. This study provided data pinpointing historical trends in ecological model research across 25 years, and its limitations focus on (a) article and journal coverage and (b) the article coding process. First, we reviewed articles triennially from 1995 to 2019 and did not evaluate articles yearly. Thus, although this study suggests an increase in the prevalence of ecological model articles since 1995, trends may have appeared different had articles from each year been analyzed or articles before 1995 been reviewed. Furthermore, we did not examine articles published across all generalist school psychology journals; only the five that were continuously published since 1995 and producing impact factors were analyzed.

Second, although all articles were coded independently by two coders and coding discrepancies were resolved by consensus, which should maximize the accuracy of coding, the degree of agreement among coders was low for some sections of the coding scheme. In particular, agreement was lower than expected for model type, primarily ecologically focused, and article content. To increase coding reliability and replicability of results, future researchers should consider ways to refine the coding scheme introduced in this study.

Implications for Research and Practice

This research addresses Conoley's and Gutkin's position on the need for adult-focused practices in schools. Conoley and Gutkin (1995) asserted that "school psychology has not fulfilled its promise to students, families, and the schooling process because we have conducted our research, training, and practice as if we were a direct service profession" (p. 211) – noting that school psychologists are not direct service providers and should use their skills with adults who interact with students. Indistinguishably, Conoley et al. (2020) indicated that there continues to be a lack of research focused on the ecological model across time – although research demonstrates the benefit of consultation and coaching with adults. Yet, research focused on eco models has, in fact, increase in prevalence in school psychology journals.

To our surprise, ecological model articles that concentrate on consultation only accounted for an insignificant fraction of ecological model articles. Thus, conclusions about the prevalence of consultation research are consistent with Conoley and Gutkin's plea for research adopting an ecological approach to improving student outcomes. Several research surveys targeting the role and function of school psychologists found that school psychologists reportedly spend more than half of their time for psychoeducational assessment, about a quarter in interventions (e.g., counseling and remediation), about one-fifth in consultation, and an insignificant amount in research and evaluation (D. K. Smith, 1984; D. K. Smith & Mealy, 1988; Reschly & Wilson, 1992). Based on the research, it is undeniable that school psychologists have historically spend a significant amount of time in assessment-related services and less time occupied with consultation. Nevertheless, while primarily ecological articles that focus on consultation and assessment plummeted in research publications, consultation roughly remained the same in conceptualizing school psychologists' reported duty time allocation. Displaying similarities in

projected time spent providing intervention services, this study demonstrates a subtle increase in primarily ecological and intervention research articles since 1995 – now representing slightly more than one-third of research articles.

Though research publications do not reflect practice trends, and there is not much research examining the use or implementation of research findings in practice, Conoley et al. (2020) addressed implementation science, which has aided in the progression of evidence-based practices in school psychology. Increasing attention to implementation has been associated with school psychological services and learning environment improvements through intervention fidelity across system-wide interventions, such as RTI and PBIS. According to Conoley and Gutkin, as implementation science gains momentum in school psychology practice, schools continue to exhibit the need for organizational readiness for changes.

In light of Conoley and Gutkin's position, there are some noticeable implications for research publications in ecological model articles in school psychology. Based on our study, consultation and adult-focused research continue to take a back seat to other school psychology-focused areas, such as assessment and intervention. Though the implementation of school-based interventions is becoming the standard for best practices in school districts and schools, much work continues to be necessary for research to help transcend the message of adult-focused practices in schools. Perhaps advocating for more school-based consultation research begins with requesting editors and editorial board members to prioritize consultation research through the review of unsolicited manuscripts and developing special issue proposals. Notably, special issues help to generate attention for a specific topic and are essential components of scientific communication. They can be highly effective tools for high-quality subdiscipline content.

Furthermore, reviewing and accepting unsolicited manuscripts can help to eliminate publication-related barriers.

