Survey of Evidence in Education for Schools (SEE-S) Descriptive Report

Elizabeth Farley-Ripple
Sam Van Horne
Kati Tilley
Samantha Shewchuk
Henry May
Deborah Amsden Micklos
Horatio Blackman

University of Delaware
University of Minnesota
University of Pennsylvania

October 2022

Center For Research Use In Education
University of Delaware
University of Minnesota
University of Pennsylvania

About the Center

The Center for Research Use in Education is an Institute for Education Sciences-funded knowledge utilization center focused on rethinking research for schools (R4S). Our mission is to expand the study of research use and produce a more holistic picture of what drives it, from the production of knowledge by researchers to the application of research in schools. We also seek to identify strategies that can make research more meaningful to classroom practice.

At our center, we believe that education research is an important part of the educational process. We further believe that rigorous evidence, whether qualitative or quantitative, can foster better opportunities and outcomes for children by empowering educators, families, and communities with additional knowledge to inform better decision-making. For this reason, we seek to support strong ties between research and practice.

To learn more about our center, visit https://crue.cehd.udel.edu/ or follow us on Twitter at @UDCRUE.

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305C150017 to the University of Delaware. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.

Please cite this report as follows:

Farley-Ripple, E., Van Horne, S., Tilley, K., Shewchuk, S., May, H., Micklos, D. A., Blackman, H. (2022). *Survey of Evidence in Education for Schools (SEE-S) Descriptive Report.* The Center for Research Use in Education (CRUE) & the Center for Research in Education and Social Policy (CRESP), University of Delaware.

Available from https://crue.cehd.udel.edu/

Acknowledgements

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305C150017 to the University of Delaware. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.

The authors would like to thank those who have contributed to this study.

This study would not have happened were it not for the willingness of the educators and researchers who participated in the exploratory and cognitive interviews, the administrators of 64 schools who agreed to offer the pilot surveys to their staff, and the 1,573 educators of the schools who participated in the pilot survey, the district administrators of the 21 districts and 20 charter schools who agreed to offer schools the opportunity to participate in the field trial, the 154 school administrators within the participating districts, and the 4,415 educators who participated in the field trial. Dr. James O'Toole was instrumental in recruiting schools for the pilot trials and districts for the field trial.

Dr. Lynn Okagaki of the University of Delaware, Dr. Rebecca Maynard of the University of Pennsylvania, Dr. Karen Seashore Louis of the University of Minnesota–Twin Cities, and Dr. Ronald Gallimore have advised this project throughout. We greatly appreciated the guidance provided by the Advisory Committee composed of Atnre Alleyne, Dr. Robert Granger, Ben Herold, Dr. Karen Kolsky, Dr. Jonathan Supovitz, Dr. Lisa Thomas, Dr. Elliot Weinbaum, and Dr. Russell Whitehurst.

Dr. Allison Karpyn, Layne Humphrey, Kalyn McDonough, and Dreisen Heath provided support in the beginning phases and assisted with developing the conceptual framework and pilot surveys.

Dr. Akisha Jones Sarfo and Dr. Sara Grajeda assisted with data analysis of the educator pilot survey and with revisions to the Survey of Evidence in Education for Schools.

Graduate students and staff who supported project activities are Rui Wang, Joseph Tise, Scott Sheridan, Liu Liu, Cara Cuccuini-Harmon, Carly Hill, and Hilary Mead.

Undergraduate students who assisted us in the project activities are Samantha Lester, Rosymar Magana, Nikita Patlolla, Nicole Mejia, Connor Morgan, Darnelle Evans, William Cavin, Mia Mazal, Mia Seibold, and Angelina Calandruccio.

Contents

Table of Figures

Table of Tables

Introduction

Expectations for the use of research in educational decision-making have grown exponentially across the globe. In the United States, increased pressure through accountability policy (e.g., No Child Left Behind, Every Student Succeeds Act) and through the production and dissemination of scientifically based research (e.g., Education Sciences Reform Act, What Works Clearinghouse) are intended to create conditions for improving research use. Concurrently, researchers, education agencies, and funders have mounted efforts to strengthen relationships between research and educational practice to improve decisions about and outcomes for children. And perhaps now, more than ever, research may be critically important to addressing the growing inequities in our education system.

Accompanying these efforts is a need to understand, at scale, educational decision-making, and the role of research in it. To date, studies of research use in the United States have tended to focus on various stakeholders' research use (e.g., Biddle & Saha, 2002; Dagenais et al., 2012), case studies of schools or districts (e.g., Asen et al., 2013; Finnigan et al., 2013), or case studies of specific education policies or practices (e.g., Hopkins et al., 2019; Scott et al., 2017).

The purpose of this report is to broadly portray research use in U.S. schools *at scale* to better understand where we are as an educational system in the more than forty-year journey to improve the role of research in education policy and practice. This report answers five key questions relevant to the various actors in the larger education ecosystem:

1. *What are the nature and depth of schools' use of research to inform policy and practice?*
2. *What are practitioner perspectives on the gap between research and practice?*
3. *Are practitioners well prepared to use research?*
4. *Where do practitioners turn for research-based information?*
5. *To what degree do practitioners engage in research brokerage activities?*

We answer these questions using survey data from administration of the *Survey of Evidence in Education for Schools* (*SEE-S*), including responses from more than 4,000 practitioners, which includes teachers, coaches, other specialists, and administrators in over 150 schools across the country.

The research presented here was conducted by the Center for Research Use in Education (CRUE; "the Center"), a knowledge utilization center funded by the Institute of Education Sciences. The Center seeks to expand understanding of how to improve the relationship between research and practice in the K–12 educational space. Additional technical details for the *SEE-S*, including sampling methods, psychometric/statistical analyses, and results are presented in a separate *SEE-S*

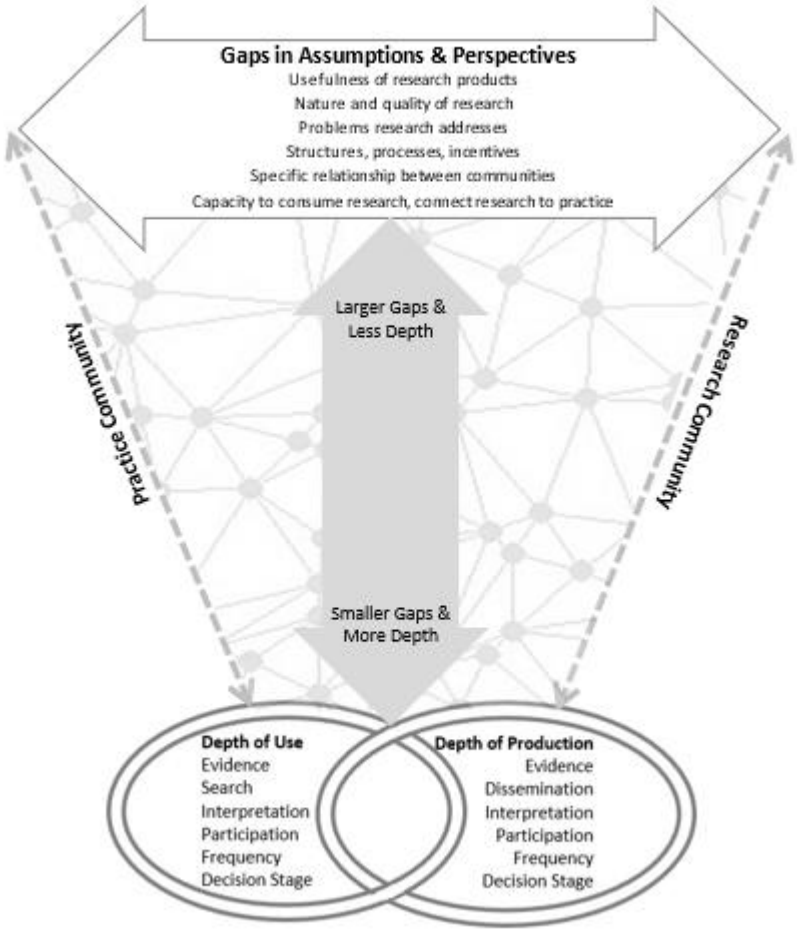
technical report (May et al., 2022). Details on the background, related literature, and conceptual framework underpinning the *SEE-S* can be found in "Rethinking Connections between Research and Practice in Education: A Conceptual Framework," an article published in *Educational Researcher* (Farley-Ripple et al., 2018).

Framing the Study

The work of the Center is guided by a conceptual framework (Figure 1) that links the practices and perspectives of both researcher and practitioner communities to more holistically understand and improve the relationship between research and practice. Figure 1 presents a detailed visualization of our conceptual framework. At the bottom of the figure are interrelated processes associated with a) use of research in decision-making and b) research production. Each process features a parallel set of dimensions, and we describe variability in those processes in terms of depth, a concept we explore elsewhere (Farley-Ripple et al., 2018). At the top of the image are five key assumptions and perspectives of the research and practice communities represented by the horizontal arrow. This arrow denotes the size and scope of potential gaps in those assumptions and perspectives between the research and practice communities, larger at the top, becoming smaller toward the bottom. Nested between the research and practice communities, the network image represents relational dimensions that support or constrain research use, including networks that support access to resources and knowledge brokerage within and between communities. We hypothesize that both perspectives and assumptions as well as relational dimensions influence research use and production, as indicated by the central vertical arrow.

This report focuses on describing the components of the framework from the practice perspective. That is, we attend here to depth of research use in school decision-making (lower left circle), practitioner's perspectives and assumptions (top arrow), and practitioner's networks and brokerage activities, and our primary and secondary research questions reflect these dimensions. Below we elaborate on the dimensions of the framework explored in this report.

Figure 1. Conceptual Framework



Depth of Use

Our construct of "depth of use" describes the complex ways in which evidence use is meaningful, systematic, and likely to generate improvements in policy and practice. Our conception of depth of use acknowledges the complexity and multidimensionality of evidence use as an organizational practice. Attending to this complexity, we focus on evidence, search, interpretation, participation, frequency, and the stage of decision-making at which evidence is relied upon. As a larger construct, depth of use describes the degree to which research meaningfully and systematically informs decisions about education practice.

Evidence

Decision-makers utilize a variety of evidence sources during the decision-making process (Coburn et al., 2009; Corcoran et al., 2003; Farley-Ripple, 2012; Penuel et al., 2016; Supovitz & Klein, 2003). Accountability policy specifically privileges external research and evaluation as well as local data in

improvement decisions. We are specifically interested in the use of evidence generated from research not conducted by the school or district (i.e., external research) compared with other forms of research (e.g., local data analysis) and knowledge that influences decision-making. We do not consider one form of research to be better or more important than other forms of evidence. Rather, we are interested in the relative influence of external research compared to other forms (i.e., locally generated) of evidence.

Search

This dimension of depth of use focuses on the nature and extent of practitioners' search for evidence. Search incorporates time, effort, and sources of evidence. Prior studies have suggested that searches are often limited to sources that are local or familiar to the decision-maker (David, 1981; Finnigan et al., 2012; Honig & Coburn, 2008; Williams & Cole, 2007), whereas several recent initiatives target improved access to research, from clearinghouses to open-access publications.

Interpretation

To impact decision-making, evidence must be interpreted and transformed into usable knowledge (Bertrand & Marsh, 2015; Coburn et al., 2009; Davies & Nutley, 2008). This sensemaking process includes critical evaluation of information to determine its quality or rigor, applicability to one's context, and relevance to the problem (Davies, 1999; Williams & Cole, 2007).

Participation

Understanding who participates in research use during decision-making is important because individuals' positionality within the staffing hierarchy as well as their predispositions, knowledge, and goals influence what and how group members interpret evidence (Coburn, 2001a; Coburn et al., 2009; Finnigan & Daly, 2014; Kennedy, 1982; Weick, 1995; Weiss 1995). Participation relates to who participates in decision-making, as well as to the ways in which they are involved (i.e., collecting information, evaluating information, making the decision).

Frequency

Frequency is an indicator of the extent to which research informs decisions and to which evidence use practices are institutionalized and sustained in practice. Although no research exists in this specific domain, the regularity with which research evidence is brought to bear on decisions may be an indicator of greater or lesser systematic use.

Stage of decision-making

Theories on research use suggest that different types of evidence may be preferred at different points in decision processes (Bass, 1983; Farley-Ripple, 2008), such as problem framing or identification of a potential solution (Coburn et al., 2009).

Gaps in Assumptions & Perspectives about Research

The horizontal arrow in Figure 1 represents our approach to understanding and describing the factors that influence the use of research in educational decisions. Dunn's (1980) five categories of culture grounds our work. Here, we look to describe the differences in assumptions and perspectives between the research and practice community across the following dimensions.

Usefulness of research products

Prior research suggests that the characteristics and type of research products influence their use in schools (Corcoran et al., 2001; West & Rhoton, 1994). The usefulness dimension of the gap represents the degree to which the characteristics valued by practitioners are incorporated into research products.

Nature and quality of research

Findings from prior work suggest that practitioners may value characteristics of research that differ from researchers' primary concerns. For example, while the research community often places greater emphasis on internal validity for causal inference, practitioners often prefer evidence based on work from organizations similar to their own; suggesting greater weight on external validity (i.e., other schools and districts; Corcoran et al., 2001; Finnigan et al., 2013; Supovitz & Klein, 2003).

Problems that research addresses

Historically, barriers to the use of research include perceptions about the relevance and timeliness for addressing problems of practice. This dimension relates to the degree to which research can address current problems of practice (Maynard, 2006) as well as the characteristics of problems of practice. Both the issue (e.g., instructional, organizational) and the nature of the problem (e.g., identifying the range of potential solutions vs. choosing to adopt a specific solution) can influence the role of research in solving those problems (Hemsley-Brown and Sharp, 2003; Supovitz & Klein, 2003; West & Rhoton, 1994).

Structures, processes, and incentives

Community dissonance reflects differences in structures, processes, and incentives between communities (Bogenschneider & Corbett, 2010). These differences are reflected in organizational conditions and shape research use in schools (e.g., Coburn & Talbert, 2006; Coburn et al., 2020; Corcoran et al., 2001; Finnigan et al., 2013; Honig, 2003; Massel et al., 2012; Supovitz & Klein, 2003; West & Rhoton, 1994).

Capacity to critically interpret research evidence

Extant research suggests that practitioners may lack both confidence in their research-use abilities (Hill & Briggs, 2020; Williams & Coles, 2007) and the capacity to critically interpret research (Coburn & Talbert, 2006; Supovitz & Klein, 2003). Educators' training and experiences related to research and data analysis may also influence whether and how they engage with research (Biddle & Saha, 2002; Supovitz & Klein, 2003).

Relationships and connections between communities

Depicted as network ties in our framework (see Figure 1), research use may also be considered a function of the relationship between researchers and practitioners (Coburn & Stein, 2010; Honig & Venkateswaran, 2012; Huberman, 1990; Landry et al., 2001). Additionally, both researchers and practitioners may be indirectly connected through individuals in the other community and organizations and media outlets (Malin et al., 2018; Neal et al., 2015; Neal et al., 2019; Spencer & Louis, 1980). The nature and extent of that relationship can facilitate or constrain beliefs about access and capacity to use research.

Networks and Research Brokerage

In our conceptual framework, nested between the research and practice communities are networks that support access to research-based information, which are constituted by key knowledge brokers engaged in a range of activities that link the two communities.

Networks

The literature on research use amply demonstrates the role of relationships and networks in research use. For example, a diffusion perspective on research use (e.g., Neal et al., 2015), emphasizes the pathways by which information and ideas flow, which rely on practitioners' ties to other individuals and organizations. Prior literature documents persistent challenges to the flow of information from research to practice, including "weak ties" or relationships between communities. Further, literature on schools' use of research suggests that most access to research is mediated through other sources, often described as research brokers. Research brokers are seen as "linking mechanisms," and include a variety of actors such as funding organizations, advocacy groups, professional associations, and individuals in schools and districts who operate in brokerage roles (Cooper, et al., 2018; MacGregor & Phipps, 2020; Malin et al., 2018; Neal et al., 2015; Scott et al., 2014). These sources therefore serve an important brokerage or linking function in the ecosystem of research use in schools—a means by which evidence-based practice could be transferred. Such brokerage may be a powerful lever for bridging gaps between communities.

Research brokerage.

A network perspective helps us to identify to whom practitioners turn, we also seek to understand the activities that facilitate the sharing and use of research - activities we describe as brokerage. Brokers take on roles related to building and maintaining relationships, staying well informed and up to date in their area of expertise, providing "coaching" related to technical and administrative components of research use, translating research jargon into ordinary language, creating products with greater value to practitioners, and creating a more collaborative space between researchers and practitioners (Cooper, 2014; Cooper & Levin, 2010; Cousins & Simon, 1996; Hood, 1982; Kochanek et al., 2015; Louis & Kell, 1981; Malin & Paralkar, 2017; Massell et al., 2012).

The Survey of Evidence in Education-Schools (SEE-S)

The conceptual framework is operationalized through the *SEE-S* and *SEE-R*—a pair of instruments to capture both researcher and practitioner perspectives on research use (Figure 2). We focus in this report on the *SEE-S*. The *SEE-S* was developed using a multi-phase approach, utilizing both qualitative and quantitative methods to produce reliable and valid survey measures. Our development process included drafting blueprints of various instruments utilizing our framework, exploratory interviews, and multiple rounds of cognitive interviews and pilot testing. Preliminary psychometric evaluation of items intended to represent specific constructs were also conducted after each stage of piloting. The final survey includes five sections which correspond to our conceptual framework as well as the research questions underlying this report (Figure 2). Items are primarily closed-ended and ask respondents to indicate agreement, frequency, or degree of importance of activities, conditions, experiences, and beliefs aligned to the dimensions of our conceptual framework. Open-ended items ask respondents to convey specific details about their work, including organizational decisions, pieces of evidence, members of their networks, and so on. Additional details about specific items, survey development, and the psychometric properties of the instrument are available from the *SEE-S Technical Report* (May et al., 2022).

Figure 2. Overview of the Survey of Evidence in Education

Data and analytic methods

The *SEE-S* was administered online to schools' instructional staff, including teachers, coaches, other specialists, administrators, and paraprofessionals, and to a member of the district office—which we

refer to collectively as *practitioners* or *educators* throughout this report, during the 2018–2019 and 2019–2020 school years.[1] A total of 134 traditional public schools from 21 districts, as well as 20 schools from 10 charters (5 rural, 13 suburban, and 13 urban), were successfully recruited into the sample for the SEE-S field trial administration. The overall individual-level response rate for the *SEE-S* was 53%. Response rates by school ranged from 0% to 100%. The average school response rate was 56%. The final sample comprised 4,415 school-based practitioners, including 25 district staff, representing 18 different states, with proportions of elementary, middle, and high schools mirroring national proportions. Table 1 depicts the distribution of *SEE-S* participants by role.

Table 1. SEE-S Participants by Role

Role	*n*	%
Classroom teacher	2,818	63.80
Special education teacher	420	9.50
Arts or electives teacher (e.g., music, art, physical education)	298	6.70
School administrator (e.g., principal or assistant principal)	181	4.10
Paraprofessional or teacher assistant	152	3.40
Instructional coach	129	2.90
Interventionist	126	2.90
Guidance counselor	108	2.40
Librarian	44	1.00
Speech language therapist	43	1.00
Health professional (e.g., school nurse)	32	0.70
District administrator/staff	25	0.60
Technology/media specialist	25	0.60
School psychologist	8	0.20
Occupational therapist	5	0.10
Physical therapist	1	0.02

Note. N = 4,415 individuals who completed at least one full portion of the survey (e.g., "Depth of Use").

Analyses of the *SEE-S* field trial data comprised several stages and various techniques for item analysis, scaling, and calculation of derived variables. Specific details of the methods used and the results of validity and reliability analyses are presented in the *SEE-S Technical Report* (May et al.,

[1] The *Survey of Evidence in Education for Schools (SEE-S) Technical Report* (May et al., 2022) presents additional detailed information on the development, data collection, and data analyses from the *SEE-S*.

2022). Within this report, analyses involve calculation of simple descriptive statistics for item responses (e.g., frequencies, percentages) and derived scales (e.g., means and standard deviations) that are displayed graphically via histograms, bar charts, and boxplots. Appendix A includes the factor loadings for the derived scales.

Organization of this report

We ambitiously report on all dimensions of our framework in this report, organized in terms of our overarching research questions and the subquestions that pertain to dimensions of our conceptual framework. Each section presents primary findings as headers, followed by the supporting evidence underlying each claim. We conclude each section with key takeaways, including implications, and conclude the report with overarching conclusions that integrate findings from across the full study.

1. What Are the Nature and Depth of Schools' Use of Research to Inform Policy and Practice?

We answer this research question by exploring data related to *depth of use*, which includes six subdimensions: (1) *evidence*, (2) *search*, (3) *interpretation*, (4) *participation*, (5) *frequency*, and (6) the *decision-making stage* where evidence is relied upon. As a larger construct, depth of use describes the degree to which research meaningfully and systematically informs decisions about education practice.

Items that support our understanding of *depth of use* are found in the first section of the *SEE-S*. We recognize that research-use practices and decision processes are likely to be different between the classroom and school levels, and that not all respondents would be involved in or familiar with organizational decisions. Therefore, we collected data on two types of decisions, (1) organizational decisions and (2) personal-practice or individual decisions. We define *organizational decisions* as decisions about policy and practice made at the school or district level that affect a significant number of teachers and/or students. We define *individual* or *decisions* for individual respondents as a decision made about the respondent's own practice or within one's own classroom. For example, using a new instructional strategy, changing classroom organization, or implementing something learned from professional development training.

To capture these distinct processes, we began this section of the survey by asking participants to describe an organizational decision made by their school in the last year and then to rate their familiarity with the decision-making process. If participants could not name an organizational decision or if they had little to no familiarity with the decision, they were redirected to a parallel set of items in the survey asking them to describe a decision that they had made themselves in their personal practice. Both paths led to a nearly identical set of questions about the dimensions of depth that are anchored in either the organizational or personal-practice decision.

Thirty percent (n=1,343) of respondents answered the questions about an organizational decision. Sixty percent (n=2,660) of respondents were routed to the items focused on a personal-practice decision. Notably, all roles were represented in both paths, with administrators more likely to report on organizational than individual decisions (68.5 versus 28.2%), and classroom teachers more likely to report on individual decisions than organizational ones (28.2% versus 64.6%). About 10% did not answer either set of questions but did respond to other sections of the *SEE-S*.

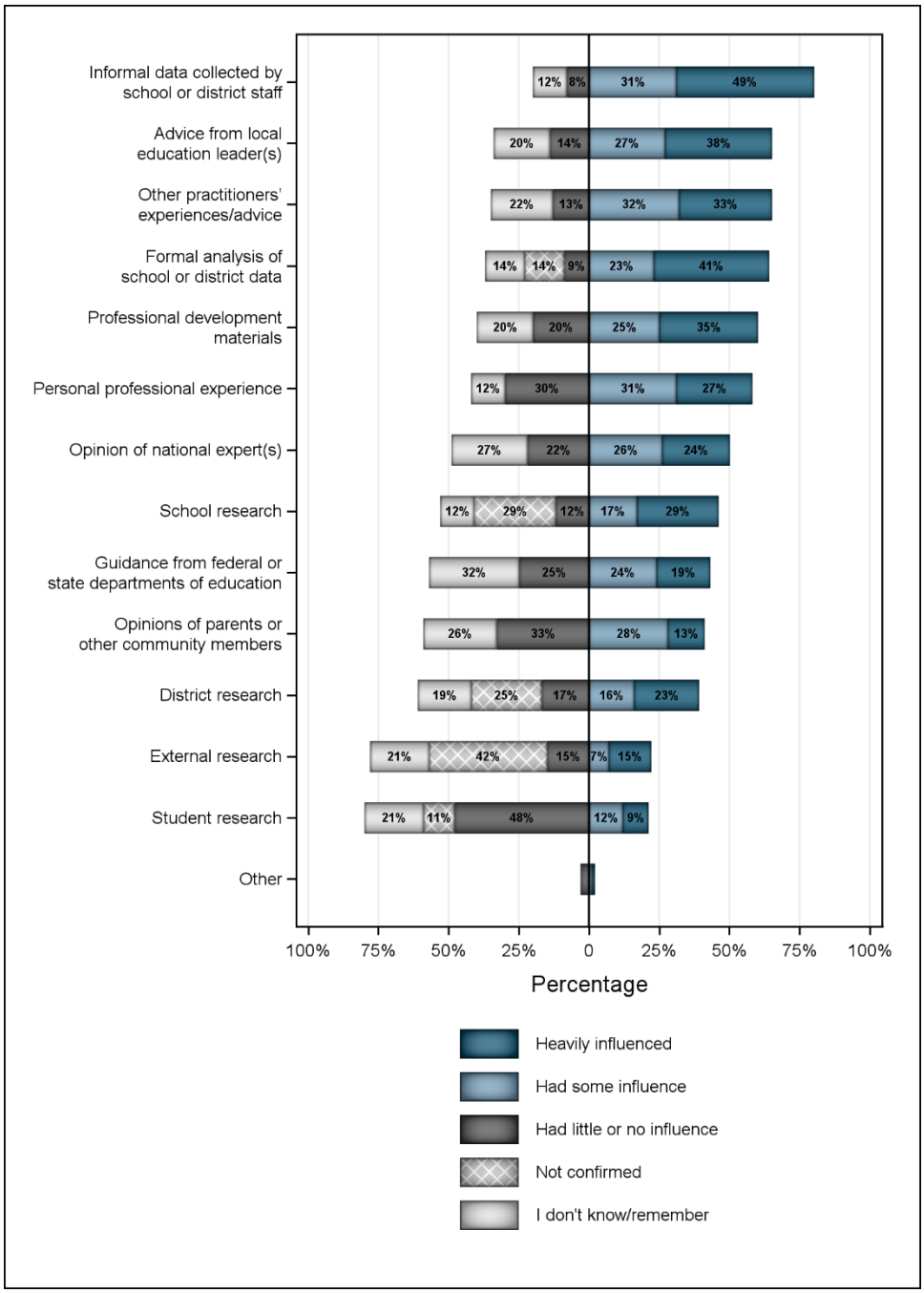
What forms of evidence are used to support decision-making in schools, and what roles does external research play?

After survey respondents were asked to describe an organizational decision at their school and to confirm their familiarity with the decision-making process (see May et al., 2022, for details), the next question in the *evidence* section of the *SEE-S* presented 14 forms of evidence, encompassing external research to the respondents' own professional experience, and asked the respondent, "To what extent did the following types of evidence influence the decision?" Figures 3 and 4 present responses to those items.

A wide range of evidence influences organizational and individual decisions.

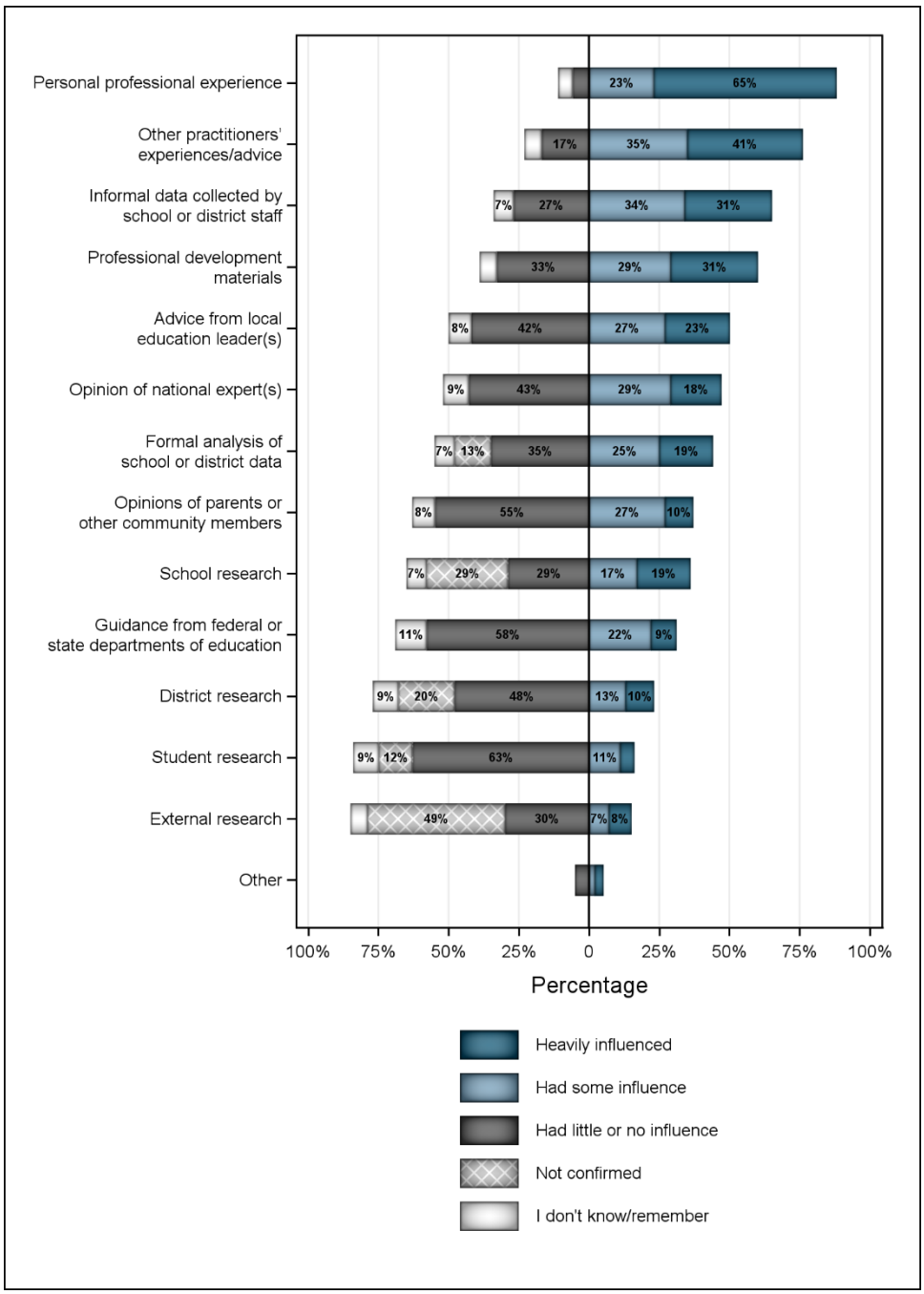
Both organizational and individual decisions are informed by a wide variety of evidence. For example, for the 918 organizational decisions cited by respondents, an average of seven types of evidence were used to inform a single decision. This result suggests that it is common for organizational decisions to be supported by several types of evidence rather than just one type. Similarly, respondents who cited individual decisions reported using an average of six types of evidence to inform each personal-practice decision. The implication is that educators must often make sense of different kinds of information when considering a change to organizational or personal practice.

Figure 3. Influence of Different Forms of Evidence on Organizational Decisions



Note. Item response *n*s range from 982 to 1,343.

Figure 4. Influence of Different Forms of Evidence on Personal-Practice Decisions



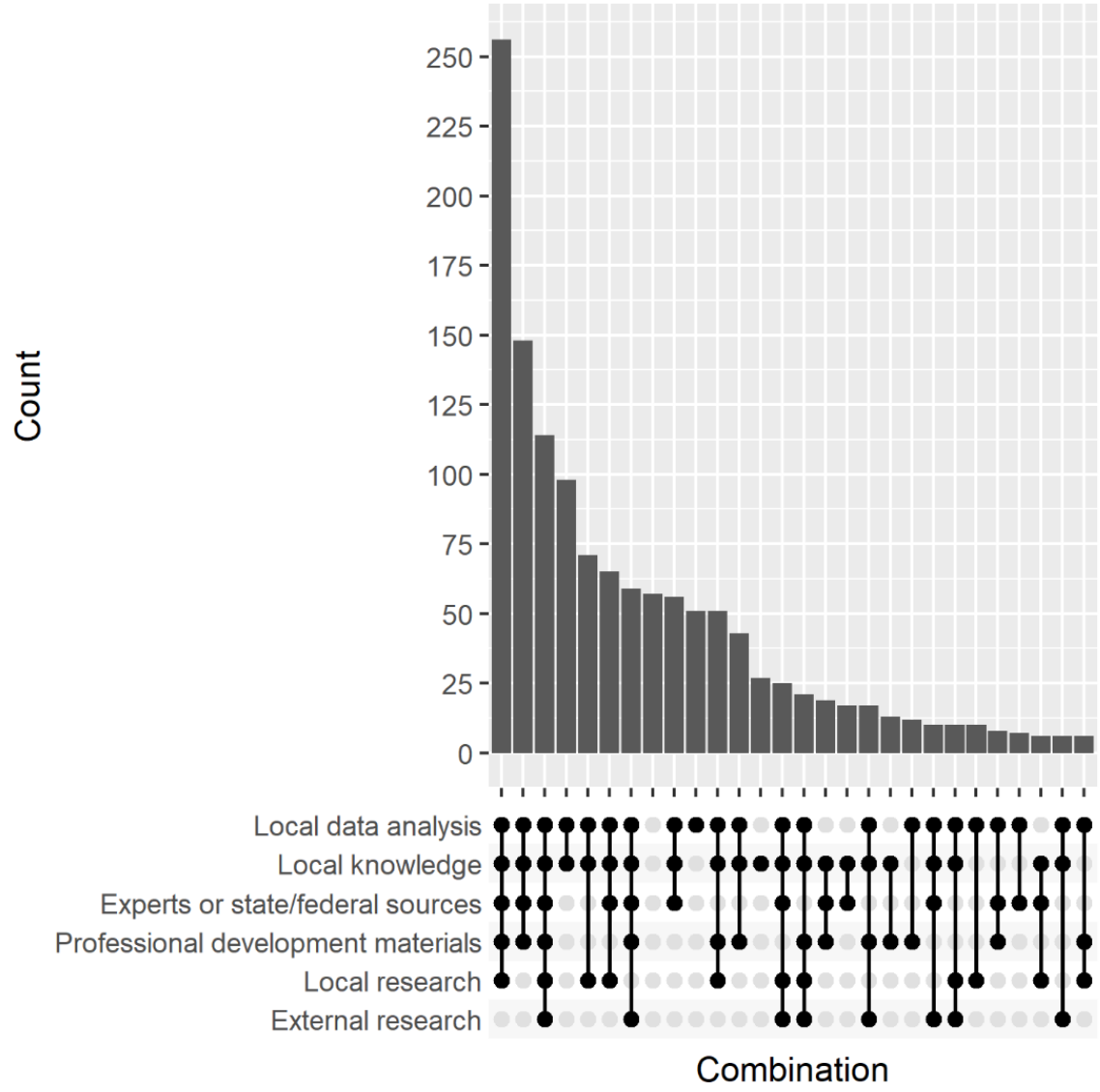
Note. Item response *n*s range from 2,380 to 2,660.

We also examined the combinations of evidence types that were used to inform organizational decisions and individual decisions. For this specific analysis, we combined some types of evidence into broader categories to enable better interpretation of the data: External Research, Local Research (includes research conducted by districts, schools, and students), Local Knowledge (evidence from local leaders, personal experiences, other practitioners' advice, and advice from the community), Informal or Formal Analyses of School or District Data (hereafter Local Data Analyses), Evidence from Experts or State/Federal Sources, and Professional Development Materials. The most prevalent evidence-type combinations are shown in Figure 5.[2] As we can see, most decisions are influenced by multiple types of evidence, and local data analyses and local knowledge were frequently cited together as influential. Additionally, whenever external research was used, that combination also included local data analyses and local knowledge. Similarly, the most prevalent evidence-type combinations that influenced individual decisions are included in Figure 6.[3] Again, we see practitioners integrating multiple forms of evidence within decisions; however, many decisions rely solely on local professional experiences (i.e., the third-most prevalent combination of evidence).

[2] These account for approximately 95% of the responses that cited an organizational decision.

