

The Role of Protocol Papers, Scoping Reviews, and Systematic Reviews in Responsible AI Research

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Abstract- Research protocol papers, scoping reviews, and systematic reviews are important tools for ensuring transparency, methodological rigor, accountability, and reproducibility in scholarly research. While widely adopted in disciplines such as medicine and social sciences, these practices remain underutilized in computer science and engineering, particularly within Responsible AI research. This paper explores the critical role that scoping and systematic reviews play in synthesizing knowledge, identifying gaps, and guiding future research in Responsible AI. It also examines how research protocol papers—especially those developed for structured reviews—can improve the credibility, clarity, and replicability of Responsible AI studies. By outlining the benefits and challenges of these methods, we argue for their greater adoption in AI ethics and Responsible AI research. We conclude with recommendations to support the institutional, editorial, and cultural shifts necessary to integrate these rigorous methodological tools into Responsible AI scholarship.

Index Terms— Responsible AI, Protocol Papers, Scoping Reviews, Systematic Reviews

I. INTRODUCTION

In response to the proliferation of AI systems development and deployment, the Responsible AI field has emerged to address growing ethical concerns regarding bias, transparency, accountability, and fairness. Examining, understanding, and addressing these broad concerns requires rigorous research methods and practices that can be fostered through the use of structured research protocols, scoping reviews, and systematic reviews. While often used in medical research [1], evidence synthesis remains uncommon in computer science, including the Responsible AI field. This paper describes research protocols, scoping and systematic reviews, why they are important, and how they can be beneficial for the field of Responsible AI. We also explore the barriers to their adoption and propose strategies for increasing their use.

II. PROTOCOL PAPERS, SCOPING REVIEWS, AND SYSTEMATIC REVIEWS

A research protocol paper is a document that describes the rationale, objectives, and methodological approach of a study before its execution. Research protocol papers are commonly used in relation to structured evidence synthesis, such as systematic reviews and scoping reviews. Protocols have a clearly identified purpose from a methodological perspective: each step the team will take to produce the review is clearly described. This includes identifying the background, rationale, objectives, and research questions, and describing the methods [2; 3; 4; 5]. Review methods outlined in a protocol include the structured search strategy, how studies will be selected (inclusion and exclusion criteria), and the data management plan including data collection, charting or data extraction, and

synthesis plans [2]. Because they describe the process that will be undertaken, one of the conventions of protocols is that they are written in future tense [2].

In fields such as health and social sciences, protocol papers are considered essential for scoping and systematic reviews, clinical trials, and other rigorous research designs [6]. In a recent meta-review of systematic reviews in engineering [7], findings suggest that systematic reviews are growing in popularity in engineering but the ways researchers report on study design and methods needs attention. Of the 3,066 systematic reviews in their sample, 99% did not register a review protocol [7].

A good comparable in the computer science space is model cards for machine learning models. Releasing model cards alongside machine learning models has been encouraged to document model performance characteristics, providing benchmarked evaluations across different conditions, such as demographics or cultural contexts [8]. Similar to the goal of model cards to transparently present model architecture and performance evaluation procedures in the AI field, a protocol increases transparency, provides an opportunity for peer feedback, enhances reproducibility, and mitigates research duplication [5]. For this reason it is recommended that research teams publish a protocol at the start of the review process [5]. In this way, protocols operate as an important communication and accountability tool. By outlining the scope and focus of a review, protocol papers offer transparency that allows the broader research community to see what work is being proposed and understand a study's objectives and expected outcomes. Protocols thus reinforce accountability by ensuring that researchers adhere to their study design and require any deviations to be documented and justified [3]. When published early enough, protocol papers also enable the opportunity for community feedback on a study's design and flag any concerns at the start of the process to allow for better quality reviews. They also enhance reproducibility by presenting a study blueprint that other researchers can follow. Platforms such as Open-Science- Framework (OSF) [9] and PROSPERO [10] that promote the publication of protocols facilitate this reproducibility, and also operate as a communication tool that lets the broader research community know what work is being done, overall leading to the prevention of research duplication [11]. Additionally, publishing a protocol in advance allows the final results paper to focus more fully on findings, analysis, and discussion, since the methodological details are already publicly available.

Scoping reviews (or scoping studies) are a methodological approach used to map the key concepts, theories, and sources of evidence on a given topic [12; 13]. Unlike systematic reviews, which focus on assessing the quality of evidence and synthesizing study findings, scoping reviews aim to identify trends, research gaps, and the extent of available literature on

a topic. Scoping reviews are particularly useful in emerging fields, such as Responsible AI, where diverse perspectives and methodologies exist. They could help researchers understand how the field incorporates ethical principles into AI development, and identify where further research is needed. For example, a scoping review in the Responsible AI field may examine the landscape of AI ethics education, identifying teaching strategies and curriculum content to identify patterns and gaps in the literature.

Like scoping reviews, systematic reviews are a rigorous method of synthesizing research evidence on a particular question, following strict inclusion and exclusion criteria [14]. The inspiration point for systematic reviews was a reflection that disciplines were not collecting and summarizing all available information of topic-specific randomised controlled trials [15]. Systematic reviews aim to provide high-quality evidence for decision-making by critically evaluating and summarizing the results of multiple studies. Systematic reviews differ from scoping reviews in that they emphasize assessing the quality and reliability of included studies. For example, a systematic review in the Responsible AI field may identify common AI ethics instructional methods in the relevant published literature, assessing the efficacy of pedagogical methods in achieving their desired learning outcomes.

