

Choice-Based Psychometrics: Expanding Measurement of Latent Constructs beyond Response-Based Scales

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Abstract:

Psychometric measurement has traditionally taken the form of an investigator obtaining estimates of latent constructs by having respondents answer questionnaire items. Response-based measures (RBMs) have emerged across the social sciences as the principal mode of questionnaire-based latent construct measurement of attitudes, perceptions, beliefs, intentions, and numerous phenomena across organizational research. Although this paradigm has fostered tremendous progress in quantitative behavioral and management research, it rests on the assumption that latent constructs can be represented through respondents' ratings of an object or construct definition presented in a statement format. However, this assumption breaks down for constructs that conceptually emerge out of making choices between competing alternatives—such as employer attractiveness, leadership preferences, strategic priorities, employee value propositions, public policy preferences, and organizational design. This paper proposes an alternative measurement paradigm, Choice-Based Psychometrics (CBP), which relies on estimating latent constructs based on respondents' repeated choice behavior rather than their repeated self-reports on statements. Drawing upon psychometric theory, random utility theory, and conjoint analysis, this paper argues that experimentally designed choice tasks can be utilized as psychometric indicators, and an individual-level estimate of utility toward one of the choice alternatives can serve as a measure of a choice-based construct. The paper develops a framework that helps distinguish response-based and choice-based measurement and provides guidance on which type of measure best fits a construct based on its ontological nature.

Keywords: Psychometrics, Measurement Construct, Choice Based Measurement, Conjoint Analysis

1. Introduction

Psychometric instruments have traditionally focused on the measurement of latent psychological constructs such as intelligence, personality, or customer satisfaction. A respondent's replies to an assessment are treated as indicators of latent constructs, which are quantified using statistical models that explain covariance among observable outcomes ([1]; [2]; [4]). Response-based metrics have influenced construct definition, item development, reliability, construct validity evaluation, factor analysis, and structural equation modeling ([5]; [6]). As psychometric scales have proliferated and been standardized, agreement questions have become a default approach for many constructs. Measures of attitudes, beliefs, emotions, perception, customer satisfaction, trust, and commitment can be appropriately measured this way. Measurement problems arise when the construct is preference- rather than evaluation-based.

Unlike attitudes and beliefs, preferences are fundamentally relational and often depend on comparisons among alternatives.

When purchasing a car, for example, what is important is not simply the value of price or speed but the comparison of these attributes across alternatives. If a person endorses statements that they value speed and affordability, the responses tell the researcher little about what the person will do when the trade-off between speed and affordability must be made. It is these trade-offs that determine preference. Responses to evaluation-focused items do not reflect utility as well as choices do. An individual can agree that a car is cheap and fast but assign more utility to speed than price in real-time decision making. The implication for measurement validity is important: validity of an instrument does not guarantee that the variable captured is the one the researcher intended to measure ([3]; [11]).

Economists and decision researchers have taken choice itself to be evidence for latent preference constructs ([10]). Choice behavior provides evidence regarding stated or latent preferences, and estimation requires modeling choice probabilities in relation to attributes of competing alternatives. Conjoint analysis is a classic example: respondents are presented with alternatives characterized by multiple attributes and asked to make repeated choices among them ([7]; [8,9]). Their choices represent a series of trade-offs between different attribute levels for alternatives, thereby revealing their preference structure. The importance of each attribute is inferred rather than stated; respondent trade-offs generate attribute-importance utilities. The key difference between response-based and choice-based measurement is the behavior upon which inferences are made.

This discussion suggests an important missing aspect of modern measurement theory. Psychometric theory has tended to optimize response-based measurement, while choice research has focused on the estimation of preferences. Far less attention has been given to whether repeated choice should itself be considered a set of psychometric indicators for a particular type of latent construct. CBP addresses this gap by introducing choice tasks as indicators for preference-based latent constructs.