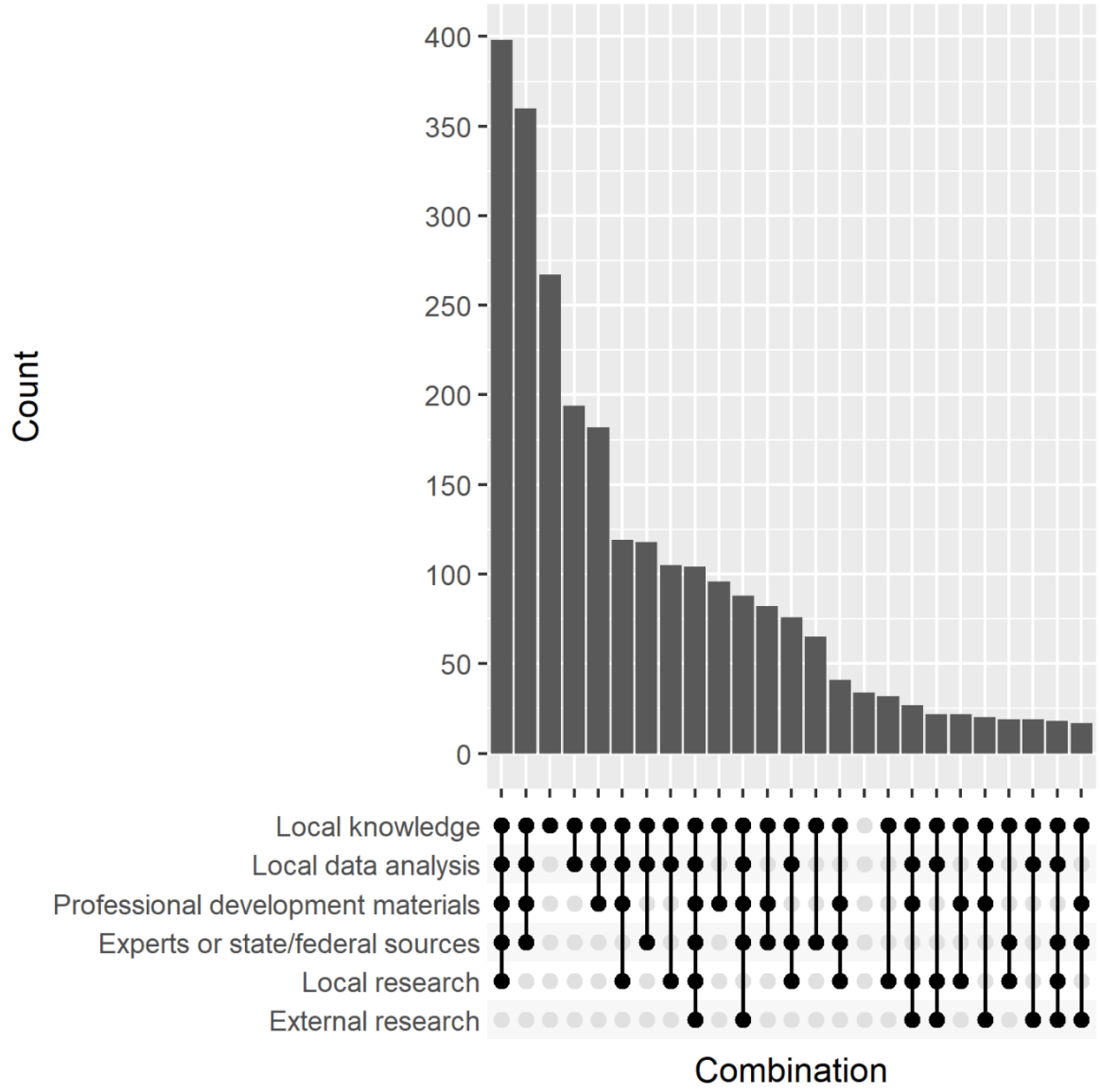
[3] As with organizational decisions, these combinations represent 95% of the respondents who cited individual decisions.

Figure 5. Evidence Combinations Influencing Organizational Decisions



Note. n = 1,283. Local data analysis = Informal or formal analyses of school or district data

Figure 6. Evidence Combinations Influencing Individual Decisions



Note. n = 2,525. Local data analysis = Informal or formal analyses of school or district data

External research has limited influence, compared with local data analyses and experiential knowledge.

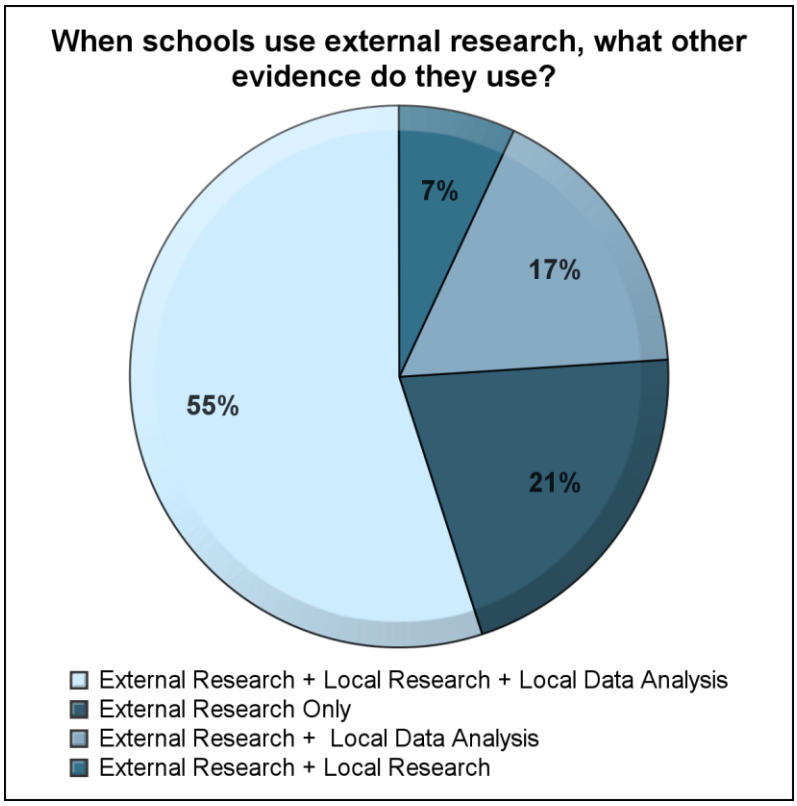
Figures 3 and 4 show that external research (i.e., journal articles, reports, books, summaries based on external research or program evaluations) has relatively limited influence on organizational and personal practices. Instead, organizational decisions are most commonly influenced by local data

analyses. Figure 3 also shows that more than 40% of the external research sources could not be confirmed—respondents either could not provide details allowing identification of the author or the publication, or the evidence they cited could not be confirmed as research (see *SEE-S Technical Report* for details).

Figure 4 shows that individual decisions are, compared with organizational decisions, more often informed by personal professional experiences and the experiences of other practitioners, underscoring the importance of experiential knowledge. As with organizational decisions, informal data analyses were also influential, suggesting that practitioners rely on a variety of data sources when making decisions about changes to their personal practice.

Notably, it is more common for decisions to rely on combinations of external research, local research, and local data analyses than to use it as a sole source of evidence. Figure 7 shows that 79% of organizational decisions informed by external research were also informed by local data analyses, local research, or both.

Figure 7. Evidence Used with External Research for Organizational Decisions

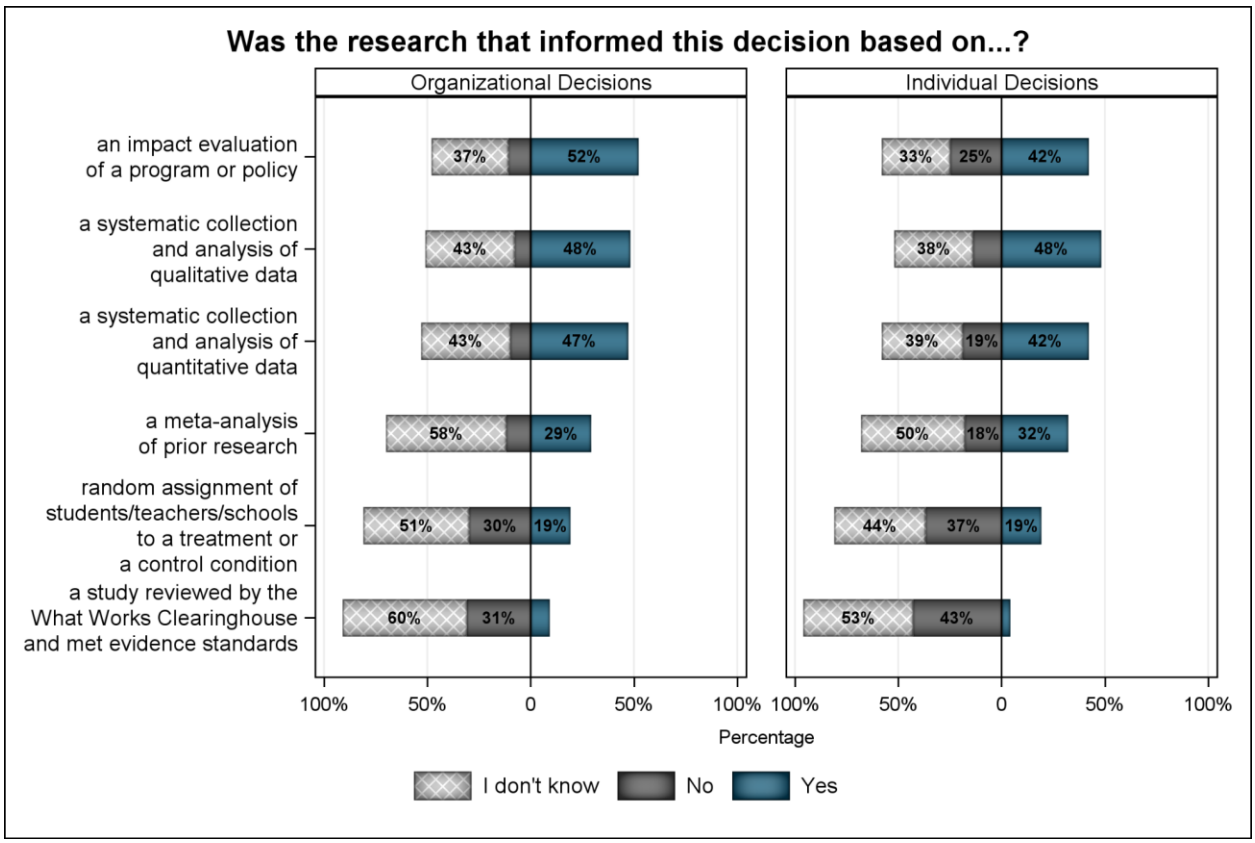


Note. *n* = 292. Includes only individuals whose responses were validated as influenced by external research.

Impact evaluations are useful for decision-making, but methodological quality is unclear.

Survey respondents who noted the influence of external research on either an organizational or a personal-practice decision were also asked to characterize the nature of that research (Figure 8). For organizational decisions, more than half of decisions using external research were reported to have been influenced by an impact evaluation. On the other hand, respondents did not often cite random assignment of study participants to a treatment or control condition as a characteristic of research evidence (i.e., only 19% of decisions). This suggests that impact evaluations (or evidence thought of as such) are being used to inform decisions, but those impact studies are unlikely to use a randomized experiment. However, the data from this study do not explain why randomized experiments were rare or lacked influence.

Figure 8. Nature of External Evidence Used in Decision-Making

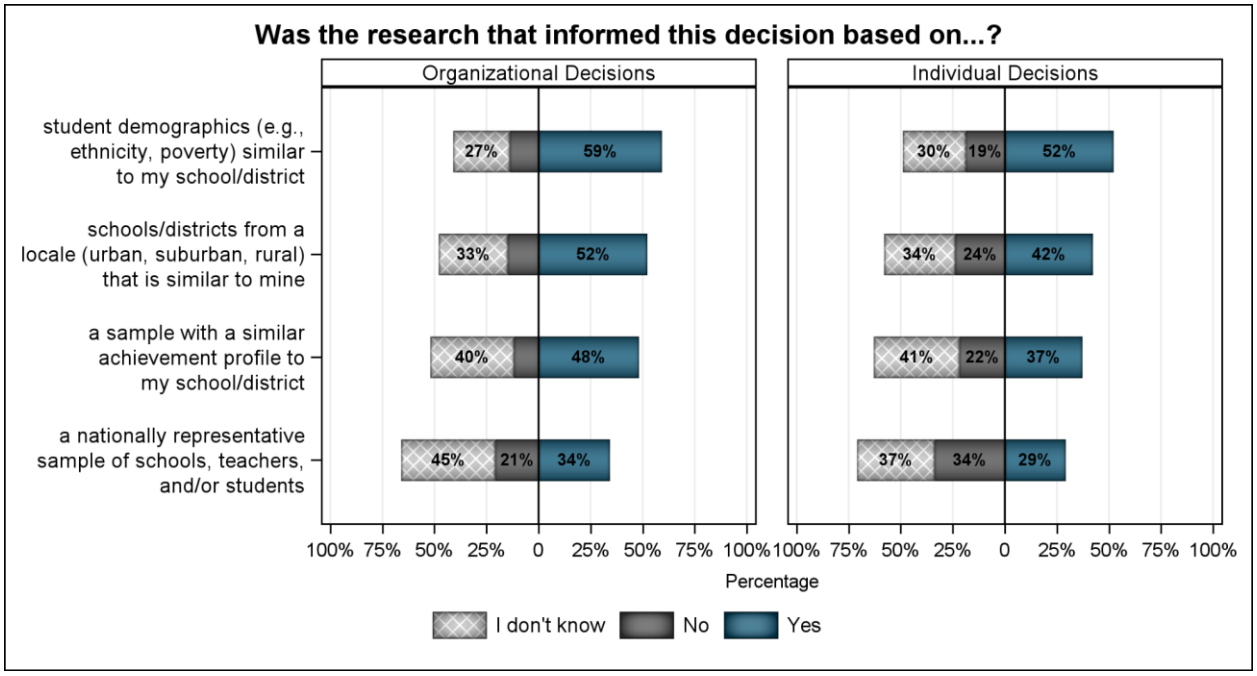


Note. Item response n = 289 for organizational decisions; n = 390 for individual decisions. Includes only individuals whose responses were validated as influenced by external research.

Research conducted in a similar context is more influential.

The *SEE-S* also included questions about the generalizability of the evidence used to inform organizational and individual decisions. Evidence informing organizational decisions tended to come from research from which the study population was similar to the local school or district context (see Figure 9), but these criteria were slightly less important for practitioners when making decisions about their own practice.

Figure 9. Nature of the Study Populations of External Research Used in Decisions



Note. Item response n = 289 for organizational decisions; n = 390 for individual decisions. Includes only individuals whose responses were validated as influenced by external research.

Key Takeaways about Evidence

Responses to items related to evidence reveal the influence of research in decision-making. In both organizational and individual decisions, a wide range of evidence is reported to be used, with particular emphasis on local and experiential knowledge. Respondents across decision types indicated the heavy influence of informal data collected by school and district staff, personal professional experience, and other practitioners' experiences/advice. Formal research, both external and district research, were reported among the least influential types of evidence for organizational and individual decisions and were almost always used alongside local data. When

external research was used, practitioners reported using impact evaluations in decision-making, but rarely cited criteria for quality, such as random assignment of participants or the What Works Clearinghouse criteria, hallmarks of the "what works" agenda that underlies evidence use policies. Further, educators are much more concerned with evidence that comes from a context that resembles their own.

Findings highlight the integrative nature of evidence use in educational decision-making and the importance of local evidence. Policy regarding evidence use emphasizes particular forms of research—external research and evaluation as well as local data—but the reality is that educators rely on a diverse body of evidence when making decisions. Furthermore, the value of local data, coupled with educators' use of studies that are conducted in contexts similar to their own, implies that local relevance is a key characteristic of evidence use in schools. Findings therefore suggest that evidence that is useful for practice cannot be reduced to debates about the relative importance of internal and external validity. "Evidence" can be construed to have different meanings in different contexts, and what educational researchers perceive to be high-quality evidence may not be what practitioners believe to be most applicable. Rather, our findings echo calls for more nuanced conceptualizations about relevance (e.g., Gutiérrez & Penuel, 2014).

How and to what extent do schools search for evidence to support decisions?

In addition to asking practitioners about the types of evidence that were influential for organizational and individual decisions, the *SEE-S* included items about the sources of that evidence, the extent of the search for information, and the cost of and time spent searching for information to guide organizational and individual decisions.

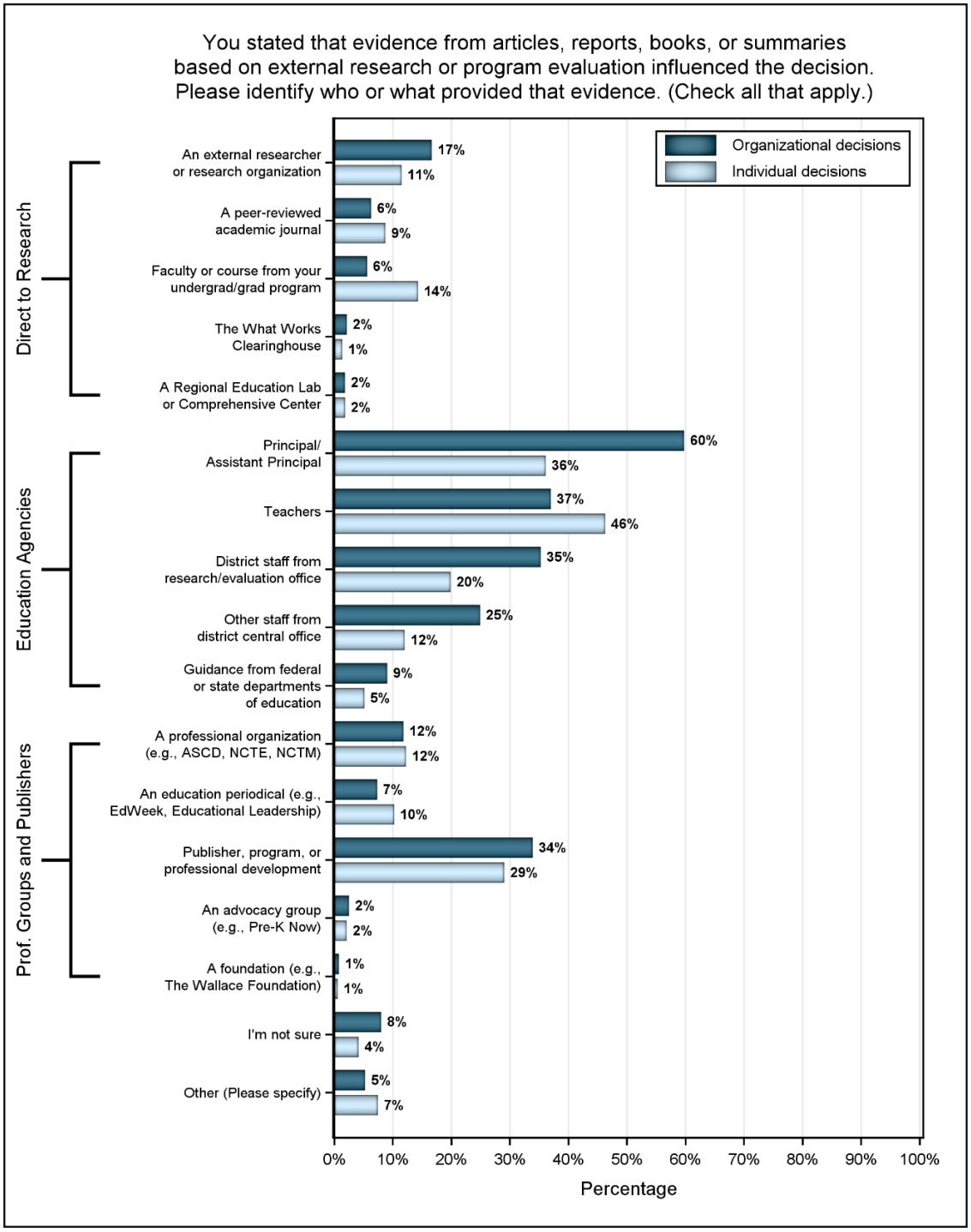
Educators rely heavily on information from local sources.

Figure 10 shows the sources of evidence based on external research that informed organizational and individual decisions. The sources of evidence on the *y*-axis are further grouped into three categories: Direct to Research, Education Agencies, and Professional Groups and Publishers. The results suggest that Direct to Research options were used less frequently—e.g., evidence for organizational and individual decisions was rarely obtained from the What Works Clearinghouse. Much more often, practitioners received their evidence from sources in their own school or district. Typically, respondents reported relying on their "local" information sources—those within their educational agency—or on analyses of data from their local context. School-based administrators often provide the evidence that is used to inform an organizational decision. External research was less influential for organizational decisions, and this chart shows that practitioners were less likely

to go to sources where external research can be accessed. For organizational decisions, for example, principals or assistant principals were main sources of evidence. For individual decisions, teachers were important sources of evidence: 46% of respondents indicated that other teachers provided evidence for their decisions.

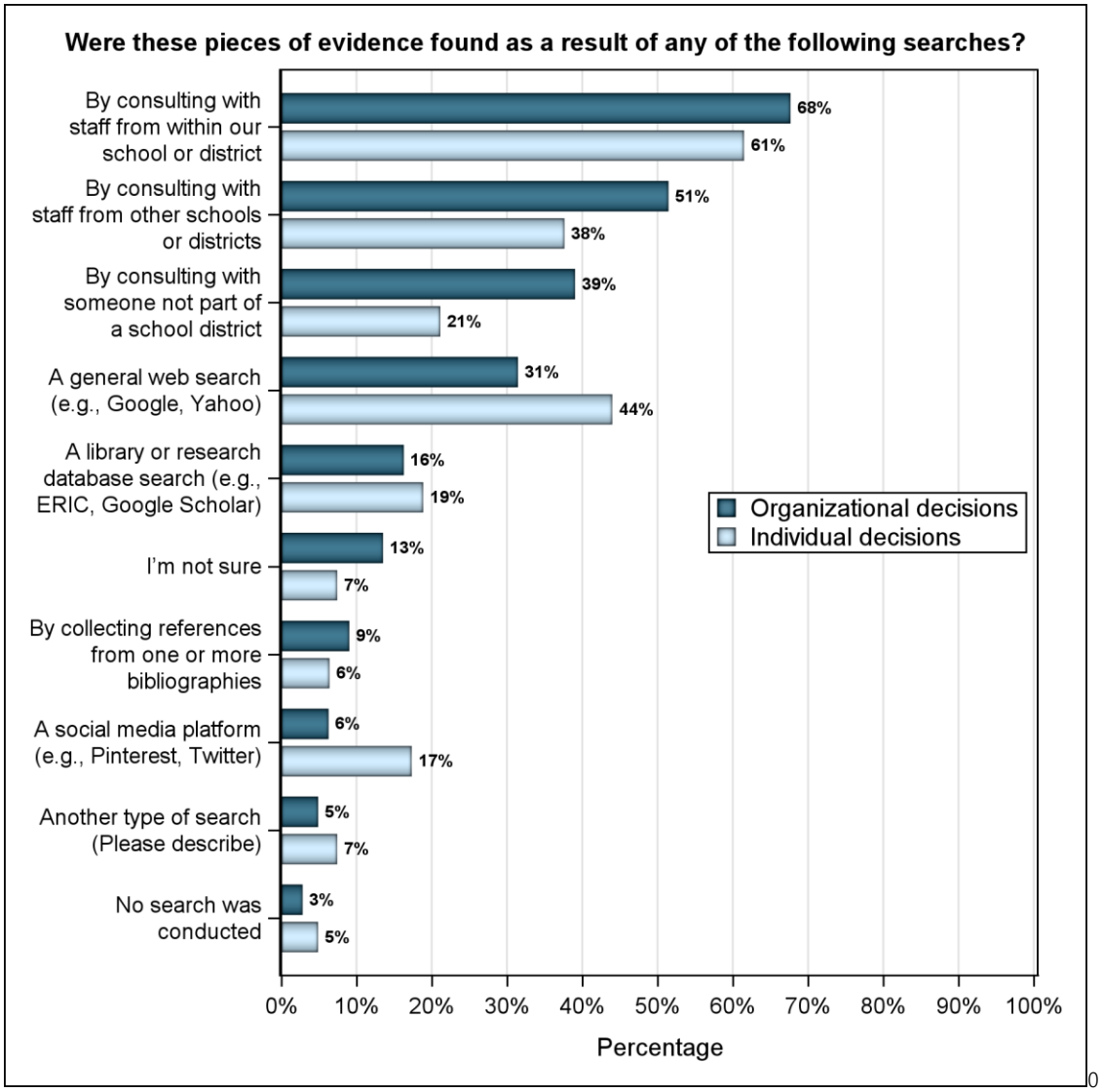
In addition to the sources of evidence in decisions, we also consider their strategies for search. For respondents who reported relying on external research (in either organizational or for individual decisions), a key method of searching was consulting with local staff within the school or district (Figure 11). Respondents also often reported going to the web for a general search (31% of respondents reporting on organizational decisions and 44% of respondents reporting on individual decisions) than consulting a library or research database (16% of respondents reporting on organizational decisions and 19% of respondents reporting on individual decisions).

Figure 10. Sources of Evidence for Organizational and Individual Decisions



Note. Item response *n* = 290 for organizational decisions; *n* = 394 for individual decisions. Includes only individuals whose responses were validated as influenced by external research. NCTE = National Council of Teachers of English; NCTM = National Council of Teachers of Mathematics.

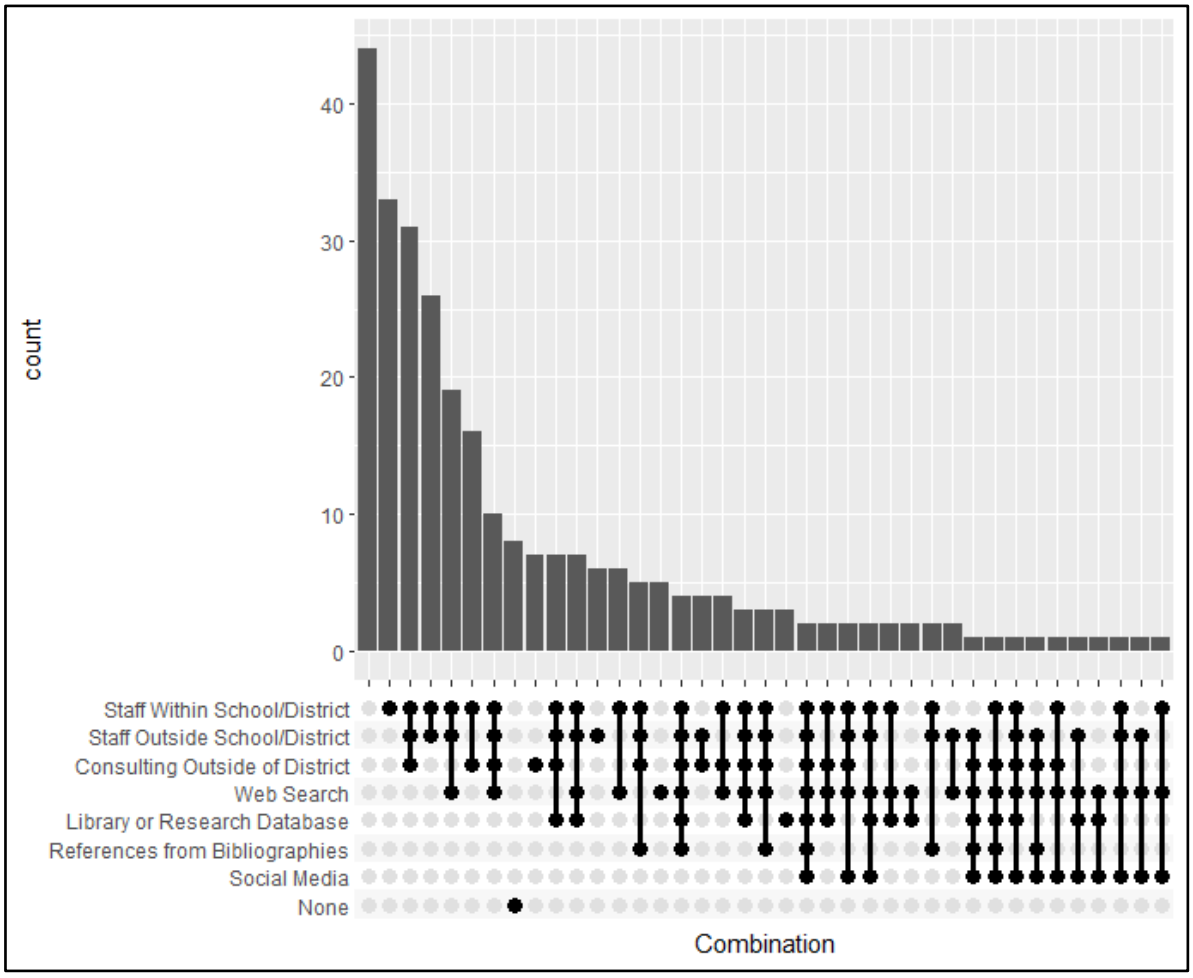
Figure 11. Search for Organizational and Individual Decisions



Note. Item response *n* = 290 for organizational decisions; *n* = 394 for individual decisions. Includes only individuals whose responses were validated as influenced by external research.

We examined the different combinations search strategies to better understand the *extent* of search—whether practitioners rely on multiple sources for information in the organizational and individual decisions reported on earlier in the survey (see Figure 12). The most frequent approaches to search relied almost entirely on local sources—local to the district or local in the sense of being within the practice community. Searching for information from other practitioners both within and outside the school or district was also common. Strategies that are more distal to education practice, such as using bibliographies, were less common and almost always used alongside local search.

Figure 12. Combinations of Extents of Evidence Search for Organizational Decisions



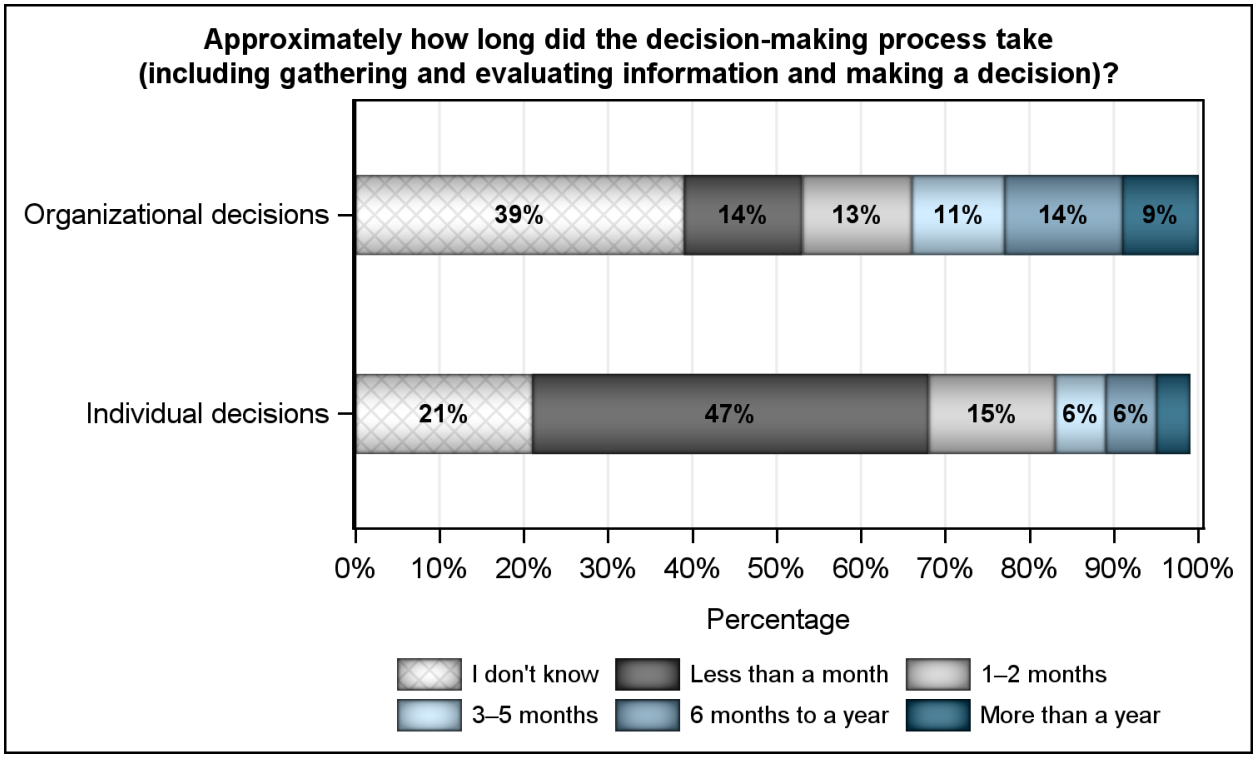
Note. n = 277 (95% of the respondents for this section).

Schools make decisions quickly and invest in resources to help them do so.

Educational decision-making happens over a relatively short time frame (Figure 13). Among respondents reporting on organizational decisions, 38% reported that the decision-making process took less than six months to complete (although we note that 39% indicated being unsure of the timeline). Furthermore, 47% percent of respondents who cited a personal decision spent less than one month in the decision-making process. This may be an important consideration when considering effort to find or to generate and use evidence in decision-making.

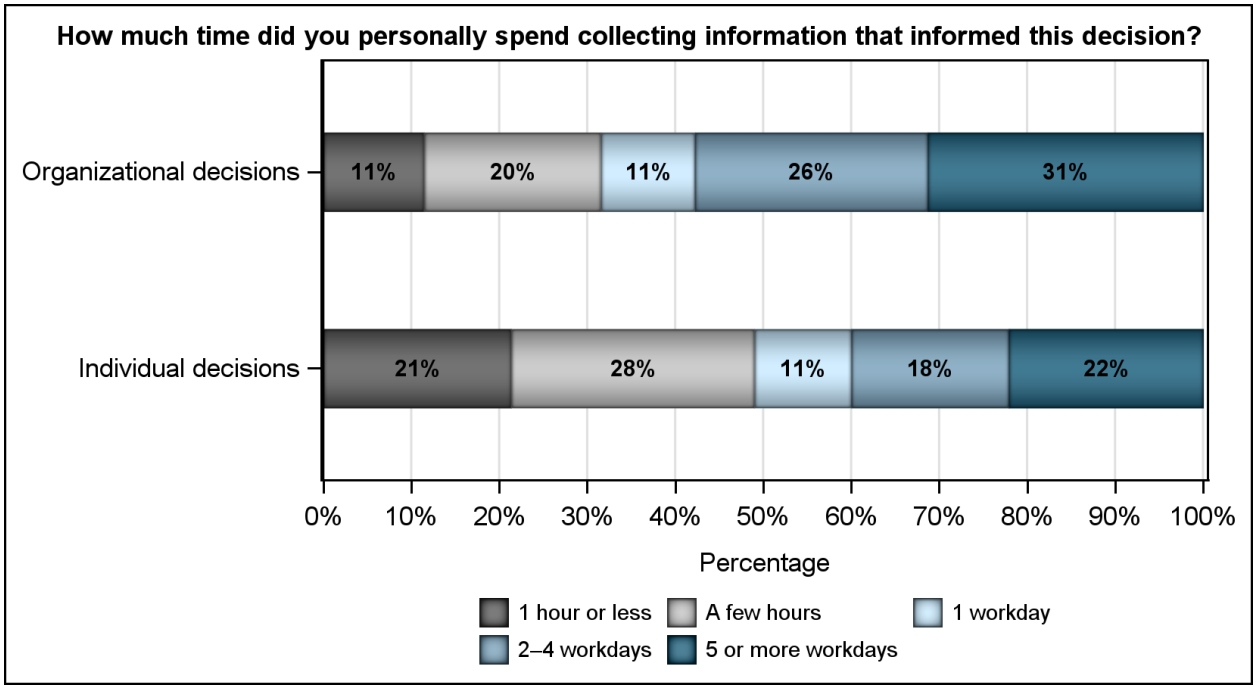
Often, the search for evidence to inform a decision occurred over only a few days, but some organizational decisions involved lengthier evidence-gathering periods. For organizational decisions, 42% of respondents reported spending one day or less, compared with 61% of respondents making individual decisions (Figure 14).

Figure 13. Overall Time Spent on Organizational and Personal-Practice Decision-Making



Note. Item response n = 1,317 for organizational decisions; n = 2,610 for individual decisions.

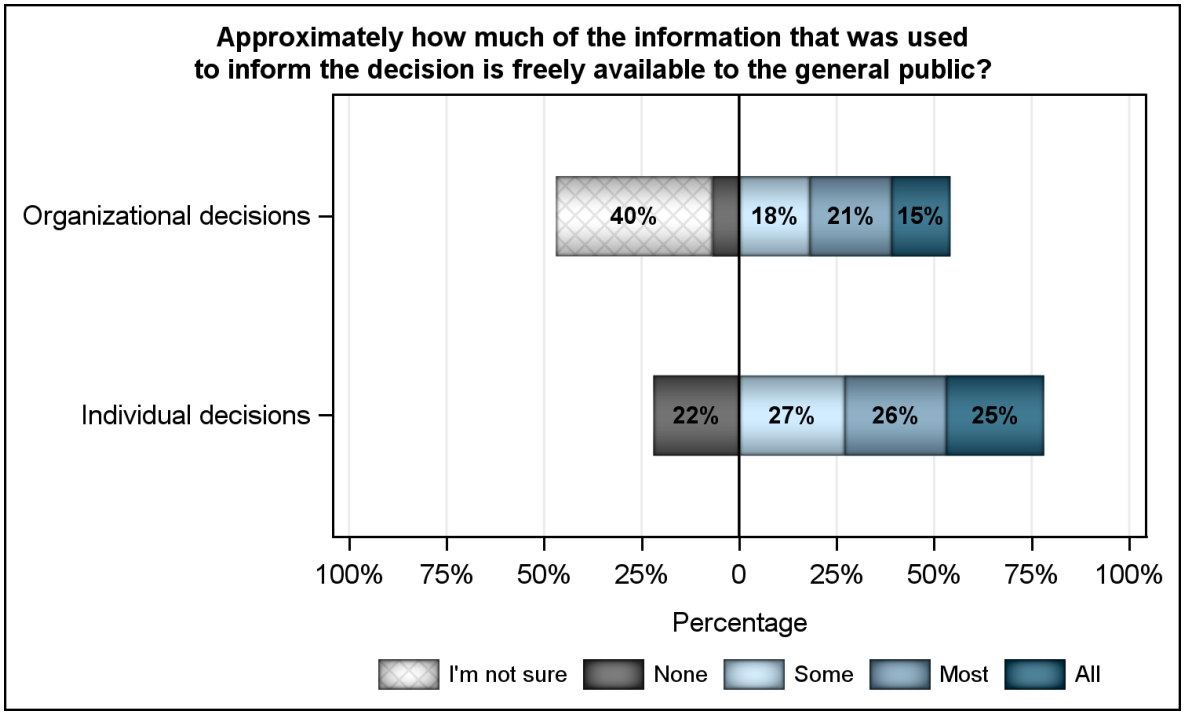
Figure 14. Time Spent Collecting Information for Organizational and Individual Decisions



Note. Item response *n* = 393 for organizational decisions; *n* = 2,576 for individual decisions. Includes only individuals who were personally involved in gathering evidence.

