Epistemological Challenges for Operationalism in Player Experience Research

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ABSTRACT

In this abstract we argue that employing an operationalist epistemology can limit the potential of player experience research. This argument is drawn from modern psychometrics where a movement questioning fundamental assumptions of classical test theory has been gaining increasing attention and has been supplying increasing amounts of evidence in recent years. We argue that these criticisms should be observed and that this could have important questions to player experience research in terms of theory and methods.

In line with the psychometrics research, we propose the use of a realist latent variable epistemology that we believe provides a stronger vantage point for the quantitative investigation of player experience and allows for more powerful methods of analysis. The concern that we put forward in this paper takes its outset in recent psychometric work of Borsboom et al. [1, 2]. Their position is that the part of psychological research that employs classical test theory suffers from a number of problems. The problems span across the epistemological, theoretical and methodological levels, but are interconnected and are ultimately related to the question of validity in empirical studies. They label the combined classical test theory approach 'operationalism'.

The fundamental problem of operationalism, according to Borsboom et al., stems from its notion of true and error scores. The idea is borrowed from the theory of errors which is used e.g. in astronomy and, crucially, assumes that the true score is constant across measurements and that the error score is only introduced by the limitations of psychological instruments of measurement, typically tests or questionnaires, or random aspects of the measurement situation. In classical test theory, the true score is approximated by assuming that the error score is random. Then one proceeds by using various techniques to measure the same phenomenon multiple times in different ways across individuals, while assuming that these measurements are perfectly parallel and governed by the same conditions. Given this procedure, the true score emerges as the average value across the multiple measurements; however, the assumptions underlying this approach are problematic, since human beings and measurement conditions will change in myriad ways between trials. This means that repeated measures cannot be considered perfectly parallel and from a strictly epistemological view, classical test theory cannot concern itself with repeated measures since they do not conform to the assumptions of the theory [1]. Classical test theory's solution to this problem is, however, to assume this parallelism anyway. The end result of this assumption is that the measurable true score itself becomes an assumption, rendering the method tautologous, but this is seldom recognized in the application of classical test theory. If accepted, this critique of operationalism poses major questions to most user experience assessment tools such as the Game Experience Questionnaire [3] that uses the same approach across games and across subjects, not taking the measurement situation into account.

Recent research on ranking-based questionnaire schemes and non-linear predictive statistics [4, 5] (among many) indicates that approaches alternative to the operationalist one in player experience research can provide models that have a strong grounding in reality and better predictive capacity than e.g. measurements based on rating-based questionnaire methodology and linear frequentist statistics. We argue that these strains of epistemology and methodology can lead to new unexplored areas of player experience research and yield more accurate predictors of player experience.

1. REFERENCES

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