2. Choice-Based Psychometrics: A Complementary Measurement Paradigm

The limitations of current approaches should not be interpreted as criticism that response-based methods are poor ways of measuring response-based latent variables. They suggest that the core assumptions about these variables may not always hold. Latent variables differ not only in their conceptual definitions but also in their ways of being measured: some are expressed through evaluation, others through behavior, and still others through choices among competing alternatives. The way these latent variables are observed should therefore help determine the measurement method.

The central assumption of CBP is that preference structure represents a latent construct observable through decision behavior rather than direct response. As an unobservable, preference must be estimated indirectly through observable data, just as latent traits are estimated through responses to items. In both paradigms, the researcher observes indicators and estimates an unobservable construct.

In response-based measurement, specific items in a questionnaire act as indicators of a latent construct. In choice-based measurement, an individual decision task acts as an indicator of the construct. A single decision provides limited information, but a series of thoughtfully constructed choice tasks can systematically uncover an individual's underlying preferences, from which an estimate of latent utility can be generated.

Within CBP, conjoint analysis can therefore be conceptualized as a method for measuring latent preference constructs, analogous to a questionnaire for attitude measurement. Estimates of utility can take the form of respondent-level scores that serve as operationalizations of constructs, conceptually akin to factor scores and latent variable estimates. Thus, the interpretation of “item” must change. Researchers adopting a CBP approach must develop realistic and theoretically appropriate decision tasks that tap into the latent construct of preference. Choice of attributes, attribute

levels, balance, orthogonality, and realism are crucial factors that must be carefully calibrated to ensure that choice tasks are appropriate indicators of preference structure ([9]; [12]).

The standard notions of validity still apply, but the evidence for them differs. Content validity involves whether the selected attributes comprehensively represent the construct; construct validity can be assessed by whether utility estimates vary according to theory; convergent and discriminant validity can be examined against related and distinct constructs; and predictive validity can be assessed by the ability of utility measures to predict relevant behavior. CBP may also reduce some response-related problems associated with agreement-based questionnaires because respondents demonstrate preferences through trade-offs rather than simply reporting agreement. However, it is not intended to replace response-based psychometrics. Constructs such as trust, satisfaction, anxiety, organizational commitment, self-efficacy, and organizational support are generally better represented through response-based measures. CBP is intended for latent variables that are fundamentally preference-based.

Response-based psychometrics and CBP are therefore complementary measurement approaches. The former measures latent evaluation, whereas the latter measures latent preference. The goal is to determine when a response-based questionnaire is appropriate and when choice-based measurement better represents the construct.

3. A Construct-Measurement Alignment Framework

The decision regarding the measurement approach should not be dictated by disciplinary convention or analytical convenience, but by the nature of the construct itself. The proposed Construct-Measurement Alignment (CMA) Framework categorizes constructs into four general types: evaluative, preference-based, behavioral, and objective. These categories draw evidence from different sources and therefore require different approaches to measurement.

Category 1 consists of evaluative constructs such as attitudes, beliefs, perceptions, emotions, satisfaction, trust, commitment and perceived organizational support. These constructs occur primarily within the cognitive or affective domain of an individual, making self-report or closely related subjective measures appropriate. Traditional notions of scales, reliability, construct validity and latent variable modeling appear appropriate here.

Category 2 consists of preference-based constructs, the primary interest of this paper. Preferences involve simultaneous and potentially conflicting attributes. Examples include employer preference, employee value propositions, job compensation, leadership preferences, strategic priorities, public policy choices, technology adoption, curriculum design, supplier selection and investment preferences. In each case, the respondent is required to balance appealing traits of two or more alternatives. The act of choosing via CBP is, therefore, a natural source of measurement evidence.