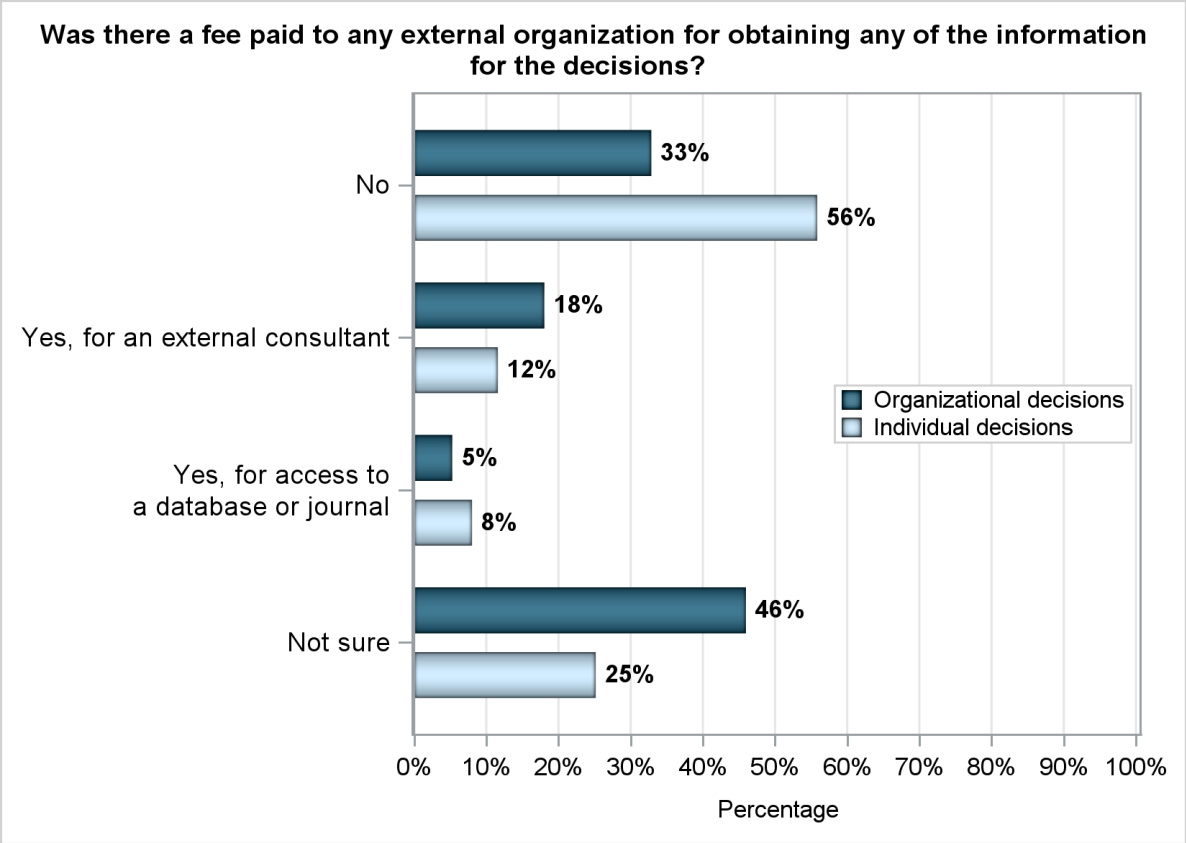
An additional factor affecting the search for evidence is cost, which has historically been a barrier to obtaining information for both individuals and organizations. Respondents who cited an organizational decision were often unsure about the cost of obtaining information related to the decision: 46% of respondents did not know if any costs had been incurred (Figure 16). About 18% of respondents reporting on an organizational decision indicated that some fees had been paid to an external consultant, compared with 12% of respondents citing an individual decision. For individual decisions, just 25% of practitioners indicated that all information used to make the decision was freely available to the public (Figure 15). For organizational decisions, there was a fair amount of uncertainty about the availability of the information—40% of practitioners were unsure of how much information was freely available to the public. Practitioners may be more likely to use evidence or other information that is accessible without having to incur extra costs, underscoring the importance of information that is not restricted by paywalls.

Figure 15. Availability of Information Used for Organizational and Individual Decisions



Note. Item response *n* = 1,317 for organizational decisions; *n* = 2,610 for individual.

Figure 16. Fees for Obtaining Information for Organizational and Personal-Practice Decisions



Note. Item response *n* = 290 for organizational decisions; *n* = 391 for individual decisions. Includes only individuals whose responses were validated as influenced by external research.

Key Takeaways about Search

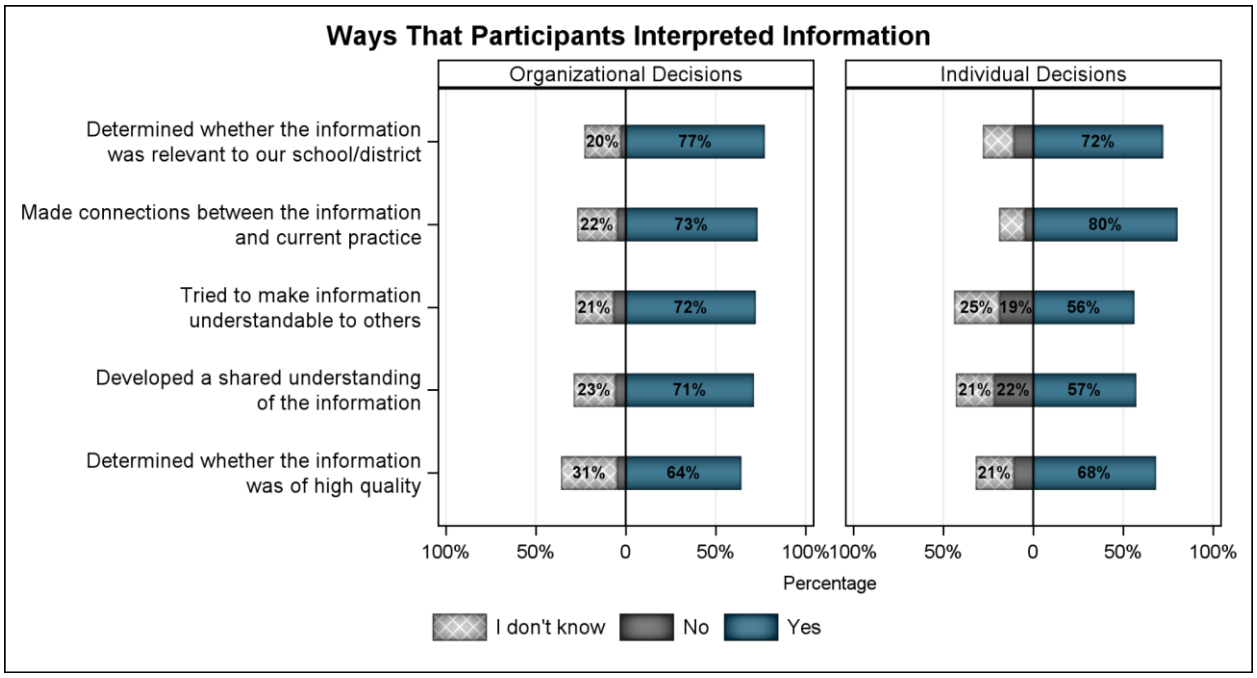
Responses about search strategies in schools help us to understand school investment in evidence use in the context of relatively short decision-making processes. Decisions—both organizational and individual ones—are made relatively quickly so information that can be most easily searched and found may be more likely to be influential. Not surprisingly, in both organizational and individual decisions, information searches focus on what is available through school- or district-based colleagues or from professional development materials. Decision makers more likely select from trusted information sources and sources familiar with what is and is not likely to be adopted in a local context. Additionally, practitioners reported using search engines or social media to find evidence (especially for individual decisions); both are quick and easy to access under time or financial constraints. Accessing research directly may be a time-intensive process, and educators do not typically spend a prolonged period gathering

information to inform a decision. These findings underscore the importance of identifying influential sources and understanding how they mediate practitioners' access to research evidence. Furthermore, it may be useful to leverage these individuals in planning to mobilize research knowledge.

How do schools make sense of evidence?

The *SEE-S* included items about how practitioners interpreted the information used to inform organizational or individual decisions. In general, respondents reported making sense of evidence in multiple ways.

Figure 17. Interpretation of Information Used in Organizational and Individual Decisions



Note. Item response *n* = 1,312 for organizational decisions; *n* = 2,599 for individual decisions.

Although respondents across both decision-types frequently engaged in all sensemaking strategies, there were some differences. The most frequent activity among those who cited an organizational decision was determining whether the information was relevant to their school/district, which suggests that it is important for respondents to ensure that research or other types of evidence are suitable for their local context (Figure 17). Among those who reported making a decision affecting personal practice, the most frequent activity was making connections between the information and current practice (Figure 17).

Key Takeaways on Interpretation

Across individual and organizational decisions, practitioners make sense of evidence in multiple ways. These findings for both types of decisions highlight a focus on relevance. Respondents engaged most frequently in two interpretive activities that helped to determine the applicability of the evidence being considered: they assessed (a) whether the evidence is appropriate for the local context and (b) whether the evidence has clear connections to current practice. Practitioners' focus on relevance in this study is consistent with findings from earlier research suggesting that being perceived as not relevant or applicable may be a barrier to educators' use research (Coburn & Talbert, 2006; Farley-Ripple et al., 2020; Maynard, 2006) and that developing skills for applying research to the local context may be important (Yoshizawa, 2020).

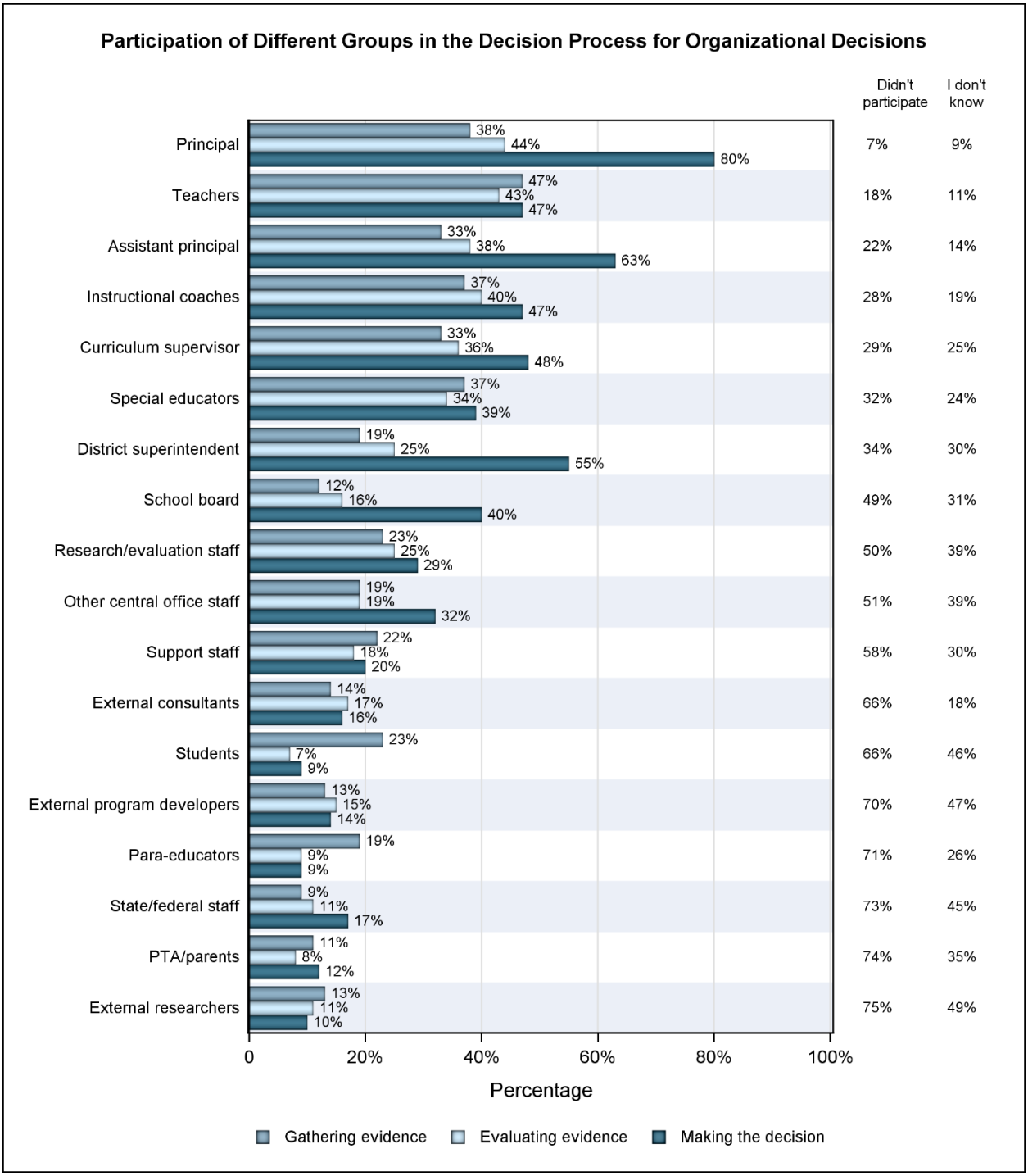
Who participates in evidence use as part of decision-making?

The *SEE-S* also asked practitioners to identify who participated in gathering information, evaluating the information, and making an organizational decision. Figure 18 shows the proportion of each stakeholder group that practitioners perceived had participated in different stages of making an organizational decision. Overall, we see higher levels of participation from staff internal to the school and district, with very low engagement with external groups.

Multiple stakeholders participate in evidence use but contribute in different ways.

The effort to gather information is most frequently undertaken by teachers, with 47% indicating participation in this activity. Principals, instructional coaches, and special educators are also instrumental in gathering evidence, and these roles participate at similar rates. When it comes to evaluating the information gathered, we again see principals, teachers, and instructional coaches as the most involved and participating at similar rates. This pattern shifts slightly when considering who participates in *making the decision*. School-level administrators (principals and assistant principals) are perceived to be decision makers most frequently. We also see significant participation from the district superintendent (55%) in this activity, despite low levels of participation in gathering and evaluating information. Similarly, the school board is perceived as participating in decision-making by 40% of respondents, despite participating in less than 20% of gathering and evaluating information.

Figure 18. Stakeholders' Perceived Participation in Organizational Decisions



Note. Item response *n*s range from 1,133 to 1,311. PTA = parent-teacher association.

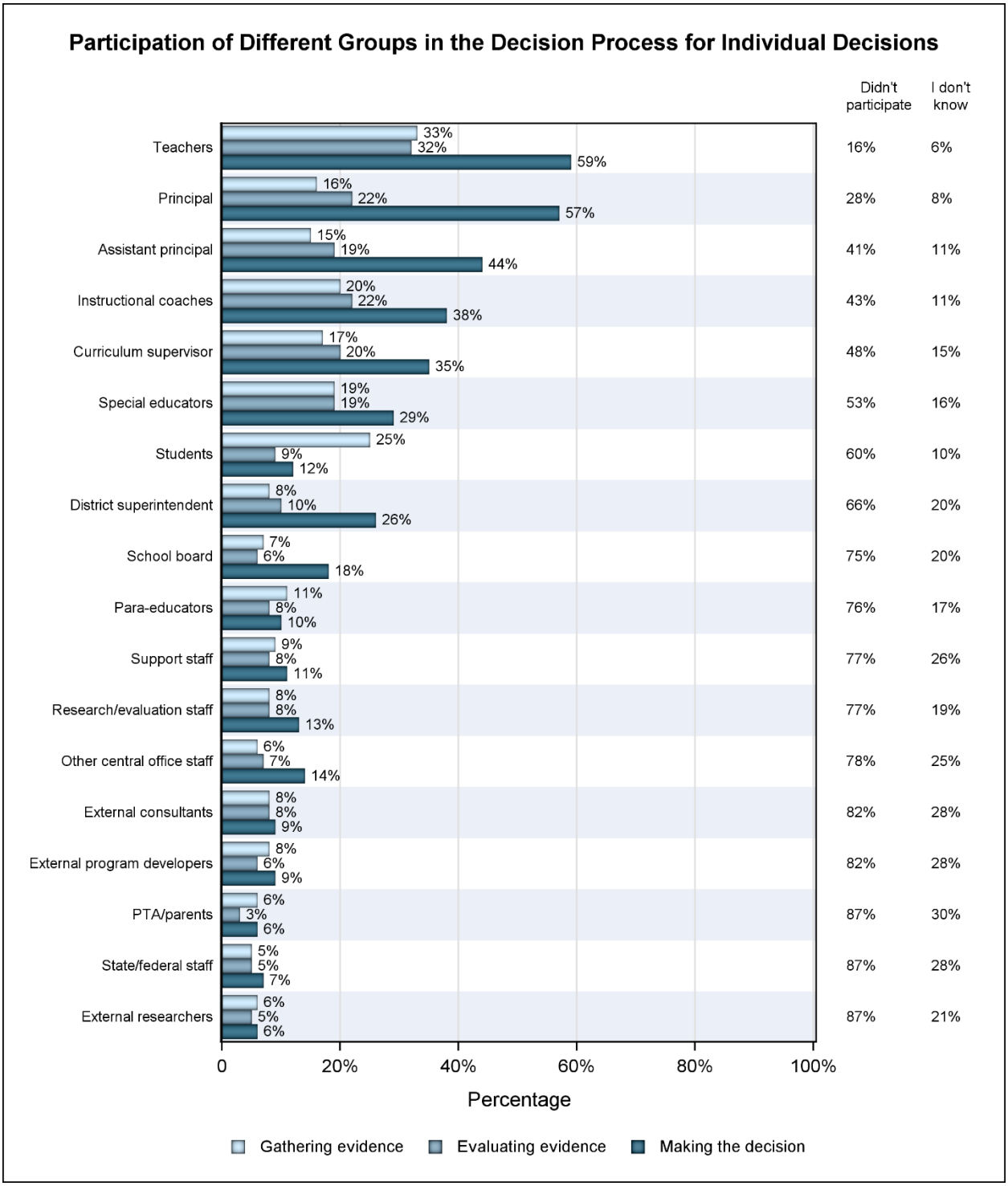
As for individual decisions, more than half of the respondents (52.2%) who reported on an individual decision indicated that someone else was involved in the decision-making process. Figure 19 summarizes respondents' perceptions of the participation of different stakeholders in individual decisions. Teachers and, when they took part, principals were most often involved in making the decision. Thus, school administrators also have a role in influencing how individuals use evidence to change their personal practice. Classroom teachers tended to be more involved in collecting and evaluating information. As with organizational decisions, those closer to instruction are more likely to have played some role in the decision-making. Also, the figures on the right side of Figure 19 show that more than half of the respondents indicated that key groups, such as parents and students, as well as those with potentially valuable expertise, such as research and evaluation staff, did not participate in the process. Considering that respondents represented in this figure reported on their own decisions, there is also surprisingly high frequency of "I don't know" responses.

Key groups are rarely engaged in the process.

For both organizational and individual decisions, key groups with potentially valuable expertise are rarely engaged in the process. For example, participation of research and evaluation staff, who have the knowledge and skills to facilitate the use of research in decision making, is infrequently reported. When considering individual decisions, less than 15% of respondents report involvement of research and evaluation staff in any of the three activities. While respondents reporting on organizational decisions report higher levels of involvement for research and evaluation staff, the frequency is still surprisingly low (see Figure 18). It is also interesting that, for both types of decision-making processes, research and evaluation staff are reported to be the most involved in making the decision rather than gathering or evaluating evidence. Considering the role of research and evaluation staff is to help school staff identify and evaluate relevant research, we would expect higher levels of engagement in gathering and evaluating evidence compared to making the decision.

Parents and/or PTA members are another group with potentially valuable expertise who are very seldom included in decision-making processes. Less than 10% of respondents reporting on individual decisions indicated participation of PTA/parents in any of the three activities, and less than 15% of respondents reporting on organizational decisions indicated participation of PTA/parents in any of the three activities. Based on the current data, it is unclear whether these low levels of parental involvement in decision-making are due to schools' failure to provide opportunities for parental involvement, a failure of PTA/parents to take advantage of opportunities provided, or both. Considering the documented benefits of parental engagement in school communities, future research to better understand the factors influencing this finding would be beneficial (Garcia & Thorton, 2014; Llamas & Tuazon, 2016; Sapungan & Sapungan, 2014).

Figure 19. Stakeholders' Perceived Participation in Individual Decisions



Note. Item response *n*s range from 1,057 to 1,349. PTA = parent-teacher association. Data are from the 52.2% of respondents who indicated others were involved in their individual decision.

Key Takeaways on Participation

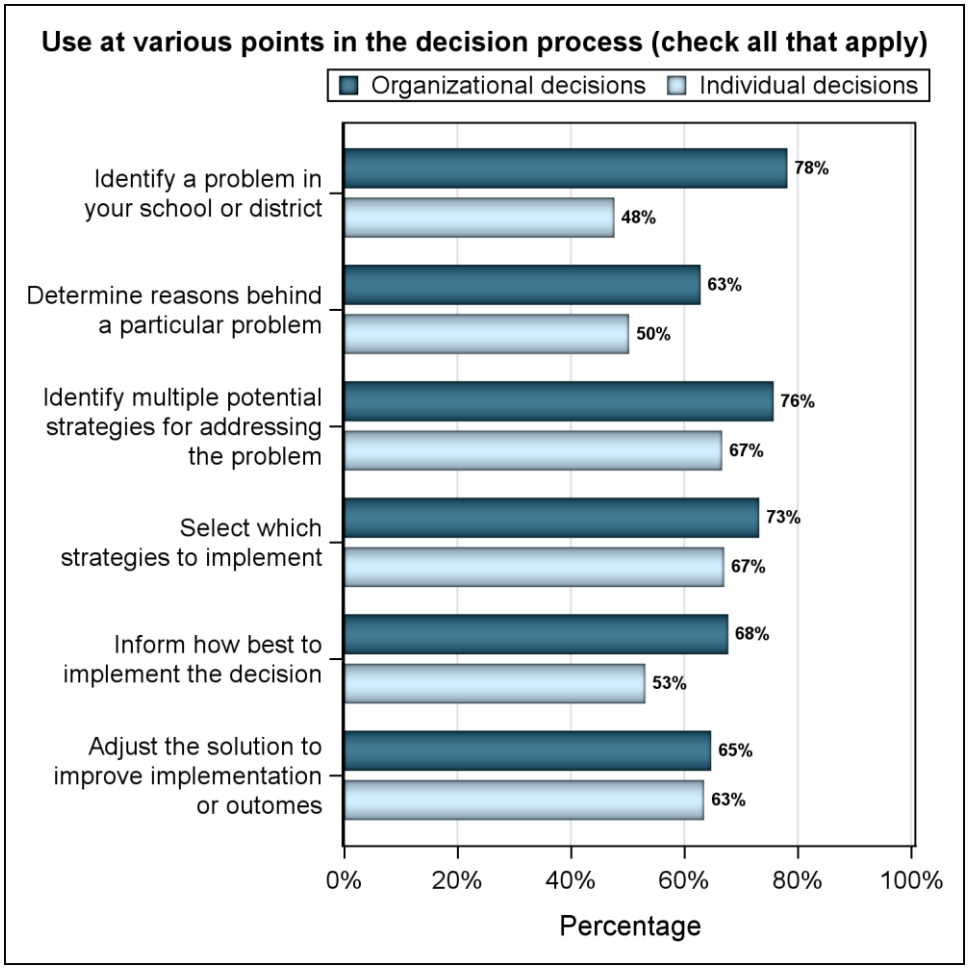
Findings provide some important insights into how individuals and groups are involved in school-level decision-making processes and highlight differential engagement in gathering and using evidence among key stakeholders. As Tseng et al. (2017) wrote, a more democratic evidence system would engage a broader set of stakeholders in the production of research and in deliberations over the findings and their implications for educational improvement. A second implication is the need to better understand the role of external expertise (e.g., outside the school or the district) in improvement decisions. In the case of research and evaluation staff, organizational structures and roles may create barriers to participating in the type of work for which they may be most suited (Shewchuk & Farley-Ripple, 2021). Further, results suggest that other sources of expertise have limited roles as well, perhaps limiting the ability for practitioners to apply ideas that might be adopted from other educational settings—what others refer to as absorptive capacity (e.g., Farrell & Coburn, 2017).

At what stages of the decision-making process is evidence used?

A set of items in the *SEE-S* focused on the role of evidence in different phases of decision-making, including identifying a problem, diagnosing a problem, identifying solutions, selecting solutions, implementing solutions, or modifying solutions. Respondents were asked to indicate whether evidence was used in each phase, keeping in mind the organizational or personal-practice decision they reported earlier in the survey.

Practitioners reported using evidence at a variety of stages in the decision-making process. For organizational decisions, evidence was most used at the stage of identifying the problem and identifying multiple strategies for addressing the problem (Figure 20). For individual decisions, evidence was most used when identifying strategies for addressing a problem and selecting which strategies to implement.

Figure 20. Practitioners' Evidence Use by Decision-Making Stage



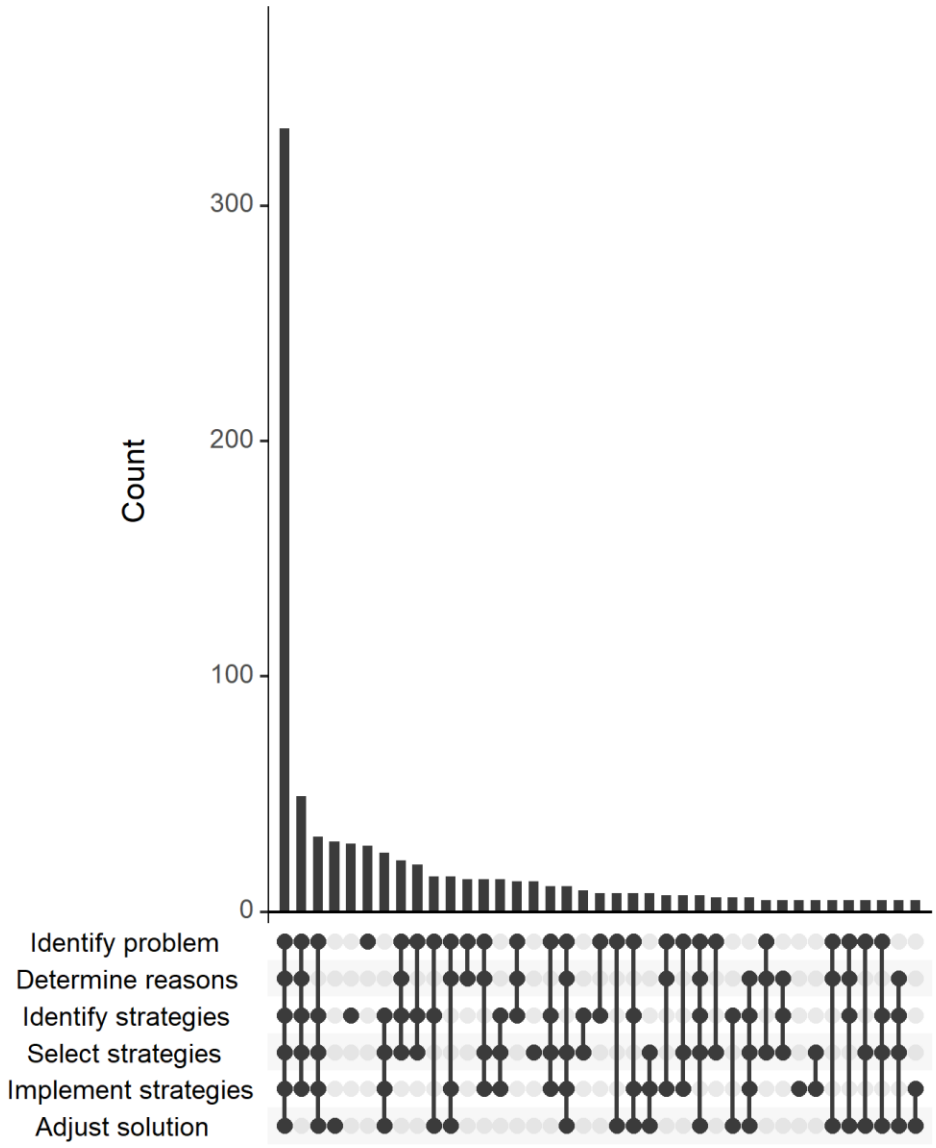
Note. N = 862 for organizational decisions; n = 1,633 for individual decisions.

Evidence is used throughout decision-making processes.

Figure 21 represents the combinations of decision-making stages for evidence use for 95% of respondents who cited an organizational decision (it omits the combinations with very low frequency). As shown in the figure, respondents most used evidence in all six decision-making stages. The second-most common combination involved all stages except for adjusting the solution; and the third-most common combination involved all stages except for determining reasons for the problem. As for evidence use in individual decisions (Figure 22), the most frequent combination was evidence used in all stages (similar to evidence use in stages of organizational decisions). The second-most common combination was evidence use only when adjusting the solution. The third-most frequent combination involved using evidence in all stages except for identifying the problem. Evidence use to identify the problem was observed more often in higher-

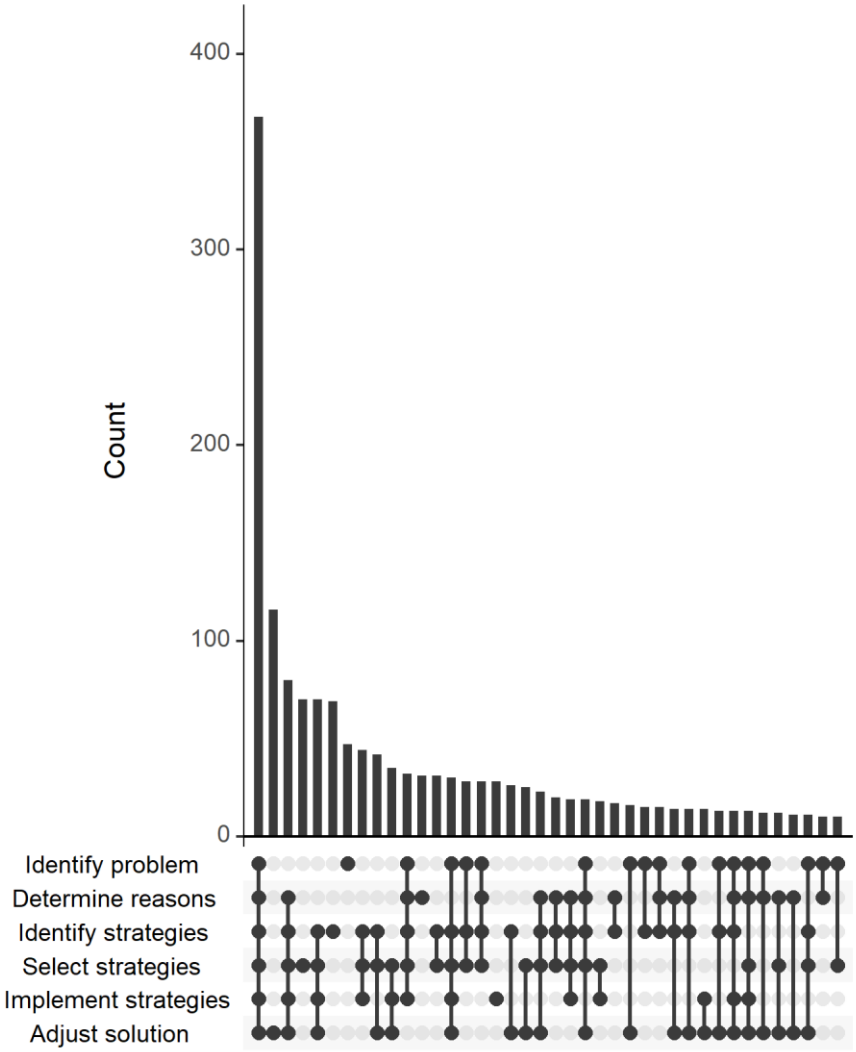
frequency combinations for organizational decisions than for individual decisions. This could be because teachers are already aware of problems or issues in their classrooms so identifying a problem is less of an emphasis.

Figure 21. Combinations of Decision-Making Stages for Evidence Use in Organizational Decisions



Note. n = 818.

Figure 22. Combinations of Decision-Making Stages for Evidence Use in Individual Decisions



Note. n = 1,577.

While for both organizational and individual decisions the most frequent combination included all stages of decision making, there are still a significant number of cases in which evidence informs only one specific decision-making stage for one reason or another. For example, evidence is sometimes used to identify or select strategies (the third most common pattern in organizational decisions and fifth most common pattern in individual decisions) or for identifying a problem (the sixth most common pattern in organizational decisions and the seventh most common pattern in individual decisions). It was also commonly reported that evidence was used to adjust a solution (the second most common pattern in individual decisions and the fourth most common pattern in

organizational decisions), perhaps suggesting that adaptations are often necessary to successfully implement solutions to specific school and/or classroom contexts.

Key Takeaways for Stages of Decision-Making

Most often practitioners reported that evidence informs all stages of decision-making. Findings also show that evidence is often used in both finding and selecting strategies to address a problem, reflecting that when evidence is used in decision-making processes, educators are looking for what works and what can be implemented.

These findings are linked to broader conceptualizations of evidence use. For example, policy expectations for *instrumental* use of research—use of research to inform specific decisions—are reflected in practitioners' reports of use for selecting strategies. Similarly, *conceptual* use of research—shaping understanding of an educational issue—may be reflected in the identifying a problem. Thus, these data suggest the value of evidence beyond the normative expectation for use in, for example, adoption decisions. However, these data capture use of multiple forms of evidence, which include local data and external research, but do not distinguish among their influence at different stages of decision-making, which is an important direction for future research.

How can we describe schools' overall depth of research use?

Having collected rich data about the role of evidence in organizational decisions, we were interested in examining patterns in the dimensions of *Depth of Use* captured in our survey. To accomplish this, we created school-level scores for each of the six dimensions of *Depth* included in our framework, with the first dimension (i.e., *Evidence*) represented by three separate constructs: *External Research*, *Local Research*, and *Local Data Analysis*. This yields eight subdimensions of *Depth*, which are described individually in Table 2. Detailed descriptions of the psychometric and statistical techniques used to derive these eight subscale scores and an overall *Depth of Use* score are included in the *SEE-S Technical Report* (May et al., 2022).

Table 2. Depth of Use Metric Description

Dimension	Description of Metric
Influence of external research	Reported influence of external research on decision-making, validated by open-ended responses.
Influence of local research	Reported influence of central office, principal- or teacher-led, or youth-led research on decision-making, validated by closed-ended survey items about familiarity with products or process.
Influence of formal analyses of local data	Reported influence of data analysis on decision-making, validated by closed-ended survey items about familiarity with products or process.
Search	Binary indicator of whether respondents went directly to sources of research, as opposed to intermediary sources. Direct access of sources included by using a library or research database search (e.g., ERIC, Google Scholar), by collecting references from one or more bibliographies, or via an external researcher or research organization, a Regional Education Lab or Comprehensive Center, the What Works Clearinghouse, a peer-reviewed academic journal, or a faculty person or a course from your undergrad/grad program.
Interpretation	Calculated as a sum of the number of items checked "Yes" to whether they engaged in determining whether the information was of high quality or whether the information was relevant to their school/district, as well as if they worked to make sure the information was understandable, made connections between information and current practice, and developed a shared understanding of the information.
Participation	Calculated the number of groups (of 18 listed) that were involved in gathering or evaluating decisions or in making the decision.
Decision stage	Count of the decision-making stages where evidence was reported to be used, including (a) identifying a problem, (b) determining reasons behind a particular problem, (c) identifying multiple potential strategies for addressing a problem, (d) selecting which strategies to implement, (e) informing how best to implement the decision, and (f) adjusting the solution to improve implementation or outcomes. Possible scores ranged from 0 to 6.
Frequency	Expected proportion of decisions, within a school, for which external research, or local research, or local data analyses influenced the decision.
Overall depth of use (DOU)	After plotting eight dimensions on a radar plot, scores for each school are calculated as the percentage of the total possible area in the radar chart that is covered by the eight triangles for that school. Possible DOU total scores ranged from 0 to 100.

