

Review paper

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QUANTITATIVE, QUALITATIVE, AND MIXED METHOD APPROACHES IN SOCIAL RESEARCH: *SHOULD I STAY OR SHOULD I GO*¹

Abstract: *In the analysis and study of social phenomena, researchers face numerous methodological decisions related to the characteristics and specifics of methodological approaches. In this paper, they are considered as ways of thinking about research design and strategies for its implementation, that is, about research methods, which also encompass certain paradigmatic questions. In other words, methodological decisions regarding the use of a particular research method are not only related to the data collection phase but also imply broader (paradigmatic) discussions concerning researchers' views on the nature of social reality and forms of valid knowledge. Therefore, the (post)positivist and constructivist paradigms, as well as pragmatism, which is traditionally associated with quantitative, qualitative, and mixed method approaches, play important roles in theoretical–methodological discussions about quantitative, qualitative, and mixed-method research and the criteria for evaluating research.*

Keywords: *methodological approaches, research methods, paradigms, criteria for evaluating research*

INTRODUCTION

In the fields of social sciences (such as sociology, pedagogy, etc.), analyses and research of a social phenomenon can be approached in various ways. Moreover, interdisciplinary research in the social sciences is common today and often involves researchers with different methodological interests (Sekol & Maurović, 2017). Methodologically, this implies knowledge and understanding

¹ The title of the song by the band Clash.

of the characteristics and specifics of different research approaches (quantitative, qualitative, and mixed methods), paradigmatic assumptions, research methods (and techniques), and other key methodological aspects (such as criteria for evaluating quantitative and qualitative research, research ethics, etc.). Methodological decisions that can be of crucial importance, such as the choice of research method/technique, are not merely a practical matter of data collection but also entail other issues (which, more broadly, are part of paradigmatic debates). In other words, the quantitative, qualitative, and mixed methods approaches involve different assumptions about the nature of knowledge, which raises questions about how research should be conducted and what form of knowledge is considered valid (Blaxter et al., 2006; Gray, 2004; Williams, 2003). On the other hand, in the methodological literature, certain terms are often used synonymously, even if they are not, which can (additionally) create difficulties in planning and conducting research, especially for students and young researchers. Furthermore, various terms are also used, such as methodological approaches (Teddlie & Tashakkori, 2009), research approaches (Creswell & Creswell, 2018; Sekol & Maurović, 2017), and research paradigms (Denscombe, 2010). Teddlie and Tashakkori (2009), however, emphasize that the terms quantitative and qualitative research paradigms (or mixed method research paradigms) are conceptually unclear and that it is advisable to avoid them.

According to Teddlie and Tashakkori (2009), research methodology is a general approach to scientific research that determines how a research question should be formulated and answered, which involves reflecting on one's own worldview and choosing a research design, sampling logic, strategies for collecting and analyzing data, and criteria for assessing research quality. Research methods include specific strategies and procedures for implementing the research design (sampling, data collection, and analysis, interpretation), whereas a paradigm is defined as a worldview that encompasses philosophical and sociopolitical issues (Teddlie & Tashakkori, 2009, p. 27). The worldview (i.e., paradigm), research design/research strategy, and research methods are three key and interrelated components of the research approach (Creswell, 2009; Creswell & Creswell, 2018). Accordingly, the paper describes quantitative, qualitative, and mixed methods approaches to scientific research, starting from broader (paradigmatic) assumptions that the researcher "brings" into the research through specific research methods related to ways of formulating research objectives/questions, sampling, data collection and analysis, as well as interpretation and conclusion (Creswell & Creswell, 2018; Teddlie & Tashakkori, 2009; Blaxter et al., 2006; Gray, 2004) up to the criteria by which research quality is assessed (Creswell & Creswell, 2018; Taherdoost, 2016; Teddlie & Tashakkori, 2009). Quantitative, qualitative, and mixed methods research, therefore, begins with ontological, epistemological, and methodological questions (della Porta & Keating, 2008;

Blaxter et al., 2006), that is, the researcher's stance on social reality and the nature of research (Creswell & Creswell, 2018). Therefore, the paper also uses the concept of "methodological approaches", which refers to ways of thinking about the research design and strategies for its implementation, that is, about research methods, which also implies paradigmatic positions.

Researchers' perspectives can develop owing to the specifics of a particular scientific field, the influence of other individuals (for example, mentors), or prior research experience, and they often lead to a researcher's preference for a certain research method (Creswell & Creswell, 2018). Through an overview of the methodological specifics of quantitative, qualitative, and mixed methods research, three paradigms are mentioned – (post)positivism, constructivism, and pragmatism, considering that they are most commonly associated with researchers' orientation toward quantitative, qualitative, and mixed method approaches in research (Creswell & Creswell, 2018; Teddlie & Tashakkori, 2009; Blaxter et al., 2006), although other paradigms are also noted in the literature (e.g., participatory, transformative). One of the more dominant traditions is therefore associated with the (post)positivist paradigm and quantitative methods, whereas criticisms of positivism have led to the adoption of the constructivist paradigm and the development of qualitative methods. Ultimately, debates around paradigms and research methods have resulted in the emergence of an "alternative methodological approach", the mixed methods approach, which is most often associated with pragmatism (Teddlie & Tashakkori, 2009). Although this term implies that methods are mixed in the mixed methods approach, mixed methods approaches are used both to describe research procedures and as a methodological approach (Freshwater & Cahill, according to Sekol & Maurović, 2017, p. 12). Therefore, Sekol and Maurović (2017) highlight the differences between the research designs and discuss the divide of mixed methods approaches depending on whether they involve mixing methods or methodologies.

