The distinction between psychometric and clinimetric approaches will not move the field forward

A comment on Carrozzino et al. (2021)

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We read the article “Clinimetric Criteria for Patient-Reported Outcome Measures” (Carrozzino et al., 2021) with great interest. Highlighting certain test characteristics for patient-reported outcome measures (PROMs) that seem to be neglected in the psychometric literature is a commendable endeavor. We share the authors' intention of supporting clinical practice by providing the most useful and well-validated PROMs possible. However, in our view, the article contains several inconsistencies that may limit its usefulness for moving the field forward.

First, abandoning the assumption of unidimensionality for the development of PROMs while recommending item response theory (IRT) models such as Rasch and Mokken analyses seems confusing. We agree that the requirement of unidimensionality may be too strict for some scales, but the recommended methods seem unsuitable to solve this problem because they usually presuppose the unidimensionality of the construct being tested (McAleavey et al., 2021). One reason for this confusion could be that the authors seem to misunderstand the concept of local independence, leading them to conclude that “items are not assumed to be intercorrelated”. Fortunately, there is a wide range of psychometric models that can flexibly deal with constructs that are not strictly unidimensional, including multidimensional or bifactor models (Reise et al., 2013). In addition, formative measurement models may be a way to model constructs with uncorrelated indicators (Bollen & Diamantopoulos, 2017). In any case, IRT models and factor analyses (FA) can be

considered special cases of a more general psychometric model (Mellenbergh, 1994), so rejecting FA in favor of IRT seems misleading. Note that IRT methods are already successfully used in the development of PROM scales (like the PROMIS item banks (Riley et al., 2011)) and thus cannot serve as a distinguishing feature of a “clinimetric” approach to PROM development.

Second, expanding the criterion of “sensitivity” and adding the criterion of “clinical validity” may be associated with undesirable costs. In both cases, the aim is to determine correlations of test scores with dichotomous variables of group membership. However, few psychopathological phenomena are best represented as categories (Haslam et al., 2020) and dichotomizing continuous variables is detrimental to clinical research and practice (e.g., loss of information, reduced statistical power; Markon et al., 2011). Loss of information can lead to misdiagnosis and thus to improper treatment and should therefore not be accepted too pragmatically. Instead, guidelines for evaluating PROMs should take into account the current state of knowledge on the (predominantly) dimensional structure of psychopathology (Conway et al., 2021; Haslam et al., 2020; Kotov et al., 2017). We acknowledge that “clinical validity” may also refer to the correlation with another continuous variable, but in this case, it remains unclear how this concept differs from established concepts of validity.

Third, some clinimetric criteria presented in the article are mere synonyms for existing psychometric concepts. For example, the

authors refer to “transferability” as the ability of a scale to measure “the same clinical dimension across different groups of patients”, which is a definition borrowed by Cattell (1964). In psychometrics, this is referred to as “measurement invariance”, which can be tested with flexible frameworks based on either IRT or FA (Olino, 2020). The convergence of both concepts was also recognized by pioneers of clinical psychometrics. For example, Bjorner and Bech (2016) conclude that both IRT and FA methods can provide comparable results and share a common set of assumptions.

Fourth, although we agree that clinical utility should be a key criterion for evaluating PROM scales, the long tradition of research on the clinical utility of PROM systems (Lambert et al., 2018) should not be ignored. Research in PROM systems always has been a cooperative effort between experienced clinicians and researchers. Thus, systematic studies on the clinicians’ perspectives are part of PROM research as well (de Jong, 2016). Several implementations of PROM have been developed specifically for routine clinical use. They include feedback for patients and

clinicians, and allow prediction of many clinically relevant phenomena, including but not limited to treatment outcomes (Lutz et al., 2019).

To conclude, emphasizing clinimetrics at the expense of psychometrics does not seem very promising to us. We invite the authors to a broader reception of the psychometric literature, which will certainly advance the measurement of clinical phenomena.

Author Contributions

Tim Kaiser (TK), Philipp Herzog (PH), Wolfgang Lutz (WL), Winfried Rief (WR), Eva-Lotta Brakemeier (ELB), and Johannes Zimmermann (JZ) all contributed substantially to the conception of this article and subsequent revisions. TK wrote the first draft and led subsequent revisions. PH, WL, WR, and ELB critically revised the revisions and provided important scientific contributions. JZ made important contributions to the argumentative structure and clarity of content of the paper.

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