III. ENCOURAGING THE USE OF PROTOCOL PAPERS, SCOPING REVIEWS, AND SYSTEMATIC REVIEWS IN RESPONSIBLE AI RESEARCH

It is apparent that protocol papers for scoping reviews and systematic reviews are not common in the computer science space. We searched for the terms "systematic review protocol" and "systematic literature review protocol" in IEEE Xplore. After removing duplicates there were 100 results. From this group 16 were systematic review protocols outlining standard content including objectives, study design, data collection, and data analysis strategies. Of the remaining publications, 70/84 mentioned the term review protocol or systematic review protocol within the text. It was clear from the statements in these publications that many authors did not publish a separate protocol for their review, but included the relevant information alongside the results of the review. In one example of this, Fariha et al. describe their process as follows, "We have structured our paper in the following sections, the background II section briefly discusses the research topics of this study. In Research methodology (Section III), we discuss the protocol followed for this review, research questions, literature search process, and inclusion-exclusion criteria." [16] In a similar example, Huang and Symonds state, "In the next section we provide details of a systematic literature review where we analyze some trends for the research area; also we provide an overview of the systematic literature review protocol used." [17]. Describing the study design and methods as a "protocol" and presenting this alongside the results of the review seems to be common practice in this space.

Many authors reference the "Guidelines for Performing Systematic Literature Reviews in Software Engineering" (SLR Guidelines) by Kitchenham and Charters [18] when talking about protocols for reviews. For example, Amjad et al. present the review protocol within their results paper "as per the

guidelines of SLR standard" [19] and cite SLR Guidelines [18] as the source of this standard. We thought that perhaps the SLR Guidelines [18] had recommended the practice of presenting review protocols in the final review paper, though upon reviewing it was clearly emphasized that a protocol should be a separate document published at the start of the review and ideally should be peer-reviewed. It is not clear why the field of computer science and engineering has established this norm, but it does seem to contradict some of the key purposes of a protocol that we have highlighted in this paper. Given the interdisciplinary and emerging nature of Responsible AI research, these purposes are even more important. Protocol papers can improve methodological clarity, aid in facilitating communication and collaboration between technical and non-technical researchers, and enhance the reliability of Responsible AI studies.

Despite their benefits, protocol papers for systematic and scoping reviews face several barriers in Responsible AI research. It appears that many Responsible AI researchers are unfamiliar with recommended practices for publishing protocol papers, leading to a general lack of awareness of their advantages. Another challenge is limited publication venues; unlike in medicine, there appears to be less enthusiasm in AI journals to encourage or publish protocol papers. Additionally, interdisciplinary resistance poses a challenge, as researchers from different disciplines may have varied expectations regarding research planning and documentation.

To increase the adoption of research protocol papers in Responsible AI, several steps should be taken. Journals and conferences focused on Responsible AI should introduce dedicated sections for research protocols. Institutional recognition is also essential, as funding agencies and research institutions should acknowledge protocol papers as valuable to their respective research communities. Training for Responsible AI publication reviewers and editors could help them become more familiar with the purpose and value of protocol papers. Many disciplines have already developed specialized groups to discuss and improve review practices, such as the Campbell Collaboration, Cochrane, and JBI [20]. The AI research community could benefit from establishing a similar group focused on developing best practices for protocol evaluation. The EQUATOR Network [21], which focuses on research transparency, offers a useful model for such efforts.

Another challenge is finding the right journal to publish protocol papers in Responsible AI. Existing venues that regularly publish protocols, such as JMIR Research Protocols, are often topic-specific, such as to medicine, and may not align with Responsible AI research needs. Researchers require clearer mechanisms for publishing research protocols specific to Responsible AI. While platforms like arXiv and OSF provide options for publicly sharing protocols, they do not facilitate the kind of peer review and critical feedback that protocol papers benefit from. Submitting research protocols to established peer-reviewed journals allows researchers to gain valuable feedback that can strengthen study design and improve the overall quality of results.

Somewhat paradoxically, the use of AI to automate aspects of the review process is an active area of research. Scholars

are using AI-driven tools to assist with systematic reviews, which suggests that AI researchers already recognize the value of structured methodologies in research synthesis [22, 23]. Encouraging the integration of research protocols into Responsible AI research can build on this momentum, motivating the field to embrace rigorous, transparent, and reproducible research practices. By implementing these strategies, the AI research community can move toward greater acceptance and integration of research protocol papers, ultimately strengthening the credibility of Responsible AI research.

IV. CONCLUSION

As Responsible AI continues to grow as a research domain, it faces complex methodological and ethical challenges that require more than disciplinary expertise—they demand structured, transparent, and reproducible approaches to knowledge production. Research protocol papers offer precisely this foundation, improving methodological rigor, fostering interdisciplinary collaboration, and reducing redundancy in an already fragmented field. Despite their clear benefits, they remain underutilized in Responsible AI, in part due to limited awareness, publication venues, and disciplinary norms. Addressing these barriers will require institutional support, changes to editorial practices, and the development of spaces for transdisciplinary dialogue and training. By integrating these methods more fully into the Responsible AI research ecosystem, the field can move toward a more credible, coordinated, and cumulative research culture—one that is better equipped to meet the ethical demands of contemporary AI development.

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