Background

Many industries have embraced the use of data to inform decision making processes, from healthcare to customer service (Marr, 2015; Smieliauskas, Chien, Shen, Geynisman, & Shih, 2014; Zhu, 2016). The social sciences have seen a similar movement towards the use of data as a functional tool in improving care across a variety of sectors, including K-12 education, and educators (including related service professionals, such as school social workers) are increasingly expected to infuse data into their day-to-day practice. This paper will track this data-driven movement into the education sector with an emphasis on how this movement has begun to manifest in the practice of school social work. We will review the recent literature to catalog the application of data in informed changes in process, outcome or theoretical orientation to embrace this data-driven movement. Then using a scoping review methodology, we will assess what school-based social workers (SBSW) are presently doing to use data to drive decision making in their practice.

Literature Review

In the last three decades, the use of data to inform decision making precipitated monumental change seemingly across every industry (Bryant, 2014). One service sector, health care, is at the forefront of data-driven change (Berzin, Singer, & Chan, 2015). Data integration and data analysis prompted efforts to impact and improve real-time patient care decision. Across several clinical areas, improvements were noted when Electronic Medical Records (EMR) data was leveraged to explore clinical decision making (Graur, Harangus, Ghenea, Hajjar, & Mois, 2016) and offer practitioners with aggregated and real-time feedback for care decisions. Trending data was found useful to inform changes not just in individual practices but in programs and policy level change as well (van Velthoven, Mastellos, Majeed, O'Donoghue, & Car, 2016). Data from the EMR can be leveraged to improve systems of care and most importantly their patients' efficient access to care (Campbell & Pierce, 2018).

In higher education, there is a similar push to embrace data to help inform process changes (Keuning, Van Geel, & Visscher, 2017). For example, colleges and universities use it to help drive decisions from course offerings to reaccreditation support and efforts to leverage online learning platforms and virtual learning management systems offer promise for increased transparency with the process and learning outcomes. Curry, Mwavita, Holter, and Harris (2016) point out that data, used at the classroom level can be marshaled to "inform" instruction rather than simply "evaluating" instruction. Their findings suggest that data, historically used as a "club" to shape behavior, can instead be used as a torch to light the way.

Similarly, Crone et al. (2016) found that in K-12 education sectors, data can help macrolevel processing for school districts to leverage data for change.

Their study found that even when data-based decision making (DBDM) was relatively brief (less than 2 minutes), this led to actionable decisions in 34% to 40% of the encounters. Earley and Bubb (2014) point out that DBDM is not an organic process, but requires active facilitation from engaged staff. Fortunately, there is growing research and practice literature that supports how data can be infused into helping schools successfully implement interventions within the three-tier Multi-tiered Systems of Support (MTSS) framework, a framework that is presently active in tens of thousands of U.S. K-12 schools (Barrett, Eber, & Weist, 2013; Freeman, Sugai, Simonsen, & Everett, 2017; Marsh & Farrell, 2015; Marsh, Pane, & Hamilton, 2006).

Data Informed Decision Making in School Social Work

It is well documented that DBDM in schools stems well beyond simple academics and now reaches into interdisciplinary efforts to educate and nurture the whole child (Schildkamp, Poortman, Luyten, & Ebbeler, 2017). This is true in efforts to support school mental health services (Lyon, Borntrager, Nakamura, & Higa-McMillan, 2013). Whitaker et al. (2018) explored this complex system from the perspective of Brief Intervention for School Clinicians. They found that data can be leveraged to explore practice patterns across clinicians as a means of examining the impact of contextual factors in mental health care. The embrace of data-driven decision making is a fixture in education and is evolving to interdisciplinary efforts to promote student outcomes (Anderson-Butcher, Paluta, Sterling, & Anderson, 2018).

When school social work aligns with the use of data to inform decision making, they are working to comport with one of the American Academy of Social Work and Social Welfare (AASWSW) 12 Grand Challenges facing the field of Social Work (Coulton, Goerge, Putnam-Hornstein, & de Haan, 2015). Specifically, the AASWSW calls for social workers to use technology, such as the use of data to inform practice and process, to promote social good, and argue that all of the 12 Grand Challenges will need to have a significant technology and data component if they're going to be addressed successfully (Berzin et al., 2015). The literature indicates that social work practice has started to shift to embrace applied data analysis in social work education and therapeutic client interactions (Baker, Warburton, Hodgkin, & Pascal, 2014), child protection services (Houston, 2015) and improve health outcomes through social determinants (Lee, Kuo , & Goodwin, 2013).

Long before the grand challenges were articulated, Kelly, et. al. (2011) argued that to address this challenge, SBSW must clearly define why they are collecting data, ensure that data collection is user-friendly and map a clear process for data use. This pathway can be vital in exploring intervention effectiveness and map student outcomes through their response to various interventions

(Sabatino, Kelly, Moriarity, & Lean, 2013). Hoover (2018) noted that there is a clear gap in clinicians' ability to get research into policy and practice. Phillippo, Kelly, Shayman, and Frey (2017) through focus group research identified that SBSW are challenged by potential barriers with limited learning opportunities and support when it comes to the implementation of research in their practice.