METHODOLOGICAL SPECIFICS OF QUANTITATIVE, QUALITATIVE, AND MIXED METHOD RESEARCH

Quantitative research

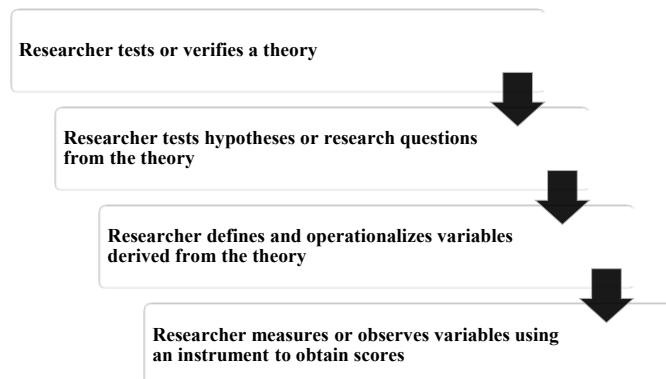
Quantitative research approaches are commonly used for testing theories by examining the relationships among variables measured via instruments.² The measurement yields numerical data that are analyzed via statistical procedures

² In research, it is possible to use existing (validated) instruments or to construct an instrument for the purposes of one's own study. For more on the construction and validation of instruments, see Taherdoost (2016). Landripet et al. (2020) illustrate this process using the example of developing the faith-based social engagement scale (VIDA).

(Taherdoost, 2022; Creswell & Creswell, 2018). Quantitative research generally serves an explanatory purpose (Babbie, 2011) and is based on previous research studies and theories (Creswell and Creswell, 2018; Denscombe, 2010). Although the “traditional scientific model” represents only one aspect of research practice, understanding its principles is important (Babbie, 2011). The research problem is usually formulated in the form of research hypotheses, with the researcher aiming to test these hypotheses on the basis of existing theoretical insights. In other words, the emphasis is on theory testing (Creswell & Creswell, 2018; Babbie, 2011; Denscombe, 2010). In quantitative research, theory is tested deductively with the aim of generalizing and replicating (Creswell & Creswell, 2018). Figure 1 illustrates this (taken from Creswell, 2009, p. 57).

Figure 1

Deductive approach in quantitative research



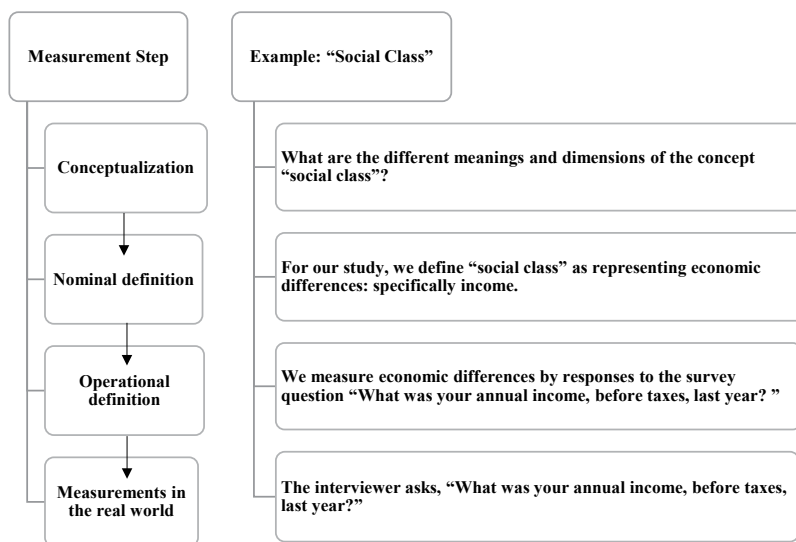
Quantitative research methods involve the use of specific strategies and research designs for conducting survey and experimental research (Creswell & Creswell, 2018; Kelly, 2018; Williams, 2003). In survey research, the measurement instrument is the questionnaire, and there are various techniques for data collection, from administering the questionnaire in combination with structured interviews, self-administered questionnaires, telephone interviews, online surveys, etc. (Williams, 2003) to using techniques such as vignettes, in which hypothetical events or situations are described in the questionnaire (Vlahov et al., 2024), and so on. In quantitative research, the starting point is research questions/objectives and research hypotheses, which can be descriptive or inferential.³ The quantitative research questions indicate the relationships

³ See more about descriptive and inferential research questions and hypotheses in Creswell and Creswell (2018) and Thrane (2023), as well as statistical analyses in Bergin (2018) and Thrane (2023).