In terms of practical application, the expansion of future research focused on consultation-based practices could increase training amongst emerging and practicing school psychologists. More often than not, school psychologists are associated with assessment-related practices and less with consultation. School psychologists could engage in opportunities to educate their school community about their many roles and responsibilities while finding opportunities to provide consultation to families and teachers. Nevertheless, this role association could be related to assessment demands for special education services, presenting less opportunity for school psychologists to engage in consultation services. Consequentially, shortages among school psychologists could be an area where we begin to address the overload of assessment-based cases in schools. Notably, professional school psychology associations, such as NASP, highlight system-level and student-level service types in the *NASP Model for Comprehensive and Integrated School Psychological Services*. Data from this study indicate a continued need for organizing and delivering school psychological services at the federal, state, and local levels, specifically in indirect services for students, families, and schools. Integrating indirect service delivery principles, including social-emotional learning as an academic content and advocating for families, could help forge a way to system-level practices among practitioners and schools (Conoley et al., 2020). Furthermore, engaging in preventive and responsive services with adults could transcend into fewer student-level special education referrals. Signaling that works still needs to be done in ecological model research and practice, our study suggests that careful attention should be paid to the inclusion of adult-focused and system-level practice among school psychology practitioners and researchers. Otherwise stated, acknowledging the

“When will school psychology realize its promise?” question may bring overdue fulfillment to the field.

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Figure 1. Percentages of ecological model research articles by year.

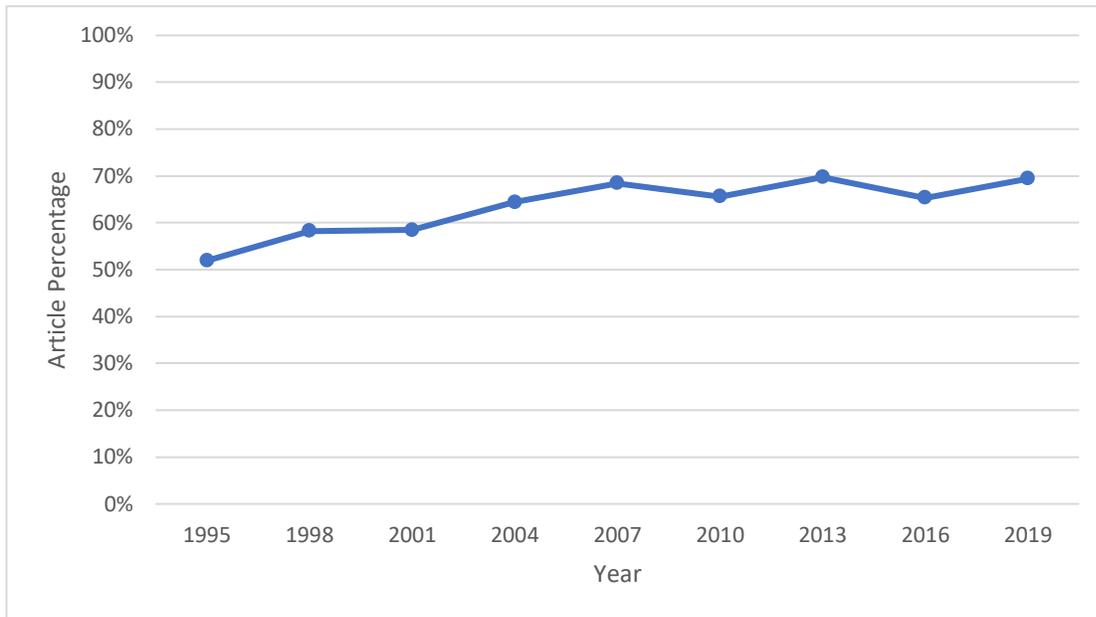
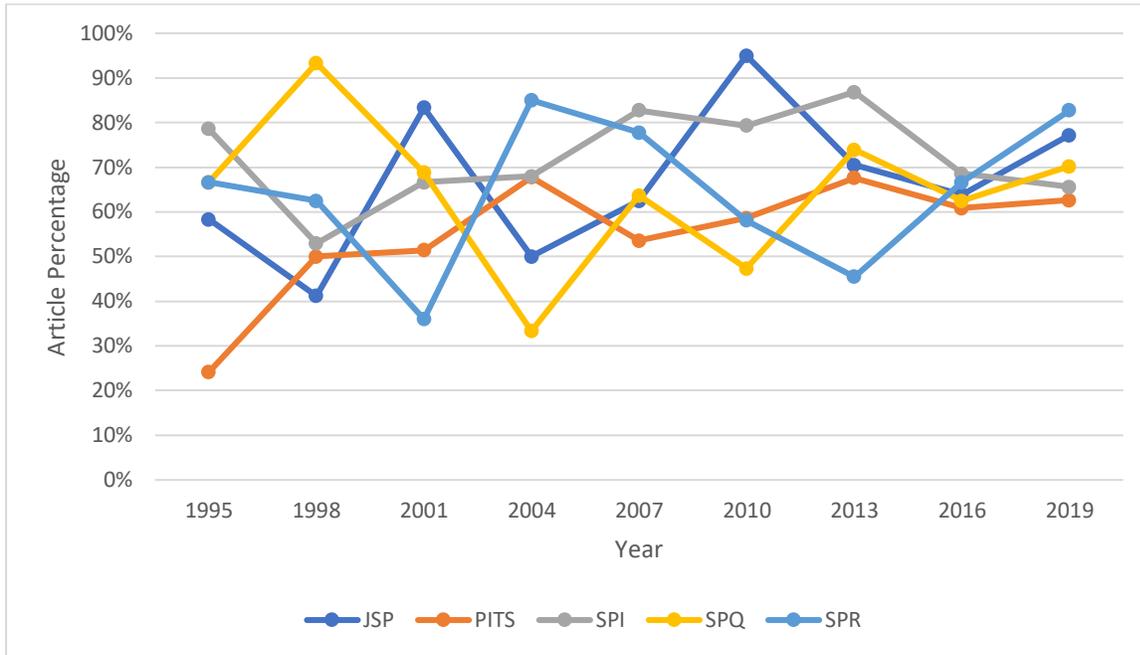