Category 3 consists of behavioral constructs concern what individuals or groups do—the actions, activities, or responses that constitute behavior. Examples include knowledge sharing, interactional cooperation, innovative activity, technology use, customer purchasing behavior, absenteeism, and organizational citizenship behavior. The construct is therefore the behavior itself, rather than the outcome produced by that behavior. Behavioral constructs can be measured by recording whether an action occurs, how often it occurs, how long it lasts, or how intensely it is performed. Appropriate sources include direct observation, digital activity traces, system logs, transaction records, physical or archival records, and experience-sampling. Questionnaires may be used when direct behavioral evidence cannot be obtained, but they measure reported or perceived behavior, not necessarily the behavior that actually occurred.

Category 4 consists of Objective constructs that concern measurable outcomes, conditions, or performance indicators that can be established independently of what people think or report. Examples include financial performance, sales revenue, production volume, market share, customer retention, employee turnover, accident rates, operational efficiency, publication output, and recorded job performance. Here, the researcher is not primarily interested in what a person did, but in the objectively verifiable result or condition associated with the phenomenon. Such measures

should preferably be obtained from reliable records, organizational databases, administrative systems, financial statements, transaction data, or other verifiable sources. Subjective ratings should be used only when an objective indicator is unavailable or when the research question specifically concerns perceptions. Thus, the fundamental distinction is: behavioral constructs capture actions; objective constructs capture independently verifiable outcomes or conditions.

The CMA Framework highlights a critical principle: different constructs require different types of evidence, and no single measurement methodology will suffice for all constructs. Response-based, choice-based, behavior-based and objective measurement should be seen as potential components of a wider measurement system. The choice between them should follow from the nature of the measurement problem. Central to this framework is the idea that the validity of the measurement process precedes questionnaire construction. Conventional validation procedures assess the quality of measurement instruments after they have been designed. While reliability, factor structure, convergent validity and discriminant validity are essential, they do not by themselves establish whether the chosen measurement paradigm is appropriate. A reliable response-based instrument will not compensate for a construct that is more amenable to description through choices, behaviors, or objective outcomes.

Equally, a well-administered conjoint study would be inappropriate for constructs such as anxiety or organizational commitment, since such constructs primarily exist as internal psychological states. There are therefore two levels of construct validity: paradigm-level validity, which considers whether the measurement paradigm is appropriate to the construct, and instrument-level validity, which considers the quality of the measurement instrument within the chosen paradigm ([11]; [3]). When considering the operationalization of a construct, a researcher should first ask: Does the construct essentially comprise an internal, judgmental perspective? Does the construct emerge from decision-making among competing alternatives? Can the construct be characterized as behavioral? Can it be characterized as objectifiable? Answering these questions directs the researcher toward an appropriate measurement paradigm prior to instrument construction.

Following the framework leads to a workflow for CBP. The initial step involves isolating the aspects of the phenomenon that theory suggests influence preference-based constructs. These aspects should then be translated into experimentally manipulated attribute combinations using established conjoint design methodologies. Respondents then complete a series of choice tasks, from which researchers estimate individual-level utilities using a choice model such as multinomial logit, mixed logit, or hierarchical Bayes. The resulting utility estimates can be used as predictor or outcome variables in regression, multilevel models, structural equation modeling, or other quantitative analyses ([12]; [13]). Thus, CBP integrates existing analytical methods rather than competing with traditional psychometric principles.

4. Limitations, Future Research, and Conclusion

The proposed framework puts forward a broader conception of construct measurement. Traditional psychometric practice focuses on response-based scales as the default methodology for gauging latent constructs. This approach has provided valuable information across the social sciences for constructs such as attitudes, beliefs, perceptions, and feelings. However, its utility begins to wane when dealing with constructs that emerge from decision-making tasks between competing alternatives.

By acknowledging that construct measurement can operate under more than one paradigm, researchers can consider methods that are more directly aligned with the constructs they investigate. The primary issue addressed by this work is construct validity. Conventionally, construct validity is examined through reliability, convergent and discriminant validity, and prediction of other variables. These procedures are meaningful only when the initial measurement paradigm is appropriately chosen.