between variables, and the research objectives point to the purpose of the research, whereas the research hypotheses are assumptions about the expected relationships between variables and are derived from theory. Statistical tests are used to test (inferential) hypotheses, based on which conclusions are drawn from the sample to the population⁴ (Taherdoost, 2022; Creswell & Creswell, 2018; Kelly, 2018; Teddlie & Tashakkori, 2009). Considering that quantitative research primarily uses a deductive approach and is based on research hypotheses, the variables used need to be determined at the beginning of the study (Kelly, 2018; Babbie, 2011). At this point, the processes of conceptualization and operationalization are important, as they serve to determine the meaning of the concepts (variables) used and measured in the research. The process of determining the meaning of a concept and describing how it will be measured in the study involves identifying its indicators (Kelly, 2018; Babbie, 2011). Figure 3 illustrates this process via the example of the concept of “social status” (taken and adapted from Babbie, 2011, p. 140). Barada et al. (2024) also noted the importance of conceptualization and operationalization, using the example of housework research, while suggesting the introduction of the concept of “management”, cognitive and emotional household management (KEUK), which complements previous conceptualizations with the mentioned dimensions.

Figure 2

Illustration of the process of conceptualization and operationalization



⁴ See more about probabilistic sampling in Babbie (2011) and Bergin (2018).

Qualitative research

Qualitative research approaches are used to understand and interpret the meanings that individuals or groups attribute to social reality (Creswell & Creswell, 2018; Silverman, 2018; Denscombe, 2010; Williams, 2003). The research process involves an emerging design and questions (Creswell & Creswell, 2018; Kelly, 2018), data that are primarily collected in the participants' environment, the researcher as the key instrument, inductive data analysis⁵, and purposive sampling⁶ aimed at obtaining rich information (Creswell & Creswell, 2018; Teddlie & Tashakkori, 2009). An emerging research design means that research and analytical procedures in qualitative studies are adapted to the field; that is, it is a nonlinear process (Vučković Juroš, 2022). Qualitative research generally serves exploratory and descriptive purposes (Babbie, 2011). The researcher may make this decision because either there is not enough theoretical insight or they want to examine the topic from a new perspective, independent of previous research findings. In other words, the focus is on theory building rather than testing it (Denscombe, 2010); thus, theory becomes the ultimate goal of research and develops from the analysis of data⁷ (Creswell & Creswell, 2018; Babbie, 2011). Figure 3 illustrates the above (taken from Creswell, 2009, p. 63). According to Creswell and Creswell (2018), theory in qualitative research can also be used in a way that guides the questions asked, as well as the collection and analysis of data. Here, it is more about theoretical lenses such as, for example, the feminist perspective, critical theory, queer theory, and other perspectives that were included in qualitative research in the 1980s, focusing on topics that researchers considered significant to explore (marginalization, empowerment, etc.) and participants whom they deemed necessary to include (women, ethnic and sexual minorities, people with disabilities, etc.) in research.

Qualitative research methods involve specific strategies and research designs for conducting qualitative studies (narrative, phenomenological, ethnographic, biographical, etc.). In qualitative research, researchers collect data using various techniques (often referred to in the literature as data collection methods), such as unstructured/semistructured interviews, focus groups, observations with/without researcher participation, etc. In this approach, alongside the researchers themselves, the key instrument is the research protocol (Creswell and Creswell, 2018). Recent empirical studies also mention other techniques

⁵ It is important to note that this approach (to coding and identifying themes) is not the only one, meaning that researchers can also use a deductive approach or a combination of approaches when analyzing qualitative data (Vučković Juroš, 2022).

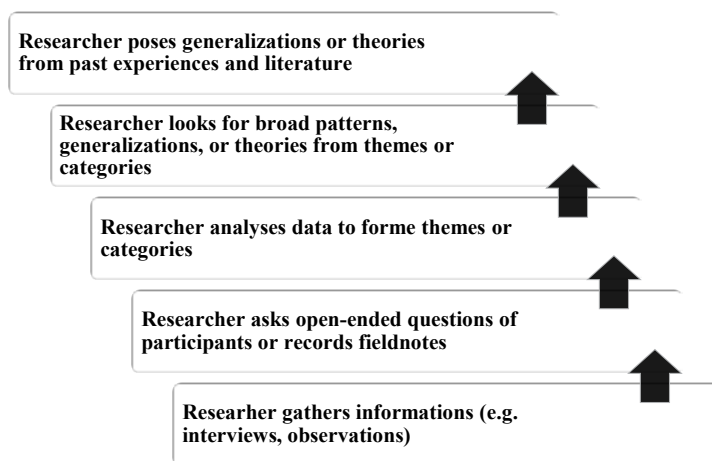
⁶ See more about purposeful sampling methods in qualitative research in Patton (2002).

⁷ There are several ways to analyze qualitative data – discourse analysis, narrative analysis, thematic analysis, etc. For example, for thematic analysis and its different approaches (coding process, identifying themes, etc.) see more in Braun et al. (2019).

for data collection, such as narrative interviews (Šarić, 2024), biographical interviews (Poletić Čosić, 2022), a timeline or lifeline as a visual representation (Lončar et al., 2019), etc. In qualitative research, one begins with 1-2 central research questions, which may be accompanied by subquestions (at most 5-7). A research question should begin with the words “what” or “how”, which indicate an emerging design (Creswell & Creswell, 2018). Unlike quantitative research, in qualitative research, conceptualization does not necessarily have to occur at the beginning of the study. In other words, a key part of some research may be the discovery of different dimensions and aspects of a concept (Babbie, 2011). Since researchers here rely mostly on induction, they avoid assumptions about what research results they might obtain (Kelly, 2018). In qualitative research, emphasis is placed on transparency (providing sufficient information or explanations about the research and analytical process) and reflexivity (statements about the researcher’s positioning, epistemological assumptions, and relationship with participants), which are related to the selection and recruitment of participants, identification of ethical issues⁸, and detailed descriptions of analytical procedures (Vučković Juroš, 2022). The author emphasized that these aspects are crucial in reporting on qualitative research.

