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HOW TO UNDERSTAND THE CURRENT METHODOLOGICAL LANDSCAPE

LEARNING GOALS

By the end of this chapter, you will be able to do the following:

- 1.1 Describe why you should care about research methods.
- 1.2 Explain the link between solid methods and the credibility of social and behavioral science research.
- 1.3 Compare the topics emphasized in each historical era to trace the development of research methodology.
- 1.4 Name the main design, measurement, and analysis categories of quantitative methods.
- 1.5 Name the main design, measurement, and analysis categories of qualitative methods.
- 1.6 Cite the trends for the most popular quantitative design, measurement, and analysis categories.
- 1.7 Cite the trends for the most popular qualitative design, measurement, and analysis categories.
- 1.8 Describe the five issues likely to have the most impact on the trustworthiness of future research methods.

IMPORTANCE OF RESEARCH METHODS

Richard Feynman is recognized as one of the most brilliant physicists ever. Born in 1918 in the USA, he was a theoretical physicist who made significant contributions in various fields such as quantum mechanics, quantum electrodynamics, and particle physics. He is credited with the beginning of nanotechnology, one of the most promising areas of physics today. Feynman popularized physics through lectures and books, making it more accessible to the general public. Among the honors he received for his research are the Nobel Prize and membership in the National Academy of Science, the American Association for the Advancement of Science, the American Physical Society, and the Royal Society of London.¹

In explaining some reasons for his research success, Feynman insisted on using a rigorous scientific approach to seek the truth and warned us about how easy it is for pseudo-science to mislead us. In addition, Feynman often used the social sciences as an example of an area where

the methods could and *should* be improved—and not doing so means knowledge will not be trustworthy, credible, or valuable.

The social and behavioral sciences are a broad group of academic disciplines that study the social life of individuals and human groups. This group of disciplines includes management, psychology, marketing, political science, anthropology, sociology, and education. These disciplines try to understand human relationships and analyze the complicated relationships between people, which involve a volatile and unpredictable human element. There is much room for improvement regarding research methodology in the social and behavioral sciences—hence the need for this book.

The social and behavioral sciences began with an interest in real-world problems such as how to improve employee performance and motivation, how to improve inter-group relations, how to enhance individual well-being, how to deliver better pedagogical techniques, and how to make products more attractive. As a result, the social and behavioral sciences were driven by problems and phenomena, similar to how other sciences were born. However, these problems were of a different kind than problems in physics. And because it was the first time these problems were studied, we needed to learn more about how to do so. We needed a set of valuable and innovative methods to guide basic questions, like: How should we collect data and what type of data? How do we measure things accurately? How do we analyze those data if we have collected the correct data type in the right way, using accurate measures? These questions reflect the three main areas of research methods: data collection, measurement, and data analysis, respectively. And the most critical questions, the ones that drive the research, follow from these: What legitimate conclusions can we draw from our results, and how do they address those fundamental organizational and societal challenges? It is unsurprising that since the birth of social science, much attention has been devoted to research methods—creating new ones, importing others from other sciences, and assessing their relative usefulness and accuracy.

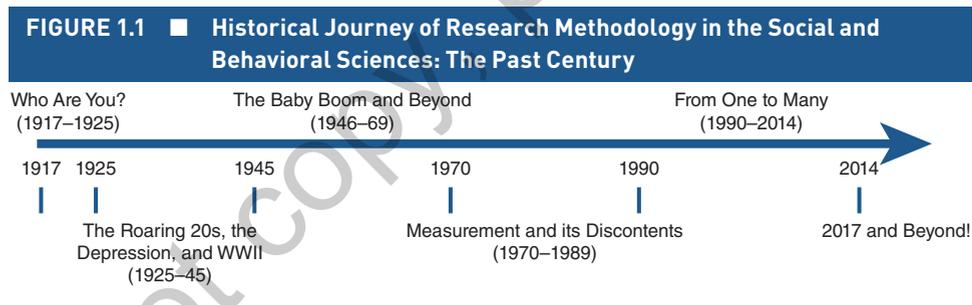
But the initial enthusiasm for better research methodology evolved into the view that there was too much emphasis on research methods to the detriment of theory. Some believe we may suffer from “physics envy” and should not necessarily follow its lead in ensuring our methods are entirely trustworthy before making claims about a particular discovery. In fact, consider the fact that articles describing the development and **validation** of new measures—a squarely methodological issue—have been among the most cited (i.e., influential) for decades. But more recently, social and behavioral science journals no longer publish these methodological articles. Why? There is a belief that the social and behavioral sciences have become too obsessed with methodology. Given what is published today in social and behavioral science journals, many methods-oriented papers published years ago would most certainly be rejected. Part of the backlash is because many social and behavioral scientists tend to think of research methods as mere details of the conscientious bookkeeper: methodological information needs to be in the report somewhere, but it should be tucked in a place that does not distract a reader from the heart of a paper.

Ironically, as methods seemed to become less of a focus in some academic circles, they are becoming more relevant than ever for the general public. In a post-pandemic world, we are now used to watching scientists debate data and graphs on TV and social media. Making sense of these opposing views boils down to details in research methodology that help determine whether a conclusion is trustworthy. How were the **variables** measured? What were the sources of data? How were the data analyzed? A researcher’s decision about how to proceed for each of these will influence a study’s results. A thorough understanding of research methods allows us to see the strengths and weaknesses of a particular methodological approach—and how they affect the legitimacy of a claim.

In 1968 eminent social scientist John Darley reviewed 50 years of social and behavioral science research.² He concluded that researchers had yet to learn from their methodological mistakes and were doomed to repeat them. But the 21st century marks the beginning of a sea change for the social and behavioral sciences. We have begun prioritizing research methods so they aren't sacrificed at the altar of "selling a good story." Instead, we are returning to the methodological preeminence that is the hallmark of credible and trustworthy science. This book provides tools for the next generation of social and behavioral scientists to avoid making the same mistakes Feynman noticed decades ago. But even as we look to the future, we must see it in the context of our past. As famously attributed to Italian-American historian of science George Santillana, "Those who do not remember their past are condemned to repeat their mistakes." So, your journey with me begins by tracing the history and trajectory of social and behavioral research.