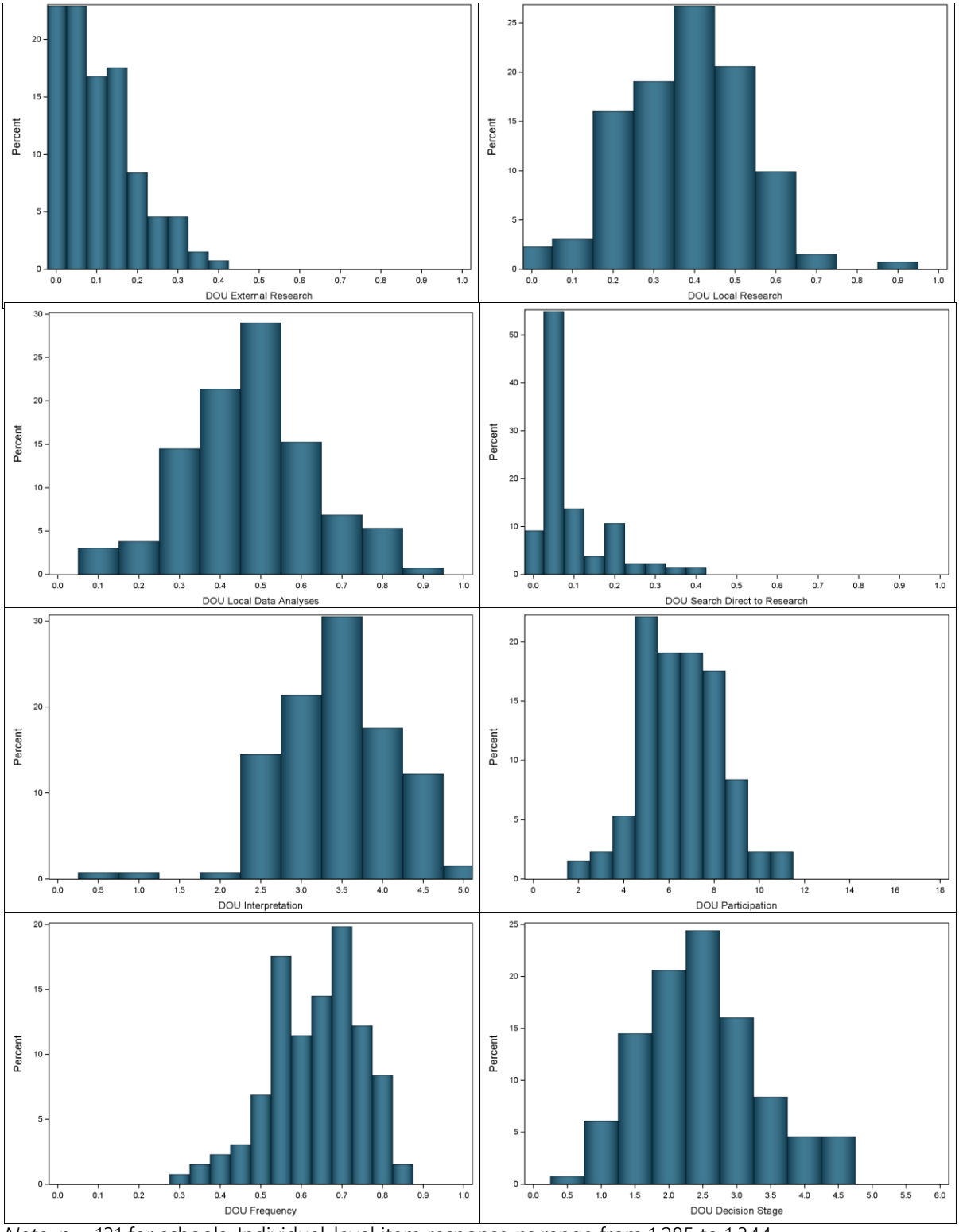
Schools vary in dimensions of use but vary least in external research use and search.

Figure 23 presents histograms of the eight subdimensions of DOU, showing remarkable differences in the distributions of scores for different subscales. For example, the influence of *External Research* and the *Search* subscales are substantially right skewed, suggesting that, across schools, the external research tends to have much lower (or infrequent) influence on organizational decisions when compared to the influence of local research and local data analyses and that search for evidence is rarely direct to research resources. In other words, our data suggest that local research and local data analysis are more commonly influential in the context of organizational decisions. Similarly, systematic *Interpretation* of information was also common, as was *Participation* of multiple stakeholders in gathering/evaluating evidence and making a decision. Lastly, the *Frequency* and *Decision Stage* histograms suggest that use of empirical evidence (including external research, local research, or formal analyses of local data) was common and used at multiple points during the decision process.

Figure 24 is a histogram of overall DOU scores, showing that most schools score closer to the low end of the *research use scale*, with a mean of 15.6 points and a standard deviation of 5.9 points. This is due in part to the low subscale scores for *External Research* and *Search*, but also due to the way in which DOU scores are calculated (i.e., a school would need to have a very high score on all eight subdimensions to produce a high overall DOU score). We also note that there is no standard or benchmark for DOU that represents good practice; the framework and its scores are intended to help differentiate among schools to better understand the nature of research use practice. However, there is considerable skew in the distribution of DOU scores, with a small but noteworthy number of schools standing out as having exceptionally high scores on the overall *DOU* scale, relative to other schools. This suggests that while it is unlikely that any school would produce a DOU score near the maximum possible value of 100 on our scale, the distribution of scores for our field trial sample informs relative comparisons of schools, and it appears that an overall DOU score higher than 20 (i.e., in the 85th percentile or above) is indicative of a relatively high *Depth of Use* school.

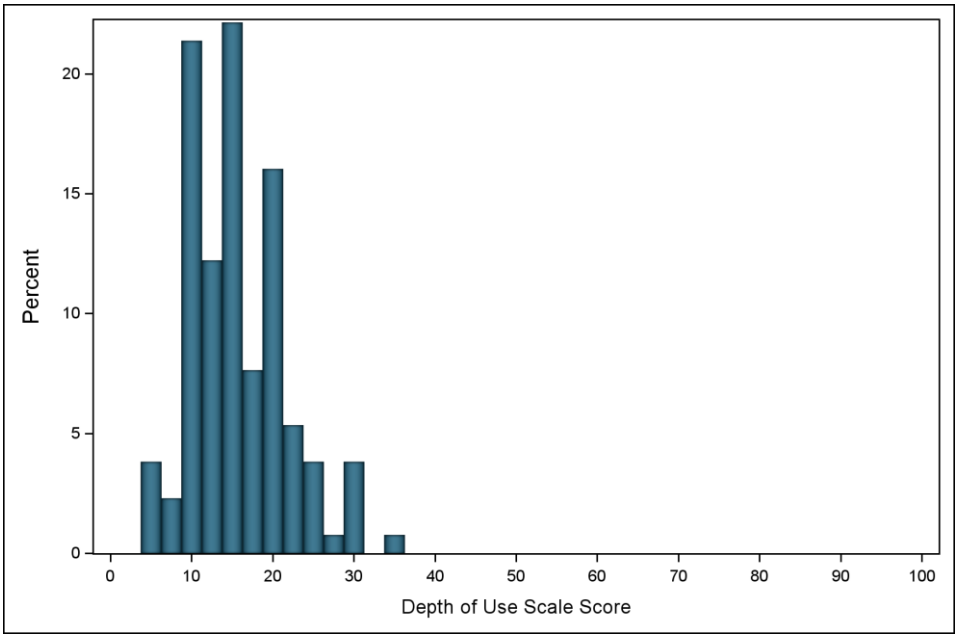
Table 3 presents descriptive statistics for the eight DOU subscales and the overall DOU score for our field trial sample.

Figure 23. Histograms of School-Level Depth of Use Subscale Scores



Note. n = 131 for schools. Individual-level item response ns range from 1,285 to 1,344.

Figure 24. Histogram of Overall Depth of Use Scale Scores



Note. n = 131 for schools. Individual-level item response ns range from 1,285 to 1,344.

Table 3. Descriptive Statistics for Depth of Use Subscale Scores

Scale	*n*	Possible Range	Mean	*SD*	Minimum	Maximum
Total Depth of Use	131	0–100	15.60	5.91	5.00	36.00
External Research	131	0–1	0.10	0.09	0.00	0.39
Local Research	131	0–1	0.38	0.15	0.00	0.87
Local Data Analysis	131	0–1	0.47	0.16	0.07	0.86
Direct to Research	131	0–1	0.09	0.09	0.02	0.40
Interpretation	131	0–5	3.44	0.72	0.75	4.79
Participation	131	0–18	6.52	1.77	1.93	10.60
Frequency	131	0–1	0.64	0.11	0.30	0.87
Decision Stage	131	0–6	2.50	0.87	0.54	4.67

The DOU scores and subscales can provide meaningful information about schools' engagement with evidence.

To illustrate profiles of the eight dimensions of DOU, we produced radar plots mapping scores along each dimension. Figure 25 shows a radar plot for a school with a low DOU score (DOU = 6), while Figure 26 shows a radar plot for a high-DOU school (DOU = 30). The differences between the plots are striking. The low-DOU school appears not to be influenced by external or local research at all: it does not engage in active or passive searches for research, and it tends not to rely on analyses of local data. Still, the low-DOU school engages in some interpretation of evidence (note that this includes all evidence, not just research): several groups are involved in collecting evidence and making decisions, and nearly half of decisions (i.e., *Frequency* score) tend to involve some form of research or data analysis (despite having low influence). In the high-DOU school, decisions tend to be influenced by both forms of research as well as by local data analyses. However, direct searches for research are still rare. High scores for *Interpretation*, *Participation*, and *Frequency* suggest that engaging with evidence is common practice for this school, and it is done at multiple points when making a decision.

Figure 25. Profile Plot for a Low Depth of Use School

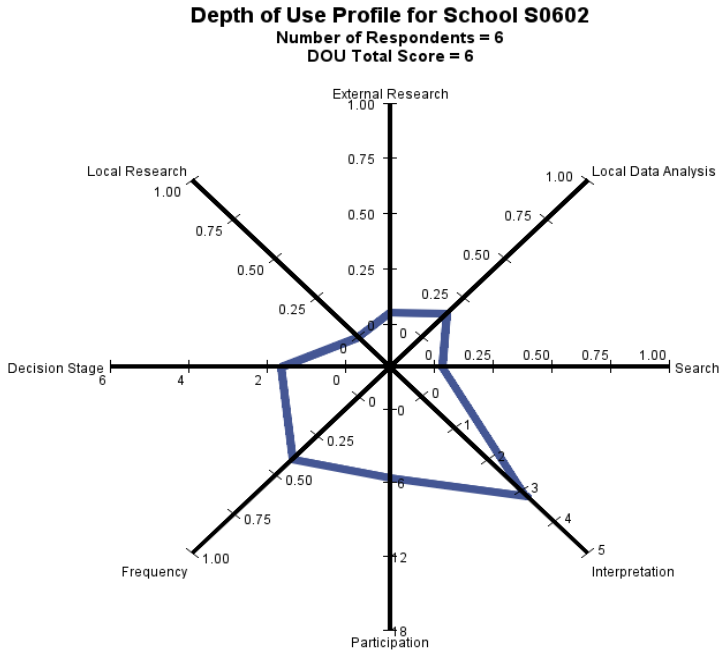
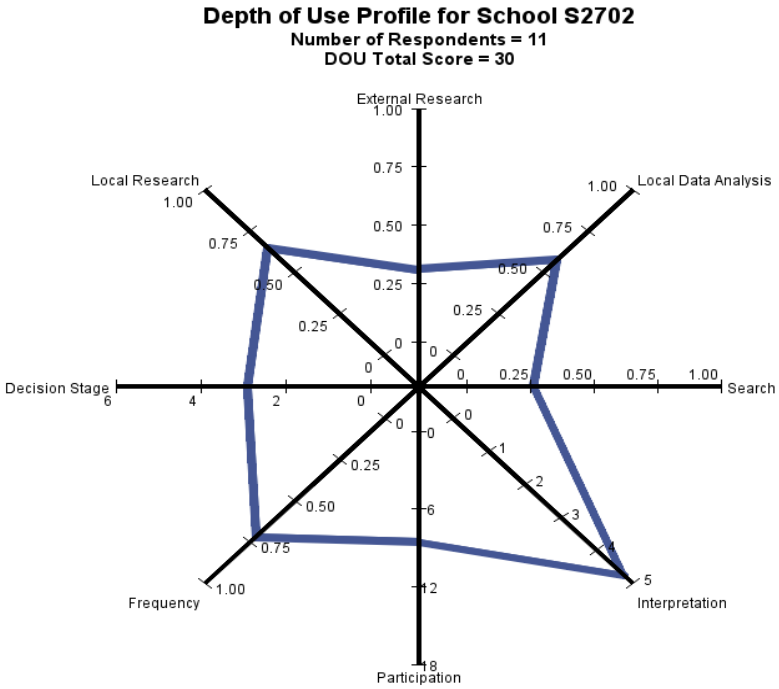


Figure 26. Profile Plot for a High Depth of Use School



Although it is highly unlikely that any school would achieve the maximum value on any DOU subscale from the *SEE-S*, the substantial skew in the DOU scores and subscales suggest three things. First, although most schools fall at the low end of the overall DOU scale (see Figure 23),

several schools score considerably higher on the DOU scale relative to other schools. This suggests that a DOU score need not be close to the top of our scale for a school to be considered deeply engaged with evidence; DOU scores above 20 points may be considered "high." Second, the two DOU subscales that focus on traditional research (i.e., *External Research*, *Search*) are very skewed (see Figure 24), suggesting that engagement with external research is much rarer than engagement with local research and local data analyses. Third, schools appear to engage with evidence in various and meaningful ways—by involving multiple stakeholders, seeking thoughtful interpretation of information, and weighing information at multiple points of a decision-making process.

The use of school-level metrics proves valuable for differentiating between schools in terms of their overall practices associated with research use. This offers a unique perspective on practices at scale and has the potential to help identify schools in need of greater supports for evidence use as well as those from whom models and guidance may be generated. We dig deeper into four deep-use schools in a mixed methods multiple case study, which provides a more nuanced perspective on what deep use of research looks like as well as the conditions that enable deep-use practices (Farley-Ripple et al., 2022).

Key Takeaways about Characterizing Schools Depth of Use

Analysis of key items capturing the dimensions of our Depth of Use (DOU) framework productively helps to describe schools' overarching practices related to research use. Schools vary widely across most dimensions but score lowest on the influence of external research use and search metrics. Integrating these scores helps to differentiate schools across dimensions and provides insight into the distribution of research-use practice across schools.

Therefore, the *SEE-S* DOU survey and scales may hold promise as a tool used by researchers, district leaders, and state agencies for measuring schools' engagement with research, and for monitoring improvement in use of research as efforts to build this capacity are undertaken. However, the results presented here are merely descriptive, and the observed variation in DOU scores and subscale scores at the school level begs for additional analyses in order to explore in what contexts and under what conditions schools are more likely to engage in deeper use of research.

To what extent do educators use research in other ways (conceptual, strategic, and imposed use)?

Our conceptual framework for depth of use emphasizes instrumental uses of research. By asking respondents to anchor responses in an organizational or personal-practice problem, we sought to explain how evidence directly informs decision-making. Yet there is widespread recognition that research use happens in many other ways that also shape educational practice and may be overlooked in normative expectations for instrumental use. We therefore included measures of some of these other uses to more comprehensively understand research use in schools. These items were borrowed from Penuel et al. (2017).

Educators were most likely to report using research to guide their thinking

Educators were asked about the different ways they used research evidence. Across the three types of evidence use, educators more often reported conceptual uses of research than strategic or imposed use and more consistently reported agreement across items (see Figure 27). Our findings suggest that educators are using research to continually expand their knowledge on issues that they deem important, help educators identify problems and appropriate solutions, and provide research-based frameworks to guide improvement efforts.

Educators also used research strategically to build support for particular educational initiatives

Strategic use was reported nearly to the same level as conceptual use. Within strategic use, a greater number of educators reported using research to seek agreement (65%), to mobilize support (63%), or to justify a decision (62%) rather than to discredit a program (41%). Strategic use of research to may reflect the increased expectations for using evidence in decision-making and appears to complement instrumental use (i.e., building support for a change or program).

Educators were less likely to agree that they engaged with research due to external requirements

Educators were least likely to agree about imposed or sanctioned uses of research (Figure 27), though with notably less consistency evident in the flatter distribution in Figure 28. A majority of respondents at least agreed with two of the three items, suggesting some influence of heightened policy expectations on research use in school-based decision-making. However, respondents less often agreed with the item about conducting research and evaluation as a requirement for externally funded projects.

Figure 27. Educators' Purposes in Using Research (Conceptual, Strategic, Imposed)

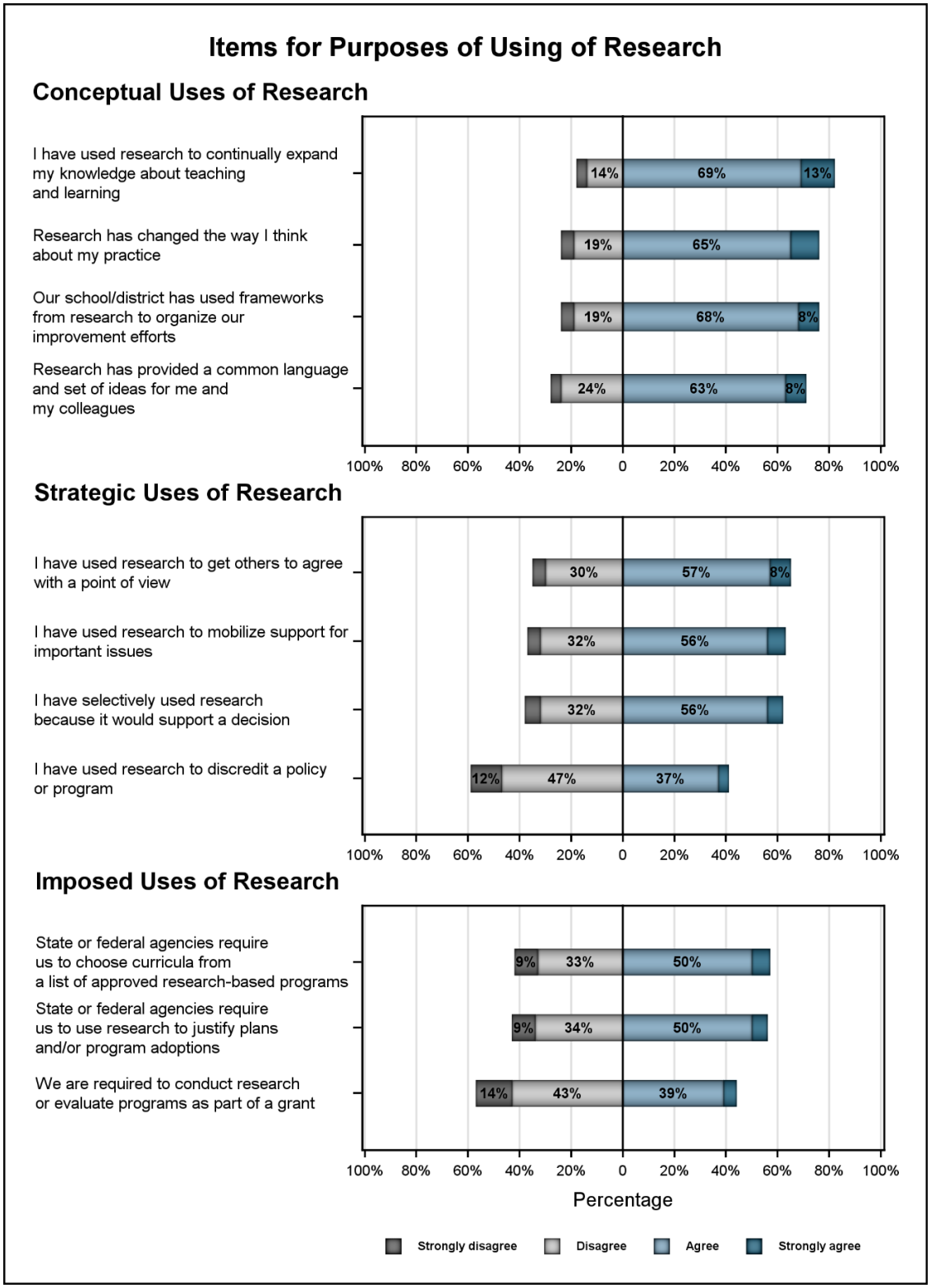
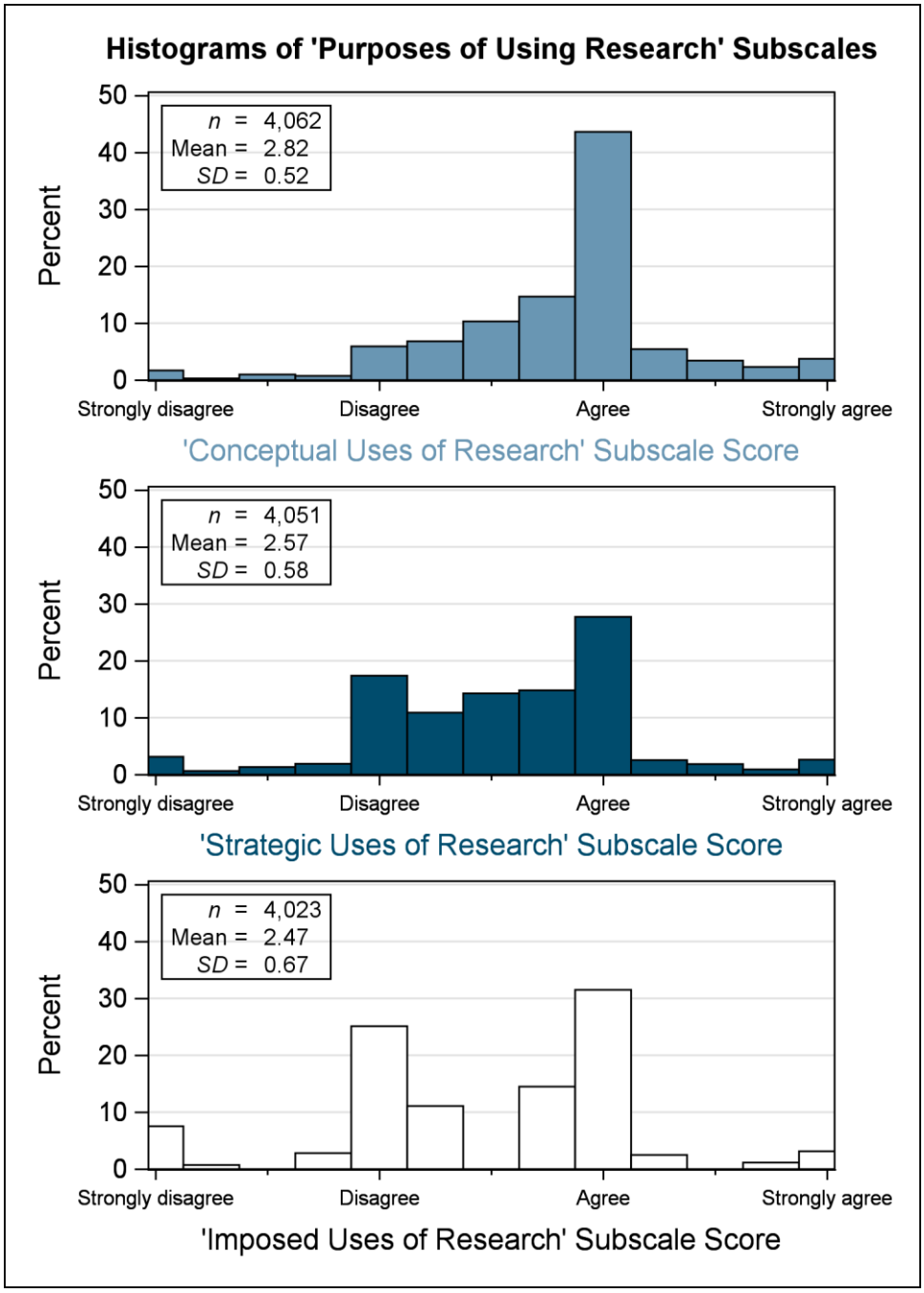


Figure 28. Histograms of Purposes of Using Research Subscale Scores



Key Takeaways on Other Uses of Research

Responses to items about conceptual, strategic, and imposed uses of research demonstrate that an emphasis on instrumental uses of research—which we have described earlier in exploring depth of use and which are emphasized in evidence use policy—paints only a partial picture of the influence of research on education. These findings highlight the relative importance of conceptual uses of research, which can inform professional growth and collective understanding of improvement work—and the somewhat limited uses associated with external accountability mechanisms. Further, with respect to strategic use, McDonnell and Weatherford (2013) contend that such uses "are at odds with the rational choice models that dominated policy analysis in the early year, they represent a more valid depiction of the actual use of research" (p. 3) in school and district contexts. They are also encouraging in terms of the value of and extent of research use for different aspects of school improvement work.

2. What Are Practitioner Perspectives on the Gap Between Research and Practice?

Our conceptual framework focuses on five hypothesized dimensions of the gap between research and practice: differences in research products; the qualities of research; the extent to which research addresses problems of practice; structures, processes, and incentives that guide decision-making; and the nature of the relationship between researchers and practitioners (here, educators). This section explores educators' perspectives on these dimensions.

We note that whereas analyses addressing our first research question about research-use practices included analyses about individual decisions and organizational decisions, analyses in response to this set of research questions are conducted at the individual rather than school level because we found that variation in responses to items in this section was not attributable to school context[4].

What research products do educators prefer to use, and what are their characteristics?

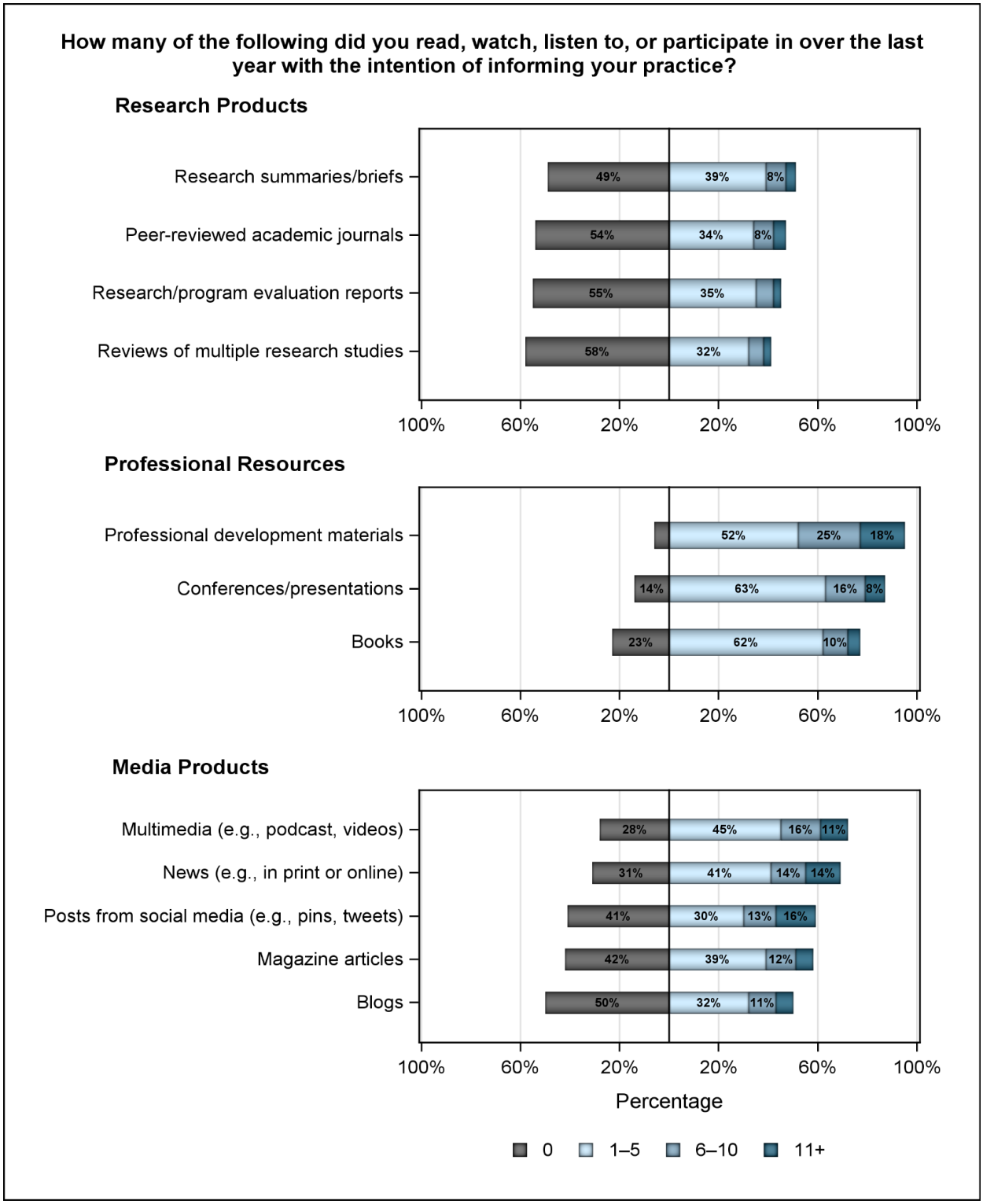
SEE-S items asked respondents to indicate the extent to which they use different types of products when informing their practice as well as their preferences with respect to product characteristics. Responses are instructive about how to design research products that meet practitioners' needs.

Practitioners prefer media and professional resources.

Responses to questions about the types of resources they engaged with over the last year to inform their practice indicate that educators use professional resources - those created specifically for practitioners - far more than traditional research products and slightly more than other types of media resources. The descriptive results of the individual items are presented in Figure 29. The most commonly used products were professional development materials, with 95% of respondents indicating that they have engaged with at least one in the last year. Conferences/presentations and books were also frequently used. Research products were used less often—e.g., about half of the respondents reported using research summaries or briefs in the last year.

[4] For each scale, we fit a linear mixed model with a random intercept for school so that we could examine the intra-class correlation for the nesting variable of school. Resulting intraclass correlation coefficients for *SEE-S* scales (Appendix B) suggested that very little variation in responses is attributable to schools (ranging from 0.1% to 8%).

Figure 29 Type of Products Consumed by Practitioners

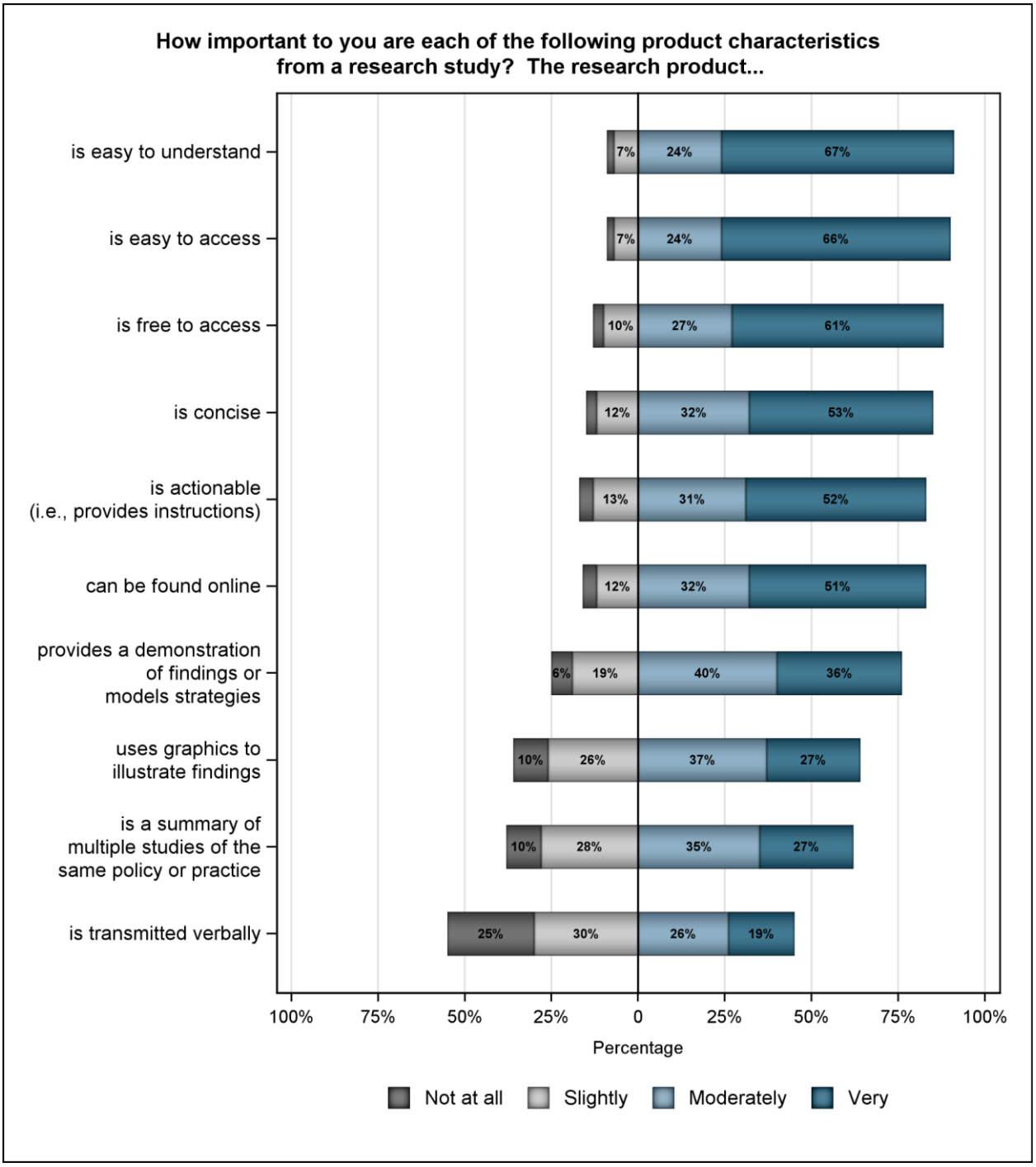


Note. Item response *n*s range from 4,085 to 4,198.

Practitioners' value ease of access and understanding over other characteristics of products.

We further asked educators to describe the characteristics they value in the resources they use. Figure 30 shows respondents' ratings of the importance of various research product characteristics. Not surprisingly, nearly all respondents indicated the importance for products to be easy to understand and access, followed by preferences for concise and actionable resources. We found more varied levels of importance, in responses related to graphic presentations, synthesis across studies, or verbal transmission, which suggests that educator preferences for research products are not homogenous.

Figure 30. Practitioners' Perceptions of Research Product Characteristics



Note. Item response *n*s range from 4,167 to 4,194.

Key Takeaways on Products Practitioners Use

These data, along with other findings presented in this report, establish a disconnect between the ways in which research is often packaged and communicated and the products with which practitioners engage as part of their practice. The fact that educators prefer products that fall in the professional category is not surprising—these are often resources created specifically for educators and are designed to meet their needs. The nearly unanimous preference for resources that are easy to access and understand and that are both concise and actionable highlights differences between professional and research resources. Further, the emphasis on easy and free access to products highlights that products behind paywalls may see barriers to use.

At the same time, we also note that educators do engage with traditional research products. Yet the features that are sometimes advocated for when communicating research—such as modeling strategies, graphic representations of findings, or verbal communication through presentations or conferences—are not universally important. Rather, our data suggest that educators likely fall into multiple profiles, reflecting different preferences and needs for how research information is packaged and shared, consistent with Neal et al.'s (2018) typology of educator perceptions of research. Overall, our findings about educators' use of products and their characteristics echo existing studies that have called for systematic attention to the translation of research and development of research-informed resources, and improving their accessibility, as a lever for strengthening uptake of research in practice (Cordingley, 2008; Penuel et al., 2018).

How do educators understand research quality?