Figure 3

Inductive approach in qualitative research



⁸ For the specifics of qualitative research ethics, that is, ethical issues in planning and conducting qualitative research, see more in Lončar et al. (2023).

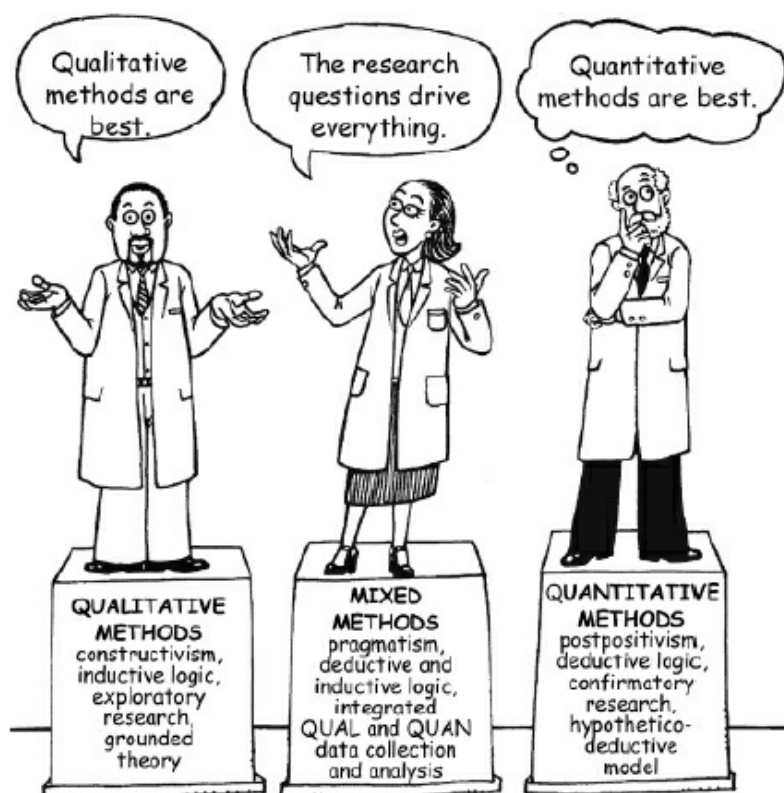
Mixed methods research

Quantitative and qualitative research have, methodologically speaking, conventionally been separated among researchers and even journals that publish research papers using only one or the other research methods (Bergin, 2018). In the last 30 years, an alternative to the quantitative–qualitative dichotomy has emerged in the form of the “third research community” (Teddlie & Tashakkori, 2009). Various terms are used in the methodological literature, such as mixed methodology (Kunac et al., 2018; Tashakkori & Teddlie, 1998), mixed method approaches and research (Šarić, 2024; Creswell & Creswell, 2018; Teddlie & Tashakkori, 2009), mixed research approaches (Sekol & Maurović, 2017), etc. On the other hand, Teddlie and Tashakkori (2009) emphasize that some terms have been used as synonyms, such as multimethods and mixed methods, even though they are not. Fetters and Molina-Azorin (2016) believe that multimethod research encompasses different ways of combining quantitative and qualitative approaches (quan + quan; qual + qual; and quan + qual), whereas mixed methods research represents only one category of multimethod research. However, the authors also noted significant differences in the ways of combining approaches in mixed methods research, given that quantitative and qualitative approaches can be integrated at different levels (Fetters & Molina-Azorin, 2016). In mixed methods research, the basis for combining quantitative and qualitative approaches is precisely the ‘place’ of their integration (which will be discussed further). Therefore, multimethod research refers to the combination of multiple qualitative or quantitative approaches (Schoonenboom & Burke Johnson, 2017). One of the frequently used terms in methodological and research papers is triangulation⁹. Teddlie and Tashakkori (2009) view triangulation as one of the strategies used in mixed methods research, noting that this refers to methodological triangulation (Sekol & Maurović, 2017; Teddlie and Tashakkori, 2009) and is used to verify validity (Denzin, 2009). Šarić (2024) emphasized that this is related to the postpositivist (quantitative) research tradition; therefore, triangulation is less common in qualitative research.