RESEARCH METHODS: A BRIEF HISTORICAL JOURNEY

Research methodology in the past century can be organized around six periods. To allow you to visualize these periods more easily, Figure 1.1 includes a summary. The first period takes us through the mid-1920s, which, in many ways, set us on a methodological course that we sail to this day. The second period is through World War II, in which the roots of modern social and behavioral science methodological concepts and techniques were formed. The third takes us through roughly 1970, which saw the formation of many of our modern-day methodological concepts and techniques. The fourth, from 1970 through 1989, emphasized the development of good measures of critical **constructs**. The fifth period brings us through the recent past, marked by a plurality regarding data-analytic approaches. Finally, the sixth period is our future, offering a glimpse of possible and desirable research methodology.



Source: Copyright © 2017 by American Psychological Association. Adapted with permission. J. M. Cortina, H. Aguinis, & R. P. DeShon, 2017, Twilight of dawn or of evening? A century of research methods in the *Journal of Applied Psychology*, *Journal of Applied Psychology*, 102(3), 274-290.

1917–1925: Who Are You?

The dominant **research paradigm** during these early years was atheoretical, as it had yet to amass evidence to assemble into theories. On the other hand, the first publications in the social and behavioral sciences showed a desire for objective methods that would lead us to appropriate and valuable conclusions. And indeed, researchers addressed this need through the methodology introduced in this period. Yet social scientists grappled with tension: the need to create a solid framework for social science research while remaining open to new ways of asking questions and

finding answers. The case study method and measurement were the two focus areas reflecting this tension.

The case study method was a particularly effective tool for discovery. This method involved looking at cases out of the ordinary, such as with people who scored notably high and low on a given measure.³

There was great interest in measuring individual and group differences such as intelligence,⁴ aptitudes,⁵ traits such as aggressiveness,⁶ and vocational interests.⁷ This focus on measurement brought to bear the early treatment of various methodological topics that are now staples. Naturally, there was a burgeoning interest in the psychometric properties of measures; that is, researchers were focused on figuring out how to build tests of individual and group differences that were useful and trustworthy. Additionally, there was great interest in **correlational analysis**, **experience sampling methodology**, and the use of **inferential statistics**. Finally, multiple regression and the beginnings of more complex prediction models appeared. In sum, many of the most influential papers during this time were methodological, and they set the stage for future theory advancements made possible because of methodological advances.

The Roaring '20s, the Depression, and World War II

This period saw a dramatic expansion of methodology. Measurement focus expanded from measuring ability to measuring personality, and along with interest in assessing personality came questions about using **self-report** as a valid source of data. In addition, this period saw the seedlings of research methods topics that would become fundamental concepts in inferential statistics and psychometrics over the next half-century—words you will see again and again, including **distributions**,⁸ **sampling error**,⁹ **growth curves** in ability scores,¹⁰ **discrimination parameters**,¹¹ and utility tables.¹² Another characteristic of this period is the beginning of the transition from a discovery model to a **hypothetico-deductive model**. As social and behavioral sciences found their footing, there was increased attention to verifying and using the knowledge it already had (e.g., using ability measures to sort individuals into appropriate military positions during World War II), with less focus on exploring new ways of uncovering knowledge. In other words, this period experienced a shift from discovery to hypothesis testing, which has continued to the present day.

The Baby Boom and Beyond: 1946–1969

From the end of World War II (WWII) to the middle of the Vietnam conflict, we see the field begin to take the methodological shape into which it has since solidified. To be sure, methodological topics that had generated interest in the previous period continued to do so. But, measurement took center stage, and this period saw tremendous strides forward in developing, evaluating, and refining measures.

Importantly, two critical components of today's research methodology, theory development, and **statistical significance testing**,¹³ came into their own. Also, many of our modern-day research practices were formed during this period, including one of the first extensive literature reviews in an empirical paper¹⁴ and some of the first tests of formal theory.¹⁵ Finally, it also included a growing appreciation of the limitations of self-report measures.

1970–1989: Measurement and Its Discontents

The early 1970s produced highly influential measurement instruments, many still in use today. For example, the Job Diagnostic Survey (JDS) scores were related to absenteeism, performance, general satisfaction, and work motivation. As a second example, the Position Analysis Questionnaire (PAQ) identified dimensions of human behavior for specific jobs; these data help us understand the extent to which seemingly different jobs share common behavioral requirements (i.e., “job elements”).¹⁶ This has implications for human resources managers, career seekers, and organizations who design jobs. Not surprisingly, along with the emphasis on creating new measures came a focus on evaluating their trustworthiness.

The barrage of new measures led to the recognition that critical and thorny issues compromised the validity of those measures, most of which were self-reported. Studies questioned the accuracy of data collected using the available measures. This focus on evaluating the trustworthiness of measures produced seminal work on interrater reliability and agreement¹⁷ but also culminated in articles that opened up new lines of research stretching into the following decade and beyond. These lines of research are seminal in today’s understanding of how to do trustworthy research. They include topics such as **common method bias**¹⁸ and **measurement invariance**.¹⁹

The development and improvement of measurement instruments were quickly followed by two immensely influential data-analytic innovations: **meta-analysis** and **structural equation modeling (SEM)**. First, **validity generalization**²⁰ (also called **psychometric meta-analysis**) represented a significant turning point, leading to a general belief that it is possible to draw conclusions about mean relations across studies,²¹ even if these studies used unreliable measures. The second data-analytic innovation revolved around SEM. Particularly within the broader context of measurement development and improvement—and the assessment of overall measure quality—SEM was seen as a fundamental tool for understanding dimensionality,²² hierarchical structures,²³ and relations between underlying constructs.²⁴

At the end of the 1980s, the zeitgeist was that data-analytic solutions such as meta-analysis and SEM would mitigate research design and measurement challenges. The belief was augmented by the introduction of more powerful computers, which allowed researchers to conduct analyses at lightning speed compared with capabilities available just a few years earlier. Thus, a data-analytic solution (as opposed to a research design solution) was the practical and seemingly logical choice to address some of the evident measurement challenges.