Figure 2. Percentages of ecological model research articles by journal and year.



Note. The journal categories used in the study have been abbreviated. JSP = *Journal of School Psychology*, PITS = *Psychology in the Schools*, SPI = *School Psychology International*, SPQ = *School Psychology Quarterly*, SPR = *School Psychology Review*.

Figure 3. Percentages of ecological model research articles by article content and year.

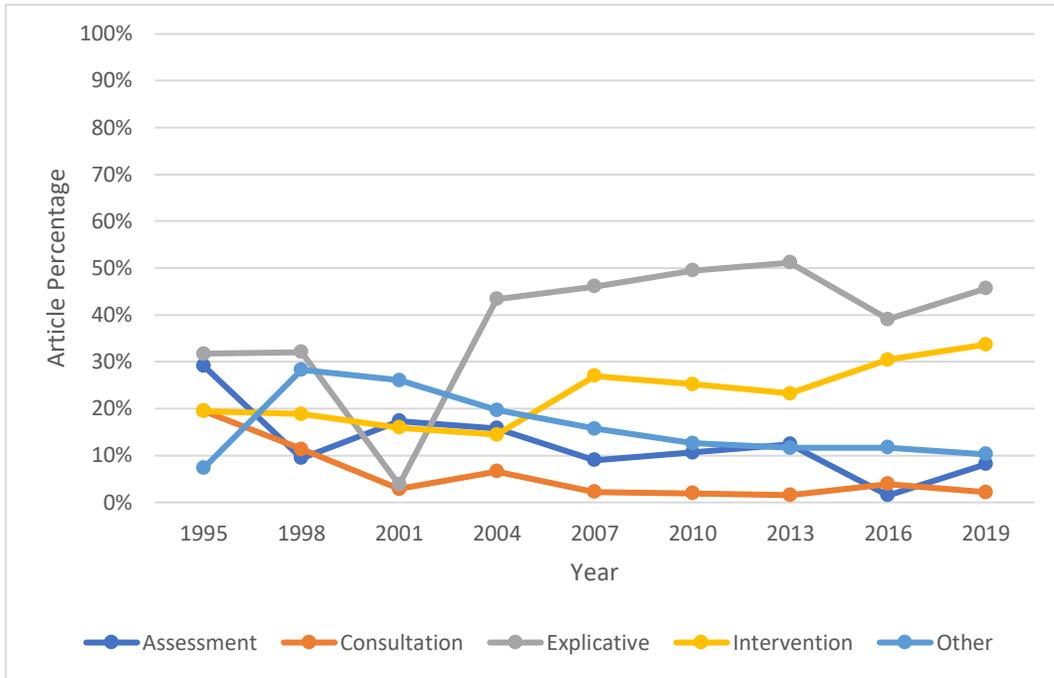


Figure 4. Percentages of primarily ecological model articles by year.