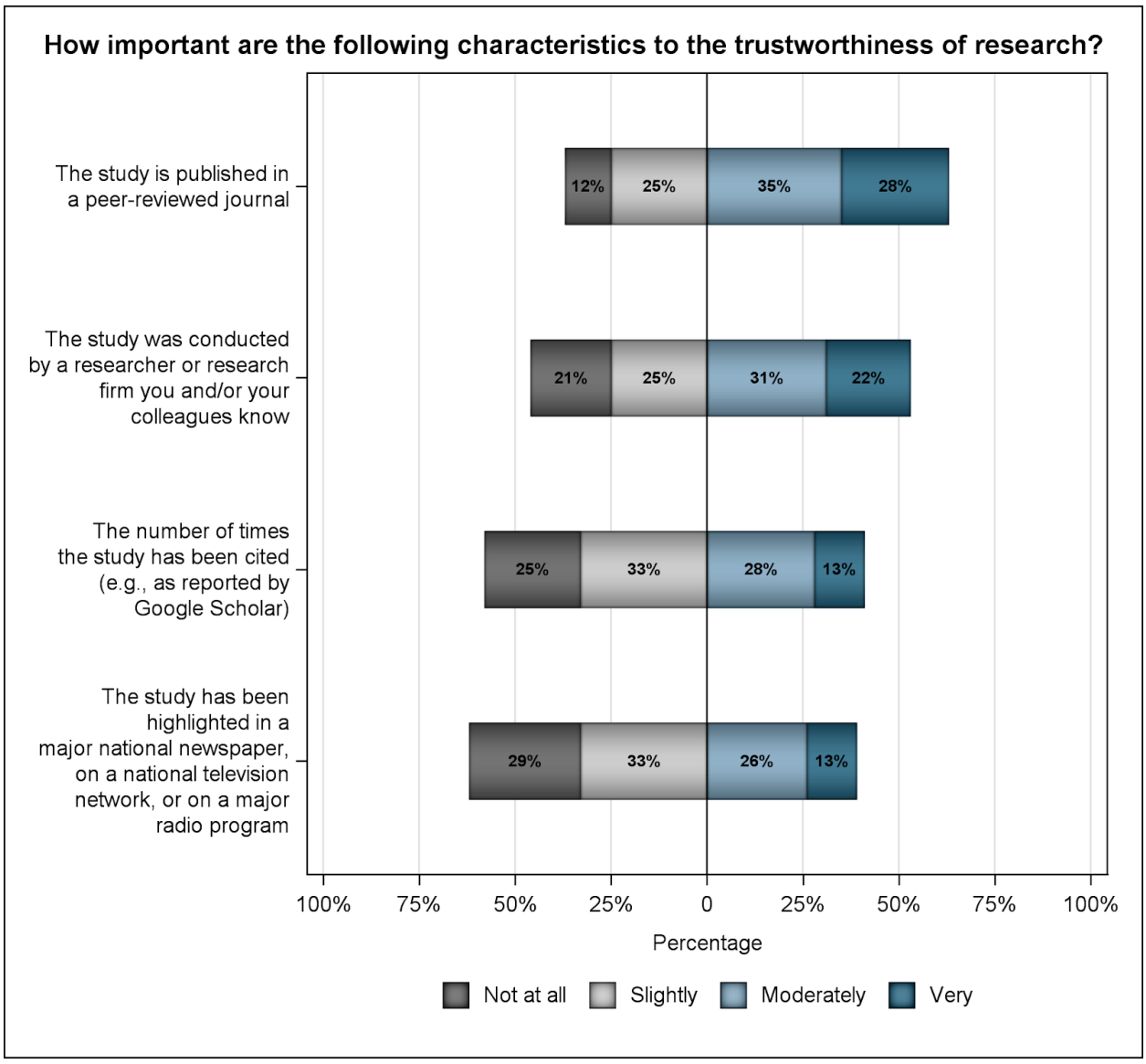
To answer this question, we explored research characteristics that educators reported as important in establishing trustworthiness and credibility. Credibility refers to the quality of plausibility and believability, while trustworthiness refers to the quality of being deserving of trust or reliable. Figure 31 shows educators' ratings of the importance of characteristics related to research evidence trustworthiness, followed by Figure 32, which presents the distribution.

Peer review signals the trustworthiness of research.

Of the four criteria for trustworthiness, respondents rated as most important the publication of a study in a peer-reviewed journal, with more than 60% of respondents indicating that this is moderately or very important. These findings appear to contradict reported behavior: our prior

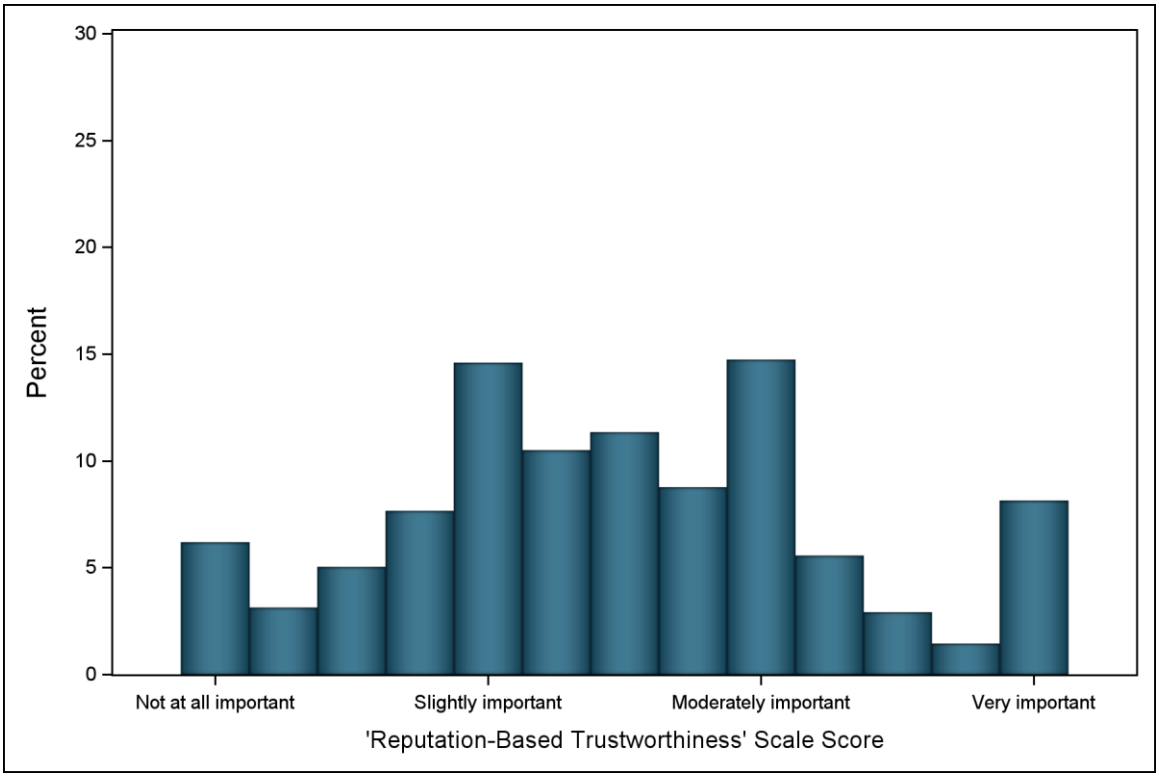
items related to evidence, as well as later findings pertaining to networks, demonstrate the limited influence of peer-reviewed research. Another notable finding is that more than half of respondents (53%) indicated that their assessment of a study's trustworthiness was impacted by whether they or their colleagues know the researcher or research firm that conducted the study. This is consistent with other studies that emphasize the role of relationships in supporting research use. We also note that 6.19% of educators reported that none of these factors were important to the trustworthiness of research.

Figure 31. Practitioners' Views on Characteristics Impacting Research Trustworthiness



Note. Item response *n*s range from 4,170 to 4,186.

Figure 32. Distribution of the 'Reputation-Based Trustworthiness' Scale Score



Note. n = 4,153.

Practitioners associate key aspects of research design with credibility of research.

In terms of what makes research credible, Figure 33 shows respondents' ratings of characteristics, while Figure 34 presents the distribution of scale scores on this set of items. In general, there was limited variation in respondents' ratings of the five factors included in this item. Practitioners reported that statistically significant results, detailed methods descriptions, and reported findings for all outcomes as the most important factors influencing their perceptions of credibility. These three characteristics were rated as moderately or very important by more than 80% of respondents. Random assignment of participants was rated as least important for credibility, but this characteristic was still rated as moderately or very important by 73% of respondents. The distribution of the *Methods-Based Credibility* scale is skewed left, in comparison to the distribution of the *Reputation-Based Trustworthiness* scale, which suggests that educators were more likely to believe that credibility criteria were important.

In addition to these characteristics, the *SEE-S* included an item that asked about the importance of a study meeting the What Works Clearinghouse standards or being identified through a research database. Importance ratings for these two characteristics were low in comparison to the design-

related characteristics presented in Figure 33. Approximately half of participants indicated that these characteristics were only slightly or not at all important (57% for What Works Clearinghouse standards, 44% for research database).

Figure 33. Practitioners' Views on Characteristics Impacting Research Credibility

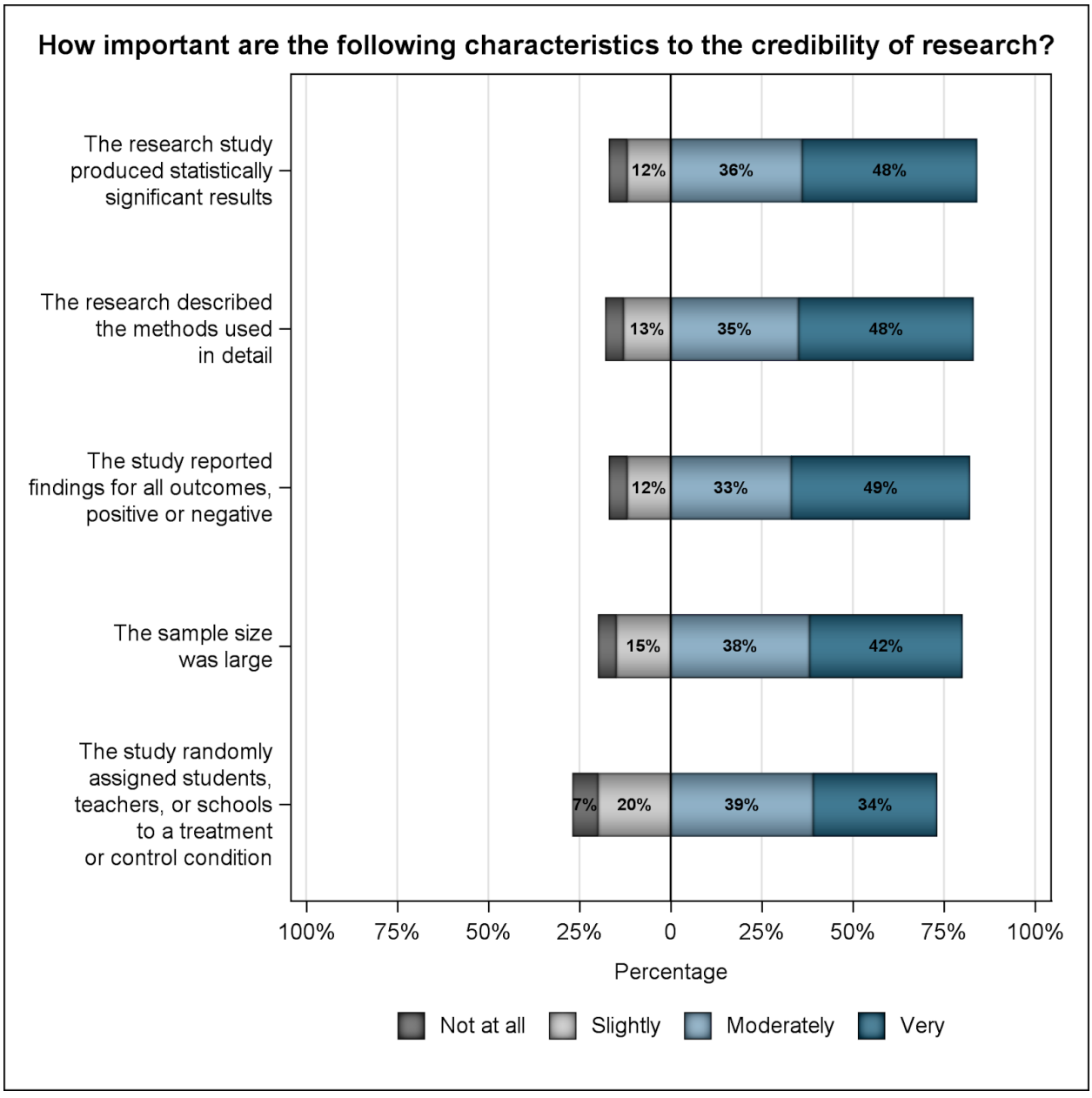
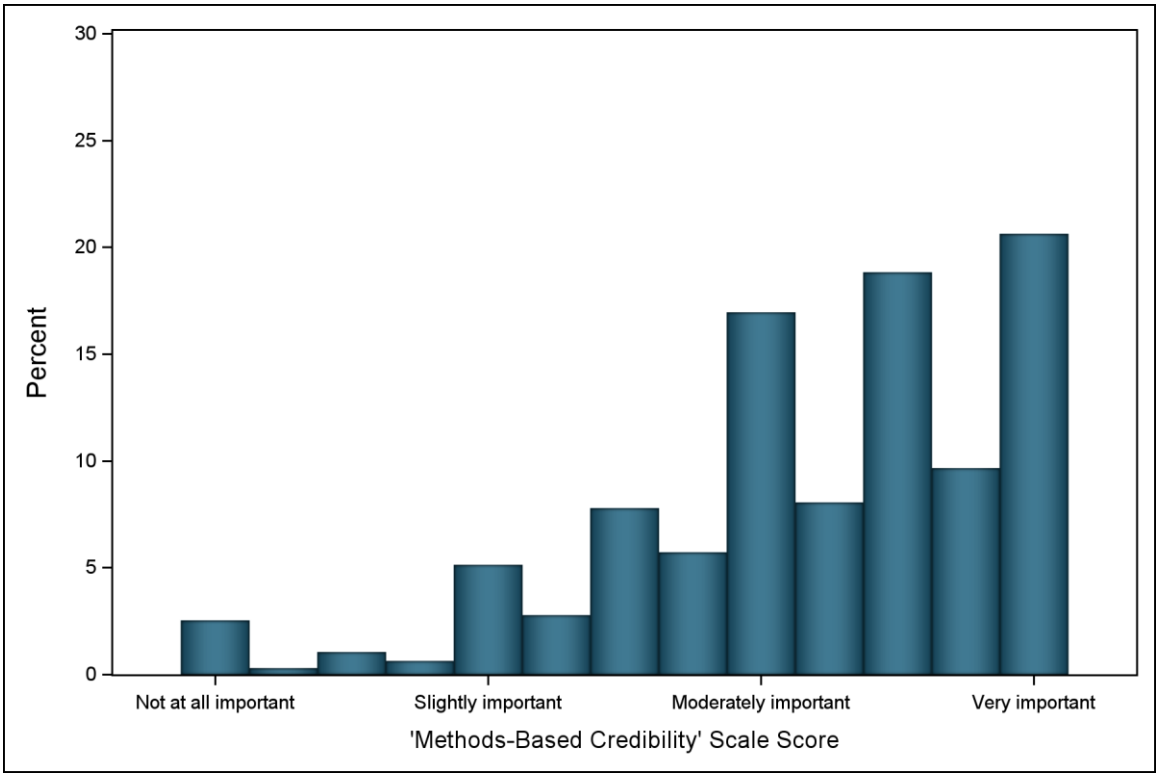


Figure 34. Distribution of the 'Methods-Based Credibility' Scale Score



Note. n = 4,112.

Key Takeaways on Research Quality

Responses regarding the trustworthiness and credibility of research indicate that educators recognize the value of various aspects of research design, and that they view them as signals of quality—for example, peer-review. At the same time, this recognition is not entirely consistent with reported behavior about evidence use in other sections of this report, perhaps signaling a knowing–doing gap. Furthermore, given that tools such as the What Works Clearinghouse were created with the intention of increasing educators' research use by providing a source of rigorous, vetted research evidence, the low importance given to meeting clearinghouse standards raises questions of awareness and understanding of this resource.

Notably, findings indicate educators assess a study's trustworthiness by whether they or their colleagues know the researcher or research firm that conducted the study. This is consistent with other studies that emphasize the role of relationships in supporting research use. Coupled with the relatively flat distribution of responses regarding trustworthiness, these data may indicate

that the most important criteria for evaluating research trustworthiness were not captured in our survey.

Do educators believe research can help them address challenges they face?

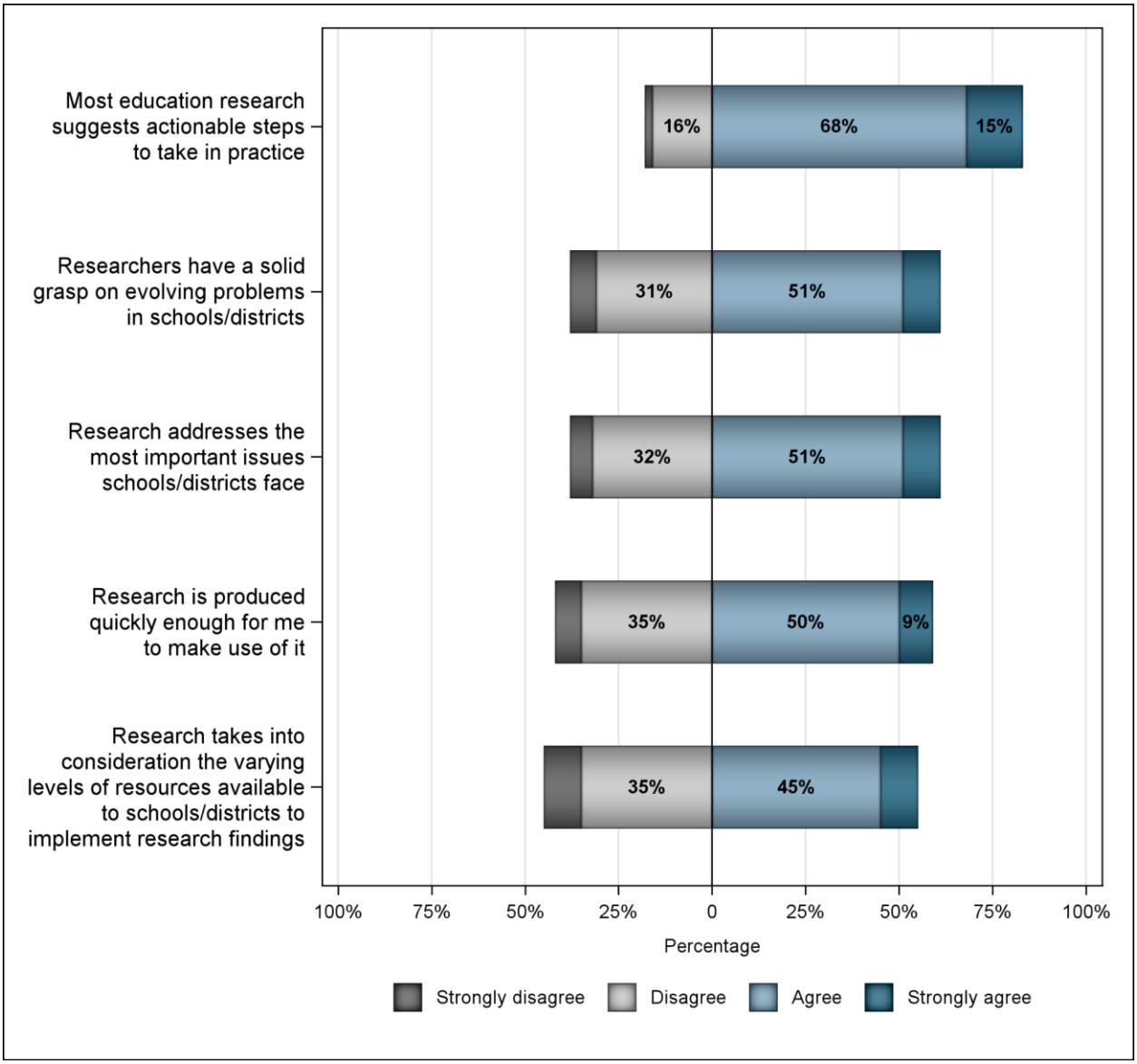
Historically, a key barrier to research use has been the relevance of research to educational policy and practice. We gauged educators' perceptions of whether research can address problems of practice through a series of items focused on the relevance and usefulness of research (Figure 35).

Educators reported positive perceptions of several aspects of research but are mixed overall.

A sizeable majority of respondents (83%) agree or strongly agree that most education research suggests actionable steps to take in practice, and 61% agree or strongly agree that researchers have a solid grasp of the evolving problems in schools and districts. However, the item with the lowest level of agreement (55% agree or strongly agree) relates to researchers' consideration of the varying levels of resources available to schools/districts in implementing research findings.

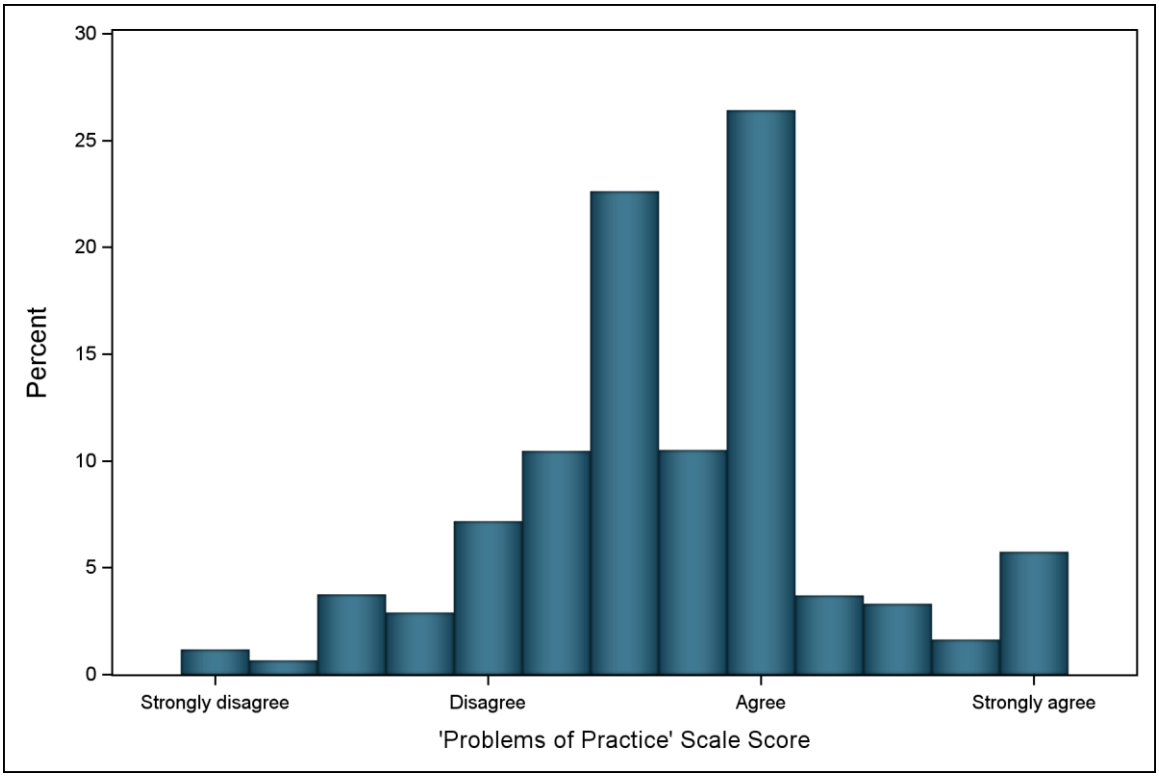
Overall, the distribution of responses when recomputed as scale scores (Figure 36) place mean responses somewhere between *disagree* and *agree* on our response scale (mean = 2.68, *SD* = .61). Few disagreed with the relevance and usefulness of research across the board, but few agreed across the board as well.

Figure 35. Practitioners' Perceptions of the Relevance and Usefulness of Research



Note. Item response *n*s range from 4,155 to 4,174.

Figure 36. Distribution of the 'Problems of Practice' Scale Score



Note. n = 4,112.

Key Takeaways on Whether Research Addresses Problems of Practice

Practitioners are generally positive about the actionability and relevance of research, a finding which is promising. These data counter the narrative that research is frequently irrelevant (Dagenais et al., 2012; Farley-Ripple et al., 2020; Maynard, 2006) but also direct attention to specific issues that can be the foci of systematic improvement. For example, data suggest that perceptions of research could be improved if issues related to timeliness and feasibility of implementation were addressed. These suggestions, of course, are not simple ones to take up systematically in the research enterprise but could be targeted through mechanisms such as funding or publishing/reporting requirements.

What structures, incentives, and processes influence research use?

One of the most important factors in the uptake of research in policy and practice is organizational conditions. We focus here on three dimensions of those conditions—structures, processes, and

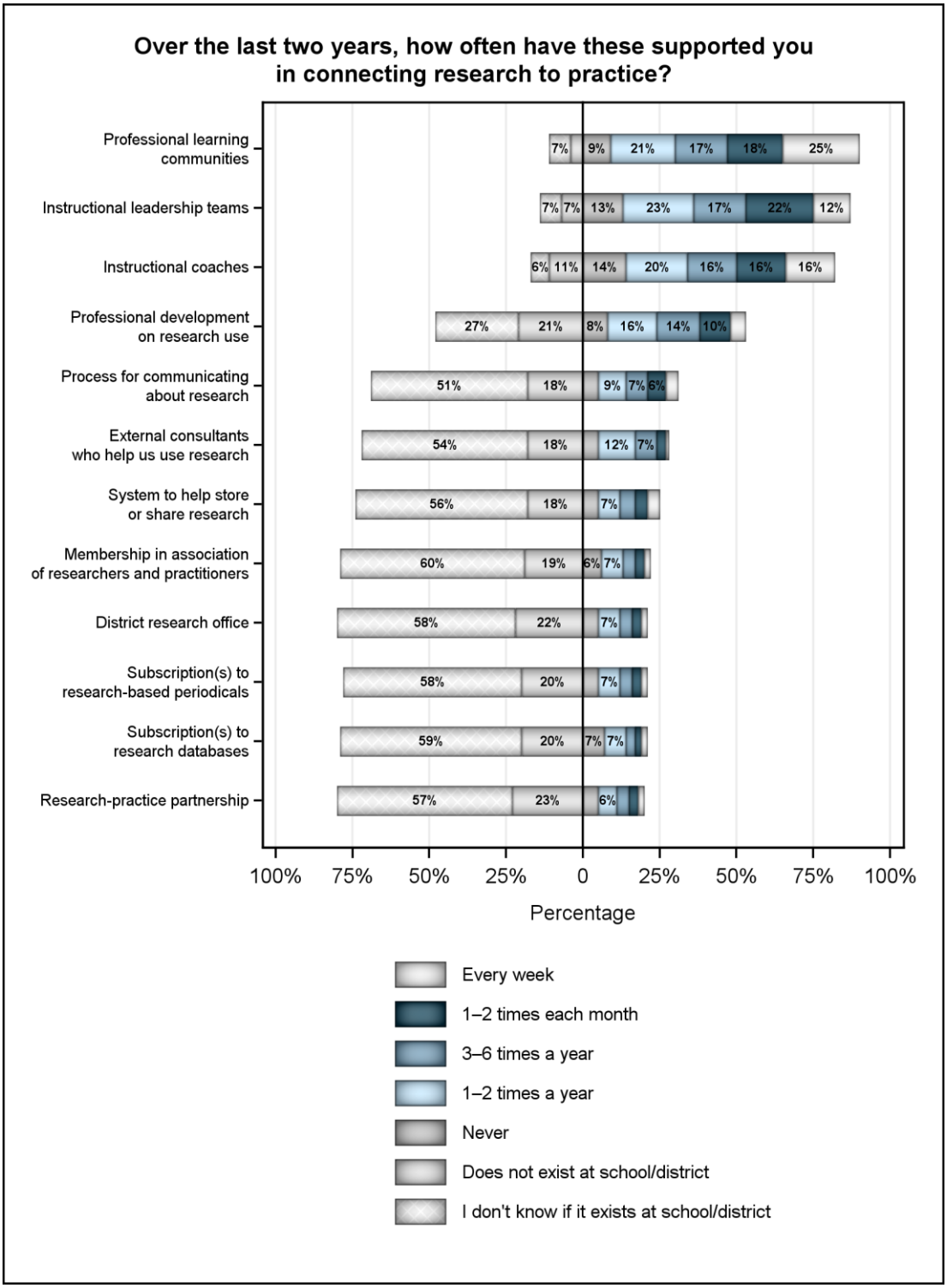
incentives—to better understand the extent to which school contexts support or constrain research use.

Some schools leverage typical structures to engage with research use.

In the *SEE-S*, educators were asked about the availability of 12 different school- and district-based structures and the extent to which they used the structure to connect with education research. Figure 37 combines the reports of whether particular structures were available in respondents' districts and reports of *whether and how often* available structures supported educators in connecting research to practice in the last two years. For example, 80% of respondents indicated that either no research–practice partnership exists at their school or district or they were unaware of its existence. But of the respondents who said a research–practice partnership exists at their site (20%), 11% had never participated in it.

The most frequently available structures (i.e., those with the fewest responses indicating they were not available, or the respondent did not know if they were available) were professional learning communities (PLCs), followed by instructional leadership teams, and instructional coaches. While these supports are commonly available across studied districts, our survey results indicate that they are not necessarily used by educators to incorporate research into their practice, with only 43% of educators using PLCs to engage with research on a weekly to monthly basis, followed by 34% and 32% of educators using, respectively, instructional leadership teams and instructional coaches on a weekly to monthly basis.

Figure 37. School and District Structures Supporting Connection of Research to Practice

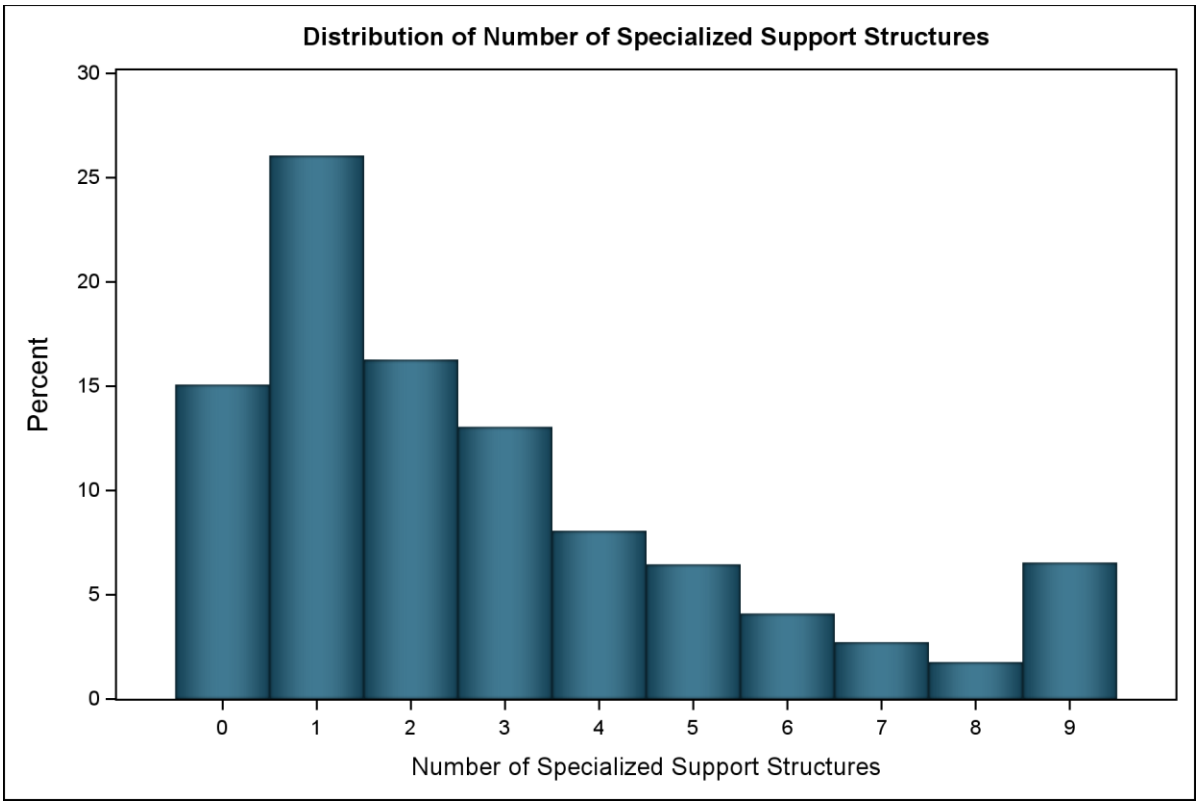


Note. Item response *n*s range from 4,094 to 4,190.

Educators have limited access to support specific to research use.

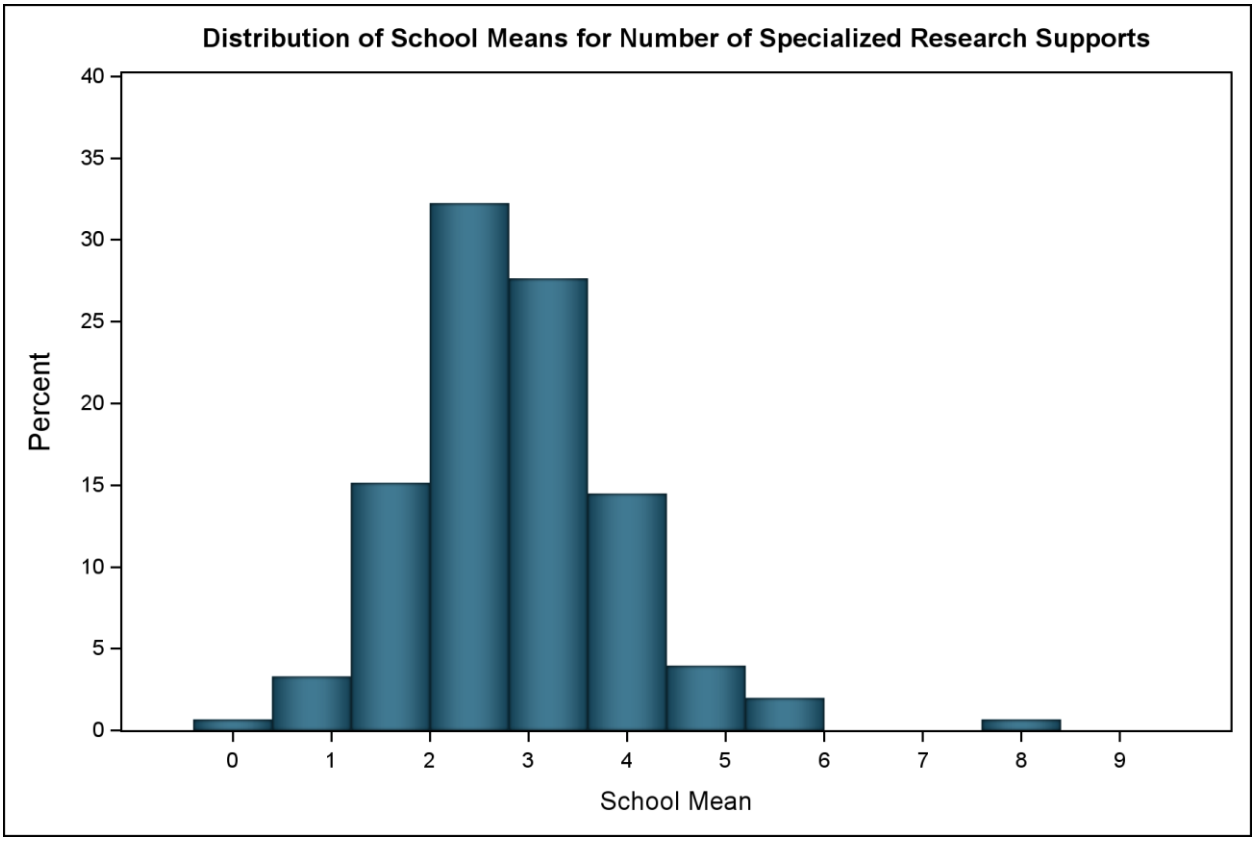
Figure 37 also shows a noticeable drop-off in the availability and use of the remaining nine structures to support educators in connecting research to practice. We consider these structures as specialized support structures that facilitate research use, and we examined the distribution of access to such structures reported by educators in our sample (Figure 38). While most respondents have at least one specialized support structure available within their schools (most often professional development on research use), the skewed distribution suggests that access to supports specifically for research use is not evenly distributed among educators. In fact, 15% of educators reported that none of these structures were available. As for the results at the school level, the histogram in Figure 39 visually represents distribution patterns of research-use structures when aggregated to the school level. Figure 39 confirms that most schools have three or fewer research-use support structures. The limited availability of these structures in schools may be due to several reasons, including a lack of resources (e.g., costs associated with accessing research databases can be prohibitive) and capacity (e.g., small school districts may not have an internal research office). These findings further underscore the importance of building school capacity primarily through the use of common structures to support research use.

Figure 38. Distribution of Number of Specialized Support Structures for Individual Respondents



Note. N = 3,477. Includes only respondents who completed these items.