1990–Present: From One to Many

Novel methodological approaches such as meta-analysis and SEM were frequently used, were welcome, and became popular across substantive domains ranging from integrity testing²⁵ to job burnout²⁶ and leadership.²⁷ However, a fundamental realization remains true today: using any single methodological approach, no matter how potent, does not offer a silver-bullet answer to important theoretical and practical questions. Instead, each methodological approach has unique strengths and weaknesses, and tailoring the method to match the question is the most effective way to obtain trustworthy results. Thus, the period beginning in the 1990s was marked by an appreciation for many different methods, a movement that can be called “from one to many.” This movement toward increased methodological plurality involved conceptual, design, measurement, and analysis topics described next.

New ways of obtaining information through study design emerged, such as in how, when, from where, and from whom data are gathered. For example, self-report data collected at only one point no longer provided a compelling basis for insights. Instead, researchers used more subtle ways of gathering information about people's thoughts, such as through **policy capturing**,²⁸ Second, they leveraged multiple data sources to go beyond information from the self-report, such as peers, customers, and supervisors.²⁹ Third, data were collected at two or more periods³⁰ in **longitudinal designs**. Fourth, they were gathered in multiple contexts, inside and outside the group or organization.³¹ Finally, researchers broadened the scope of their study by focusing on individuals at lower levels of the organization and higher (e.g., top management teams³²).

Not only is the approach to data collection more sophisticated, but from this era, we now have a more comprehensive understanding of measurement. Previous eras focused on how wording on a **survey** might affect the type of information produced. Still, this era added appreciation of other sources of error, like the passage of time and the use of multiple raters.³³ Previous eras heavily utilized one type of **scale**—i.e., **Likert-type scales** with answers ranging from “Strongly Agree” to “Strongly Disagree”—but different scale formats emerged in this era. Previous eras measured outcomes at one level of analysis only (i.e., employee), but now, we measure at many levels (e.g., the team level³⁴).

Despite advances in measurement, this period also saw the gradual extinction of studies about measure development and validating measures. This is a strange occurrence given that so many of the most cited papers in the history of the social and behavioral sciences describe the development and validation of new measures. However, papers on data analysis continued to thrive. Many published papers addressed refinements and improvements in procedures and the estimation of parameters within the context of multiple regression,³⁵ meta-analysis,³⁶ **measurement equivalence**,³⁷ and **multilevel modeling**,³⁸ among many others.

The movement from one to many created unexpected challenges. First, researchers faced many choices regarding theory, design, measurement, and analysis. Second, there was an increased level of sophistication in the analytic repertoire. Moreover, a movement from one to many meant that methodological choices were not mutually exclusive and could be combined within the same study. But, there needed to be more guidance on how to go about implementing these integrative approaches so that the type of knowledge produced by one complemented the kind of knowledge produced by another. The challenges above opened up new opportunities. First, *Psychological Methods* and *Organizational Research Methods* were launched as new journals devoted to methodology in the mid to late 1990s. Second, some journals began to publish articles that reviewed methodological practices and offered specific guidelines and best-practice recommendations.³⁹

The State of Social and Behavioral Science Methods

A few themes emerged over the past few decades. First, it became apparent that more than solutions based exclusively on data-analytic approaches would be necessary to address methodological challenges. Second, the adoption of novel data analytic approaches tended to happen rather quickly—the broader availability of statistical software packages accelerated the speed of the adoption process. Third, however, innovations regarding research design were slow and often were not implemented at all. Finally, in addition to the aforementioned methodological issues, there was a change in how methodological practices were reported. The trend toward longer Introduction sections seemed to shoot upward, placing more significant length constraints on Method sections.

Overall, the period including 1990 through 2014, involved the introduction of many methodological innovations and a staggering broadening of the methodological landscape to the point that the usual undergraduate and graduate training regarding methodology may need to catch up.

METHODS IN PRACTICE

THE NEED TO UPDATE RESEARCH METHODS EDUCATION

A study⁴⁰ involving graduate training in statistics, research design, and measurement in 222 psychology departments concluded that “statistical and methodological curriculum has advanced little [since the 1960s]” (p. 721) and that “new developments in statistics, measurement, and methodology are not being incorporated into most graduate training programs” (p. 730). Consequently, it is not surprising that editors of many journals have scrambled to find sufficiently knowledgeable reviewers to evaluate manuscripts using more novel methods. Given the proliferation of methodological techniques, the social and behavioral sciences may be forced to update research methods education.

I have just taken you through a brief historical review of methodological evolution in the last century. Now, let’s learn about the types of methods currently in use. The following section addresses **quantitative methods**, and the following one discusses **qualitative** ones. This is useful for researchers who want to know what types of methods exist—and serve as a guide for particular methods you may want to learn in the future because they may be specifically suitable for your research questions and interests. Also, to learn about the relative popularity of various methods, we must consider a particular journal, *Organizational Research Methods* (ORM), as a case study. ORM is a natural choice for discussing social and behavioral science methodology given its broad coverage of methods: its papers span new methods in organizational research and existing methods in other fields; methods in **micro** areas of research (i.e., at the individual level of analysis), and **macro** (i.e., at the organizational, industry, and societal level of analysis); and, significantly, advancements in knowledge in both quantitative and qualitative methods of research.

MAPPING QUANTITATIVE RESEARCH METHODS

The late 1990s marked the beginning of a new era finally conducive to stand-alone methods journals. In contrast to journals devoted to methodology in specific social and behavioral science fields (e.g., *Applied Psychological Measurement*, *Psychological Methods*, *Sociological Methods & Research*) or journals devoted to particular methodological and data analytic approaches (e.g., *Multivariate Behavioral Research*, *Structural Equation Modeling*), ORM’s mission is broader.

Based on a **content analysis** of the 193 articles published in ORM’s first ten volumes (1998 to 2007), we now understand various research methodology topics in the social and behavioral sciences.

