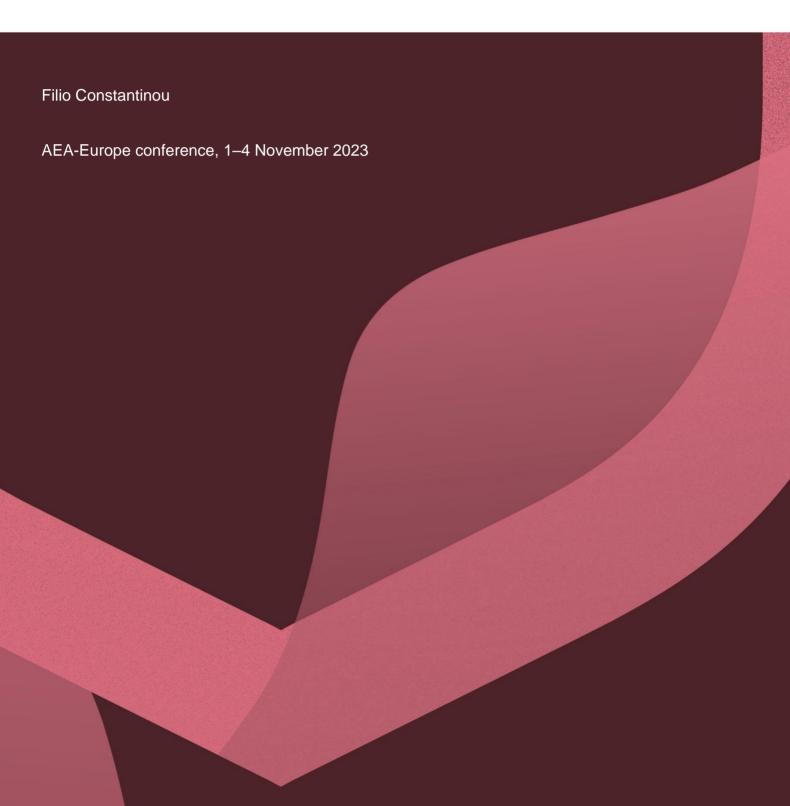# CAMBRIDGE
UNIVERSITY PRESS & ASSESSMENT

Can examination papers always be error-free? An exploratory investigation into the conditions that can give rise to errors in assessment instruments.

Conference abstract

Filio Constantinou

Author contact details:

Filio Constantinou
Assessment Research and Development,
Research Division
Shaftesbury Road
Cambridge
CB2 8EA
UK

filio.constantinou@cambridge.org
https://www.cambridge.org/

As a department of the university, Cambridge University Press & Assessment is respected and trusted worldwide, managing three world-class examination boards, and maintaining the highest standards in educational assessment and learning. We are a not-for-profit organisation.

Cambridge University Press & Assessment is committed to making our documents accessible in accordance with the WCAG 2.1 Standard. We're always looking to improve the accessibility of our documents. If you find any problems or you think we're not meeting accessibility requirements, contact our team: Research Division
If you need this document in a different format contact us telling us your name, email address and requirements and we will respond within 15 working days.

How to cite this publication:

Constantinou, F. (2023, November 1–4). *Can examination papers always be error-free? An exploratory investigation into the conditions that can give rise to errors in assessment instruments*. [Paper presentation]. Annual conference of the Association for Educational Assessment – Europe (AEA-Europe), Malta. https://2023.aea-europe.net/

Abstract

Reforms typically take place in response to an existing problem and their success is largely dependent on the extent to which the problem itself has been sufficiently understood. In the area of high-stakes assessment, one problem necessitating attention is the occurrence of errors in examination papers. Examples of such errors include: questions failing to provide students with sufficient information and therefore proving unanswerable; factually inaccurate questions; multiple-choice questions containing more than one correct answer; and questions worded in an ambiguous way.

If not detected and corrected prior to the examination, such errors can introduce unfairness into the assessment process by preventing students from performing to the best of their abilities. While their negative effect can often be mitigated through post-examination interventions (e.g., discarding erroneous questions), it can probably never be fully eliminated due to the impact that such errors may have on students' performance in the rest of the paper (e.g., errors may undermine students' confidence or create time management challenges for them). In addition, errors can erode public trust in the examination system. Therefore, it is important that no errors reach candidates.

To ensure that their assessments are free from errors, examination providers in England perform a series of rigorous checks at various stages of the assessment development process. While these checks have been successful at considerably reducing the number of errors, they have not been able to fully eliminate them. Errors continue to occur occasionally, suggesting that the current assessment development process may need to be revisited and further improved. However, prior to attempting any changes or reforms to the current process(es), the conditions that can give rise to errors need to be sufficiently investigated and understood. Otherwise, there is a risk that the changes or reforms may prove ineffective.

To this end, this study sought to develop a better understanding of the factors that can lead to errors in examination papers. To achieve this, it drew upon the knowledge and experience of 36 assessment professionals involved in the construction process of various high-stakes examination papers (e.g., GCSEs, A levels, IGCSEs, International A levels) in a wide range of different subjects. The data were collected via in-depth, semi-structured interviews.

Given the exploratory nature of the research and the scarcity of empirical error studies in the field of assessment, the interview analysis was carried out mainly in a data-driven manner. However, it was conceptually guided by the theoretical directions provided by the error research conducted in other fields (for a review, see Suto & Ireland, 2021), notably the idea that errors result from human failure and that human failure stems, more often than not, from the interaction between people and context (e.g., equipment, procedures, environment) (see e.g., Reason, 2000). Therefore, the data analysis focused on understanding the context of paper construction (henceforth 'paper construction process') and people's involvement in, and interaction with, it. More specifically, the analysis was conducted in three stages:

- Stage 1: The interview data were analysed thematically in a bottom-up manner to construct the profile of the paper construction process. The main aim of this stage was to illuminate the nature of the paper construction process and understand its demands and complexities.

- Stage 2: The profile of the paper construction process, as developed in Stage 1, was used to identify, or deduce, key qualities that assessment professionals would need to have for the paper construction process to be carried out successfully ('required human qualities'). These would then facilitate the process of evaluating the human qualities which, according to the interviewees, were observed in the workplace ('manifested human qualities').

- Stage 3: The required human qualities, as identified in Stage 2, were compared with the manifested ones, to illuminate the different ways in which the people and their interaction with the paper construction process posed a risk to the quality of examination papers.

Overall, the analysis exposed the complex and often unexpected ways in which the characteristics of the paper construction process and the characteristics of the people who participate in it interact with one another, creating opportunities for error. This talk will present a number of 'active' and 'latent' human failures which can lead to errors in examination papers. In addition, it will argue that, to minimise the risk of error in examination papers, efforts to 'adapt' people to the demands of the paper construction process should be carefully combined with efforts to adapt the paper construction process to people requirements. The talk will conclude with some reflections on whether it would be possible for examination papers to always be error-free.

References

Reason J. (2000). Human error: models and management. *BMJ*, *320*(7237), 768-70.

Suto, I. & Ireland, J. (2021). Principles for minimising errors in examination papers and other educational assessment instruments. *International Journal of Assessment Tools in Education*, *8*(2), 310-325.