Quantitative and qualitative approaches should not be viewed as dichotomies but rather as ends of a continuum, whereas mixed method approaches lie in the middle of this continuum, as they contain features of both approaches (Creswell & Creswell, 2018; Teddlie & Tashakkori, 2009). Moreover, each approach has advantages and disadvantages (Sekol & Maurović, 2017). One of the (pragmatic) reasons for conducting mixed method research lies in recognizing the practical value and methodological limitations of research methods (May, 2011). Apart from the methodological orientation of researchers toward

⁹ Denzin (2009) distinguishes four types of triangulations: data, theory, researcher, and methodological triangulation (which can be within method and between method).

quantitative research methods (objectivity, value neutrality, numerical data, and statistical analyses) and the (post)positivist paradigm, as well as qualitative research methods (construction of reality, contextualization, narrative data, and thematic analyses) and the constructivist paradigm, there is also an indication of a methodological orientation of researchers toward mixing quantitative and qualitative research methods, which is most often associated with pragmatism. Pragmatism presents the idea of compatibility of paradigms, refuting the theses about opposing paradigms, and that mixing quantitative and qualitative research methods is inappropriate given the (paradigmatic) differences in these research methodologies (Teddle & Tashakkori, 2009). Although the use of a mixed methods approach in scientific research in Croatia is not very common (Sekol & Maurović, 2017), it is important to highlight its application in sociological empirical research (for example, Besednik & Lončar, 2024; Petrić et al., 2022; Kunac et al., 2018). On the other hand, Sarić (2024) contributed to theoretical-methodological and research discussions on the application of analytical triangulation of narrative data in qualitative (narrative) research.



Source: Teddle and Tashakkori (2009). Illustration of a different approach to the research problem

In mixed methods research, researchers use numerical and narrative data, address explanatory and exploratory research questions, employ deductive and inductive approaches, probabilistic and purposive sampling, statistical and narrative analyses, and triangulation (using multiple sources of data collection and analysis) (Teddlie & Tashakkori, 2009). The two main mixed methods research designs¹⁰ are parallel and sequential, which can be either explanatory or exploratory (Creswell & Creswell, 2018; Teddlie & Tashakkori, 2009). The parallel (or convergent) research design is conducted in a single phase. Quantitative and qualitative data are collected simultaneously and analyzed separately, and the results are subsequently compared to confirm or disprove the findings. The assumption is that quantitative and qualitative data provide different information and that the results should be the same. Integration occurs when the results are combined during the analysis phase, which can be approached in various ways, for example, by presenting the quantitative results and then comparing them with the qualitative results (or vice versa) in the discussion section (Creswell & Creswell, 2018, pp. 300–301). The explanatory sequential design is used by researchers with a stronger quantitative background and is conducted in two phases. In the first phase, quantitative data are collected and analyzed, on the basis of which the second qualitative phase is planned. The quantitative results inform the purposeful sampling of participants for the qualitative phase and the type of questions that will be asked. The assumption is that qualitative data help provide a more detailed explanation of the initial quantitative results, so it is important to link the quantitative results with the collection of qualitative data (for example, collecting and analyzing quantitative data through a survey questionnaire in the first phase and then conducting qualitative interviews to explain certain responses from the questionnaire). Integration occurs by connecting the results obtained through the quantitative method with the collection of data using the qualitative method (Creswell & Creswell, 2018, p. 304). An exploratory sequential research design is conducted in three phases. Researchers begin with the qualitative phase and then proceed to the quantitative phase in such a way that new measurements, for example, a new instrument or variables (in the second phase), are developed through the collection and analysis of qualitative data, on the basis of the qualitative data results, and these will be tested/measured with the aim of generalization in the third, quantitative, phase. Therefore, integration occurs in the second phase, in which the quantitative data collection phase is planned and conducted on the basis of the analysis of qualitative data (Creswell & Creswell, 2018,

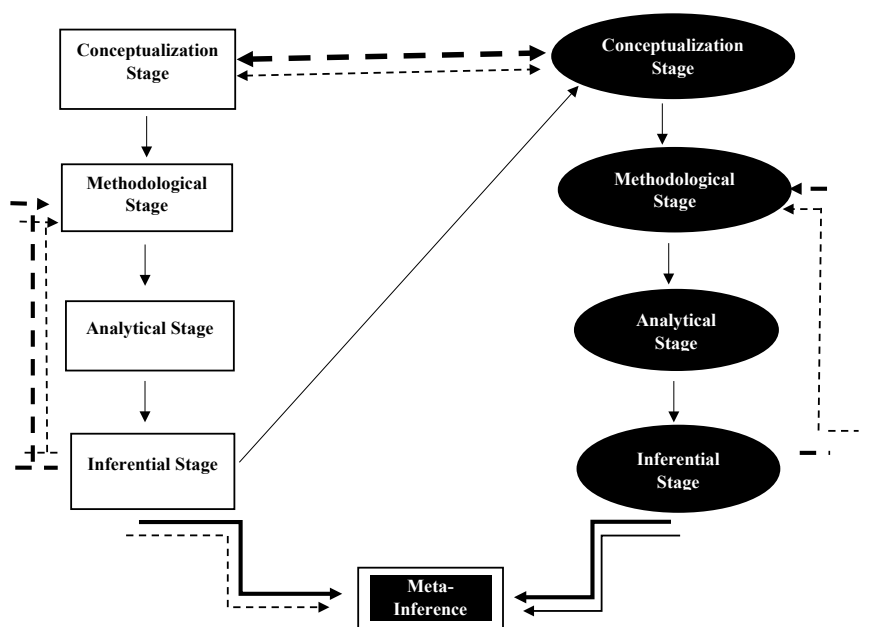
¹⁰ Other research designs are also mentioned in the methodological literature (Teddlie & Tashakkori, 2009; Creswell, 2009; Sekol & Maurović, 2017). See more on the implementation of mixed methods research and the research process (i.e., defining research objectives/questions, sampling, data collection and analysis, and drawing conclusions) in Teddlie and Tashakkori (2009) and Creswell and Creswell (2018).

pp. 306–307). Figure 4 graphically illustrates the specifics of mixed method research designs¹¹ (according to Teddlie & Tashakkori, 2009).