Quantitative Topics: Research Design

Regarding research design, the 24-category list includes:

- archival
- **behavioral simulation**
- **case study**
- **control variables/statistical controls**
- **correlational/passive observation/non-experimental**
- **cross-cultural research**
- electronic/ web research
- experimental
- **experimental repeated measures**
- **exploratory**
- **external validity/ generalizability**
- narrative literature review
- **internal validity**
- measurement design
- **mixed methods** (qualitative & quantitative)
- **Monte Carlo** / computer simulation
- multilevel research
- quantitative literature review/ meta-analysis
- **quasi-experimental**
- research setting
- sample size
- sampling
- survey
- temporal issues

Which are the most popular among these 24 topics? They are survey (32.35%), temporal issues (i.e., longitudinal designs) (13.24%), and electronic/web research (10.29%). If your goal is to be able to read and understand contemporary research, you should think about learning these approaches because you are likely to encounter them in published articles.

Quantitative Topics: Measurement

Below is the list of the categories in the quantitative-measurement group:

- archival data
- **banding**
- level of the dependent variable
- measurement invariance/equivalence
- reliability
- scale development
- source of measures
- test development
- test theory
- validity

Out of these, which are the most popular? They are validity (40.12%), reliability (23.26%), level of analysis of dependent variable (11.05%), scale development (9.88%), and measurement invariance/equivalence (8.72%). Again, these are topics you should be familiar with if your goal is to be able to read and understand contemporary research.

Quantitative Topics: Data Analysis

Below is the list of quantitative data analysis categories:

- ANCOVA
- ANOVA
- article citation/impact
- **average deviation scores**
- **Bayesian networks**
- **canonical correlation**
- categorical dependent variables
- **causal mapping**
- **chi-square**
- **cluster analysis**
- **coefficient beta**
- common method variance
- computational modeling
- computer simulation
- confidence intervals
- correlation

- **critical ratio**
- descriptive
- **discriminant analysis**
- **effect size**
- **ethnostatistics**
- **factor analysis**
- **generalized estimating equations**
- **logistic regression**
- longitudinal data analysis
- **MANCOVA**
- **MANOVA**
- meta-analysis
- missing data
- **multidimensional scaling**
- multilevel research
- multiple regression-correlation
- **network analysis**
- **neural networks**
- **nonparametric techniques**
- other
- **outliers**
- **path analysis**
- **power analysis**
- **probable error**
- **probit regression**
- **simple linear regression – bivariate**
- structural equation modeling
- t-tests
- **z-tests**

The most popular topics are as follows: multiple regression/correlation (17.03%), structural equation modeling (12.23%), multilevel research (10.92%), missing data (9.61%), factor analysis (6.68%), temporal issues (i.e., techniques for analyzing data collected throughout time) (6.55%).

In sum, the most popular quantitative topics are surveys, temporal issues, and electronic/web research (research design); validity, reliability, and level of analysis of the dependent variable (measurement); and multiple regression/correlation, structural equation modeling, and multilevel research (data analysis). Taken together, the lists in the following sections include a comprehensive list of quantitative methodological approaches used regularly regarding design, measurement, and data analysis. You can review these lists to set your own goals regarding which you would like to learn based on which ones are more closely related and helpful to your substantive research interests.

MAPPING QUALITATIVE RESEARCH METHODS: RESEARCH DESIGN, MEASUREMENT, AND DATA ANALYSIS

There are 21 popular approaches to qualitative research design:

- **action research**
- archival
- **biographical method**
- case studies
- clinical research
- direct estimates
- **document interpretation**
- ethnography
- **grounded theory**
- interviewing
- **interpretive**
- knowledge-based view
- narrative
- **observational techniques**
- **paper and pencil**
- **participant observation**
- **participative inquiry**
- **personal experience methods**
- policy capturing
- survey
- **visual method**

The most popular areas among these were: interpretive (26.67%), policy capturing (16.67%), and action research (13.33%).

In terms of qualitative measurement, there are four categories:

- archival data
- paper and pencil
- reliability
- survey

In terms of qualitative analysis, the popular topics include:

- **concept mapping**
- **conjoint analysis**
- content analysis
- interpretive
- **multisource ratings**
- narrative analysis
- policy capturing
- **semiotic analysis**

The most popular subcategories among the qualitative analysis topics were interpretive (26.32%), policy capturing (26.32%), and content analysis (21.05%).

Overall, the most popular qualitative topics are interpretive, policy capturing, and action research (research design), surveys and reliability (measurement), and interpretive, policy capturing, and content analysis (data analysis). If you are interested in qualitative methods, the list above is an excellent starting point to choose which methods you would like to learn in the future—those that would be most useful to your substantive research interests.

RESEARCH ON RESEARCH METHODS: BEST IN KIND

As mentioned earlier, a significant development was the creation of journals devoted to research methodology. As a researcher, you will want to know what the best research is on research methods. Why? Because this provides you with insights as the user of a method and, therefore, you should read these articles to ensure you follow their recommendations in your substantive research. Also, as a methodologist, you want to read these articles to do top-notch research on research methods.

The Academy of Management is a leading professional organization for social sciences related to organizations. Its members research organizational behavior, strategy, entrepreneurship, human resource management, conflict management, careers, diversity and inclusion, consulting, technology and innovation management, and many other topics. The Research Methods Division of the Academy of Management bestows a yearly award to the best article

TABLE 1.1 ■ Academy of Management Research Methods Division Best Article Awards Received by *Organizational Research Methods* Articles.

Year	Awarded Article
2020	Newman, D. A. (2014). Missing data: Five practical guidelines. <i>Organizational Research Methods</i> , 17, 372-411.
2017	Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2012). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. <i>Organizational Research Methods</i> , 16, 15-31.
2016	Carlson, K. D., & Wu, J. (2012). The illusion of statistical control: Control variable practice in management research. <i>Organizational Research Methods</i> , 15, 413-435.
2015	Aguinis, H., Pierce, C. A., Bosco, F. A., & Muslin, I. S. (2009). First decade of <i>Organizational Research Methods</i> : Trends in design, measurement, and data-analysis topics. <i>Organizational Research Methods</i> , 12, 69-112.
2014	LeBreton, J. M., & Senter, J. L. (2008). Answers to 20 questions about interrater reliability and interrater agreement. <i>Organizational Research Methods</i> , 11, 815-852.
2007	Edwards, J. R. (2001). Multidimensional constructs in organizational behavior research: An integrative analytical framework. <i>Organizational Research Methods</i> , 4, 144-192.
2005	Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. <i>Organizational Research Methods</i> , 3, 4-69.
2004	Cortina, J. M., Chen, G., & Dunlap, W. P. (2001). Testing interaction effects in LISREL: Examination and illustration of available procedures. <i>Organizational Research Methods</i> , 4, 324-360.
2002	James, L. R. (1998). Measurement of personality via conditional reasoning. <i>Organizational Research Methods</i> , 1, 131-163.

