

Letter to Editor

Advancing Psychometric Rigor: The Imperative to Move Beyond Cronbach's α in Psychological AssessmentHamid Sharif Nia^{1,2*} , Yasamin Yousefnejad² 

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Dear Editor

The reliability of measurement instruments underpins empirical research in psychology and psychiatry. As McNeish highlighted [1], our field's persistent overreliance on Cronbach's α as the default reliability metric persists despite the availability of superior alternatives. This letter presents a comprehensive argument for adopting more sophisticated reliability coefficients, particularly McDonald's Omega (ω), to strengthen psychosomatic and mental health research.

The limitations of Cronbach's α are well-documented yet frequently overlooked in practice. As Sijtsma [2] demonstrated, alpha makes several stringent assumptions that are routinely violated. It requires all items to contribute equally to the measured construct (tau-equivalence), assumes unidimensionality, and presumes uncorrelated errors. These requirements are rarely met in psychological research, where constructs are often multidimensional, and items typically vary in their relationship to the latent variable [3]. When these assumptions are violated, as they nearly always are, alpha produces systematically biased reliability estimates that can mislead researchers about their measures' actual quality [4].

McDonald's Omega (ω) offers a scientifically superior alternative. Unlike alpha, ω properly accounts for the true factor structure of measures by grounding itself in factor analysis [5]. This approach provides three key advantages: it yields accurate estimates with varying factor loadings, handles multidimensional scales through hierarchical ω calculations, and maintains accuracy when common assumptions are violated [6]. The superiority of ω becomes evident when examining clinical measures; depression inventories that appear adequate by alpha standards often show substantially lower but more accurate reliability estimates with ω [7].

The consequences of inadequate reliability assessment permeate all stages of research. Inflated reliability estimates compromise study power and distort effect sizes [8], while in clinical settings they may foster excessive confidence in diagnostic instruments [9]. These issues are particularly concerning given the typically modest effect sizes in psychotherapy research [10].

Modern psychometrics offers sophisticated solutions beyond the alpha- ω dichotomy. The Greatest Lower Bound provides accurate maximum reliability estimates [2], while multilevel analyses properly account for nested data structures [11]. Longitudinal designs benefit from specialized metrics distinguishing state and trait components [12]. These approaches collectively enable a more nuanced understanding of measurement properties.

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Fortunately, the technical barrier to adopting ω is now lower than ever. User-friendly statistical software packages, such as JASP (open source) and SPSS software, version 27 and later, include built-in options for calculating McDonald's Omega, making this robust metric accessible to researchers without advanced programming skills. This accessibility facilitates a smooth transition from reliance on Cronbach's α to the use of more accurate reliability estimates.

Implementation requires multi-level effort. Journals should mandate ω reporting alongside traditional metrics [1], while training programs must emphasize modern psychometrics. Software barriers have disappeared - open-source packages, such as lavaan [13], make these analyses accessible to all researchers.

This transition represents our field's maturation. As psychosomatic research explores complex mind-body interactions, we need measurement tools that match this complexity. Adopting ω and other modern metrics offers a crucial step toward methodological rigor. I urge the journal to lead this advancement by encouraging improved practices and providing guidance to authors. Our collective commitment to measurement quality will yield more reliable, reproducible, and impactful results.

Use of artificial intelligence (AI) Tools

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Ethical Considerations

Compliance with ethical guidelines

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Authors' contributions

Conceptualization and writing the original draft: Hamid Sharif-Nia; Investigation, review & editing: Yasamin Yousefnejad.

Conflict of interest

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