School social work has lagged behind other industries and even colleagues within the K-12 realm in the use of DBSM as key component to SBSW practice. A recent analysis of the Second National School Social Work Survey (n=3,769) showed that the majority of SBSW report feeling challenged by the demands of being data-driven and evidence-informed in their daily practice, and would like more training to do this well (Thompson, Frey, & Kelly, 2019). The County Schools Mental Health Coalition may hold some promise as a model for data-based community-level impact (Reinke et al., 2018). They engaged a "…triannual countywide screening for all school-age youths (N = ~25,000), a common reporting process at multiple levels, evidence-based treatments mapped onto risk factors, and professional supports…" to not only guide real-time decision making but to also measure the relative impacts of these care decisions (Thompson et al., 2017).

The practice of school social work has evolved considerably in the area's primary prevention and secondary/tertiary care. Kelly, et. al. (2015) point out that school social work developed from the early 1900's practice of a predominantly casework model (home assessments and resource brokering) to a medical model in the 1940's and then a multidisciplinary team focus in the 1970's and then finally to the evidence-based practices (EBP) approach which leverages the multi-tiered systems of support (MTSS) known today. Despite significant educational and policy efforts to make SBSW more data-driven and evidence-informed in their work, most SBSW still struggle to practice this way, given the many barriers they report (training, time, and role definition among many others) (Brake & Kelly, 2019; Kelly, 2008. ; Kelly, et. al., 2016). As school social work has evolved, so too has the disciplines need to match EBP and MTSS with the DBDM efforts of collegial partners in education. This article applies the scoping methodology to systematically explore the application of DBDM in school social work practice

Present Study
The purpose of this article was to conduct a scoping review examining the state of evidence-informed decision making in school social work.   Scoping reviews are a relatively new approach, but theoretically and functionally differ from systematic reviews (Munn, Peters, et al., 2018).   Systematic reviews are principally focused identifying international evidence, confirm current practice or address variations in approaches, identify areas for future research, investigate

conflicting results, and produce statements to guide decision-making (Munn, Stern, Aromataris, Lockwood, & Jordan, 2018). Scoping reviews on the other hand are systemic reviews of research evidence which aim to identify gaps in current literature, summarize the state of the field in relation to the topic, mapping key concepts, determine the range or scope of available evidence on a topic, and to make recommendations for future research based on the current state of area that was reviewed (Peters et al., 2015). For this study, a scoping review was selected as a first step, given the perception of the authors that this area (use of data by SBSW and related practices) was still an emerging field that would benefit from being mapped out first by a scoping review.

Methods
Search strategy
   The PsycINFO and Web of Science databases were used to identify potential articles for this scoping review. The search was limited to peer-reviewed journal articles published between 2008 and 2018 in order to capture the state of evidence-informed decision making in school social work during the past ten years. Only peer-reviewed articles were used in this scoping article to ensure consistency across articles since the focus of this scoping review was to identify the state of the literature in academia. In addition to the database search, each article in the journals *Children & Schools, School Mental Health,* and *Advances in School Mental Health Promotion* were reviewed during the same time period to ensure any articles focused on using data in school social work and school mental health were not missed in the initial search. This was done as the topics published in each of these journals were aligned with the focus of this scoping review. The search terms identified by the research team included four primary search categories. Each category included multiple terms and the search was set up so that at least one term must be present from each of the four categories. These included (1) Data or evidence or information, (2) "decision making" or decision-making or decisions or "evidence-informed" or evidence-informed or "data-driven" or data-driven, (3) "social work" or psychology or mental-health or "mental health" or behavioral-health or "behavioral health" or "case management", and (4) school*.

Inclusion criterion
  To be included in the study, articles had to focus on (1) the use of evidence or data to inform decision making and (2) specifically include school social work or SBSW. Articles that mentioned school social work but did not specifically discuss using data or evidence-informed decision making or those that discussed evidence-informed decision making but did not specifically mention SBSW were also excluded. Additionally, articles that included outcomes

assessments (e.g., program or risk/protective factors) but did not include an application to use in evidence-informed decision making were also excluded. Only articles in that addressed DBDM in the United States were included in this review.

Search Results

An initial search using PsycINFO and Web of Science databases revealed 828 articles. The authors also reviewed all articles in *Children & Schools, School Mental Health*, and *Advances in School Mental Health Promotion*, which identified 89 articles. After reviewing the articles for duplicates from all data sources, a total of 708 unique articles remained as potential articles for consideration. The first ten article titles, abstracts, and full text were screened together by the research team to develop a shared understanding of the search criteria. The initial review of the articles was focused on identifying any potential articles that broadly mentioned (1) data, evidence-informed decision making, or outcomes, and (2) school social work. Once consensus regarding inclusion or exclusion was reached on these ten articles, the remaining 698 articles were reviewed independently by members of the research team. After the first broad round of screening, 53 articles were found to meet initial criteria. Subsequently, the research team further reviewed these articles together to ensure they met the full criteria of using evidence-informed decision making in school social work. This analysis step identified 13 articles that met the full criteria for inclusion in the study (See Figure 1). A full description of each article that met the criteria for inclusion in the scoping review can be found in Table 1. The studies that did not meet the final inclusion in the study were removed because they mentioned data or outcomes but did not provide any information about how it could be applied decision-making in school social work or did not discuss the application to school social work specifically.