Sources: Adapted from Aguinis, Ramani, & Villamor (2019) and Academy of Management Research Methods Division (<https://rm.aom.org/awards/pastawardrecipients>). Reproduced with permission.

on methodology published in any journal or book during the five preceding years. Table 1.1 lists ORM articles that received the Academy of Management Research Methods Division Best Article of the Year Award (RMD Award). We can learn a lot about the types of methods the field values by looking at which papers have received this prestigious award. This table shows that almost 50% of the awards have gone to ORM papers in the last twenty years and that these papers mostly pertain to quantitative methods.

Let's apply the same strategy of looking at award-winning papers to see what topics are deemed necessary by the field but specific to ORM. Instead of assessing the types of methods advancements most valued by the field, we can determine which methods advancements the experts at ORM value. Of note, the ORM award is not just a matter of opinion: year after year, the award-winning papers have been more impactful than non-award-winning papers (as judged by citation count using [Web of Science](#)). Like RMD Award winners, the majority (13/15) addressed quantitative issues. One noticeable difference, however, is that a majority (12/15) of these papers addressed issues related to analysis rather than measurement (Table 1.2).

TABLE 1.2 ■ *Organizational Research Methods* Best Article of the Year Award Winners

Year	Article
2020	2020: Certo, S. T., Busenbark, J. R., Kalm, M., & LePine, J. A. (2020). Divided we fall: How ratios undermine research in strategic management. <i>Organizational Research Methods</i> , 23, 211-237.
2019	2019: Becker, T. E., Robertson, M. M., & Vandenberg, R. J. (2019). Nonlinear transformations in organizational research: Possible problems and potential solutions. <i>Organizational Research Methods</i> , 22, 831-866.
2018	2018: Putka, D. J., Beatty, A. S., & Reeder, M. C. (2018). Modern prediction methods: New perspectives on a common problem. <i>Organizational Research Methods</i> , 21, 689-732.
2017	2017: Cortina, J. M., Green, J. P., Keeler, K. R., & Vandenberg, R. J. (2017). Degrees of freedom in SEM: Are we testing the models that we claim to test? <i>Organizational Research Methods</i> , 20, 350-378.
2017	2017: Roulet, T. J., Gill, M. J., Stenger, S., & Gill, D. J. (2017). Reconsidering the value of covert research: The role of ambiguous consent in participant observation. <i>Organizational Research Methods</i> , 20, 487-517.
2016	2016: Shaffer, J. A., DeGeest, D., & Li, A. (2016). Tackling the problem of construct proliferation: A guide to assessing the discriminant validity of conceptually related constructs. <i>Organizational Research Methods</i> , 19, 80-110.
2015	2015: Cho, E., & Kim, S. (2015). Cronbach's coefficient alpha: Well-known but poorly understood. <i>Organizational Research Methods</i> , 18, 207-230.
2015	2015: Walsh, I., Holton, J. A., Bailyn, L., Fernandez, W., Levina, N., & Glaser, B. (2015). What grounded theory is... A critically reflective conversation among scholars. <i>Organizational Research Methods</i> , 18, 581-599.
2014	2014: Newman, D. A. (2014). Missing data: Five practical guidelines. <i>Organizational Research Methods</i> , 17, 372-411.
2013	2013: Kozlowski, S. W. J., Chao, G. T., Grand, J. A., Braun, M. T., & Kuljanin, G. (2013). Advancing multilevel research design: Capturing the dynamics of emergence. <i>Organizational Research Methods</i> , 16, 581-615.
2012	2012: Kruschke, J. K., Aguinis, H., & Joo, H. (2012). The time has come: Bayesian methods for data analysis in the organizational sciences. <i>Organizational Research Methods</i> , 15, 722-752.
2011	2011: Cortina, J. M., & Landis, R. S. (2011). The earth is <i>not</i> round ($p = .00$). <i>Organizational Research Methods</i> , 14, 332-349.
2011	2011: Edwards, J. R. (2011). The fallacy of formative measurement. <i>Organizational Research Methods</i> , 14, 370-388.
2010	2010: Leavitt, K., Mitchell, T. R., & Peterson, J. (2010). Theory pruning: Strategies to reduce our dense theoretical landscape. <i>Organizational Research Methods</i> , 13, 644-667.
2009	2009: Richardson, H. A., Simmering, M. J., & Sturman, M. C. (2009). A tale of three perspectives: Examining post hoc statistical techniques for detection and correction of common method variance. <i>Organizational Research Methods</i> , 12, 762-800.
2008	2008: Cheung, G. W. (2008). Testing equivalence in the structure, means, and variances of higher-order constructs with structural equation modeling. <i>Organizational Research Methods</i> , 11, 593-613.
2008	2008: LeBreton, J. M., & Senter, J. L. (2007). Answers to 20 questions about interrater reliability and interrater agreement. <i>Organizational Research Methods</i> , 11, 815-852.
2007	2007: Duriau, V. J., Reger, R. K., & Pfarrer, M. D. (2007). A content analysis of the content analysis literature in organization studies: Research themes, data sources, and methodological refinements. <i>Organizational Research Methods</i> , 10, 5-34.
2006	2006: Lance, C. E., Butts, M. M., & Michels, L. C. (2006). The sources of four commonly reported cutoff criteria: What did they really say? <i>Organizational Research Methods</i> , 9, 202-220.
2005	2005: Chen, G., Bliese, P. D., & Mathieu, J. E. (2005). Conceptual framework and statistical procedures for delineating and testing multilevel theories of homology. <i>Organizational Research Methods</i> , 8, 375-409.

