



From Meta-Analysis Editors

Dear Readers,

Research synthesis has an important role in scientific enterprise. Having some unique qualities like making contribution to the cumulative nature of science, providing policy makers with guidance and being able to explain inconsistent data that seem to be inconsistent in the literature makes research syntheses indispensable for us. Thus, we believe that it is of utmost importance to bring together the educational studies in which meta-analysis, one of the most effective research synthesis methods, is conducted so that Turkish educational policy could be constructed based on scientific evidence, future research in education could be directed, and educational practices could benefit from the results of the scientific studies.

In this respect, as the editors of this special issue, we have been pleased by the fact that we have received 25 meta-analysis studies for the special issue because this number suggests that the number of meta-analysis studies have been increasing and the special issue could be more comprehensive. However, it was unexpected and discouraging that only 2 meta-analysis studies were left to be published after the review by the editors and referees. We would like to summarize the review process before discussing the reasons for this.

As the editors, we started the process studying a very detailed scale to provide more objective and meaningful feedback for the manuscripts. After studying the standards that have been developed for this purpose in literature, we decided to revise "Meta-analysis Reporting Standards" (MARS) to fit it with our purpose. We selected this scale because it is suggested by APA and we believe it is the most appropriate one for educational meta-analysis studies. Next, we chose the referees from those who were directly related with meta-analysis and/or who had previously conducted meta-analysis in the field of education so that they would provide better methodological feedback. The review process started with the review of all manuscripts by the editors.

We -the editors- basically took three criteria into consideration while reviewing the manuscripts: (i) some or all of the primary studies included in the meta-analysis should be conducted in Turkey, as indicated clearly in the special issue announcement; (ii) the previous meta-analysis studies (if available) should be taken into consideration while explaining the significance of the meta-analysis; (iii) there should be no need to go back to the primary studies, to re-organize the data and to repeat all analyses during editing procedure. As the editors, we reviewed all manuscripts individually based on these three criteria. At this stage, the manuscripts that we both decided not to meet at least one of the criteria were rejected with the co-decision of the editors. On the other hand, the review process was started for the six manuscripts that met all three criteria indicated above.

Those manuscripts that were included into the referee process were sent to three different referees to be reviewed. The referees followed the revised version of the MARS scale and they provided feedback based on this scale not only for the manuscripts which were accepted to be published but also for the ones which were decided "not to be published" based on this scale. For all the manuscripts which were rejected at this stage, there was a consensus of decisions among all three referees. Then, the editing process began for three articles which were considered as acceptable by at least two of the referees. Two of these studies were revised to be published in the light of the feedback provided by the referees in three steps.

We started this letter highlighting the significance of research synthesis like meta-analysis. However, it is important that in order for the meta-analyses to function as we indicated, they should be free of problems. In this sense, we would like to make some suggestions based on the problems we encountered during the review process.

First of all, although it is possible to conduct meta-analysis with a few number of primary studies, in terms of validity of the results it is essential to collect as many primary studies as possible within the scope of the research question. The samples that have been selected without a specific argument like only the ones available via electronic databases or only graduate theses or only journal articles cannot represent the related population of primary studies; therefore, the results of a meta-analysis study conducted only with these types of primary studies cannot be expected to be valid. Accessing all the primary studies in literature is only possible with a systematic and comprehensive literature search. Although electronic databases have made this process considerably easier than before, it still requires being patient and systematic.

Moreover, it is indispensable that in meta-analysis, similar to any other research methods, the researcher needs to understand which analysis is performed for what reason in order to reach reliable and valid results. For example, the choice between fixed-effect and random-effect models in meta-analysis directly affects the fundamental assumptions of the study and how to interpret the results. It is important that such decisions are made in an informed way and the results are interpreted accordingly.

In addition, when there is no elimination or grouping of primary studies to make the effect size values revealed from these studies comparable, the results of the meta-analysis are affected negatively. Mixing the studies with control group with the ones that do not have control groups, or treating studies with different control groups as if they were the same makes estimated overall effect size values meaningless.

Another issue to be careful about is moderator analysis. In education, the distribution of the effect sizes revealed from primary studies is heterogeneous to a certain degree. It is essential to remember that two fundamental aims of meta-analysis are estimating the average effect size values using this distribution and explaining the heterogeneity in the distribution with moderator analysis. Thus, it is highly important to determine the moderator variables which, should be based on the literature, have the potential of explaining inconsistency in the data rather than choosing the easiest ones to code or the first ones that come to mind.

Furthermore, we would like to emphasize that publication bias is a main threat to the validity of the results obtained by meta-analyses. There are several methods to detect and/or control the impact of publication bias. Funnel plot, Rosenthal and Orwin's fail-safe number, Duval and Tweedie's trim-and-fill method are just some of these. Controlling this issue by using these methods is an important and indispensable part of meta-analysis.

Additionally, when interpreting the overall effect size values estimated by the meta-analysis, paying attention to only statistical significance but not practical significance means excluding the contribution of effect size to the statistical interpretation. Lastly, we should not consider meta-analyses to be statistical results only; and, instead, as we discussed in the first paragraph, we should attach enough importance to interpreting the results according to the fact that these studies are performed to construct educational policies, to direct the educational studies to be conducted in future, and to make educational practices benefit from the results of scientific studies.

We think that all these problems we have encountered are a natural part of the growth of meta-analysis in Turkey and whole-heartedly believe that meta-analysis studies, the number of which has been increasing recently, are going to provide all stakeholders in education with very significant results when necessary improvements are made to ensure a certain level of quality. In this regard, although there are only two meta-analysis studies in the special issue, we think it will contribute to the recognition of this particular aim. Finally, we would like to extend our thanks to the members of the Journal of Education and Science, referees and authors who helped this special issue come to life, and especially to the Turkish Education Association and editors of the Journal of Education and Science.

Yours faithfully,

Assistant Professor Dr. Ulaş Üstün

Associate Professor Dr. Ali Eryılmaz