One of the important questions raised in mixed methods approaches is what exactly is being mixed: methods or methodologies (Sekol & Maurović, 2017). The authors emphasize that mixed methods research, on the one hand, starts from philosophical assumptions that influence how quantitative and qualitative approaches are mixed in different research phases and, on the other hand, is directed toward collecting, analyzing, and mixing quantitative and qualitative data (Creswell & Plano Clark, according to Sekol & Maurović, 2017, p.12). Referring to sequential and parallel research designs, Sekol & Maurović (2017) state that in a sequential (explanatory and exploratory) research design, it is a matter of mixing methods, whereas in a parallel design, it is a matter of mixing methodologies. Fetters and Molina-Azorin (2016) noted that combining quantitative and qualitative approaches, that is, different ways of integrating them (method or methodology), also presents specific research challenges.

Figure 4

Illustrations of parallel and sequential research design



¹¹ For the depiction of a parallel research design, arrows with bold lines were used, unlike the arrows used to depict a sequential research design. This division of mixed-methods research designs is not the only one (see for comparison Teddlie & Tashakkori, 2009; Creswell, 2009; Sekol & Maurović, 2017), but it can be considered basic (Creswell & Creswell, 2018).

CRITERIA FOR EVALUATING THE QUANTITATIVE, QUALITATIVE AND MIXED METHOD RESEARCH

Reflecting on the entire research process, including the issue of criteria for evaluating research, is guided by positions on the nature and knowledge of social reality as well as orientation toward certain research methods, which the researcher explicitly or implicitly brings into the research. These positions, in addition to leading to greater or lesser strict adherence to one of the research approaches (Creswell & Creswell, 2018), also serve as reference frameworks (Babbie, 2011) for reflecting on the entire research process. Guba and Lincoln (2005) illustrate these positions through differences in the ontological (social reality), epistemological (knowledge of reality), and methodological assumptions (methods) of various paradigms. In other words, from the (post)positivist paradigm and the “real” (un)attainable reality (ontology) and the knowledge of reality as it is “in itself” (epistemology) through reality shaped by social, political, economic, etc. values to the constructivist paradigm and constructed, (co)created realities (ontology) and the knowledge of reality as seen by another person (epistemology), researchers adopt quantitative, qualitative, or mixed method approaches in research and orient themselves toward certain research methods and criteria for evaluating research. Moreover, the positivist and constructivist paradigms occupy certain positions regarding the objectives of research, the nature of knowledge, criteria, values, ethics, the role of the researcher, etc., and respond differently to key issues such as axiology, action, control, the relationship between truth and knowledge, reflexivity, etc. Figure 5 demonstrates this (according to Guba & Lincoln, 2005). In this sense, quantitatively oriented researchers can be placed within the (post) positivist paradigm, whereas qualitatively oriented researchers are more often situated within the constructivist paradigm¹² (Teddle & Tashakkori, 2009).

On the other hand, researchers who are oriented toward a mixed methods approach to a research problem find pragmatism appealing (Teddle & Tashakkori, 2009). Pragmatism is based on applying whatever will solve the problem (Patton, according to Creswell & Creswell, 2018). Researchers who use a mixed methods approach reject the notion that researchers should commit exclusively to a quantitative or qualitative approach (Teddle & Tashakkori, 2009). Instead, researchers are open to different viewpoints (paradigms) and choose research methods and data collection/analysis procedures that are appropriate for their needs, which means that they recognize the importance of both quantitative and qualitative data for a better understanding of the research subject (Creswell & Creswell, 2018). Teddle and Tashakkori (2009) argue that

¹² It is important to note that researchers’ epistemological orientations do not always have to be strictly within these oppositions. For example, qualitative researchers can also be postpositivist oriented (cf. Šutić et al., 2022), which is evident in the ways of reporting research and analytical procedures when presenting findings (Vučković Juroš, 2022).

this is an attempt to reconcile quantitatively and qualitatively methodologically oriented researchers with the aim of combining quantitative and qualitative research methods. Sekol and Maurović (2017) emphasize that researchers who start from combining quantitative and qualitative approaches can take different positions and proceed from the idea that within a single paradigm, it is not necessary to use methods that are common to it (the dominant paradigm approach), which is characteristic of sequential research designs; that paradigms are not actually incompatible but different (the equal paradigms approach), which is characteristic of parallel research designs; and that differences between paradigms can be overcome with the help of new paradigms, such as pragmatism. According to the authors, in pragmatism¹³, it is therefore about mixing quantitative and qualitative approaches in a way that is already included in both the dominant paradigm approach (with an emphasis on mixing methods) and the equal paradigms approach (with an emphasis on mixing methodologies). Hampson and McKinley (2023) emphasize that grounding mixed methods research in pragmatism leads to a new level of complexity. Specifically, the authors critically address several of its features (such as practicality, emphasis on research results, epistemological assumptions, disagreement with the “either-or” view of paradigms, importance of a research question, and its necessity for mixed methods research), which they do not consider sufficient (pre)conditions for pragmatism.