Sources: Adapted from Aguinis, Ramani, & Villamor (2019) and Academy of Management Research Methods Division (<https://rm.aom.org/awards/awardrecipients>). Reproduced with permission.

This list is handy for social and behavioral science researchers because it provides an idea of the most current methodological topics, which will be addressed throughout this book. The award topics include:

- How **ratios** undermine research in strategic management (2020)⁴¹
- Possible problems and potential solutions for **nonlinear transformations** in organizational research (2019)⁴²
- New perspectives on modern prediction methods (2018)⁴³
- **Degrees of freedom** in SEM (2017)⁴⁴
- Reconsidering the value of **covert research** and the role of ambiguous consent in participant observation (2016)⁴⁵
- A guide to assessing the discriminant validity of conceptually related constructs to tackling the problem of construct proliferation (2015)⁴⁶
- Cronbach's coefficient alpha (2015)⁴⁷
- A critically reflective conversation among scholars on what grounded theory is (2015)⁴⁸
- Five practical guidelines to address missing data (2014)⁴⁹
- Advancing multilevel research design and capturing the dynamics of emergence (2013)⁵⁰
- Bayesian methods for data analysis in the organizational sciences (2012)⁵¹
- The earth is not round ($p = .00$) (2011)⁵²
- The fallacy of formative measurement (2011)⁵³
- Strategies to reduce our dense theoretical landscape (**Theory pruning**) (2010)⁵⁴

RESEARCH METHODS: THE PRESENT AND THE FUTURE

By now, you have a good idea of the historical journey of methods in the social and behavioral sciences, the wide variety of quantitative and qualitative approaches available, and the topics addressed by best-in-kind research on research methods. Next, this section addresses the future. Specifically: (1) Which methodological areas have been consistently popular? (2) Which are the methodological areas that are becoming increasingly popular? and (3) What will the future look like?

Which Are the Topical Areas That Have Been Consistently Popular over Time?

As a consumer of research, there are methodological approaches you should understand to be current on the latest literature. To give you a sense of the consistently popular methods topics, we look at a summary of the issues that were most typical (modal) of an article published in the first decade of ORM. Of note, the modal article addresses quantitative instead of qualitative topics. Popular topics are listed below, organized by research method area. Percentages denote

the relative frequency of papers in each area of research methods—note how these differ across quantitative and qualitative papers.

Quantitative Articles

- Study design (15%): surveys, temporal issues, and electronic/Web research
- Measurement (49%): validity, reliability, and level of analysis of dependent variable
- Data analysis (49%): multiple regression/correlation, structural equation modeling, and multilevel research

Qualitative topics

- Study design (56%): interpretive, policy capturing, and action research
- Measurement (9%): surveys and reliability
- Data analysis (33%): interpretive, policy capturing, and content analysis

Which Are the Methodological Areas That Are Becoming Increasingly Popular?

As both a researcher and consumer of research, there are up-and-coming methodological topics you should aim to learn to stay current. As Figure 1.2 shows, in terms of quantitative topics, there are upward trends regarding surveys and electronic/Web research (design), level of analysis of the dependent variable and validity (measurement), and multilevel research (analysis). These trends can be explained by the availability of electronic data collection (rather than just paper and pencil) and the need to understand individuals and organizations within different levels and contexts (e.g., teams, organizations, and societies). Regarding qualitative topics, the attention devoted to interpretive and action research has increased with time (design). Still, trends in terms of measurement and analysis are difficult to identify, given that the overall number of articles is relatively small.

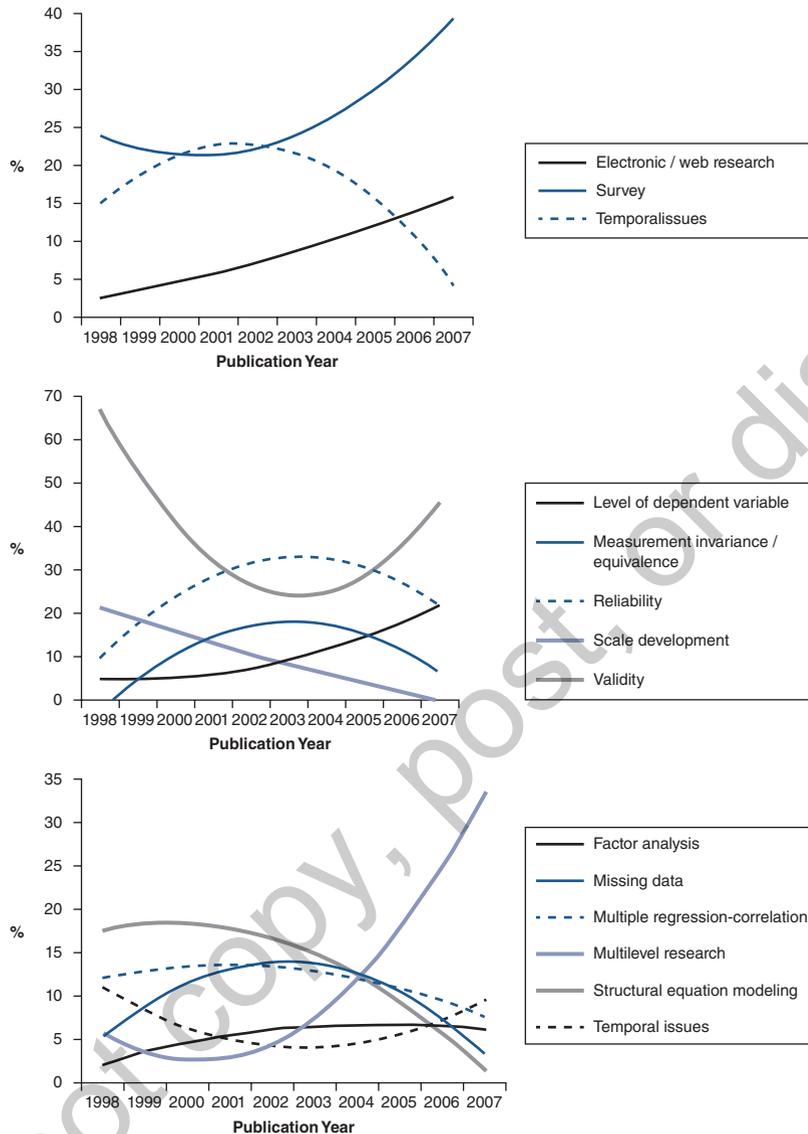
What Will the Future Look Like?