Figure 39. Distribution of School Means of Number of Specialized Support Structures for Research Use

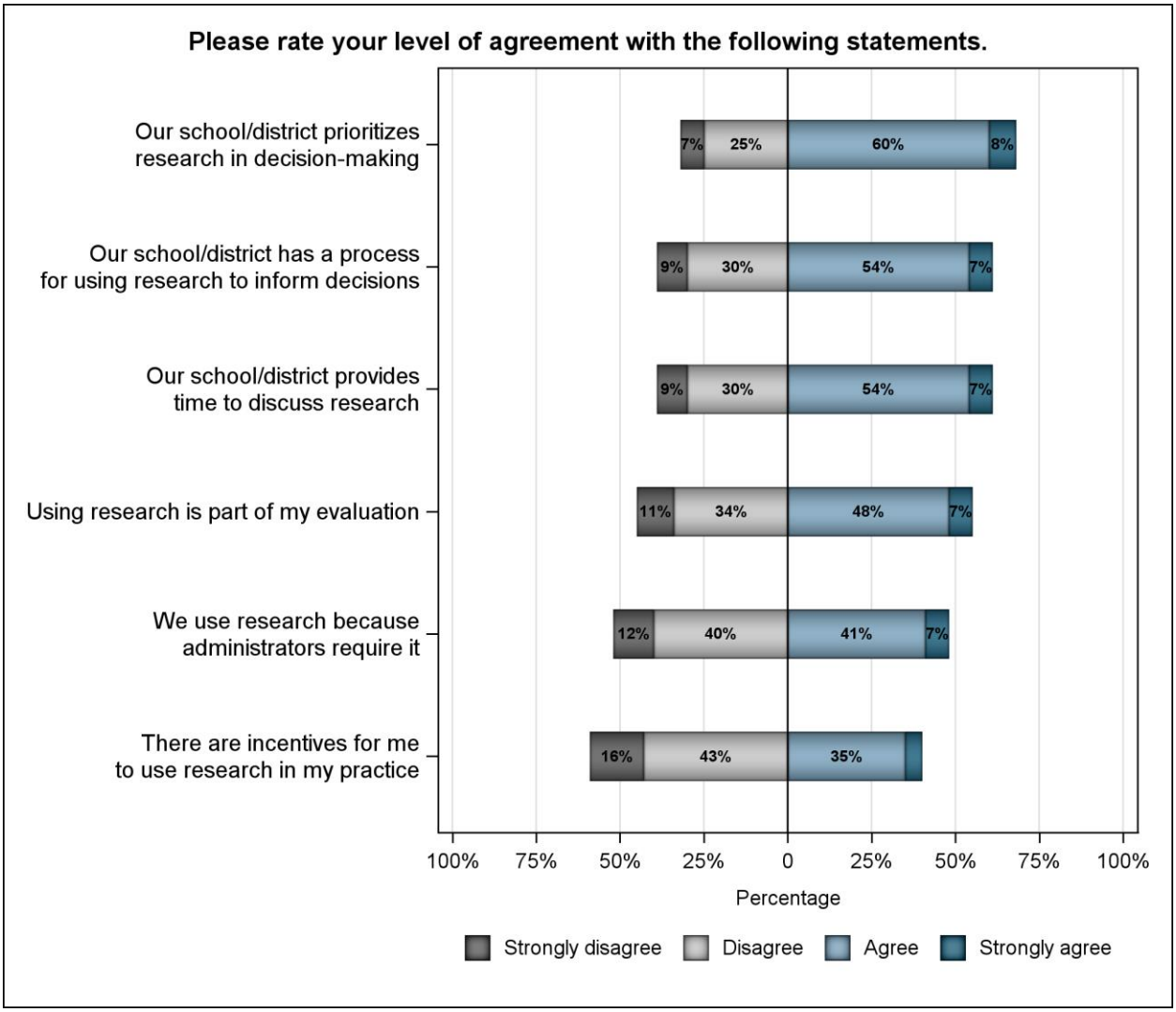


Note. n = 158.

School contexts vary widely and may not provide sufficient support for research use.

Educators were asked about the different processes and incentives in their schools and districts that support use of research in practice. Figure 40 presents the items related to processes and incentives. Within the scale, practitioners most often agreed or strongly agreed that their school/district prioritized research in decision-making (68%, Figure 40). This suggests that many educators are working within schools/districts with stated organizational values that are supportive of research use. Figure 40 also indicates that practitioners agreed or strongly agreed that their school/district had specific processes (61%) for using research when making decisions; however, they were less likely to report that there were incentives (41%) for encouraging research use.

Figure 40. Items for Processes and Incentives to Support Research Use



Note. Item response *n*s range from 4,095 to 4,107.

Key Takeaways for Structures, Processes, and Incentives

Specialized research-use supports, such as research offices and subscriptions to research journals, are not often available to educators. While specialized supports have been proposed to support school/district research use (Bickel & Cooley, 1985; Coburn, 2010; Farley-Ripple, 2012; Honig, 2003; Hubbard, 2010), they may represent additional requirements and costs for schools and districts. In contrast, findings suggest that commonly reported structures (i.e., PLCs, instructional support teams, and instructional coaches) play an important supporting role in

research use, at least for some schools. We note that these structures are not specific to research use; that is, these structures exist in schools to achieve many purposes, including supporting professional learning, decision-making, and implementation of new policies or practices; they therefore may or may not be leveraged to support research use. Some schools in our sample clearly leverage these structures for research use, whereas others do not. However, their widespread presence in schools—and the space and time they afford—is a potential opportunity for strengthening research use. That is, their presence provides an opportunity for schools/districts to adapt pre-existing structures so that the use of research is embedded into everyday routines. For example, research by Brown (2017) suggests that school and district leaders can adapt PLCs to support educators in "engag[ing] in a facilitated process of learning, designed to help them make explicit connections between research knowledge and their own assumptions and knowledge" (p. 389). Further, Brown notes that schools that engaged in these practices have begun to "transform teaching and improve student outcomes" (p. 387). Therefore, these common structures may hold untapped potential to support engagement with research in ways that impact student learning.

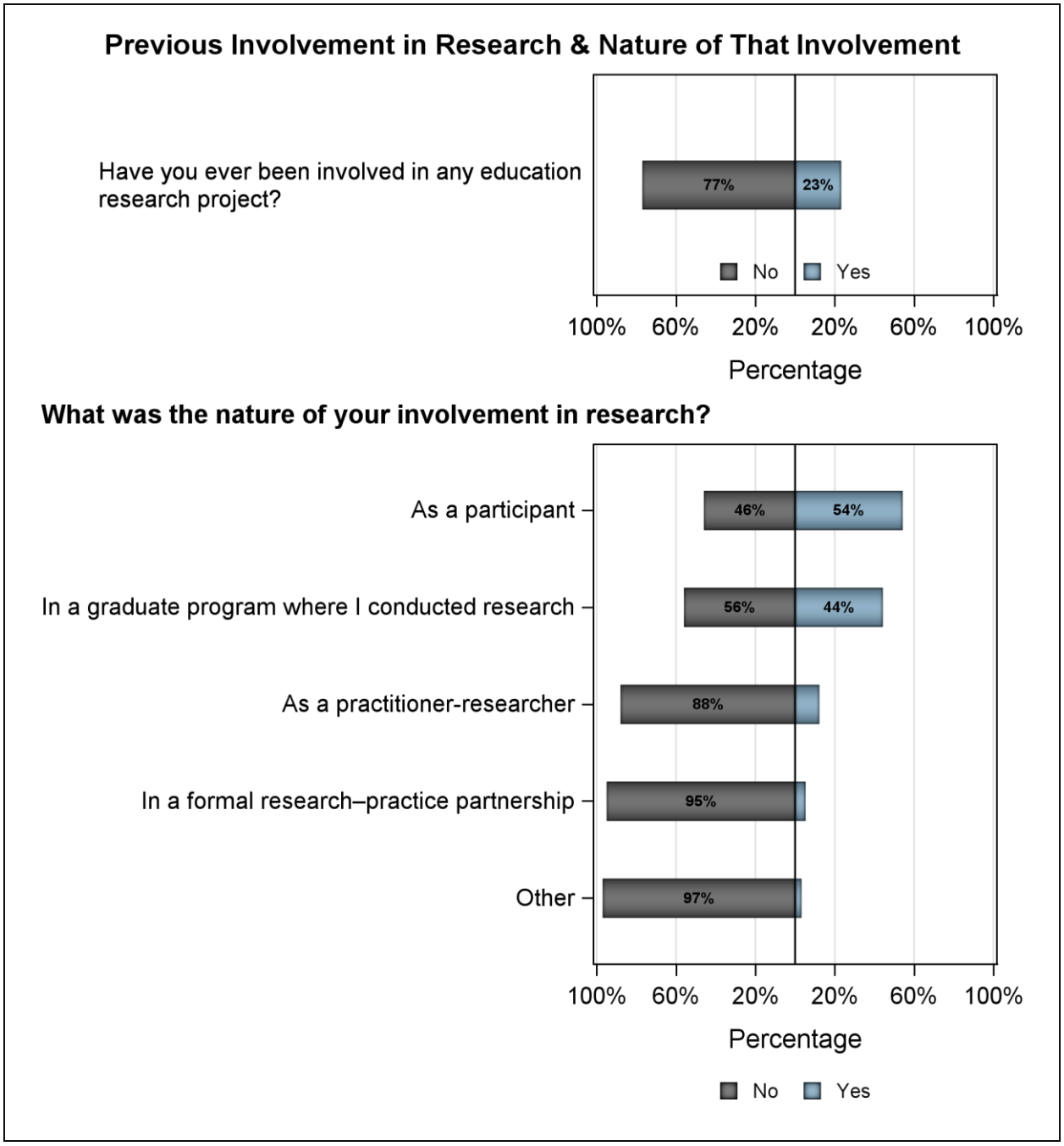
How do school communities interact with research communities?

A final dimension of the gap between research and practice pertains to the extent to which the two interact. To capture that relationship, practitioners were asked about prior involvement with and in research as well as recent opportunities to engage with researchers.

Educators have had limited involvement with research.

Figure 41 shows the different ways respondents have engaged in research. Most notably, only 23% of educators have participated in research, with the vast majority never having been involved in any education research. Of those that had been involved in a research project, over half reported that they were involved as a research participant. Further, very few practitioners responded that they had engaged in action research as a practitioner–researcher or had been involved in a formal research–practice partnership. This suggests that most educators have very little prior involvement with education research, and when they do, they are most often engaging as research subjects, rather than through research activities that have been shown to improve evidence-based decision-making, such as research–practice partnerships and practitioner-led research.

Figure 41. Previous Involvement in External Research and the Nature of That Involvement



Note. Item response *n* for top panel = 4,147; *n* = 955 for bottom panel.

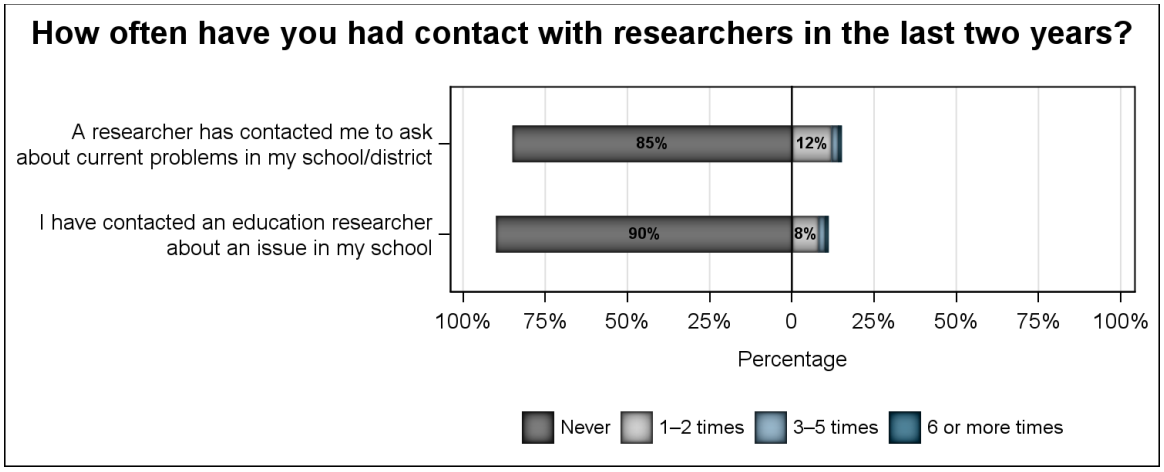
Because so few educators reported prior experience with research in the ways described above, we explored the extent to which that experience differed by role and education to better understand this phenomenon. Compared with classroom teachers (22%), a much greater percentage of school administrators (39%) reported previous involvement in research. Other roles, such as school

psychologists (50%) and instructional coaches (29%), also have greater prior experience with research, which might be explained by specialized training or the nature of their roles in schools. Respondents with graduate-level training (specifically doctoral) were substantially more likely to have been involved in research. Sixty-one percent of educators with doctoral degrees had prior research experience as did 29% of those with master's degrees, compared to 14% of those with bachelor's degrees and 11% of those with associate's degrees.

Educators want to interact with researchers but rarely do.

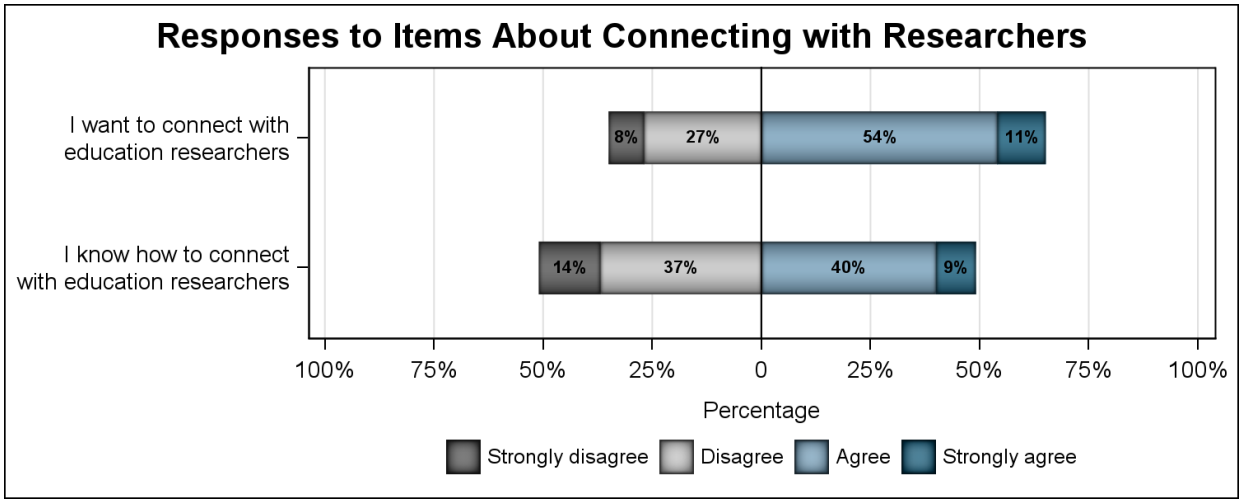
Educators were also asked about how often they have had contact with researchers in the last two years as well as their desire to and knowledge of how to connect with researchers. Figure 42 indicates that a small proportion of practitioners have direct contact with researchers, whether self-initiated (10%) or initiated by the researcher (15%). Figure 43 reveals that many practitioners reported wanting to connect with education researchers (65%) but that many do not know how (51%).

Figure 42. Frequency of Contact with Researchers



Note. n = 4,197.

Figure 43. Practitioner Connection with Researchers



Note. Item response *n*s range from 4,159 to 4,167.

Key Takeaways about Interaction Between Communities

Practitioners reported limited prior experiences engaging in research-related activities, though this varies by role and education in expected ways; educators with formal leadership roles or specialized training are more likely to have had those experiences. Research has found that prior participation in research projects is associated with educators' self-reported use of research-based information (e.g., Cousins & Walker, 2000; Lysenko et al., 2015). Role- and degree-related differences may point to levers for building school capacity for research. Those with specific roles or educational backgrounds can be tapped for leadership teams, coaching roles, professional learning, or informal supports that can help their colleagues to access and interpret research, leveraging their greater levels of knowledge about research. Additionally, this finding suggests that professional educational programs can be spaces where research and practice come together, an opportunity often called for in policy and research.

Furthermore, data on the (lack of) interaction between researchers and practitioners suggest missed opportunities as well as the challenge of scaling relationships between research and practice. Prior research emphasizes the importance of relationships in supporting research use, which means that initiatives that bring researchers and practitioners into conversation with one another can strengthen the role of research in practice.

3. Are Practitioners Well Prepared to Use Research?

Covered in this section are the *SEE-S* survey items that measure individual educators' confidence in critically interpreting research and their research-related training and experiences. As suggested in our conceptual framework (Farley-Ripple et al., 2018), the results presented here suggest that educators' training, experiences, and ability to critique research may play a crucial role in enhancing or limiting depth of research use by schools and individual educators.

How confident are practitioners in critically interpreting research?

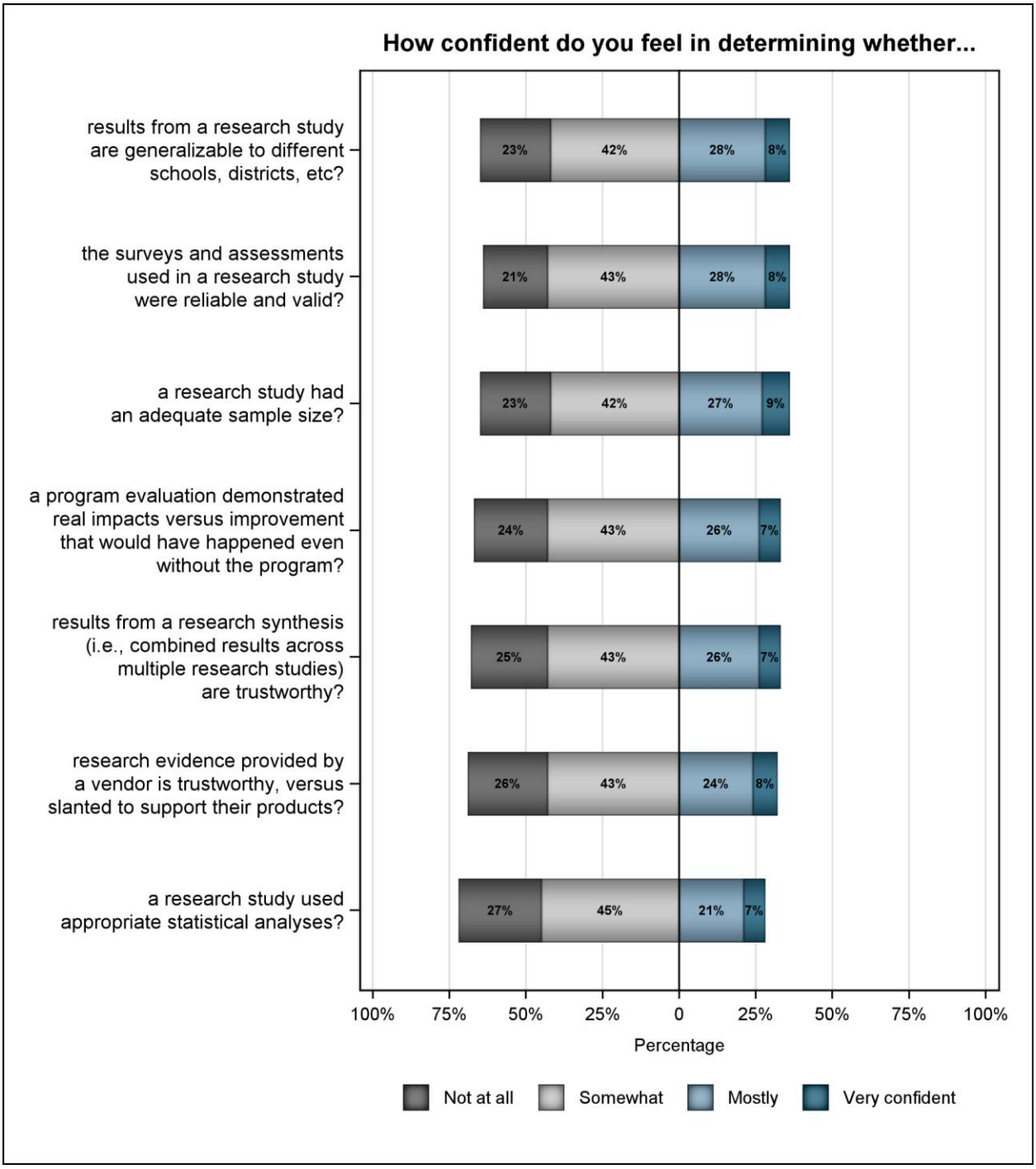
Respondents indicated their confidence evaluating or understanding seven aspects of research on a 4-point scale from *not at all confident* to *very confident*. These items were used to create a survey scale to characterize practitioners' overall confidence in critiquing.

Most practitioners are not confident in their ability to critically interpret research.

Figure 44 shows that respondents were typically only somewhat confident in critically interpreting different kinds of research. The responses across the seven items in this section were similar, but practitioners were least confident in evaluating whether a research study used appropriate statistical analyses and whether research evidence provided by a vendor is trustworthy vs. slanted to support their products. The implication of this result is that most educators do not feel well prepared to critically consume research evidence.

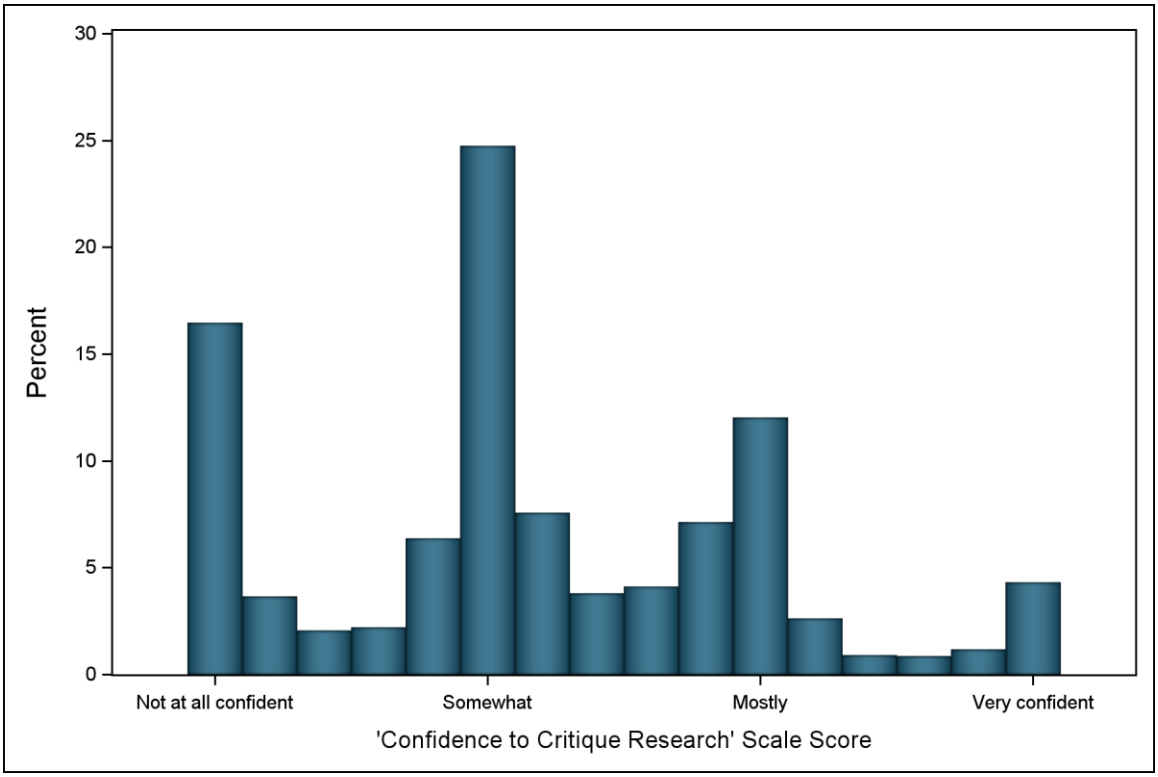
When considering the overall scale, the mean (standard deviation) was 2.17 (0.81), which indicates that practitioners, on average, are only somewhat confident. Further, about 16% of respondents had the lowest possible value on the scale (Figure 45), indicating that they were not at all confident in critiquing the aspects of research described in our survey items.

Figure 44. Practitioners' Confidence in Critiquing Research



Note. Item response *n* = 4,082.

Figure 45. Histogram of Practitioners' 'Confidence to Critique Research' Scale Scores



Note. Item response *n* = 4,082.

Most schools have multiple staff that *are* confident in their ability to critically interpret research.

However, 22% of respondents had scores between the *mostly confident* and *very confident* categories on the *Confidence to Critique Research* scale. This suggests that although most educators lack confidence in critically evaluating research, there are a significant number of school-based educators who are confident and who might play an important role in schools' capacity for research use.

Furthermore, when aggregated to the school level, more than 70% of schools had three or more educators whose mean confidence was at least 3 (at least *mostly confident*) and only 5% of schools had zero. Therefore, while educators *overall* report lower levels of confidence, a school-level perspective suggests that the vast majority of schools have at least one person that can contribute to critical use of research in decision-making.

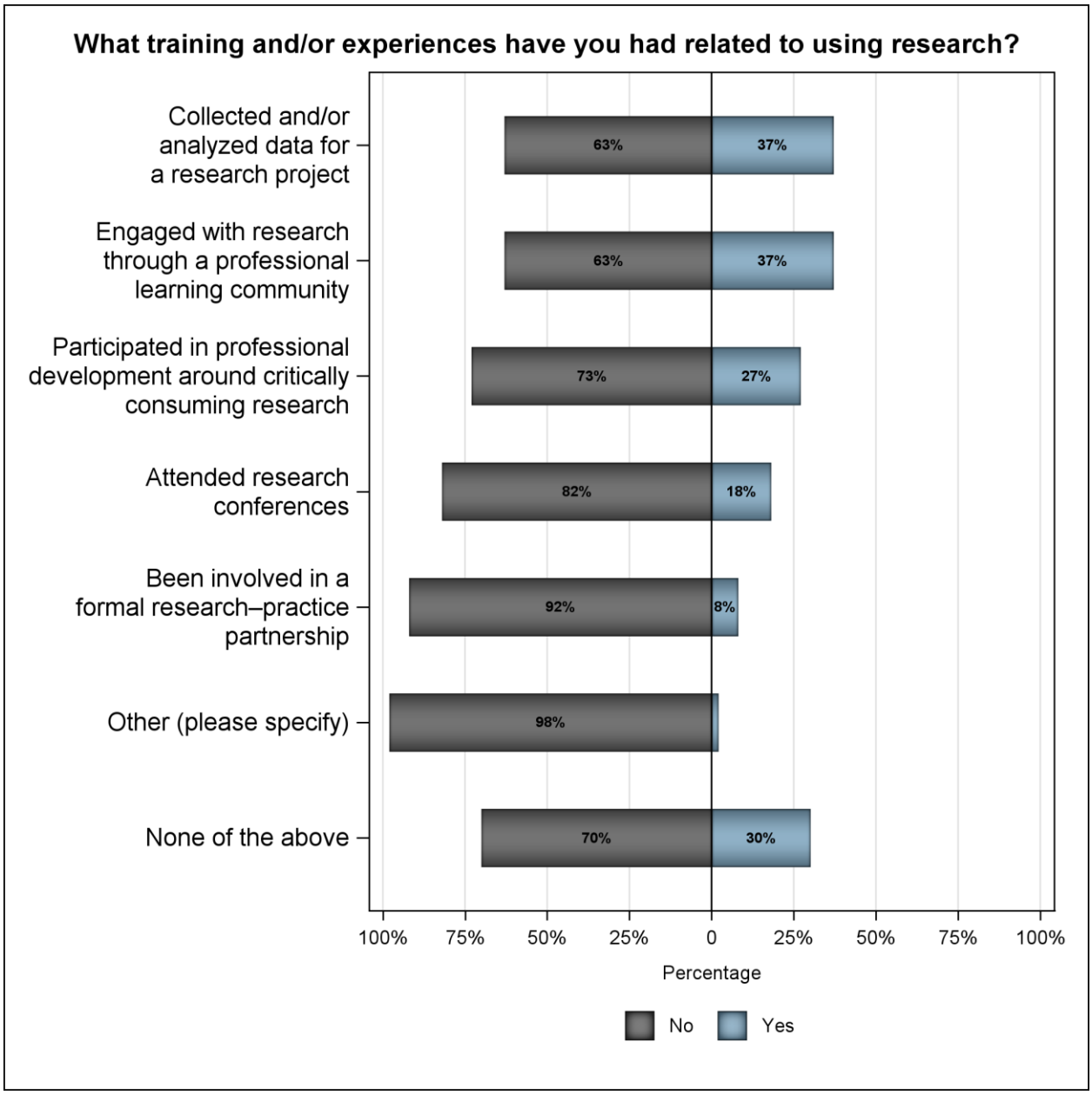
Key Takeaways on Confidence Critically Interpreting Research
Broadly speaking, practitioners are not confident in critically interpreting research, and it may be unrealistic to expect practitioners to distinguish well-designed research studies from others that are less likely to produce results that practitioners can have confidence in. This, compounded by the difficulty of deciding how to implement the results of a research study, can be a severe impediment to using educational research in one's practice. However, findings reveal that individuals who indicate high levels of confidence are present in nearly all schools and can serve as important school-wide resources by serving as brokers or capacity builders, scaffolding colleagues' use of research.

What research-related training and experiences do educators have?

Educators were asked about their previous research-related training in order to better understand preparation for research use. Responses to these items help us understand the nature of the training as well as the extent of training practitioners experience.

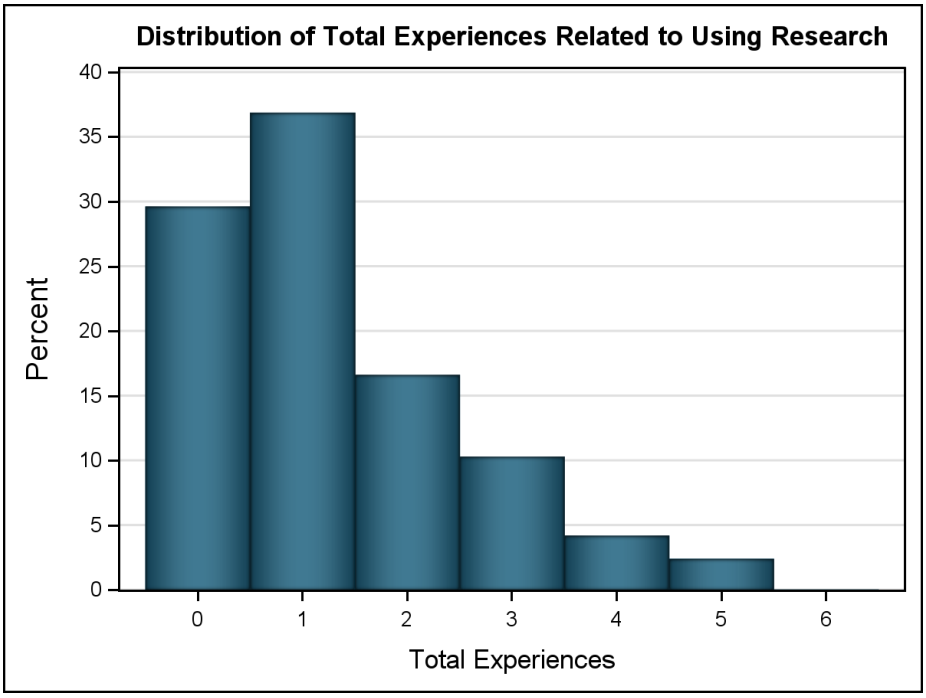
Figure 46 illustrates the frequency of various training opportunities that relate to research use. The two most common activities were collecting/analyzing data for a research project and engaging with research through a PLC. Participating in a research–practice partnership was the least common, with only 8% of respondents reporting this experience. In a histogram counting the number of experiences indicated by each, Figure 47 indicates that approximately two-thirds of practitioners have engaged with research through at least one experience. However, only one-third of practitioners had engaged in more than one activity.

Figure 46. Practitioners' Research Experiences



Note. Item response *n* = 4,082.

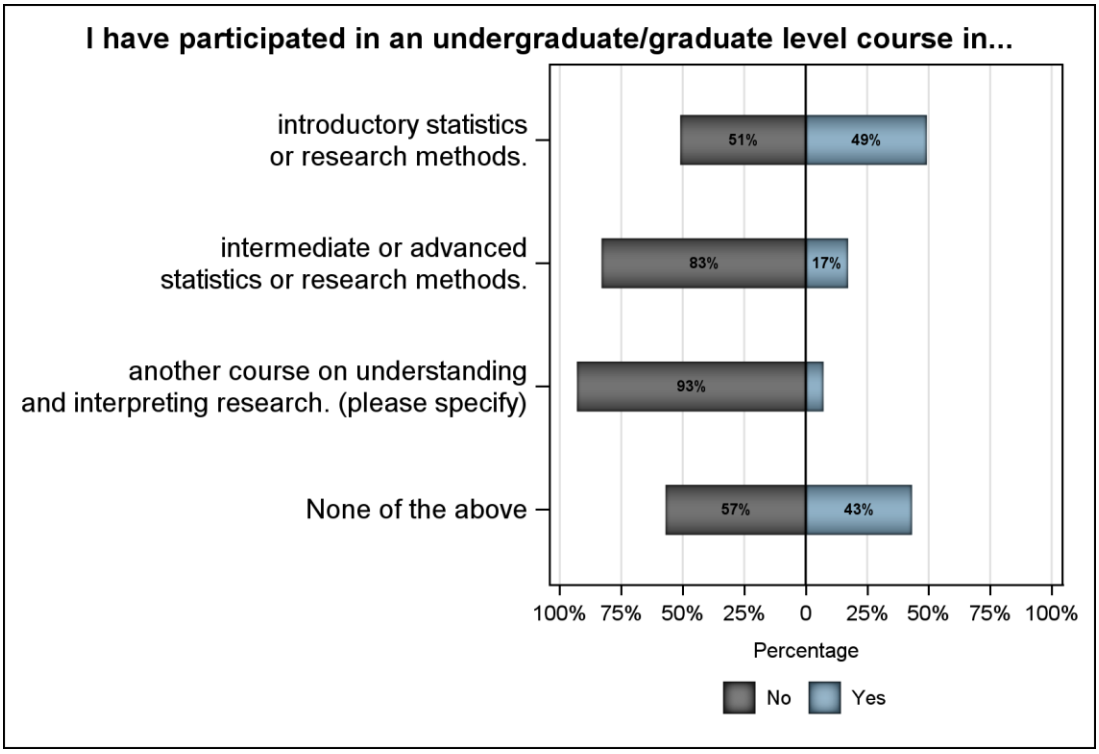
Figure 47. Distribution of Practitioners' Total Research Experiences



Note. n = 4,082.

Educators were also asked about their coursework related to research (Figure 48). Of those that had taken courses, most had participated only in an introductory statistics or research methods course. These data align with our previous findings (see Figures 44 and 45) that show that practitioners perceive themselves as having limited capacity to critically interpret research.

Figure 48. Practitioners' Research-Related Training



Note. Item response *n* = 4,082.

Key Takeaways on Research-Related Training

Practitioners are not typically engaging in experiences that expose them to research or prepare them to use research effectively, and most have minimal training on research methods or statistics (e.g., only about half have ever taken a statistics or research methods course). Importantly, a substantial portion of practitioners indicated that they had not had any experience or any coursework related to research. These findings explain educators' lack of confidence in critically interpreting research and suggest that more intentional, formal efforts to prepare educators for research use need to be implemented systemwide in order to meet policy expectation for increased use of evidence in decision-making.

4. Where Do Educators Turn for Research-Based Information?

In our conceptual framework, practitioners' networks are an important mechanism for linking to research and to the research community. To capture networks in our survey, educators were asked about the individuals, organizations, and media sources to which they turn when accessing research-based information; they were also asked to indicate what category best describes that resource. Educators generated more than 21,000 nominations, with more than 4,000 unique organizations and media sources.

Data were then used to characterize individuals' personal networks for accessing research and were also aggregated to the school level to characterize school capacity to access research. Figure 49 presents the mean proportion of individual and school networks comprised of each category of resource. That is, the bars indicate the extent to which categories of resources are represented in individual and school networks. For example, on average, professional associations comprised 8% of the average educators' network and 7% of the average schools' networks.

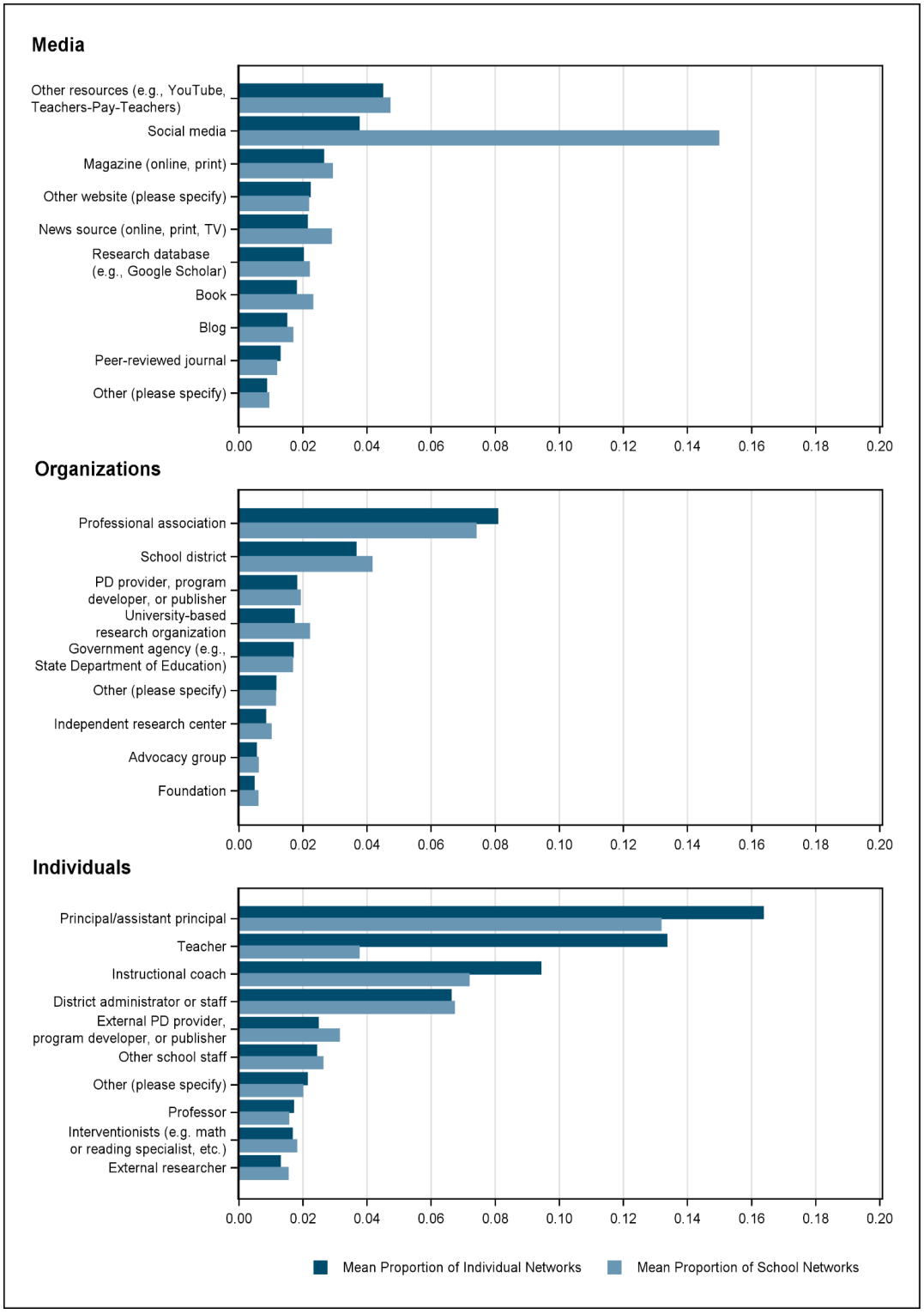
We also aggregated the various categories to help us understand the extent to which educators 1) access research directly through members and institutions in the research community (i.e., university and independent research centers, peer-reviewed journals, research databases, professors); 2) access research through external intermediaries positioned outside the formal education system but also outside the research system; or 3) access research through members of the local school or district community. The mean proportion of individuals' and schools' networks comprising these aggregate categories is presented in Figures 50 and 51, respectively.