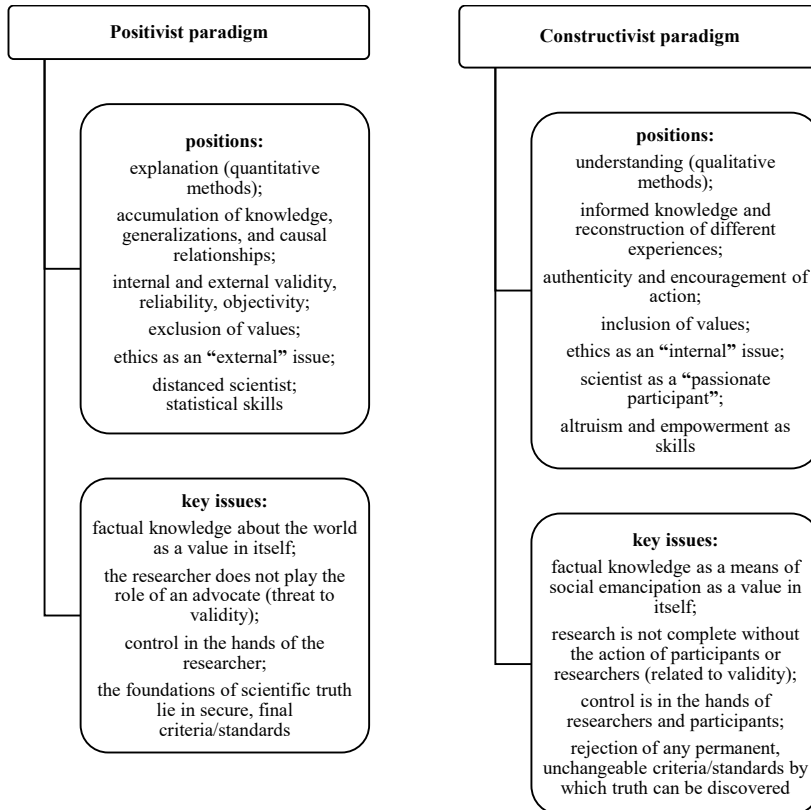
Criteria for assessing the research address questions about the truthfulness of research findings, applicability (in another context/with different participants), consistency (with the same or similar participants in the same/similar context), and biases (Lincoln & Guba, according to Seale, 1999). Positivist criteria for evaluating the research traditionally rely on (Seale, 1999, pp. 39–42):

- internal validity (the extent to which a study supports causal explanations in a specific context);
- external validity (the extent to which causal explanations are applicable in other contexts or whether they can be generalized);
- reliability (the extent to which different researchers interpret the findings in the same way, meaning that the nature of social reality should not pose a problem); and
- replicability (the extent to which different studies reach the same conclusions or how objective the conclusions are).

¹³ Ilić (2023), for example, uses a comparison to squeezing dry wood, given that he does not find “(...) epistemological foundations of a new, third, distinctive methodology” (Ilić, 2023, p. 33), meaning that he sees nothing specific or different from already existing research practices of combining quantitative and qualitative approaches. Furthermore, the author does not believe it is justified to speak of significant epistemological differences between the quantitative and qualitative approaches, and thus “(...) it makes no sense to advocate an inductive logical basis for the qualitative and a deductive logic for the quantitative approach” (Ilić, 2023, p. 42).

Figure 5

Positions and key issues of the positivist and constructivist paradigms



Although some authors (Taherdoost, 2016) point to the need to achieve (conventional) validity, reliability, and generalizability in qualitative research, it is emphasized that the concept of trustworthiness is more “suited” to qualitative research and questions of validity and reliability. Accordingly, the trustworthiness of qualitative research is achieved through the application of interpretivist criteria (Lincoln & Guba, according to Seale, 1999, pp. 44–45):

- credibility, which is achieved through prolonged field presence, observation, and triangulation, while it is crucial to present the material (transcripts or reports) to the research participants themselves;
- transferability, which is achieved through detailed, rich descriptions of the settings in which the research is conducted;
- dependability, which is achieved by thoroughly documenting the research and analytical procedures applied throughout the study; and

- confirmability, which is achieved through reflexivity and relates to the researcher's critical assessment in methodological accounts (i.e., the way the research was conducted).

In other words, quantitative research relies on internal and external validity and reliability, whereas qualitative research relies on the criteria of trustworthiness, that is, credibility and transferability (Teddlie & Tashakkori, 2009). One of the criteria additionally mentioned is authenticity (as a criterion closely linked to the constructivist paradigm, whereas the previously mentioned criteria are not necessarily so). Authenticity, therefore, refers to the involvement of research in representing a range of different realities, achieving an understanding of what is being studied for others, and encouraging some form of action and empowerment (Lincoln & Guba, according to Seale, 1999).