While this list could be extremely long, let's focus on five issues that may have the most significant impact in the years to come. These include (1) constructive **replication**; (2) embracing methods that allow us to study the exceptionally good and bad; (3) not allowing misguided or incomplete analyses to survive the review process; (4) shifting emphasis toward research design and measurement; and (5) increased theory specificity.

Constructive While Replication

More than a century ago, there was a call for a cooperative system in which social and organizational problems were assigned to a research group best suited to study them. The idea would be that a given research team would design studies, form hypotheses, test them, refine hypotheses, and retest until they had **triangulated** a solution. Although this and similar processes were reported early in the 20th century, they no longer happen in social and behavioral research. The reality is that the models offered in empirical papers are rarely tested again,⁵⁵ and those published in theoretical papers (i.e., offering a theoretical model without including data), such as *Academy of Management Review* articles, are rarely tested.⁵⁶ The reason is that to be published, an empirical paper must make a “theoretical contribution.” In other words, it cannot test someone else's

FIGURE 1.2 ■ Trends in Counts in Percentages for the Most Popular Quantitative Design (Top Panel), Quantitative Measurement (Center Panel), and Quantitative-Data Analysis (Bottom Panel) Topics



Source: Aguinis, Pierce, Bosco, & Muslin (2009). Reproduced with permission.

theory. If top journals are reluctant to publish constructive replications, then few researchers will conduct them. The solution here is simple. Our journals must encourage and publish high-quality constructive replications.

It bears mentioning that constructive replication and repetition are not the same thing. You may have heard that criticism regarding the lack of replication is unwarranted because the slack is picked up by meta-analyses (i.e., a method used to conduct a quantitative summary of the existing literature, as described in Chapter 11). But a meta-analysis is not constructive replication because it analyzes large numbers of studies rather than replicating a single study. A good replication involves testing either an entire theory or a portion of a theory already put

forth in the literature. Such papers do exist, but they are rare. The social and behavioral sciences must embrace a model standard in other fields that involves independent verification of results through constructive replication.

Embracing Methods That Allow Us to Study the Exceptionally Good and Bad

The exceptional is, by definition, rare. In the sciences, we have moved toward a statistical significance model in which the probability of obtaining a particular value tells us how much stock to put in the results. However, statistical significance models require large samples to estimate probabilities reliably. Because exceptional cases are rare, finding large samples of the exceptional to use in statistical significance testing is impossible. Surely, there is value in understanding the exceptional and knowing why, for instance, some of the most influential and prolific scholars continue to work full-time, mostly pro bono, after retirement. Indeed, knowing why the employee with the perfect attendance record always attended every day is valuable. There is value, too, in studying people, units, and organizations that fail badly. Sometimes the best way to arrive at this understanding is through a case study of the exceptional.

EXAMPLE: Learning From Case Studies

Those who have read the book *Moneyball* know that making a case study of the Oakland A's was the only way to understand how they had one of the best records in baseball over several years with only one-third of other teams' payroll. At the other end of the spectrum, the National Transportation Safety Board officials had to use a case study approach in May of 2015 as they combed through the wreckage of an AMTRAK accident that killed 188 people in Philadelphia. So, while we need to know about the exceptionally good, we must also learn about the exceptionally bad. However, we may need to embrace qualitative methods such as case studies and grounded theory to do this. We might consider ourselves a science of the mean if we do not.⁵⁷

Not Allowing Misguided or Incomplete Analyses to Survive the Review Process

Years ago, we could not conduct SEM analyses without knowing precisely what we were doing—an analyst had to understand the analysis to conduct it fully. The disadvantage of this was that very few people could conduct SEM analyses. The advantage was that only skilled analysts could engage in SEM. Today, SEM analyses are semiautomatic with a variety of software choices. Unfortunately, the result is that many such analyses are done incorrectly.

METHODS IN PRACTICE

CAN WE TRUST NUMERICAL RESULTS REPORTED IN PUBLISHED ARTICLES?

Nearly 40% of papers in the *Journal of Applied Psychology* (JAP) and *Academy of Management Journal* (AMJ) reported incorrect degrees of freedom for their SEMs, which means the authors of these papers were not testing the models that they claimed to be testing.⁵⁸ Similarly, models integrating **mediation** and **moderation** are quite common, and authors can

access user-friendly scripts and programs that allow testing such models. Yet authors of papers in JAP, AMJ, and other top journals who hypothesize full mediation rarely defend full mediation and rarely test for it properly.⁵⁹ You may still need to learn what some of these words mean, so you may be tempted to gloss over this issue. But these are not merely the quibbles of stats geeks. These are problems that result in the wrong words going into the Results and Discussion sections of published articles.

These are problems that compromise the trustworthiness of research that we see used in media, politics, and law. The only solution to this problem is to ensure that every paper considered for publication has been evaluated carefully by someone with expertise in the methods described. However, a high level of knowledge and expertise is required to provide thorough, skilled reviews. Moreover, providing such reviews is time-consuming, and reviewers are volunteers who are not compensated for their work. So, given the strain on the reviewer pool, this won't be easy to do. Whether the solution is graduate training, continuing education, reviewer credentialing, reviewer compensation, or some combination, it will take work.

Shifting Emphasis Toward Research Design and Measurement

This may seem an odd point, given the previous section. Still, the hope is that the fascination with abstruse data analysis techniques gets replaced by a fascination with appropriate research design, including top-notch measurement. More researchers can perform advanced analyses as data analysis software becomes more accessible. As a result, our methodological rigor focus across fields has shifted from design and measurement, which was and is hard, to analysis, which has become easy to access. But the design comes first. Analysis can only fix data from a good design.