Figure 1. Search Results
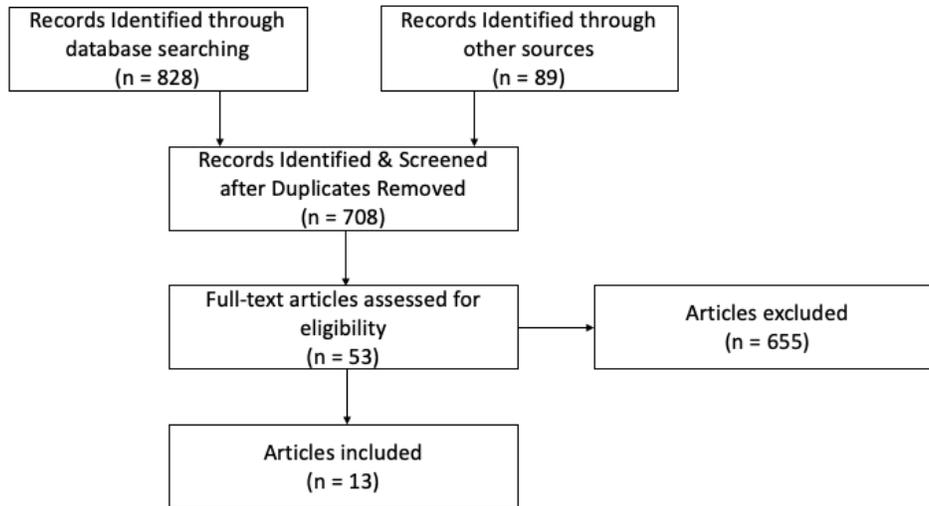
Results

Each of the selected articles was examined by two members of the research team using an open coding approach. A thematic coding tree was created by the researchers using the qualitative software package MaxQDA (12.3.3). All articles were reviewed by team members together to ensure agreement between coders. Inter-rater reliability was calculated at 95.23% using Cohen's Kappa. A coding node frequency analysis was created and shows the codes by theme (See Table 2). Each of the themes is summarized and described below. Several articles addressed multiple themes and were coded in each category. Additionally, the type of article was identified and included school social work models' illustrations, surveys which included data related survey items, editorials, case illustrations, decision-making factors which impact the use of data by SBSW, and preparedness for using assessment and evaluation tools.

Table 2. Themes

Theme	Number of Articles
School Social Work Model	5
Use of evidence-based evaluation tools and processes	5
Preparedness for using assessment and evaluation tools	3
Data sources	2
Barriers to Data Decision Making	2
School social work outcomes	2
Case Illustrations	2

Themes

   Reviewing the articles revealed seven major themes, including school social work models, the use of evidence-based evaluation tools, preparedness for using assessment and evaluation tools, data sources, barriers to data decision making, school social work outcomes, and case illustrations. Each of these themes is described in detail below.

School social work model (N=5)

   Five articles discussed the development, use, or validation of a school social work model. These articles could be categorized across the three categories of editorials, surveys, and theoretical presentations. Two articles focused specifically on the national school social work practice model, it's development, and implementation (Frey et al., 2012; Kelly, et. al., 2015; Thompson et al., 2017) and a third proposed a conceptual model that could be applied to school social work (Thompson et al., 2017). Two other models were found that offered a broader perspective, including SBSW, school psychologists, counselors, nurses, and community partners (Anderson-Butcher et al., 2008; Richard & Villareal Sosa, 2014). These were not specifically focused on SBSW, they did mention how SBSW might fit into the models in the use of data. Overall, the introduction of school social work models provided a framework for SBSW to integrate DBDM as part of their practice. While SBSW roles vary across schools and districts, having a strong foundational model to guide the use of data SBSW to begin to become leaders in conversations around identifying at-risk students, targeting interventions where they can be most effective, and improving outcomes for students.

   Frey et al. (2012) introduced the idea of a national school social work practice model from its conception to the initial iterative development processes. Embedded within this model are key practice features which are predicated on the use of a data-informed practice. These are the need to support emotionally relevant mental health services through screening, promotion, prevention, and intervention. While these areas are directly related to data use by SBSW, this article describes the broad overview and provides few details about how that might be applied in practice. Several researchers took this a step further and applied the results of a national survey to examine how results aligned with the national school social work practice model (Kelly, et. al, 2015). The goal of this survey was to see how the model was implemented by SBSW in the use the research-supported interventions and the use of tiered intervention systems to support student success. Two survey areas directly related to the use of data in school social work were the frequency of use of evidence-based assessment-evaluation tools and preparedness to use and access evidence-based assessment tools. Another area, promoting school climate and a culture conducive to learning

might involve the use of data, but the use of data in that area was not explicitly described.

Using the national school social work model as a backdrop, Thompson et al. (2017) presented four problem-solving steps involved in using data to make changes to student outcomes. The first step included administering student and teacher checklists to identify areas of risk. Next, an effective intervention is selected from a menu of evidence-based supports. These interventions would be mapped to risk area and the level at which students will receive the intervention. The third step is to implement support. Finally, their approach proposed collecting information to monitor and evaluate the effectiveness of the support.

Richard and Villareal Sosa (2014) conceptualized a practice model based on their survey of Louisiana SBSW. In this model, they described evaluation as one of the four practice areas, and accountability and DBDM as one of the core skills for SBSW. While this model was borne out of the results of the survey, it is presented as a conceptual model that has the potential to impact school social work.