Educators turn to a wide range of resources, and access to research is largely mediated.

Notably, we find that educators' networks are incredibly diverse: no single type of resource accounts for the majority of a network, and most constitute a small fraction of a network. Perhaps the clearest characteristic of individual and school networks is that most access to research-based information is mediated by external intermediaries and members of the local education community, with a very small portion of individual (9%) and school (9%) networks offering direct links to the research community - meaning access is mediated (e.g., curated, interpreted, synthesized, etc.) by other individuals, organizations, or media sources.

Among those direct connections, research databases, professors, and university-based research centers are relied on by educators slightly more than peer-reviewed research and independent research organizations as resources, but across the board, direct connections to research are far less frequently reported. However, the data are unable to indicate whether practitioners lack direct access, are unaware of how to access research directly, or choose not to access research directly.

Figure 49. Composition of Individual and School Networks



Note. PD = professional development.

Figure 50. Composition of Individuals' Networks, Aggregated to Categories of Mediation

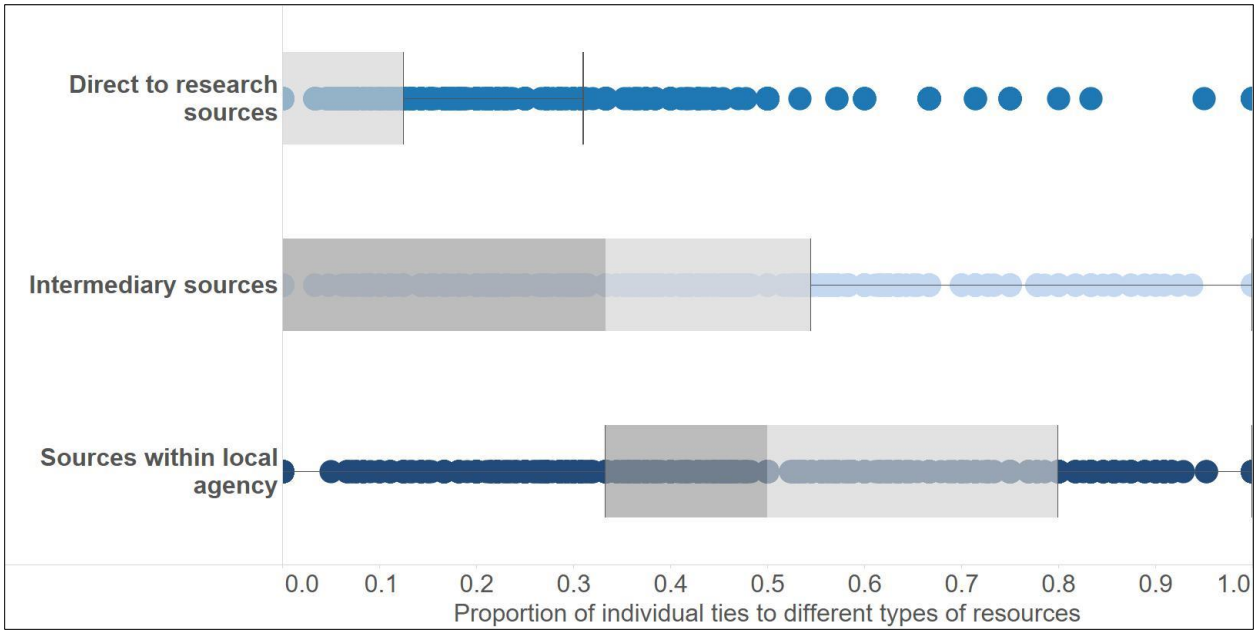
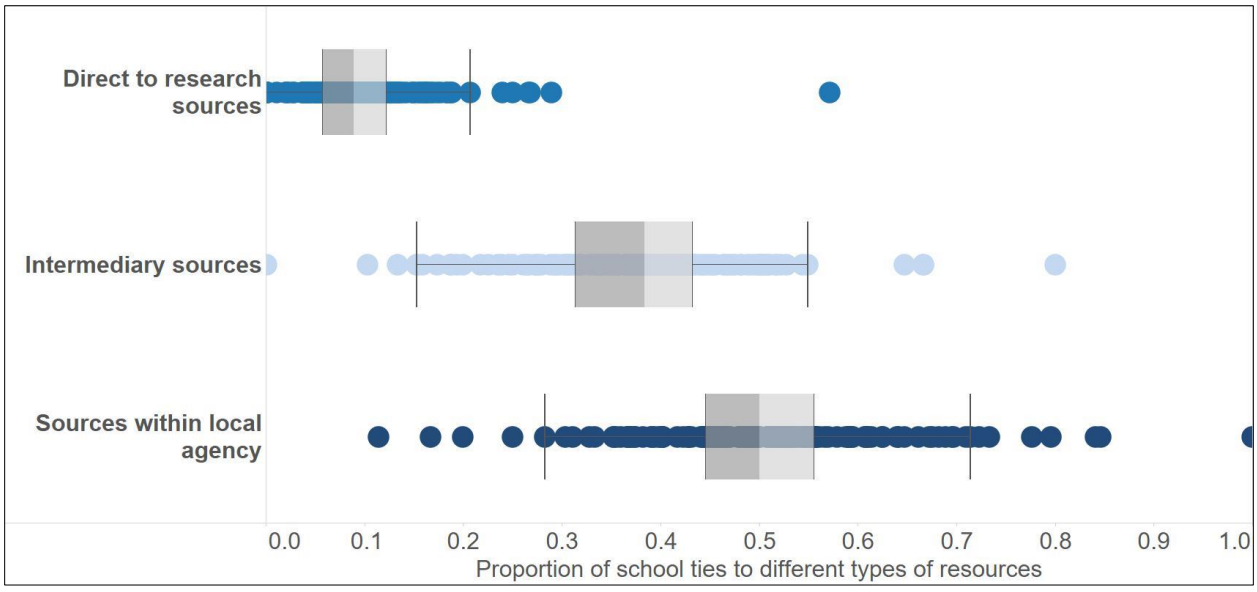


Figure 51. Composition of Schools' Networks, Aggregated to Categories of Mediation



Local, individual resources are most influential.

With access to research being largely mediated, it is important to understand the nature of that mediation. The most commonly tapped resources are other educators—teachers, instructional

coaches, administrators. In fact, "local" resources—those within the same district system—constitute more than half of the average individual (53%) and school (51%) network (Figure 50 and 51). If we seek to understand how research information may enter a school (i.e., looking beyond individuals within a school), district administrative staff and central offices appear particularly important, as the next most frequently cited resources accounting for 10% of individual and 11% of school networks (Figure 49). Additionally, with more than half of all nominated resources being *individuals*, rather than organizations or media sources, it is also clear that relationships and professional trust are key drivers of mediation.

Educators rely on a diffused set of intermediary organizations.

A final feature of mediation is the importance of intermediary resources. As educators rarely directly access to research, intermediary organizations are the primary external source of research information, accounting for 36% of individual and 38% of school networks (Figure 50 and 51). The sheer volume of individuals, organizations, and media sources is also significant, with more than 4,000 unique resources nominated in the survey. The scale and scope of this "third space" between research and practice is difficult to estimate, and variability in the nature and quality of the information brokered by these sources is not well understood.

Networks for accessing research are not equitably distributed.

Beyond the extent to which connections between research and practice are mediated, our data also provide insight into how the capacity to access research is distributed across the education system. Not surprisingly, educators' individual networks vary more widely than schools' (Figures 50 and 51), likely reflecting differences in roles, prior experiences, knowledge about research, and beliefs about research—many of which we discuss throughout this report. Because educators often turn to one another (as indicated in these data), individual access may not be as important to understand as their collective capacity at the school level. We note that some schools rely almost entirely on local sources of information—five schools' networks had 75% or more ties reliant on local sources, and twelve have *zero* aggregate ties to the research community. Schools' differential, perhaps inequitable, access to different kinds of information has implications for schools' capacity to use research and for leveraging external resources to support improvement more broadly.

Key Takeaways about Networks

Our findings suggest that educators rely on thousands of intermediaries to obtain research-based information. The volume of individuals and organizations serving as brokers poses a significant challenge for mobilizing research and creating systemic change. Furthermore, individuals and schools vary in their networks, creating inequities in capacity at both levels of practice. However, these data confirm the critical importance of intermediary organizations in

linking research and practice. Despite the challenges that such a large and informal system poses, there is an enormous sector of individuals and organizations that are positioned to help address persistent gaps between communities.

Networks data also highlight the importance of school-based brokers and influential external brokers. Educator networks reflect school-based roles and responsibilities. For example, those with leadership roles, decision-making responsibilities, and serving as supports for teachers and students are more likely to access research directly but are also more likely to serve as research resources to colleagues. This means that strategically intervening to support individuals in these roles may enhance school capacity. Further, professional associations and districts are influential organizations, and that they may be important partners for researchers seeking to mobilize their work and reliable resources to which to direct educators.

5. To What Degree Do Educators Engage in Research Brokerage Activities?

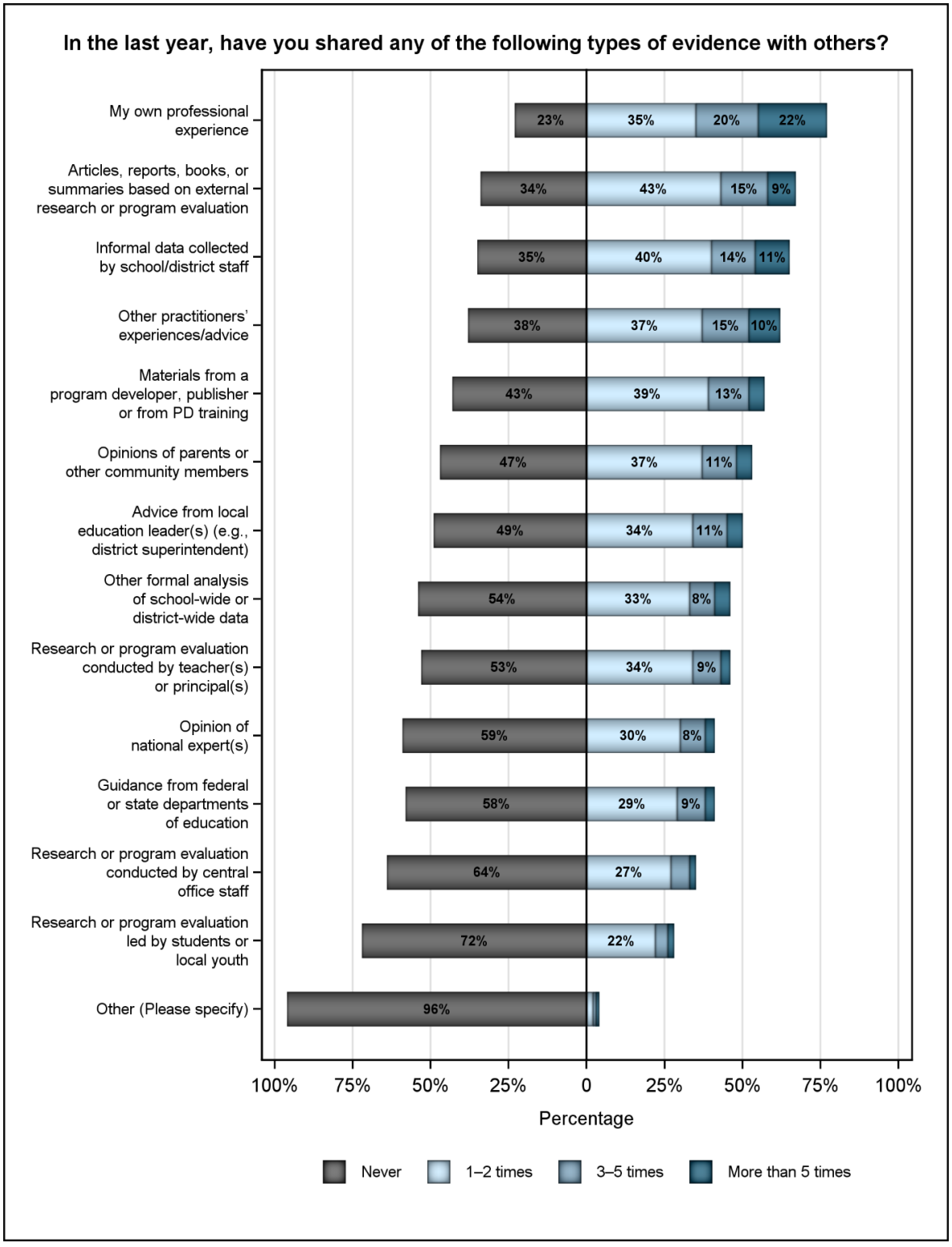
In our conceptual framework, we link networks to the idea of brokerage—that is, networks help us identify who educators turn to when finding information and brokerage helps us identify how that information is shared. In the prior section, we learned that other school and district staff are key resources that educators turn to. Therefore, a natural extension of our inquiry into the connections between research and practice is a need to better understand the brokerage activities that educators engage in. To better understand the activities undertaken by those serving as sources of research for others, we asked survey respondents about their responsibilities for sharing research, the kinds of information they share, and the activities they engage in as brokers within their school or district.

Brokering research is an informal but common activity.

Forty percent of our sample reported that there is *no expectation for them to share research* in their school, and only 21% reported this expectation as being moderate or very great. This suggests few have formal responsibilities for mobilizing research within their schools, despite educators' widespread reliance on each other. Nonetheless, educators reported that sharing research is fairly common (Figure 52): 66% reported sharing external research at least once per year (though only 9% reported sharing more than five times). Other kinds of research move through schools, too: 36% reported sharing district research, 47% reported sharing school research, and 28% reported sharing student or youth-led research at least once per year. These proportions are comparable to other kinds of evidence that inform decisions, such as local data, professional expertise, and information from professional learning materials, which puts external research squarely among the kinds of resources that are shared within schools.

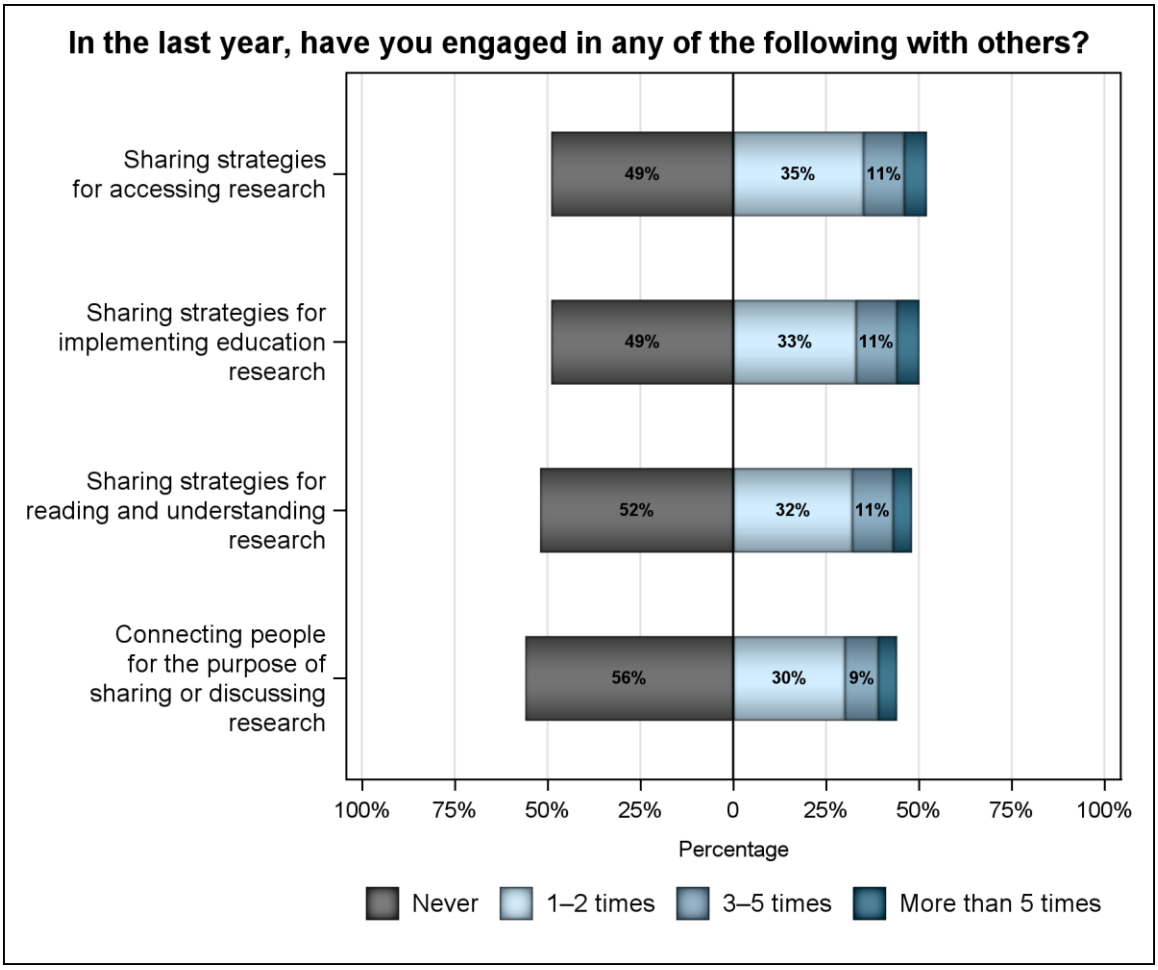
In addition to sharing research, practitioners support the flow of research within the school in other ways (Figure 53), including helping others access research (51% reported doing this at least once per year), helping colleagues understand research (48%), helping implement research-based practices (51%), and engaging others in discussing research (44%).

Figure 52. Practitioners' Brokerage of Different Forms of Evidence



Note. Item response *n*s range from 3,810 to 4,072. PD = professional development.

Figure 53. Educators' Capacity-Building Brokerage Activities

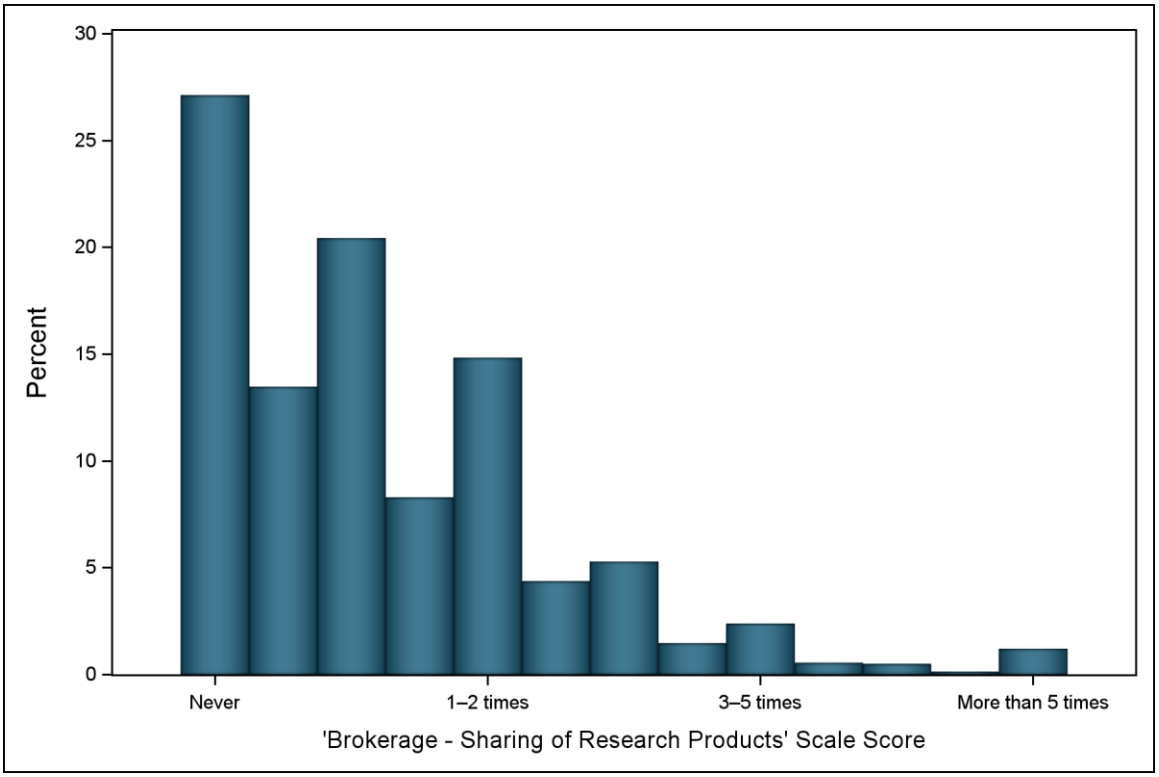


Note. Item response *n*s range from 3,915 to 3,932.

A few individuals serve as key research brokers.

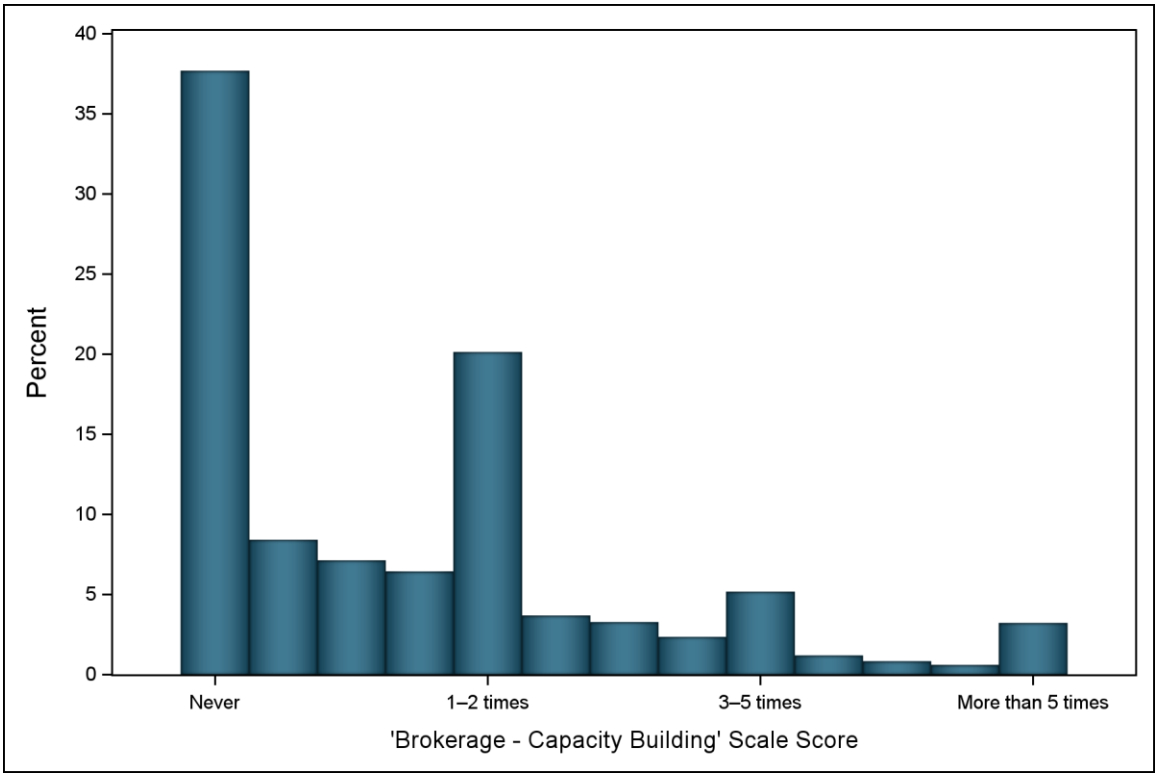
While many educators reported engaging in brokerage, many reported relatively infrequent engagement. To take a closer look at research sharing and capacity building, we developed two scales. The first, *Research Sharing*, includes responses related to external, district, school, and youth-led research. The second, *Capacity Building*, includes all items from Figure 53. The right skewed nature of the distribution of both scales (Figures 54 and 55) shows that a small set of individuals are highly engaged as research brokers and serve as an important source of research use capacity for their schools.

Figure 54. Distribution of 'Research Sharing' Scale



Note. Item response *n* = 3,824.

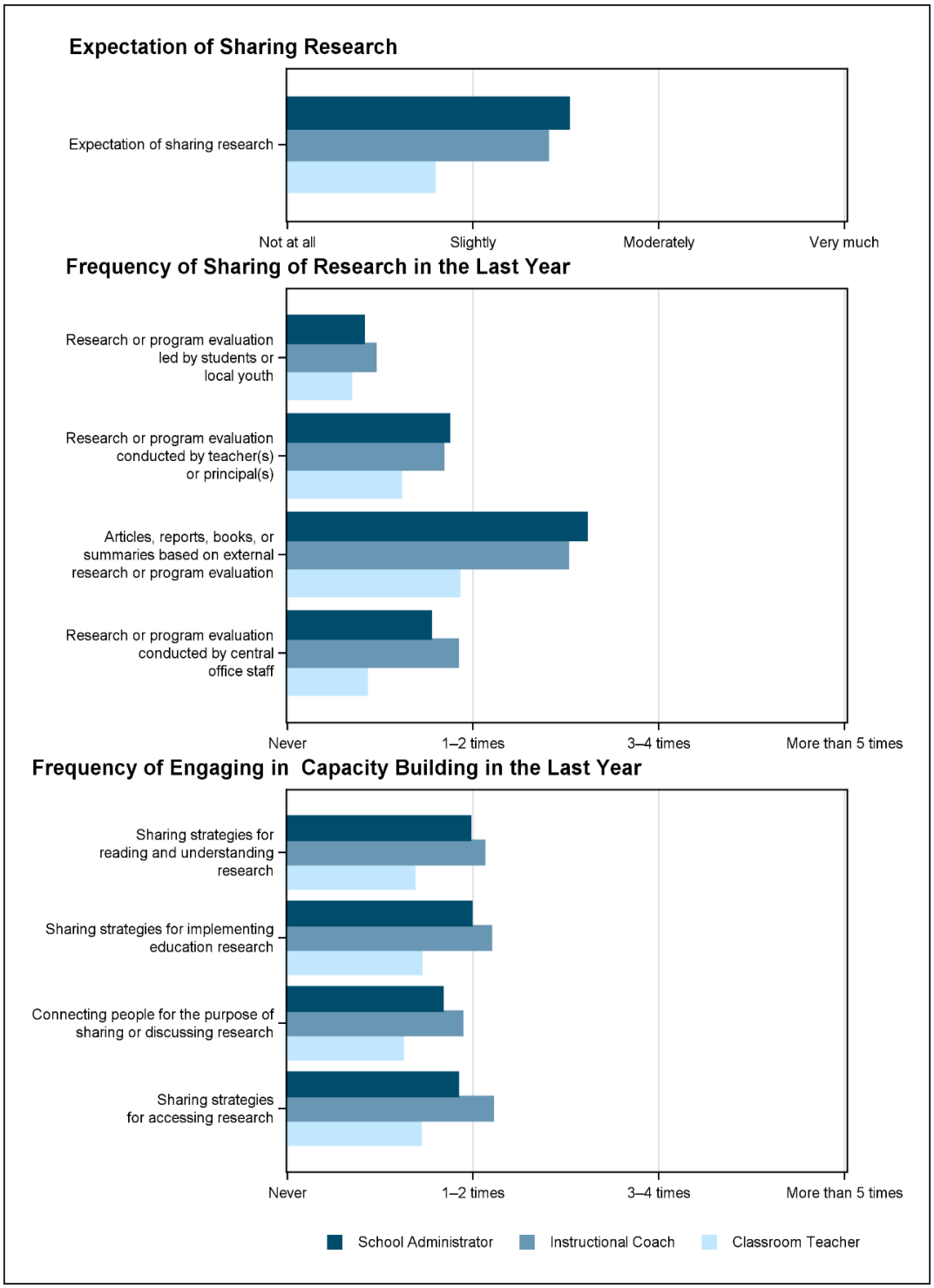
Figure 55. Distribution of 'Capacity Building' Scale Score



Note. n = 3,891.

In an earlier section of this report, we noted that educators often turn to other teachers, instructional coaches, and principals as sources of research. For this reason, we explore research brokerage among these groups a bit more deeply. Figure 56 illustrates that instructional coaches and principals reported greater expectations to share research; they also reported sharing external research more often than teachers. Furthermore, coaches overall reported greater levels of sharing and of supporting the use of research through capacity building (Figure 56, bottom panel). This suggests that although many members of the school community engage in brokerage, regardless of position, principals and coaches may be particularly important levers for increasing engagement with research.

Figure 56. Mean Reports of Expectations and Frequency of Research Sharing and Capacity Building by Role

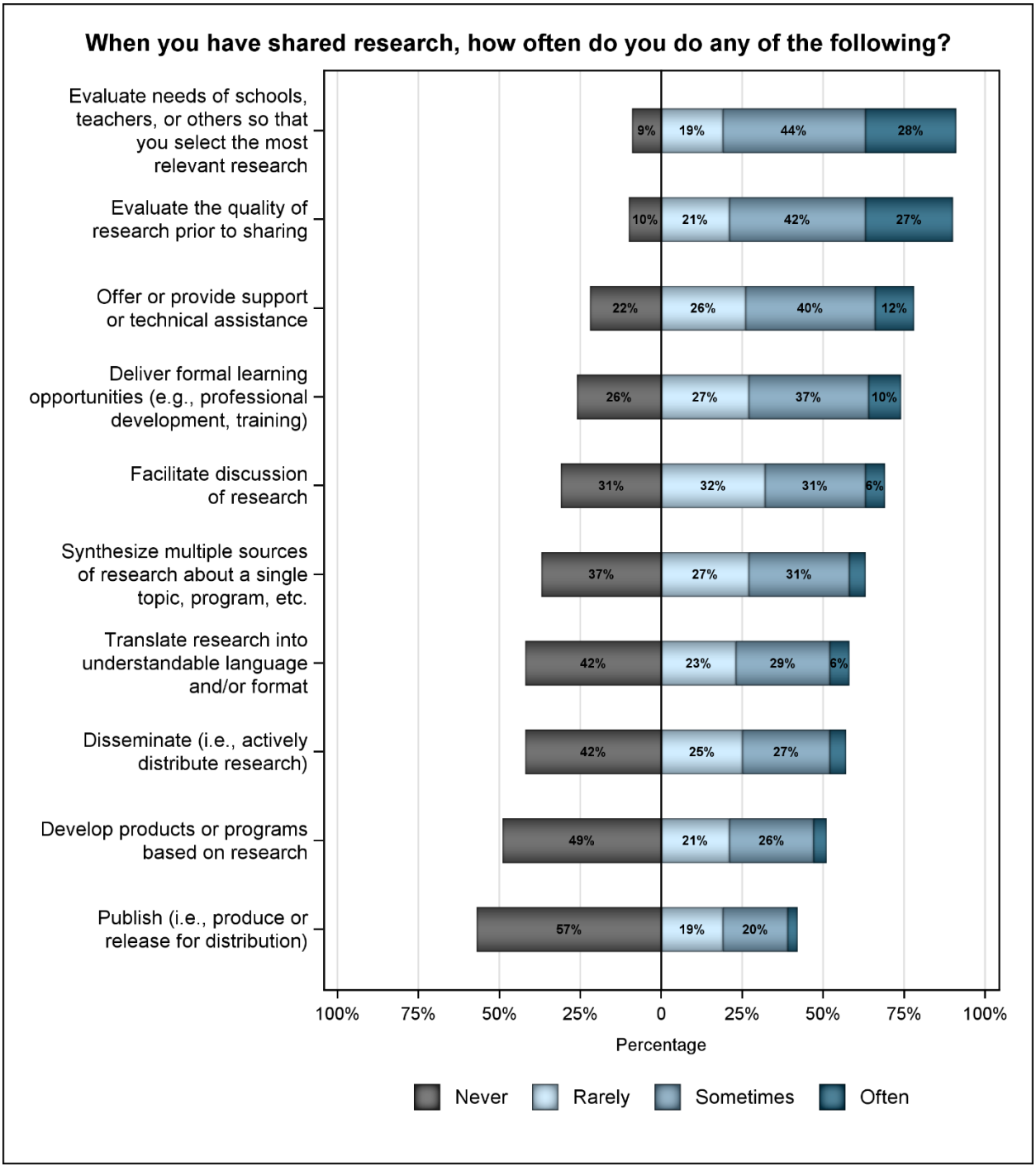


Note. Item response *n* ranges from 2,771 to 2,802.

School-based brokers most often engage in important local brokerage activities.

Returning to the overall set of respondents (i.e., not just teachers, leaders, and coaches), among those who reported sharing external research, we found a wide range of knowledge brokering activities (Figure 57). These activities suggest that school-based brokers engage in what we might describe as local work—technical assistance and support, evaluating local needs, and delivering formal learning. These are often the most challenging for researchers or intermediary brokers to enact because of challenges related to resources and scale. An implication of this finding is that other knowledge-mobilization activities—translating, developing programs or products, disseminating, developing, and publishing—may need to be taken up by other actors in the system—and that the work of brokerage may be distributed or even ultimately coordinated among members of the research, intermediary, and practice communities.

Figure 57. Knowledge Mobilization Activities of School-Based Brokers



Note. Item response *n*s range from 2,065 to 2,121.

Brokerage capacity is not evenly distributed across schools.

Though it is common for educators to broker research through a range of activities, brokerage is not distributed evenly across schools. Correlational analyses at the school level found that expectations for brokerage roles, brokerage of external research, capacity building for research use, and brokerage activities are positively associated with one another (Pearson's correlations between .346 and .830), which means that schools that are higher one on dimension of brokerage tend to be higher on the others, and subsequently, schools that have lower scores on these dimensions tend to have lower scores across the board. As a result, the distribution of this aspect of organizational capacity varies widely across the education system.

Key Takeaways about Research Brokerage

Educators frequently serve as brokers within their schools and play important internal roles sharing and translating research into more useful and usable forms of information. Few have significant, explicit responsibilities to share research—creating an informal system for mobilizing research in practice. While building leaders most often acknowledged this responsibility, not all felt that was their role, despite their colleagues' reliance on them. This presents an opportunity to support and develop leaders in new ways. However, many different educators are engaged in this work, which helps maximize those external ties we noted earlier and suggests that it is not *only* education leaders who are influential in school networks. Based on this finding we echo earlier calls we have made to formalize supports for school-based brokers through recognition, training, and staffing decisions (Farley-Ripple & Grajeda, 2019).

School-based brokers also engage in what we might describe as local work—technical assistance and support, evaluating local needs, and delivering formal learning. These are often the most challenging for researcher or intermediary brokers to enact because of resources and scale, which suggests that there is some natural distribution of the work of brokerage happening. An implication of this finding is that other knowledge mobilization activities—translating, developing programs or products, disseminating, developing, and publishing—may need to be taken up by other actors in the system.

Brokerage in schools is therefore an important dimension of research use capacity, yet we found that such capacity is not evenly distributed across schools, pointing again to inequities across schools for research-informed improvement.

Lessons Learned about Research Use in Schools

This report summarizes the results of a large-scale survey study that investigated the extent to which U.S.-based schools use research evidence to inform their practice. Based on our conceptual framework, we use survey responses from close to 4,500 educators in 154 schools to explore five areas of interest: (1) the nature and depth of schools' use of evidence, (2) practitioners' perspectives on the gaps between research and practice communities, (3) educators' preparation to use research evidence, (4) the characteristics of the connections between educators and the research community, and (5) the degree to which educators engage in research brokerage. Looking across these findings, we highlight some key lessons that emerge in this work. These themes have implications for practice but also suggest directions for future research.

External research, local research, and data use are linked.

One valuable finding pertains to the importance of local research and local data analyses to organizational decisions. When practitioners do use external research, it is often in conjunction with some form of local research or local data analysis. Further, formal and informal data analysis were among the most influential sources of evidence in both organizational and individual decisions. This signals that educators value empirical evidence in making decisions, leading us to ask, *how might we build better connections between using external research and state, district, and school priorities and routines for using internal data?* The existing relationships between research and data—which are borne out in our mixed methods case studies as well (Farley-Ripple et al., 2022)—seem like a promising foundation upon which we can build increased capacity and demand for educational research.