One possible means to achieving this end would be a Registered Reports model. In this publishing model, the Introduction and Method sections alone are subjected to a review process. Once these sections are approved, the author only needs to execute the design for the paper to be published. The paper's publication is not contingent on the resulting data's relationship with the introduction; data need only be collected consistent with the proposed method. An alternative would be to have reviewers and editors review only the Introduction and Method sections of completed papers before seeing the results. Either approach would go a long way toward eliminating the pervasive problem of **HARKing**—that is, hypothesizing after results are known.⁶⁰ Of course, ensuring that experts on a given design get a look at every viable submission to journals would help, too, but again, this would be difficult given the strain on the review system. The hope is that future methodology historians will look back upon the next few decades and observe that the review process rewarded researchers who made the difficult and time-consuming but appropriate design choices, even if that meant tolerating the study's limitations.

Increased Theory Specificity

Social and behavioral science theories tend to be vague.⁶¹ They contain hypotheses that are, at best, directional (i.e., more of X is related to more of Y). Over time, we add boxes and arrows to our increasingly complex models rather than refining them. A model expanded this way “effectively closes it off from rebuttal or disconfirmation by anything in the world.”⁶² Other scientific fields move in the direction of parameterization of models—meaning that relations between variables are described in terms of direction and specific strength. But we do not do this, and we should, particularly given the availability of information on the current state of our knowledge,

in the form of bivariate relations and their distributions, in the most popular domains in social and behavioral science research.⁶³ One way to shift emphasis to research design and measurement would be to embrace computational modeling, which involves detailed descriptions of processes complete with point estimates of parameters that can then be cross-validated and adjusted. Another way to move in this direction would be to embrace categorical shift models of human behavior. For example, approaches such as **catastrophe modeling** and **spline regression** involve identifying slope parameters and points along an axis of predictor values at which a dependent variable value and its relationship to the predictor changes suddenly.⁶⁴ The Bayesian methods described in Chapter 14 might help us here.⁶⁵ Specifically, suppose we were to evaluate study $k + 1$ not in isolation but as a mechanism for adjusting beliefs driven only by study k . In that case, **theory refinement** is more likely to move forward.

These are only a few examples of approaches that would help us to refine our theories. Whether through these or other mechanisms, the social and behavioral sciences would benefit from theoretical specificity. Next, in Chapter 2, we will focus on a critical aspect of research: ethics.

DISCUSSION QUESTIONS

1. Why should you care about research methods?
2. What are, in your opinion, the most important methodological developments in each of the six time periods described in Figure 1.1 that are still important today? Please explain your reasoning.
3. Is the balance between the relative popularity of quantitative and qualitative methods conducive to advancing social and behavioral science knowledge?
4. Do you see any typical pattern in the most recent articles that won the best AOM-RMD and ORM article of the year award?
5. Which topical areas have been consistently popular in the social and behavioral sciences? What do you think explains their popularity?
6. Which are the topical areas that have become increasingly popular? Why do you think this may be the case?
7. Do you think the predictions in this chapter about the future of research methods will come true in the coming years? Why? Why not?
8. What would, in your opinion, facilitate and impede the predictions in this chapter about the future of research methods?

KEY TERMS

action research
analysis of covariance (ANCOVA)
analysis of variance (ANOVA)
average deviation (AD)
banding
Bayesian networks

behavioral simulation
biographical method
canonical correlation analysis
case study
catastrophe theory
causal mapping

chi-square (χ^2) distribution
 cluster analysis
 coefficient beta
 common method bias (CMB)
 concept mapping
 conjoint analysis
 constructs
 content analysis
 control variable
 correlational
 correlational analysis
 covert research
 critical ratio
 cross cultural research
 degrees of freedom
 discriminant analysis
 distribution
 document interpretation
 effect size (ES)
 experimental repeated measures
 external validity
 factor analysis
 generalizability
 generalized estimating equation (GEE)
 grounded theory
 growth curve
 HARKing
 hypothetico-deductive model
 inferential statistics
 internal validity
 interpretive
 logistic regression
 longitudinal designs
 macro organizational research
 multivariate analysis of covariance
 (MANCOVA)
 multivariate analysis of variance (MANOVA)
 measurement equivalence
 measurement invariance
 mediation
 meta-analysis
 micro organizational research
 mixed methods
 moderation
 Monte Carlo research
 multidimensional scaling
 multilevel modeling
 multisource rating
 network analysis
 neural networks
 non-experimental research
 nonlinear transformations
 nonparametric technique
 observational technique
 outliers
 paper and pencil
 participant observation
 participative inquiry
 passive observation
 path analysis
 personal experience methods
 policy capturing
 power analysis
 probable error
 probit regression
 psychometric meta-analysis
 qualitative methods
 quantitative methods
 quasi-experimental design
 replication
 research paradigm
 sampling error
 scale
 self-report
 semiotic analysis
 simple linear regression – bivariate
 spline regression
 statistical control
 statistical significance testing
 structural equation modeling (SEM)
 survey
 theory pruning
 theory refinement
 triangulated
 validity generalization (VG)
 variables
 visual method
 Web of Science (WoS)
 z-test

NOTES

This chapter is based to a large extent on the following sources:

Aguinis, H., Pierce, C. A., Bosco, F. A., & Muslin, I. S. (2009). First decade of Organizational Research Methods: Trends in design, measurement, and data-analysis topics. *Organizational Research Methods*, 12(1), 69-112. <https://doi.org/10.1177/1094428108322641>

Aguinis, H., Ramani, R. S., & Villamor, I. (2019). The first 20 years of Organizational Research Methods: Trajectory, impact, and predictions for the future. *Organizational Research Methods*, 22(2), 463-489. <https://doi.org/10.1177/1094428118786564>

Cortina, J. M., Aguinis, H., & DeShon, R. P. (2017). Twilight of dawn or of evening? A century of research methods in the Journal of Applied Psychology. *Journal of Applied Psychology*, 102(3), 274-290. <https://doi.org/10.1037/apl0000163>

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