Anderson-Butcher et al. (2008) offered a broad framework around the Ohio Community Collaboration Model for School Improvement (OCCMSI) which provides an overall logic model for how key processes can influence improvement planning. Within these key processes lies the assumption that data will be used through the process to drive decision making through each step. Processes that should be addressed in this framework include needs/resources assessment, gap analysis, partnership, and infrastructure development, and evaluation-driven learning, improvement and continuous feedback. Ultimately, the goal is to increase the capacity of schools for evaluation driven learning and improvement. This is done through the collaboration of schools and communities in reviewing outcomes data at every level, including an analysis of the needs assessment, using data to identify gaps in needs and resources, the effectiveness of implemented programs, and school-wide learning improvements. This framework identifies the role of SBSW as operating with and within schools to support the change efforts by serving as intermediaries between schools, families, and communities. SBSW can play key roles in needs assessment and gap analysis to identify priorities and solutions through the regular review of data as part of a continuous improvement planning process.

Use of evidence-based evaluation tools and processes (N=5)

Another theme that was identified was related to the role of SBSW and how they use data and evidence-based tools or processes. Most of the articles under this theme looked at surveys of how often SBSW used assessment and data processes within their school social work practices (Kelly & Lueck, 2011; Kelly, et. al., 2015; Richard & Villareal Sosa, 2014; Whittlesey-Jerome, 2013). While

one article examined a specific approach for SBSW to calculate treatment effectiveness using effect sizes (Rubin & von Sternberg, 2017). The articles in this area focused on which tools and processes SBSW used in their school social work practice.

In an effort to clarify the role of SBSW in Louisiana, Richard and Villareal Sosa (2014) found that within their role a majority of SBSW (58%) use assessment and evaluation in their practice. Others found that when survey respondents were asked about adherence to the six best practices in school social work they noted *all of the time* that they state the target of the intervention (50.0%), operationalize the goal (48.3%), collaborate with others to identify the correct data (36.7%), decide on the frequency of data (30.5%), and sometimes choose reliable and valid measures (30.5%) (Whittlesey-Jerome, 2013). However, many reported they never participate in information management systems that aggregate their data with other SBSW (49.2%) and never used graphs to map behaviors over time (45.9%).

Kelly, et. al. (2015) found that almost half of those SBSW that responded to a national survey reported always using standardized scales (48.1%) and progress monitoring tools (47.7%), which was followed by the use of existing data (23.1%). Most often social workers always learned about resources evidence-based practice resources through trainings or workshops (61.8%), then online evidence-based practice sites (42.6%), online databases (23.0%), supervision (16.2%) and journals or books (14.2%). This was confirmed in another study which discussed that while SBSW might engage in evidence-based practices during the course of their work, few reported using online research or journals to acquire the necessary information to engage in an evidence-based process (Kelly & Lueck, 2011).

Finally, Rubin and von Sternberg (2017) presented a new method for examining the effect size of pre/post-test designs by using within-group comparisons. The authors walked through how practitioners calculate effect sizes and use those results to determine the impact even without control groups. The authors provide step-by-step instruction on how to calculate the effect size of pre/post measures. Once these are calculated, practitioners would compare their results to previously benchmarked studies. Four benchmark comparison studies were provided in the article, including cognitive behavioral therapy (CBT) for depression, problem-solving therapy (PST) for depression, trauma-focused interventions, and eye movement desensitization and reprocessing (EMDR). One limitation of this approach is that a benchmark must already be established for the intervention and problem focus.

Data sources (N=2)

Where SBSW got their data was also a theme that was evident throughout several of the articles (Kelly & Lueck, 2011; Whittlesey-Jerome, 2013). Having data that answers the questions being asked, is easily accessible, and is reliable is one the most critical steps in using data to make evidence-informed decisions (Lucio, Campbell, Detres, & Johnson, 2018). In order to fully embrace a DBDM approach, SBSW have to use data sources that speak directly to the impact of school social work services.

When asked what data are used to evaluate the effectiveness of services, SBSW most often preferred teacher and student self-report, then student observation, and finally school data when measuring their effectiveness (Kelly & Lueck, 2011). This was similar to school counselors. However, school psychologists reporting using school data as their first choice to show evidence of the effectiveness of their interventions. Whittlesey-Jerome (2013) asked SBSW how often they used different methods to gather data. Looking at the response option *all of the time,* it was found face-to-face interviews were used most (67.2%), followed by direct observations (50.8%), school records (45.9%), and self-reports (42.6%). The respondents reported that some of the time they used test scores (55.7%), rating scales (43.3%), questionnaires (43.3%), and role plays (38.3%).

Barriers to data decision making (N=2)

Another key theme that appeared throughout several articles was how data was used to make decisions. Across the two articles that covered this theme, barriers to using data to make decisions were presented (Kelly, 2011; Phillippo et al., 2017). Phillippo et al. (2017) looked at how SBSW make practice decisions and learn how to use data. The focus group participants reported they wanted to implement data-driven practices but identified barriers such as a lack of knowledge, limited resources, role, and organizational conditions. Even when SBSW sought additional knowledge, it was often through peers rather than formal training. Additionally, even though participants expressed a need to learn more they noted that they did not generally pursue training in this area. There exists a gap between what SBSW research has identified and actual practice application of using evidence to drive decision making.