Research must be relevant to practice.

The notion of relevance to the local context emerges throughout our findings. We see local data and other forms of local knowledge as highly influential forms of evidence. We also find educators making sense of research in the context of local practice as part of interpretation. Further, search strategies and networks for accessing research are dominated by local sources. Together, these results suggest that "relevance to practice" (Gutiérrez & Penuel, 2014) is, indeed, a critically important consideration in the use of evidence at the school level. Accordingly, we echo Gutiérrez and Penuel (2014) in their call to apply this criterion to the research enterprise, including through funding research and how research is conducted and communicated. But our findings also suggest that relevance to practice cannot necessarily be generalized; rather, relevance is understood in terms of meeting *local* needs, whether meeting the needs of student populations or fitting with local goals and resources. Approaches that support the generation of local evidence (e.g., research–practice partnerships) or that help educators more easily evaluate the match between findings and local context may be promising directions for future work.

Research-use practices and conditions vary widely.

One of our key findings is that research-use practices and overall depth of use vary across schools. Because one of the most important factors in the uptake of research in policy and practice is organizational conditions (Coburn & Talbert, 2006; Cousins & Leithwood, 1993; Penuel et al., 2017), the widely varying conditions related to structures, processes, incentives, capacity to use research, and networks for and brokerage of research likely contribute to differences in research use. While this report does not explore the sources of that variability, this line of inquiry is likely a productive next step in developing and targeting supports to create more equitable capacity. Further, this finding is perhaps not surprising, as schools vary widely in nearly all aspects of the educational process. However, this does suggest that evidence-use policy has not resulted in systematic changes, nor does it appear to have resulted in systematic implementation. Because evidence-use policy is enacted in diverse ways, additional information and guidance about different models or approaches may be needed to achieve system-wide evidence-use goals. Further, it may be important to expand evidence-use policies to more effectively promote conditions for research use, including mechanisms for getting research into the hands of educators, generating local evidence, and building knowledge and buy-in for the use of research.

Leadership plays a critical role in research use.

School leaders—principals in particular—have a significant role in the implementation of evidence-use policy. School leaders are mediators of policy in schools (e.g., Coburn, 2005; Ganon-Shilon & Chen, 2019; Shaked & Schechter, 2017; Spillane et al., 2002): they must make sense of the policy for their context and support sensemaking and implementation among their staff. Further, leadership frameworks include roles for setting the vision for improvement, directly building staff capacity, and shaping organizational culture. Our survey data do not address leadership directly yet suggest specific opportunities for leadership to strengthen research use. Data demonstrate that administrators play a major role in making organizational decisions, by sharing research evidence and because of their prior experience with research. In this way, leaders are positioned to model research use in their own practice. Further, they are often responsible for the availability and use of organizational structures, processes, and incentives and for whether and how others participate in decision-making (e.g., distributed leadership)—areas where we found significant variability across schools. For these reasons, efforts to clarify effective leadership for research use and to prepare leaders for these roles may be an important lever in improving schools' capacity for and engagement in research use.

The knowing–doing gap is complex.

Findings from our study suggest a potential disconnect between what practitioners report (or know) to be important for establishing the credibility or trustworthiness of a piece of evidence, on the one hand, and the evidence and sources of evidence that they actually use, on the other. For

example, responses indicate that practitioners value peer-reviewed status as the most important factor influencing trustworthiness; yet peer-reviewed journal articles are among the least used types of evidence according to the survey item inquiring about the influence of different forms of evidence on decision-making. Similarly, most practitioners reported valuing dimensions of credibility that were not reflected in the evidence that influenced their decision-making.

These findings highlight two issues. First, they work against common narratives that educators are unaware of or indifferent to common indicators of research quality—a narrative that sustains a deficit view of educator capacity. Second, they raise important questions about the conditions to which the knowing–doing gap is attributable. Findings about practitioners' capacity to critically interpret research as well as relatively limited training experiences may provide a partial explanation and suggest professional learning may help to close the gap. However, there are also likely barriers that prevent engagement with high quality sources of evidence, such as constraints on time and effort or availability of timely and relevant research—both of which are evidenced in this study. Further, there are also simply other, even more important considerations, in decision-making that influence whether and what evidence is used. Our data suggest all of these may be at play, but a much more nuanced examination is needed.

Knowledge brokers and intermediaries are underutilized resources.

Knowledge brokering is promoted as a strategy for deepening interaction between research and practice. Less attention has been given to knowledge brokers embedded within schools and districts (Farley-Ripple & Grajeda, 2019). Findings from our survey suggest that school and district staff may act as knowledge brokers who facilitate links between evidence and practice. Importantly, knowledge brokers exist in all schools and are an important entry point for external research. They play important internal roles sharing and transforming research into more usable forms of knowledge and building their colleagues' and schools' capacity to use research. However, this work tends to be informal and unrecognized. To better leverage these individuals in improving schools' use of research, we echo our prior call to more formally and explicitly recognize the work of knowledge brokers, as well as develop and support individuals to take on these roles.

Furthermore, we note that the sparse interaction between research and practice documented here also points to the potential for intermediaries to address the problem of scale: there are more than 130,000 schools in the United States, and the feasibility of developing direct relationships with researchers is limited. In contrast, intermediary organizations have great reach and influence (as noted in our network data) and therefore have strong potential to serve as boundary spanners between research and practice.

While a growing number of studies are focusing on the role and activities of these organizations (e.g., Cooper, 2014; Malin, 2021), our study is one of the first to examine the kinds of intermediary organizations educators rely on to obtain research-based information. Our findings suggest that

educators rely on thousands of intermediaries to obtain research-based information, and this system of intermediaries appears largely informal and uncoordinated. However, as we have noted in other aspects of our work (Shewchuk & Farley-Ripple, 2022), there is a need to better understand the work of intermediaries as knowledge brokers and to formalize and leverage their work in linking research and practice. There is also a need for more immediately pragmatic information that can help educators understand what organizations exist, what their evidence-use commitments are, and how to navigate the plethora of resources. Similarly, researchers need more information about how to engage the intermediary space to better communicate research and produce better informed research. And intermediaries themselves would benefit from tools that would foster strategic decision-making about their role and work, allow for coordination and collaboration, and result in more effective use of limited resources.

Relationships matter.

A final cross-cutting theme in this report is the importance of relationships, which is consistent with the broader literature that emphasizes relationships and trust in multiple aspects of research use (Harrison et al., 2017; Malin & Brown, 2019; Rickinson & Edwards, 2021). Relationships are most directly emphasized in networks, where most resources educators turn to were other individuals—especially those in their school. Relationships are also important in the context of brokerage—whether relying on or serving as a support for colleagues. Both play out in responses to search, where the evidence taken up in decisions comes from school and district leaders. In contrast, the *absence* of relationships between researchers and practitioners may perpetuate barriers to research use. Still other findings suggest the importance of relationships in less direct ways. For example, school structures that support research use include PLCs, leadership teams, and coaches—all social structures as well as support structures. The ability to leverage them for school-wide use of research depends on organizational cultures that feature trust. Further, participation in decision-making varies across schools, with some key stakeholders rarely engaging with evidence or in decision processes. A more democratic or distributed approach to decision-making relies again on positive relationships among stakeholders. These dimensions of research use highlight the social and relational processes underlying research-use practices in schools and pushes against notions of evidence use as a technical or administrative task that is simply implemented. As a result, it is important that the evidence-use policies and initiatives that seek to improve the role of research attend to building relational capacity within and across the research and practice communities.

A bigger picture presents opportunities and limitations.

Our findings are unique in that they shed light on the complexity of the practice and conditions surrounding research use in schools *at scale*. The findings offer a system-wide view that challenges narratives suggesting research does not influence practice and calls into question deficit perspectives of educators' engagement with research. They demonstrate widespread use of

evidence privileged by accountability policy—research and data—and the presence in many schools and among many practitioners of supportive conditions, including beliefs about the value of research, structures that may enable engagement with research, and the presence of knowledge brokers and educators with research knowledge across schools. They also highlight variability in practices and conditions, as well as unequal distribution of capacity for research use, which, unchecked, will perpetuate the gap between research and practice and serve as a barrier to system-wide improvement. Our findings point to potential levers as well as opportunities for improvement, among them improving search activities, democratizing evidence use in decision-making, preparing educators to lead research use, and building stronger connections among members of the research and practice communities.

At the same time, there are limitations to this work. First, our purposes were entirely descriptive, and next steps include examining the relationships between conditions and practices as well as explaining variability across schools. Second, our findings are self-reported and represent perspectives on research-use practices more than actual behaviors. Similarly, several items are based on recall which may reduce the accuracy of reports of decision processes. Third, a large-scale perspective comes at the expense of a more nuanced understanding of what these practices and conditions look like in practice. We do this to some extent in our mixed-methods multiple-case study of deep use schools; but we are still constrained in our ability to draw comparisons and the potential to do deep observation of practices that occur over extended periods of time. Nonetheless, the study of evidence use in education offers many valuable and rich case studies of school board decision-making (e.g., Asen et al., 2013), district decision-making (e.g., Coburn et al., 2020), networks of schools (Brown et al., 2020), of schools and districts (Honig & Venkateswaran, 2012), or of specific education policies or practices (e.g., McDonnell & Weatherford, 2013; Scott et al., 2017), making this view at scale a valuable complement to other work in the field.

References

Asen, R., Gurke, D., Conners, P., Solomon, R., & Gumm, E. (2013). Research evidence and school board deliberations: Lessons from three Wisconsin school districts. *Educational Policy*, *27*(1), 33–63.

Bass, B. M. (1983). Organizational decision making. Homewood, IL: Richard D. Irwin, Inc.

Bertrand, M., & Marsh, J. A. (2015). Teachers' sensemaking of data and implications for equity. *American Educational Research Journal*, *52*(5), 861–893.

Bickel, W. E., & Cooley, W. W. (1985). Decision-oriented educational research in school districts: The role of dissemination processes. *Studies in Educational Evaluation*, *11*(2), 183–203.

Biddle, B. J., & Saha, L. J. (2002). *The Untested accusation: principals, research knowledge, and policy making schools* (Ser. Contemporary studies in social and policy issues in education). Ablex.

Bogenschneider, K., & Corbett, T.J. (2010). Evidence-based policymaking: Insights from policy-minded researchers and research-minded policymakers. New York, NY: Taylor and Francis Group.

Brown, C. (2017). Research learning communities: How the RLC approach enables teachers to use research to improve their practice and the benefits for students that occur as a result. *Research for All*, *1*(2), 387–405. https://doi.org/10.18546/RFA.01.2.14

Brown, C., Flood, J., MacGregor, S., & Armstrong, P. (2020). Is distributed leadership an effective approach for mobilising research-informed innovation across professional learning networks?: Exploring a case from England. In S. Gorard (Ed.), *Getting evidence into education* (pp. 181–198). Routledge.

Caplan, N. (1979). The two-communities theory and knowledge utilization. *American Behavioral Scientist, 22*(3), 459–470.

Coburn, C. E. (2001). Collective sensemaking about reading: How teachers mediate reading policy in their professional communities. *Educational Evaluation and Policy Analysis, 23*(2), 145–170.

Coburn, C. E. (2005). Shaping teacher sensemaking: school leaders and the enactment of reading policy. *Educational Policy*, *19*(3), 476–509.

Coburn, C. E. (2010). Partnership for district reform: The challenges of evidence use in a major urban district. In C. E. Coburn & M. K. Stein (Eds.), *Research and practice in education: Building alliances, bridging the divide* (pp. 167–182). Rowman & Littlefield.

Coburn, C. E., Spillane, J. P., Bohannon, A. X., Allen, A. R., Ceperich, R., Beneke, A., & Wong, L.-S. (2020). The role of organizational routines in research use in four large urban school districts (Technical Report No. 5). National Center for Research in Policy and Practice. https://files.eric.ed.gov/fulltext/ED612257.pdf

Coburn, C. E., & Talbert, J. E. (2006). Conceptions of evidence use in school districts: Mapping the terrain. *American Journal of Education*, *112*(4), 469–495. https://doi.org/10.1086/505056

Coburn, C. E., Toure', J., & Yamashita, M. (2009). Evidence, interpretation, and persuasion: Instructional decision making at the district central office. *The Teachers College Record, 111*(4), 1115–1161.

Coburn, S. E., & Stein, M. K. (2010). Research and practice in education. Building alliances, bridging the divide. Lanham, MA: Rowman & Littlefield Publishers, Inc.

Cooper, A. (2014). Knowledge mobilisation in education across Canada: A cross-case analysis of 44 research brokering organisations. *Evidence & Policy: A Journal of Research, Debate and Practice*, *10*(1), 29–59.

Cooper, A., & Levin, B. (2010). Some Canadian contributions to understanding knowledge mobilisation. *Evidence & Policy: A Journal of Research, Debate and Practice, 6*(3), 351–369.

Cooper, A., Rodway, J., & Read, R. (2018). Knowledge mobilization practices of educational researchers across Canada. *Canadian Journal of Higher Education*, *48*(1), 1–21.

Corcoran, T. B., Fuhrman, S. H., & Belcher, C. L. (2001). The District Role in Instructional Improvement. Phi Delta Kappan, 83(1), 78–84.

Corcoran, T., McVay, S., & Riordan, K. (2003). Getting it right: The MISE approach to professional development. CPRE Research Reports. Retrieved from http://repository.upenn.edu/cpre_researchreports/42

Cordingley, P. (2008). Research and evidence-informed practice: Focusing on practice and practitioners. *Cambridge Journal of Education*, *38*(1), 37–52.

Cousins, J. B., & Leithwood, K. A. (1993). Enhancing knowledge utilization as a strategy for school improvement. *Knowledge*, *14*(3), 305–333. https://doi.org/10.1177/107554709301400303

Cousins, J. B. & Simon, M. (1996). The nature and impact of policy-induced partnerships between research and practice communities. *Educational Evaluation and Policy Analysis,18*(3), 199–221.

Cousins, J. B., & Walker, C. (2000). Predictors of educators' valuing of systematic inquiry in schools. *The Canadian Journal of Program Evaluation*, Special Edition, 25–52.

Dagenais, C., Lysenko, L., Abrami, P. C., Bernard, R. M., Ramde, J., & Janosz, M. (2012). Use of research-based information by school practitioners and determinants of use: A review of empirical research. *Evidence & Policy: A Journal of Research, Debate and Practice*, *8*(3), 285–309.

David, J. L. (1981). Local uses of Title I evaluations. *Educational Evaluation and Policy Analysis, 3*(1), 27–39.

Davies, P. (1999). What is evidence-based education? *British Journal of Educational Studies, 47*(2), 108–121

Davies, H. T. O., & Nutley, S. (2008). *Learning more about how research-based knowledge gets used.* William T. Grant Foundation: New York, NY.

Dunn, W.N. (1980). The two-communities metaphor and models of knowledge use. Knowledge, 1, 515–536.

Farley-Ripple, E.N. (2008). Accountability, evidence, and school district decision-making (Unpublished doctoral dissertation). University of Pennsylvania, Philadelphia, PA.

Farley-Ripple, E. N. (2012). Research use in school district central office decision making: A case study. *Educational Management Administration & Leadership*, *40*(6), 786–806. https://doi.org/10.1177/1741143212456912

Farley-Ripple, E. N., & Grajeda, S. (2019). Avenues of influence: An exploration of school-based practitioners as knowledge brokers and mobilizers. In J. Malin & C. Brown (Eds.). *The role of knowledge brokers in education: Connecting the dots between research and practice* (pp. 65–90). Routledge.

Farley-Ripple, E., May, H., Karpyn, A., Tilley, K., & McDonough, K. (2018). Rethinking connections between research and practice in education: A conceptual framework. *Educational Researcher*, *47*(4), 235-245.

Farley-Ripple, E. N., Tilley, K., Mead, H., Van Horne, S., & Agboh, D. (2022). *How is evidence use enacted in schools? A mixed methods multiple case study of "deep use" schools?* Center for Research Use in Education, University of Delaware.

Farley-Ripple, E., Tilley, K., Shewchuk, S., & Sheridan, S. (2020). Commentary—Reframing relevance: Strategies for closing the gap. In A. M. Urick, D. E. DeMatthews, & T. G. Ford (Eds.),

Maximizing the policy-relevance of research for school improvement (pp. 387–402). Information Age Publishing.

Farrell, C. C., & Coburn, C. E. (2017). Absorptive capacity: A conceptual framework for understanding district central office learning. *Journal of Educational Change, 18*(2), 135–159. https://doi.org/10.1007/s10833-016-9291-7

Finnigan, K.S., Daly, A.J., & Che, J. (2012). The acquisition and use of evidence districtwide. Paper presented at the Annual Meeting of the American Educational Research Association, Vancouver, Canada, 2012.

Finnigan, K. S., Daly, A. J., & Che, J. (2013). Systemwide reform in districts under pressure. The role of social networks in defining, acquiring, using, and diffusing research evidence. *Journal of Educational Administration, 51*(4), 476–497.

Finnigan, K. S., & Daly, A. J. (2014). Conclusion: Using research evidence from the schoolhouse door to Capitol Hill. In K. Finnigan & A. Daly (Eds.), Using Research Evidence in Education (pp. 177–187). Springer International Publishing.

Ganon-Shilon, S., & Chen, S. (2019). No school principal is an island: from individual to school sense-making processes in reform implementation. *Management in Education*, *33*(2), 77–85.

García, L. E., & Thornton, O. (2014). The enduring importance of parental involvement. *NEA Today*.

Gutiérrez, K. D., & Penuel, W. R. (2014). Relevance to practice as a criterion for rigor. *Educational researcher*, *43*(1), 19–23.

Harrison, C., Davidson, K., & Farrell, C. (2017). Building Productive Relationships: District Leaders' Advice to Researchers. *International Journal of Education Policy and Leadership*, *12*(4), n4.

Hemsley-Brown, J., & Sharp, C. (2003). The use of research to improve professional practice: A systematic review of the literature. *Oxford Review of Education, 29*(4), 449–470.

Hill, H., & Briggs, D. (2020). Education leaders? knowledge of causal research design: A measurement challenge. Annenberg EdWorking Papers.

Honig, M. I. (2003). Building policy from practice: District central office administrators' roles and capacity for implementing collaborative education policy. *Educational Administration Quarterly*, *39*(3), 292–338. https://doi.org/10.1177/0013161X03253414

Honig, M. I., & Coburn, C. (2008). Evidence-based decision making in school district central offices: Toward a policy and research agenda. *Educational Policy, 22*(4), 578–608.

Honig, M. I., & Venkateswaran, N. (2012). School–central office relationships in evidence use: Understanding evidence use as a systems problem. *American Journal of Education*, *118*(2), 199–222.

Hood, P. D., Far West Laboratory for Educational Research and Development, & National Institute of Education (U.S.). (1982). *School improvement in the far west: the effects of federal and state cutbacks, consolidation, and deregulation on education in California, Nevada, and Utah*. Far West Laboratory for Educational Research and Development.

Hopkins, M., Weddle, H., Gluckman, M., & Gautsch, L. (2019). Boundary crossing in a professional association: The dynamics of research use among state leaders and researchers in a research-practice partnership. *AERA Open*, *5*(4), 2332858419891964.

Hubbard, L. (2010). Research to practice: The case of Boston Public Schools, Education Matters and the Boston Plan for Excellence. In C. E. Coburn & M. K. Stein (Eds.), *Research and practice in education: Building alliances, bridging the divide* (pp. 55–72). Rowman & Littlefield.

Huberman, M. (1990). Linkage between researchers and practitioners: A qualitative study. *American Educational Research Journal, 27*(2), 363–391.

Kennedy, M.M. (1982). Evidence and decision. In M. M. Kennedy (Ed.), *Working knowledge and other essays* (pp. 59–103). Cambridge, MA: The Huron Institute.

Kochanek, J. R., Scholz, C., & Garcia, A. J. (2015). Mapping the collaborative research process. *Education Policy Analysis Archives*, *23*(121). https://doi.org/10.14507/epaa.v23.2031

Landry, R., Amara, N., & Lamari, M. (2001). Climbing the ladder of research utilization evidence from social science research. *Science Communication*, *22*(4), 396–422.

Levine, A. (2020). Why do practitioners want to connect with researchers? Evidence from a field experiment. *PS: Political Science & Politics, 53*(4), 712–717. https://doi.org/10.1017/S1049096520000840

Llamas, A. V., & Tuazon, A. P. (2016). School practices in parental involvement, its expected results and barriers in public secondary schools. *International Journal of Educational Science and Research*, *6*(1), 69–78.

Louis, K. S., & Kell, D. (1981). The Human Factor in Dissemination: Field Agent Roles in Their Organizational Context. Linking R&D with Schools. Retrieved from Washington, D.C.

Lysenko, L. V., Abrami, P. C., Bernard, R. M., & Dagenais, C. (2015). Research use in education: An online survey of school practitioners. *Brock Education: A Journal of Educational Research and Practice*, *25*(1), 35–54.

MacGregor, S., & Phipps, D. (2020). How a networked approach to building capacity in knowledge mobilization supports research impact. *International Journal of Education Policy and Leadership*, *16*(6). https://doi.org/10.22230/ijepl.2020v16n6a949

MacMahon, S., Leggett, J., & Carroll, A. (2022). Partnering to learn: A collaborative approach to research translation for educators and researchers. *Mind, Brain, and Education*. Advance online publication. https://doi.org/10.1111/mbe.12317

Malin, J. R. (2021). How educational intermediaries connect research and practice. *Phi Delta Kappan*, *103*(4), 37–43.

Malin, J., & Brown, C. (Eds.). (2019). *The role of knowledge brokers in education: Connecting the dots between research and practice*. Routledge.

Malin, J. R., Brown, C., & Trubceac, A. S. (2018). Going for Broke: A Multiple-Case Study of Brokerage in Education. AERA Open, 4 (2), 1–14. https://doi.org/10.1177/2332858418769297

Malin, J. R., & Paralkar, V. K. (2017). Educational knowledge brokerage and mobilization: The" Marshall Memo" case. *International Journal of Education Policy and Leadership, 12*(7). http://journals.sfu.ca/ijepl/index.php/ijepl/article/view/790

Massell, D., Goertz, M. E., & Barnes, C. A. (2012). State education agencies' acquisition and use of research knowledge for school improvement. *Peabody Journal of Education, 87*(5), 609–626. https://doi.org/10.1080/0161956X.2012.723506

May, H., Blackman, H., Van Horne, S., Tilley, K., Farley-Ripple, E.N., Shewchuk, S., Agboh, D., & Micklos, D. (2022) *Survey of Evidence in Education-Researcher Technical Report/Descriptive Report,* Newark, DE: Center for Research Use in Education, University of Delaware (IES Grant R305C150017).

Maynard, R. A. (2006). Presidential address: Evidence-based decision making: What will it take for the decision makers to care?. *Journal of Policy Analysis and Management*, *25*(2), 249–265.

McDonnell, L. M., & Weatherford, M. S. (2013). Evidence use and the Common Core State Standards movement: From problem definition to policy adoption. *American Journal of Education*, *120*(1), 1–25.

Miller, J. D. (1986). Parental Involvement in the Schools: Causes and Effects.

Neal, J. W., Neal, Z. P., Kornbluh, M., Mills, K., & Lawler, J. (2015). Brokering the research-practice gap: A typology. *American Journal of Psychology, 56*(3–4), 422–435.

Neal, J. W., Neal, Z. P., Lawlor, J. A., Mills, K. J., & McAlindon, K. (2018). What makes research useful for public school educators?. *Administration and Policy in Mental Health and Mental Health Services Research, 45*(3), 432–446. https://link.springer.com/article/10.1007/s10488-017-0834-x

Neal, J. W., Neal, Z. P., Mills, K. J., Lawlor, J. A., & McAlindon, K. (2019). What types of brokerage bridge the research-practice gap? The case of public school educators. *Social Networks, 59*, 41–49. https://doi.org/10.1016/j.socnet.2019.05.006

Ng-A-Fook, N., Kane, R. G., Butler, J. K., Glithero, L., & Forte, R. (2015). Brokering knowledge mobilization networks: Policy reforms, partnerships, and teacher education. *Education Policy Analysis Archives/Archivos Analíticos de Políticas Educativas*, *23*, 1–27.

Penuel, W. R., Briggs, D. C., Davidson, K. L., Herlihy, C., Sherer, D., Hill, H. C., & Allen, A. R. (2016). Findings from a National Study on Research Use among School and District Leaders. (Technical Report No. 1). National Center for Research in Policy and Practice.

Penuel, W. R., Briggs, D. C., Davidson, K. L., Herlihy, C., Sherer, D., Hill, H. C., Farrell, C., & Allen, A.-R. (2017). How school and district leaders access, perceive, and use research. *AERA Open*, *3*(2). https://doi.org/10.1177/2332858417705370

Penuel, W. R., Farrell, C. C., Allen, A. R., Toyama, Y., & Coburn, C. E. (2018). What research district leaders find useful. *Educational Policy*, *32*(4), 540–568. https://doi.org/10.1177/0895904816673580

Phipps, D. J., & Shapson, S. (2009). Knowledge mobilisation builds local research collaborations for social innovation. *Evidence & Policy: A Journal of Research, Debate and Practice*, *5*(3), 211–227.

Plevyak, L. H. (2003). Parent involvement in education: Who decides? *The Education Digest*, *69*(2), 32.

Rickinson, M., & Edwards, A. (2021). The relational features of evidence use. *Cambridge Journal of Education*, *51*(4), 509–526.

Sapungan, G. M., & Sapungan, R. M. (2014). Parental involvement in child's education: Importance, barriers and benefits. *Asian Journal of Management Sciences & Education*, *3*(2), 42-48.

Scott, J., DeBray, E., Lubienski, C., La Londe, P. G., Castillo, E., & Owens, S. (2017). Urban regimes, intermediary organization networks, and research use: Patterns across three school districts. *Peabody Journal of Education*, *92*(1), 16-28.

Scott, J., Lubienski, C., DeBray, E., & Jabbar, H. (2014). The intermediary function in evidence production, promotion, and utilization: The case of educational incentives. In Finnigan, K.S., & Daly, A.J. (Eds), Using Research Evidence in Education (pp. 69-89). New York: Springer International Publishing.

Shaked, H., & Schechter, C. (2017). *Systems thinking for school leaders : holistic leadership for excellence in education*. Springer. https://doi.org/10.1007/978-3-319-53571-5

Shewchuk, S., & Farley-Ripple, E.N. (2021). *Findings from the District Research Leader Knowledge Mobilization Survey* (RB21-002.1). Newark, DE: Center for Research in Education and Social Policy.

Shewchuk, S., & Farley-Ripple, E. N. (2022). *Understanding Brokerage in Education: Backward Tracking from Practice to Research*. Center for Research Use in Education, University of Delaware. http://www.research4schools.org/understanding-brokerage-in-education-backward-tracking-from-practice-to-research/

Spencer, G., & Louis, K. S. (1980). Training and Support of Educational Linking Agents. Cambridge, MA: Abt Associates.

Spillane, J., Reiser, B., & Reimer, T. (2002). Policy Implementation and Cognition: Reframing and Refocusing Implementation Research. *Review of Educational Research. 72.* 387-431. 10.3102/00346543072003387.

Tseng, V., Fleischman, S., & Quintero, E. (2017). Democratizing evidence in education. In *Connecting research and practice for educational improvement* (pp. 3-16). Routledge.

Weick, K. E. (1995). Sensemaking in Organizations. Thousand Oaks: Sage Publications.

Weiss, C.H. (1995). Nothing as practical as good theory: Exploring theory-based evaluation for comprehensive community initiatives for children and families. In J. P. Connell, A. C. Kubisch, L. B. Schorr, & C. H. Weiss (Eds.), New approaches to evaluating community initiatives: Concepts, methods, and contexts (pp. 65–92). Washington, DC: The Aspen Institute.

West, R. F., & Rhoton, C. (1994). School district administrators' perceptions of educational research and barriers to research utilization. *ERS Spectrum, 12*(1), 23–30.

Williams, D., & Cole, L. (2007). Teachers' approaches to finding and using research evidence: An information literacy perspective. *Educational Research, 49*(2), 185–206. https://doi.org/10.1080/00131880701369719

Witherspoon, C. L., Bergner, J., Cockrell, C., & Stone, D. N. (2013). Antecedents of organizational knowledge sharing: A meta-analysis and critique. *Journal of Knowledge Management*, *17*(2), 250–277. https://doi.org/10.1108/13673271311315204

Yoshizawa, L. (2020). *Research use under pressure: State and district implementation of the ESSA evidence requirements* (Publication No. 28220526) [Doctoral dissertation, Harvard University]. ProQuest. https://www.proquest.com/docview/2457700532

Appendix A: Factor Loadings for Survey Scales

Factor Loadings for *Problems of Practice* Scale

Scale	Variable	Factor Loading
Problems of Practice	Most education research suggests actionable steps to take in practice.	0.62
	Researchers have a solid grasp on evolving problems in schools/districts.	0.86
	Research addresses the most important issues schools/districts face.	0.86
	Research takes into consideration the varying levels of resources available to schools/districts to implement research findings.	0.81
	Research is produced quickly enough for me to make use of it.	0.69

Factor Loadings for *Processes and Incentives* Scale

Scale	Variable	Factor Loading
Processes and Incentives	Our school/district has a documented process (e.g., guidelines) for using research to inform decisions.	0.78
	Our school/district provides time to discuss research.	0.81
	Our school/district prioritizes research in decision making.	0.79
	There are school/district incentives for me to use research in my practice.	0.79
	Using research is part of my evaluation as a practitioner.	0.71
	We use research because a supervisor or administrator requires it.	0.67

Factor Loadings for *Processes and Incentives* Subscales

Item	Processes	Incentives
Our school/district has a documented process (e.g., guidelines) for using research to inform decisions.	0.78	0.03
Our school/district provides time to discuss research.	0.89	–0.05
Our school/district prioritizes research in decision making.	0.74	0.07
There are school/district incentives for me to use research in my practice.	0.29	0.54
Using research is part of my evaluation as a practitioner.	–0.05	0.85
We use research because a supervisor or administrator requires it.	0.02	0.71

Factor Loadings for *Products* Scales

Item	Research	Media	Professional Resources
Professional development materials	–0.02	0.01	0.76
Conferences/presentations	0.02	–0.02	0.66
Books	0.21	0.16	0.39
News (e.g., in print or online)	0.03	0.48	0.30
Magazine articles	0.19	0.41	0.21
Blogs	0.07	0.77	–0.12
Multimedia (e.g., podcast, videos)	0.07	0.58	0.19

Posts from social media (e.g., pins, tweets)	–0.08	0.77	–0.01
Peer-reviewed academic journals	0.68	0.12	0.02
Research summaries/briefs	0.87	–0.01	0.02
Research/program evaluation reports	0.91	–0.07	0.00
Reviews of multiple research studies	0.92	–0.01	–0.03

Factor Loadings for Characteristics of Products *Consumed* Subscales

Item ("How important to you are each of the following product characteristics from a research study? The research product . . .")	Ease of Access	Helpfulness of Features
is actionable (i.e., provides instructions).	0.65	0.06
is concise.	0.79	0.01
is easy to understand.	0.96	–0.10
is easy to access.	0.94	–0.07
is free to access.	0.74	0.04
can be found online.	0.55	0.21
is transmitted verbally.	–0.08	0.70
uses graphics to illustrate findings.	0.04	0.78
provides a demonstration of findings or models strategies.	0.20	0.67
is a summary of multiple studies of the same policy or practice.	0.03	0.77

Factor Loadings for *Reputation-Based Trustworthiness* Scale

Item	Factor Loading
The study was conducted by a researcher or research firm you and/or your colleagues know.	0.58
The study is published in a peer-reviewed journal.	0.56
The study has been highlighted in a major national newspaper, on a national television network, or on a major radio program.	0.84
The number of times the study has been cited (e.g., as reported by Google Scholar).	0.82

Factor Loadings for *Methods-Based Credibility* Scale

Item	Factor Loading
The research study produced statistically significant results. Statistically significant means that results are unlikely to occur by chance.	0.76
The sample size was large.	0.78
The study randomly assigned students/teachers/schools to a treatment or control condition.	0.73
The study reported findings for all outcomes, positive or negative.	0.82
The research described the methods used in detail.	0.81

Note. The item correlations range from 0.54-0.76.

Factor Loadings for *Purposes of Using Research* Scales

Item	Conceptual	Imposed	Strategic/Political
Research has changed the way I think about my practice.	0.77	–0.05	0.05
I have used research to continually expand my knowledge about teaching and learning.	0.85	–0.06	0.01
Research has provided a common language and set of ideas for me and my colleagues.	0.67	0.13	0.03
Our school/district has used frameworks from research to organize our improvement efforts.	0.41	0.26	0.03
I have used research to mobilize support for important issues.	0.32	0.04	0.52
I have used research to get others to agree with a point of view.	0.11	–0.10	0.85
I have selectively used research because it would support a decision.	0.02	0.01	0.75
I have used research to discredit a policy or program.	–0.09	0.15	0.62
State or federal agencies require us to choose curricula from a list of approved research-based programs.	0.05	0.83	0.00
State or federal agencies require us to use research to justify plans and/or program adoptions.	0.04	0.94	–0.04
We are required to conduct research or evaluate programs as part of a grant.	–0.03	0.58	0.21

Factor Loadings for *Confidence to Critique Research* Scale

Item (How confident do you feel in determining whether . . .)	Factor Loading
a research study used appropriate statistical analyses?	0.87
a research study had an adequate sample size?	0.89
a program evaluation demonstrated real impacts versus improvement that would have happened even without the program?	0.91
the surveys and assessments used in a research study were reliable and valid?	0.92
results from a research study are generalizable to different schools, districts, etc.?	0.92
results from a research synthesis (i.e., combined results across multiple research studies) are trustworthy?	0.92
research evidence provided by a vendor is trustworthy, versus slanted to support their products?	0.89

Note. The item correlations range from 0.76-0.86.

Factor Loadings for *Brokerage: Information Sharing* Subscales

Item (In the last year, have you shared any of the following types of evidence with others?)	Research	Local Knowledge	Experts/State and Federal Sources
Articles, reports, books, or summaries based on independent research or program evaluation (paper or web-based)	0.31	0.30	0.15
Research or program evaluation conducted by central office staff	0.80	–0.09	0.10
Research or program evaluation conducted by teacher(s) or principal(s)	0.86	0.13	–0.13
Research or program evaluation led by students or local youth	0.75	–0.15	0.10
Other formal analysis of school-wide or district-wide data	0.62	0.16	0.06
Informal data collected by school/district staff	0.22	0.44	0.14
Materials from a program developer or publisher	0.14	0.34	0.38
Opinion of national experts	0.08	0.06	0.66
Guidance from federal or state departments of education	–0.04	–0.04	0.93
Advice from local education leaders (e.g., district superintendent)	0.12	0.16	0.59
Other practitioners' experiences/advice	-0.05	0.75	0.13
Opinions of parents or other community members	0.10	0.52	0.20
My own professional experience	–0.02	0.88	–0.08

Factor Loadings for Interpretation Scale

Item ("When you've shared these, how often have you shared . . .")	Factor Loading
an actual product (e.g., the article, a link to the article, etc.).	0.76
your interpretation or summary of the findings.	0.82
practices or strategies you developed based on the research.	0.81

Factor Loadings for Capacity Building Scale

Item ("In the last year, have you engaged in any of the following with others?)	Factor Loading
sharing strategies for accessing research.	0.86
sharing strategies for reading and understanding research.	0.88
sharing strategies for implementing education research.	0.88
connecting people for the purpose of sharing or discussing research.	0.85

Factor Loadings for *Brokerage: Activities* Scale

Item ("When you have shared research, how often do you do any of the following?")	Factor Loading
Evaluate the quality of research prior to sharing	0.40
Evaluate needs of schools, teachers or others so that you select the most relevant research	0.43
Deliver formal learning opportunities (e.g., professional development, training)	0.67
Offer or provide support or technical assistance	0.66
Publish (i.e., produce or release for distribution)	0.76
Develop products or programs based on research	0.78
Disseminate (i.e., actively distribute research)	0.83
Synthesize multiple sources of research about a single topic, program, etc.	0.82
Translate research into understandable language and/or format	0.80
Facilitate discussion of research	0.80

Appendix B: Intraclass Correlation Coefficients of *SEE-S* Scales

Scale	*Intraclass Correlation Coefficient (ICC)*
Methods-Based Credibility	0.0175
Incentives to Use Research	0.0640
Processes and Incentives	0.0837
Problems of Practice	0.0325
Processes for Using Research	0.0847
Ease of Access to Products	0.0215
Helpful Features of Products	0.0273
Products Consumed: Media	0.0278
Products Consumed: Professional Resources	0.0544
Products Consumed: Research	0.0333
Conceptual Uses of Research	0.0440
Using Research Is Imposed	0.0477
Using Research for Strategic Purposes	0.0348
Reputation-Based Trustworthiness	0.0324
Confidence to Critique Research	0.0409
Brokerage: Activities	0.0381
Sharing Local Knowledge	0.0174
Sharing Experts/State and Federal Sources	0.0048
Sharing of Research Products	0.0195
Brokerage-Interpretation	0.0015
Capacity Building	0.0239