We believe construct validity is best understood on two levels. Paradigm-level construct validity considers the appropriateness of the measurement paradigm; instrument-level construct validity refers to the validity of the

individual instrument within a chosen paradigm. A choice-derived measurement instrument can be statistically psychometric yet still capture an irrelevant phenomenon if the wrong measurement paradigm was selected.

One important implication of this framework pertains to theory development. Many studies of management and business examine choices involving trade-offs among conflicting objectives, including employer attraction, strategy selection, consumer decision making, leadership preferences, organizational structures, compensation structures, and policy implementation. Choice-Based Psychometrics can capture the complexity of theories that incorporate comparisons among competing alternatives rather than simple agreement. Survey research has been pervasive because of its efficiency, ease of implementation, and mature methods of analysis. However, methodological convenience should not be confused with appropriate measurement methodology. The development of random utility theory and accessible software for analyzing choice models contributes to the feasibility of choice-based measurement ([10]; [13]). Future studies should compare the predictive utility of particular constructs measured in traditional psychometric and Choice-Based Psychometric formats. Further methodological research is needed to compare their reliability and validity and to develop guidance for treating choice-based measurements as latent constructs in structural equation modeling and multilevel modeling.

Choice tasks have applications in human resource management, business, and public policy, including employer preferences, contract preferences, leadership preferences, employee value propositions, strategic priorities, innovation project portfolios, organizational structures, taxation, welfare services, environmental regulation, and service delivery standards. This paper does not argue that response-based models have had their day; it argues that they need not be the only method of measuring latent constructs. Attitudes, beliefs, perceptions and emotions remain appropriately captured through traditional response-based models. The same measurement-paradigm principle should, however, apply to preference-based latent constructs. Psychometric measurement can therefore be extended through choice behaviors, providing an additional means of observing latent preferences in quantitative social science research.

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Conflict of Interest

The author declares no conflict of interest.

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References

1. Cronbach LJ, Meehl PE. Construct validity in psychological tests. *Psychol Bull.* 1955;52(4):281-302. doi:10.1037/h0040957.
2. Nunnally JC, Bernstein IH. *Psychometric theory*. 3rd ed. New York: McGraw-Hill; 1994.
3. Messick S. Standards of validity and the validity of standards in performance assessment. *Educ Meas Issues Pract.* 1995;14(4):5-8. doi:10.1111/j.1745-3992.1995.tb00881.x.
4. Borsboom D. *Measuring the mind: Conceptual issues in contemporary psychometrics*. Cambridge: Cambridge University Press; 2005.
5. DeVellis RF, Thorpe CT. *Scale development: Theory and applications*. 5th ed. Thousand Oaks: SAGE; 2021.
6. Furr RM. *Psychometrics: An introduction*. 4th ed. Thousand Oaks: SAGE; 2021.

7. Green PE, Rao VR. Conjoint measurement for quantifying judgmental data. *J Mark Res.* 1971;8(3):355-363. doi:10.1177/002224377100800312.
8. Green PE, Srinivasan V. Conjoint analysis in consumer research: Issues and outlook. *J Consum Res.* 1978;5(2):103-123.
9. Green PE, Srinivasan V. Conjoint analysis in marketing: New developments with implications for research and practice. *J Mark.* 1990;54(4):3-19. doi:10.1177/002224299005400402.
10. McFadden D. Conditional logit analysis of qualitative choice behavior. In: Zarembka P, editor. *Frontiers in econometrics.* New York: Academic Press; 1974. p. 105-142.
11. Borsboom D, Mellenbergh GJ, van Heerden J. The concept of validity. *Psychol Rev.* 2004;111(4):1061-1071. doi:10.1037/0033-295X.111.4.1061.
12. Louviere JJ, Hensher DA, Swait JD. *Stated choice methods: Analysis and applications.* Cambridge: Cambridge University Press; 2000.
13. Train KE. *Discrete choice methods with simulation.* 2nd ed. Cambridge: Cambridge University Press; 2009.