Kelly (2011) similarly found that one of the failures of DBDM is a lack of knowledge by SBSW to be able to implement the steps. In reality, practitioners often don't know how to interpret, use, or implement interventions based on data. In order to address this gap, school-based mental health professionals need to have a clearly defined reason for collecting the data, have processes that are user-friendly process for gathering data, and a system for using the data to intervene.

Case illustrations (N=2)

Two articles were case illustrations of data usage by SBSW (Hopson & Lawson, 2011; Thompson et al., 2017). These showed examples of how schools and SBSW can support the use of data in decision making. Hopson and Lawson (2011) provided an illustrated an example of how schools can use data to support interventions around school climate and students social-emotional learning competencies. Using the social development model (SDM) as a guide to focus interventions which embodied the key concepts of prosocial bonding and interaction opportunities, skills needed to make and keep connections, and reinforcement of learned skills. The authors noted that even though social workers were not involved in the case illustration, SBSW could be useful in the collection of data for ongoing evaluation and improvement of school climate and ultimately student outcomes.

While the previous example was a case illustration, another article provided a more theoretical case example of how data *could* be applied (Thompson et al., 2017). The case example illustrated how schools might integrate data into decision making by administering checklists and identifying risk, selecting interventions to address the issues identified, put the intervention into action, collect information to monitor progress, and see change. While all of these steps were provided as a theoretical model for DBDM, the focus was on using screening data to identify supports at the universal, selected, and indicated levels. The reports presented showed school level risks for specific behaviors which could then be used by SBSW to target these areas of risk.

School social work outcomes (N=2)

What data are shared by SBSW as evidence of the effectiveness of services came across as a theme in two studies (Bye, Shepard, Partridge, & Alvarez, 2009; Richard & Villareal Sosa, 2014). This speaks to whether the services provided impacted the desired outcomes. Richard and Villareal Sosa (2014) found that 72% of SBSW provided a response to intervention (RtI) as a measure of effectiveness using school data, followed by administrator reports (82%), case notes (54%), and self-constructed graphs (32%). This suggested to the authors that SBSW in Louisiana are practicing in a way that is consistent with Standard Decision Making and Practice Evaluation, which emphasizes data-driven decision making.

SBSW and school administrators in four school districts in Minnesota were surveyed regarding outcomes expected as a result of school social work services as well as the sources of funding for these services (Bye et al., 2009). Both administrators and SBSW reported that increasing school attendance and decreasing discipline problems were the most important outcomes. While there was consistency between social workers and administrators on what key outcomes

should be reported, twenty-nine percent did not present data related to the effectiveness of school social work services. The remainder reported discipline problem rates (49%), other including attendance (32%), rate of parent involvement (26%), student achievement scores (26%), school climate (25%), rates of school violence (22%), and dropout rate (10%). The survey also indicated that administrators were often unaware of how school social work outcomes were being reported. While the use of data reporting varied across different outcomes, almost one in three social workers reported they did not present data to others at all. sixty-six percent of social workers reported that informal conversations were seen as a way to convey school social work outcomes. This was contrasted by administrators, where only twelve percent saw this the same way. This can be problematic because even though these conversations are occurring administrators reported not recalling these conversations. This illustrated that school social work outcomes must be shared through formal processes in order to keep others informed of the impact of social work services.

Preparedness for using assessment and evaluation tools (N=2)
The final theme that was found was how prepared SBSW felt they were to be able to use assessment and evaluation tools (Kelly, et. al., 2015; Thompson et al., 2019). When asked how prepared they use and access evidence-based assessment-evaluation tools and practice resources, survey respondents stated they were *always prepared* to use standardized scales (63.2%), existing data (23.5%), progress monitoring (21.4%), student/teacher self-assessment (14.4%), and monitoring fidelity (11.1%). However, when it came how much access SBSW reported having access to, over half said they had *high access* peer consultation (54.7%), then online databases (22.9%), trainings and workshops (16.8%). Less than 1% said they had high access to journals or books.
Thompson, Frey, and Kelly (2019) used a latent profile analysis approach to classify SBSW across three levels of ecologically oriented practices across the school, home, and community. Respondents were categorized as high (17%), medium (67%), and low (16%) in relation to their level of ecologically oriented practice. High profile social workers more likely report higher scores being prepared to use evidence-based measures, use to evidence-based measures, access to evidence-based supports, use of evidence-based supports, and engagement in universal (school-wide) practices. While the high-profile category of social workers was more likely to have a graduate degree and advanced certification, a larger percentage had 10 or fewer years of practice experience compared to the other groups.

Discussion and Implications for Research and Practice

This study's findings suggest additional areas for practice and research going forward. We detail them in this section, starting with the implications for school social work practice and following that with discussing how the limited research on SBSW and data might be accelerated by some national efforts our team is engaged in. The roles of school social work practice and research must continue to work together to identify best practices in enhancing the use of DBDM in school social work practice.