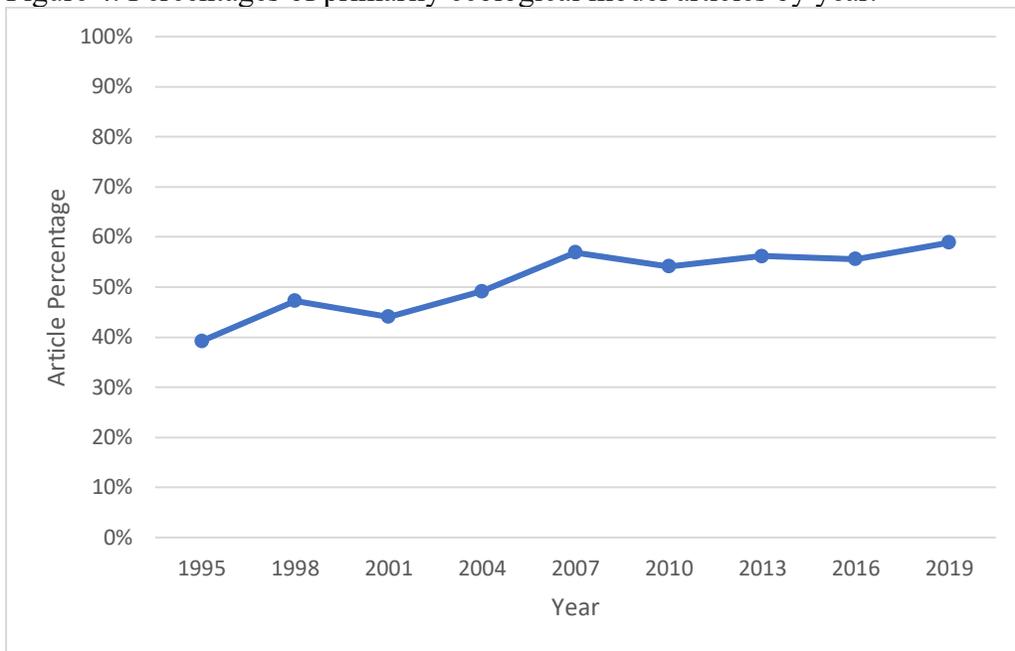
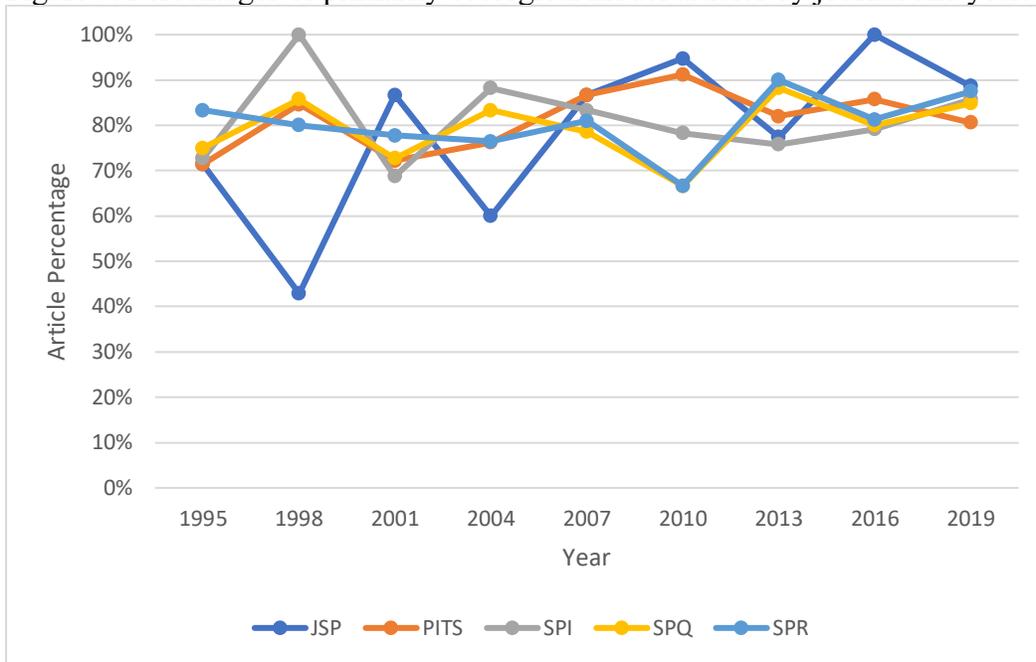


Figure 5. Percentages of primarily ecological model articles by journal and year.



Note. The journal categories used in the study have been abbreviated. JSP = *Journal of School Psychology*, PITS = *Psychology in the Schools*, SPI = *School Psychology International*, SPQ = *School Psychology Quarterly*, SPR = *School Psychology Review*.

Figure 6. Percentages of primarily ecological model articles by article content and year.