In discussions on the validity of research, it is necessary to also consider mixed methods research designs, as they face additional validity issues. On the one hand, what they have in common is the issue of the quality of inferences, which includes internal validity and credibility and relates to the evaluation of the quality of inferences drawn on the basis of quantitative and qualitative findings (Teddlie & Tashakkori, 2009). Similarly, Creswell and Creswell (2018) emphasized that in all mixed methods research designs, validity is based on both quantitative (e.g., constructs and measurements, quantitative data) and qualitative validity (e.g., triangulation, qualitative findings and data). On the other hand, they also highlight the specific aspects of assessing validity in mixed methods research. In concurrent designs, additional attention needs to be paid to sample size, which will not be the same and where it is sufficient to point out different perspectives on sampling; the use of different concepts or variables (it is recommended to use the same concepts/variables); and the lack of follow-up steps if conclusions differ (Creswell & Creswell, 2018, p. 302). In an explanatory sequential design, additional validity concerns relate to when researchers do not consider all options (from quantitative data) for follow-up (by focusing, for example, on participants' demographic characteristics, other explanations might be overlooked) and when a different sample is taken for each phase of the study (it is assumed that a more detailed explanation of quantitative results will be achieved by selecting participants for the qualitative phase from those who took part in the quantitative phase) (Creswell & Creswell, 2018, p. 305). In an exploratory sequential design, additional attention should be given to instrument development (i.e., when researchers have not utilized all the advantages and richness of qualitative findings) and to participant selection (when researchers select the same participants who took part in the qualitative phase) for participation in the quantitative data collection phase or for instrument testing (Creswell & Creswell, 2018, p. 307).

CONCLUSION

By choosing a specific research methodology, researchers refer to the formulated research objectives/research questions, sampling methods, collection and analysis of research data, interpretation of research results, conclusions, and evaluation criteria used to assess the research. Accordingly, quantitative, qualitative, and mixed methods approaches in research are defined as ways of thinking about the research design and research strategies for its implementation, which also assume certain paradigmatic positions. Quantitative research addresses an explanatory purpose and is basically used to examine relationships among variables from previous theories and research (deductive approach). Qualitative research addresses an exploratory purpose and is used for a deeper understanding of the meaning attributed to social reality, with an emphasis on theory building rather than testing it, as in quantitative research (inductive approach). In quantitative research, determining how a particular concept will be measured is established at the beginning of the study. In qualitative research, on the other hand, determining or uncovering aspects of a concept can be a key part of the research process. In mixed methods research, quantitative and qualitative approaches are combined within various research designs, such as parallel and sequential (explanatory and exploratory) designs. The parallel research design is conducted with the aim of comparing quantitative and qualitative research results. The explanatory research design aims for qualitative research results to provide a more detailed explanation of quantitative research results, and the exploratory research design aims to develop new measurements (and generalizations). A key part of mixed-methods research designs is the integration of quantitative and qualitative methods (and methodologies), whereby in parallel research designs, it occurs through their comparison in the analysis phase, whereas in sequential research designs, integration occurs in the phase in which the results of analyzing one type of data inform the collection of the other type of data.

Although quantitative, qualitative, and mixed method approaches should not be viewed as dichotomies, their (methodological) basis involves researchers' perspectives on the nature of social reality, knowledge, and the ways in which (valid) knowledge is obtained. In other words, researchers start from ontological, epistemological, and methodological questions that form the basic assumption of each paradigm. Therefore, conventionally, quantitative, qualitative, and mixed method approaches are associated with the (post)positivist and constructivist paradigms, as well as pragmatism, although in research, this does not necessarily have to be so one-sided. However, each paradigm responds differently to ontological, epistemological, and methodological questions and takes different positions in regard to research goals, knowledge and the foundations of truth, criteria, values, ethics, control, the role of the researcher,

and so on. The criteria for evaluating research, therefore, also “correspond” to the paradigmatic assumptions of quantitative, qualitative, and mixed method research. That is, although researchers rely on the questions of truthfulness, applicability, consistency, and biases when evaluating research, they do so in ways that are consistent with the research methodology. Therefore, the methodological literature discusses positivist and interpretivist criteria for assessing and evaluating quantitative and qualitative research. Additionally, in mixed methods research, some further validity issues are highlighted depending on whether a parallel, explanatory, or exploratory sequential research design is used in the study.

One of the limitations of this paper is that, at first glance, it may appear as a simplified “methodological reality” in social research. However, the intention was to provide a basic overview of quantitative, qualitative, and mixed method approaches to scientific research, as well as the methodological features and specifics of quantitative, qualitative, and mixed method research, while also attempting to clarify some terminological ambiguities found in the methodological literature. Therefore, we hope that this paper can serve as a reference point for students and young researchers who are just beginning to acquire their own scientific research experience in various scientific fields. We are confident that, on this basis, readers will themselves uncover (here) an unfinished story about research methodology and, perhaps, by reading other authors, critically reflect on the terminology used here or the classifications presented. We consider theoretical and methodological discussions to be extremely important, as was also proven during the writing of this paper. Therefore, the importance of reflecting on, for example, the possibilities of quantitative research for theory development (see Chen & Chen, 2024) or the justifiability of conventionally attributing the deductive approach exclusively to quantitative research and the inductive approach exclusively to qualitative research (in other words, on the development of methodological thinking and approaches to research) is justified. This will certainly contribute to a more systematic understanding of the relationship between quantitative and qualitative research in the social sciences, which goes beyond the propositions of this paper.

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