Implications for practice

This scoping review shows that SBSW are engaged in a practice that requires them to collect data and use it to help them serve their schools more effectively. While SBSW roles vary across schools and districts, having a strong foundational model to guide the use of data SBSW to begin to become leaders in conversations around identifying at-risk students, targeting interventions where they can be most effective, and improving outcomes for students. Data are being collected at a school level and is then being infused into additional intervention planning and implementation (Anderson-Butcher et al., 2018; Hopson & Lawson, 2011; Thompson et al., 2019). There is also some evidence that SBSW are collecting data at a more Tier 3 direct practice level to inform their practice choices, and that at least some of this work aligns well with the national school social work practice model (Kelly, et. al., 2015; Richard & Villareal Sosa, 2014). This is encouraging, and that there were 13 studies in this review from the past decade indicates that there is some movement in school social work practice towards data-driven decision making and increased utilization of EBP.

However, a number of significant concerns present in these studies amidst the overall positive trends identified. For example, most SBSW report not having a coherent framework or set of practices that they can rely on to collect, analyze, and use data in their daily SBSW practice. Many SBSW responses to the surveys identified here show that they believe they lack the training and the time to do this work consistently. Unfortunately, many are still primarily practicing in a reactive mode with crisis intervention and high caseload demands dictating their practice choices (Phillippo et al., 2017). To the extent that there were SBSW actively engaged with and utilizing data in these articles, there were also a number of extenuating circumstances that may have facilitated this high level of engagement and competence. Most prominently was the presence of a research team and university-district partnerships. Without that level of administrative commitment and university-practice partnerships it is unclear how many SBSW would be able to use data effectively.

A final concern that bears saying here is that as noted in our initial sections, the fields of education, health care, and other human service institutions

are rapidly making electronic records and data tools standard expectations of practice, and school social work appears to not be fully engaged in that process (yet), and with a few exceptions, don't appear to be leading these efforts within their school settings. This is not a problem that is unique to school social work, as social work overall is struggling to fully embrace and take leadership roles within the tectonic shifts that technology is bringing to practice (Berzin et al., 2015). However, given the primacy that assessment, screening, and progress monitoring tools are assuming within school mental health and special education practice, it's time for SBSW to get more in front of this growing movement within K-12 education (Kelly, et. al., 2015).

This question of how to make school social work practice identities align more fully with the profession's national model and the push to be more data-driven is a necessarily multi-faceted one, but from our perspective, there are at least two areas that school social work researchers and practitioners can join together on immediately to make this closer to a reality:

1) Bring researchers and practitioners together to do this. Since Summer 2018, our team has been hosting a free social media platform for any and all SBSW to join and share resources. A big focus of the work there thus far has been the topic of data and EBP, and while the site (dubbed SSWNetwork, https://schoolsocialworkers.mn.co) has mostly been populated by SBSW talking to each other and comparing notes, we plan in 2019-20 to begin to formally bring researchers and practitioners together there to partner on learning and implementing data-driven and evidence-informed practices together.

2) Make field placements and pre-service school social work training more data and evidence based. At present, most SBSW are trained over the course of their second year in the MSW in one school district with one supervisor who is themselves a school social worker. Many (but not all states) also require specific school social work content coursework to gain licensure, but there is little standardized curriculum across the country, and the most recent review of school social work syllabi offered little evidence that data-driven and evidence-informed work is adequately represented there (Berzin & O'Connor, 2010). Because it is very likely in many school social work contexts that practitioners will not have consistent ongoing professional development and supervision (Kelly, Bluestone-Miller, Mervis, & Fuerst, 2012), it is crucial that faculty and staff teaching SBSW make teaching these skills a priority, both for their student interns and for their supervisors.

Implications for Research

In some ways, the more dire implications are for school social work research, as the relative lack of empirical support for school social work services makes the need for the field to have more feasible examples of data-driven school social work practice even more urgent. Simply put, more research on school social work practice at all 3 levels of MTSS is needed to demonstrate the value of having SBSW in every school. In order to help accomplish this, school social work research must generate very user-friendly and coherent frameworks for collecting and using data that SBSW tell researchers they're seeking. It's important to differentiate this claim we make here from the standard "more research is needed" comment you read at this point in most research articles. In our view, what is needed here isn't just more research on school social work practice, but more research on what the mechanisms are for helping a critical mass of SBSW become data-driven and evidence-informed as just a standard feature of their practice identity and repertoire of skills. It is not enough to only understand the impact of a specific intervention or program on school outcomes, but school social work researchers will have to identify those supports and barriers which affect SBSW proficient use of DBDM.

Study Limitations

This study has several limitations that need to be factored into understanding the study findings, and we detail them briefly here. First, our scoping review procedures outlined earlier in the article focused only on DBDM articles with SBSW, and it is very possible that there are a range of other articles on this topic within school mental health more broadly that, though they were excluded from this review, could have provided insight into how DBDM could be better integrated into SBSW practice. Additionally, the focus on published articles in peer-reviewed journals meant that any other sources (gray literature in the form of state or federal-level reports, informal reports on blogs or other social media spaces by SBSW) were not included in this review, and might have shown further details about how SBSW are using data and technology. Finally, and perhaps most importantly given the aims and scopes of this journal, the U.S.-centric focus of the scoping review itself meant that we can't draw any conclusions (yet) about how DBDM and SBSW are working in other parts of the world. It is our hope that this scoping review might be replicated and focus on international contexts, including the conducting of searches in journal databases that publish articles in languages other than English.

Conclusion

Social work as a profession is moving toward using data to inform decision making. However, while on a similar long-term trajectory as many other

professions, such as health care, marketing, and even higher education, social work continues to lag behind (Berzin et al., 2015; Lucio et al., 2018; Marr, 2015; Zhu, 2016). School social work has begun to adopt this approach to practice in schools, but it is still applied inconsistently and often behind other industries and school-based professionals. Even within in the K-12 environment there has been movement among school counselors and school psychologists to embrace this approach (American School Counseling Association, 2019; National Association of School Psychologists, 2019).

It is encouraging to note that there has been some recent literature specifically related to school social work in terms of overall models, using of evidence-based tools, how prepared SBSW are to use assessment tools, data sources, barriers, and outcomes. While there has been some movement in the direction of data-informed decision making over the last ten years, the literature is still sparse. We are starting to see models developed that help chart a path towards improved use of data to inform decision making (Anderson-Butcher et al., 2008; Frey et al., 2012; Kelly, et. al., 2015; Richard & Villareal Sosa, 2014).

The evidence suggests that infusing the systematic use of data to inform decision making has been a key tool to improve efficiency/effectiveness and these benefits could be clearly applied to school social work to improve the practice and ultimately to improve outcomes for the students and families' SBSW serves. The application of a defined and systematic approach of using data to inform decision making is needed to address gaps in students' services, unmet needs and ultimately impact student outcomes.

Table 1. Articles noted for review

Citation	Themes	Type of Article	Sample	Methodology	Summary
Anderson-Butcher, D., Lawson, H. A., Bean, J. Flashpholer, P., Boone, B., & Kwiatkowski, A. (2008). Community Collaboration to Improve Schools: Introducing a New Model from Ohio. *Children & Schools, 30*(3), 161-172	• School social work model	• School social work model	NA	NA	The OCCMSI is a data-based improvement planning process which identified the five core components of academic learning, youth development, parent/family engagement and support, health and social services, and community partnerships. This framework was developed around the understanding, measuring, and evaluating school and non-academic barriers which impede student success.
Bye, L., Shepard, M. Partridge, J., & Alvarez, M. (2009). School Social Work Outcomes: Perspectives of School Social Workers and School Administrators. *Children & Schools, 31*(2), 97-108.	• School social work outcomes	• Survey includes data related items	The sample was drawn from SBSW and administrators from four areas of Minnesota. A total of 140 SBSW were surveyed along with 53 administrators. Among social workers surveyed, a majority provided services to students in special education programs (90%) as well as the general population of students (61%). Additionally, the school social workers reported serving grades pre-K (25%), K through 6 (53-60%), 7 through 8 (36%), and 9 though 12 (30%).	One survey was administered to SBSW and another to school administrators. Lead SBSW in each area worked with the research team to distribute the surveys. They were administered at school meetings, emailed, and/or hard copy mailed to participants. All school administrator surveys were distributed through hard copy mailed instruments only.	SBSW and administrators across four school districts were surveyed about outcomes of social work services. They were asked three data related questions around the expectations regarding the benefits of school social work services, actual outcomes data reported by SBSW, and how outcomes data are communicated.

Citation	Themes	Type of Article	Sample	Methodology	Summary
Frey, A. J., Alvarez, M. E., Sabatino, C. A., Lindsey, B. C., Dupper, D. R., Raines, J. C., Streeck, F., McInererney, A., & Norris, M. P. (2012). The development of a national school social work practice model [Editorial]. *Children & Schools, 34*(3), 131–134.	• School social work model	• Editorial	NA	Editorial	This editorial discussed the initial development of the National School Social Work Model. The rationale and initial conceptualization are discussed, along with the presentation of the comprehensive framework are provided.
Hopson, L. & Lawson, H (2011). Social Workers' Leadership for Positive School Climates via Data-informed Planning and Decision Making. *Children & Schools, 33*(2), 106-118.	• Case illustration	• Case illustration	Middle/High school students (N=485) and school personnel (N=104) were involved in the study.	School personnel completed the School Success Profile-Learning Organization (SSP-LO) and students completed the School Success Profile	This article provides a case example of SBSW and administrators using data to enhance school climate. Using data about schools' learning culture and student's risk and protective factors, administrators, SBSW, school personnel, and social work faculty developed strategies for developing a more supportive school climate.
Kelly, M. S. (2011) Data-Driven Decision Making in School-Based Mental Health: (How) Is it Possible? *Advances in School Mental Health Promotion, 4*(4), 2-4,	• Barriers to data decision making	• Editorial	NA	Editorial	This essay discussed the use of Data Driven Decision Making (DDDM) which held the promise of moving school mental health into accountability and effective practices through the use of data.

Citation	Themes	Type of Article	Sample	Methodology	Summary
Kelly, M.S. & Lueck, C. (2011) Adopting a Data-Driven Public Health Framework in Schools: Results from a Multi-Disciplinary Survey on School-Based Mental Health Practice, *Advances in School Mental Health Promotion, 4*(4), 5-12.	• Data sources • Use of evidence-based evaluation tools and processes	• Survey Includes Data Related Items	The sample included a total 1,874 school based mental health professionals, including SBSW, school counselors, school nurses, and school psychologists. A majority were female (82%-100%) and white (87%-96%).	Surveys were sent through four state school based mental health (SBMH) associations and any SBMH providers working for the state Department of Health. Emails and list serv postings for recruitment were employed and this yielded a 31% response rate.	This research examined the trends in school based mental health through a survey which looked at practice context of services, included population served, reason for referral practice types, and measuring the effectiveness of services. Within the context of data, participants were asked what data they use the effectiveness of their interventions.
Kelly, M. S., Frey, A., Thompson, A., Klemp, H., Alvarez, M., & Cosner Berzin, S. (2015). Assessing the National School Social Work Practice Model: Findings from the second National School Social Work Survey. *Social Work, 61*(1), 17-28.	• School social work model • Use of evidence-based assessment tools and processes • Preparedness for using assessment and evaluation tools	• Survey includes data related items	A total of 3,769 SBSW responded to the survey, which was a 44.4% response rate. Most where female (91.2%), white (82%) and had an MSW (88.5%).	The online survey was administered to members through the professional school social work organizations and 33 state associations along with the District of Columbia also administered the survey to members. Twenty-three other local groups dedicated to school social work agreed to participate. Finally, at the local level a snowball approach was used to gather more participants.	This article examined the results of a national survey related to the National School Work Model. While the model covers three broad practice concentrations, the one that is most closely related to the use of data is using research supported interventions and evaluation strategies to examine the impact of interventions. Within this article the authors described the survey results and the extent these areas are implemented by school social work.

Citation	Themes	Type of Article	Sample	Methodology	Summary
Phillippo, K. L., Kelly, M. S., Shayman, E., & Frey, A. (2017). School Social Worker Practice Decisions: The Impact of Professional Models, Training, and School Context. *Families in Society: The Journal of Contemporary Social Services, 98*(4), 275–283.	• Barriers to data decision making	• Decision making factors for data usage	Sixty SBSW participated in this study. Ninety-five percent were female, and a majority were White (82%). Most were located near the Chicago area and worked in one school (78%).	Six focus groups were conducted with participants grouped by school level (elementary school, high school, etc.)	Using focus groups of practicing SBSW, this research focused on which model's guide school social work practice in relation to data driven work, what professional training informed this area, and the relationship of setting to the selection and adoption of data-driven work.
Richard, L. A. & Villarreal Sosa, L. (2014). School Social Work in Louisiana: A Model of Practice. *Children & Schools, 36*(4), 211-220.	• School social work model • Use of evidence-based evaluation tools and processes	• Survey includes data related items	Demographics for the sample were not provided.	Participants were contacted via email address, which was provided by the Louisiana Department of Education. The entire Louisiana school social work population (N=487) were surveyed, with a 78% response rate.	This study examined the role of school social work in Louisiana. As a result of this work, the researchers developed a conceptual model for school social work, which included a component on accountability.
Rubin, A. & von Sternberg, K. (2017). A practitioner friendly way to evaluate practice. *Social Work, 62*(4), 297-302.	• Use of evidence-based evaluation tools and processes	• Decision making factors for data usage	NA	NA	The authors presented a method for practitioners to evaluate their practice using within group effect sizes to determine the impact of pre/post change in the absence of a control group.

Citation	Themes	Type of Article	Sample	Methodology	Summary
Thompson, A. M, Frey, A. J., & Kelly, M. S. (2019). Factors influencing school social work practice: A latent profile analysis. *School Mental Health, 11*(1), 129-140.	• Preparedness for using assessment and evaluation tools	• Survey includes data related items	A total of 3,769 SBSW responded to the survey, which was a 44.4% response rate. Most where female (91.2%), white (82%) and had an MSW (88.5%).	The online survey was administered to members through the professional school social work organizations and 33 state associations along with the District of Columbia also administered the survey to members. Twenty-three other local groups dedicated to school social work agreed to participate. Finally, at the local level a snowball approach was used to gather more participants	The authors looked at several items including preparedness to use evidence-based measures, the use of evidence-based measures, access to evidence-based supports, and use of evidence-based supports.
Thompson, A. M, Reinke. W., Holmes, S., Danforth, L. & Herman, K. (2017). County Schools Mental Health Coalition: A Model for a Systematic Approach to Supporting Youths. *Children & Schools, 39*(4), 209-218	• Case illustration • School social work model	• Case illustration	No demographics were provided for the school.	One single coalition school was used to illustrate the implementation of the model.	A case illustration was provided on how schools effectively use data to identify risk on important indicators of youth mental health at the county, school, grade, classroom, and individual student levels.
Whittlesey-Jerome, Wanda. (2013). Results of the 2010 Statewide New Mexico School Social Work Survey: Implications for Evaluating the Effectiveness of School Social Work. *School Social Work Journal, 37*(2), 76-87.	• Survey includes data related items	• Use of evidence-based evaluation tools and processes • Data sources	Sixty-four social workers responded to the survey (32%). In addition, all but two were working as SBSW (96.9%) and a majority were White (74.2%), followed by those who chose not to answer (16.1%), American Indian (6.5%) and Black (3.2%). Eighty-seven percent help an MSW, and a majority were female (75.6%).	Survey provided to SBSW across the state of New Mexico. Participants who were willing to participate provided email addresses during the NASW annual state luncheon. Surveys were completed electronically online.	Using a 2010 statewide survey of SBSW in New Mexico, the researchers looked at how SSW SBSW evaluate their effectiveness.

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