The BIMAS-2 Change-Sensitive Items and the Intervention Item Selection Rules Model

Dr. Scott Meier (University of Buffalo) proposed a set of Intervention Item Selection Rules (IISRs; Meier, 1997, 1998, 2000, 2004) that helped to guide the development of the BIMAS. The central philosophy of the IISRs is that intervention sensitive items should evidence change in response to an intervention (i.e., a decrease in the maladaptive behaviors or an increase in the adaptive behaviors). Intervention-sensitive items should also behave in a theoretically expected manner in other conditions (i.e., remain stable over time when no intervention is present). The IISRs approach assumes that (a) test items and tasks differ along a trait–state continuum, and (b) different test construction and item-analysis procedures are necessary to select items with a high state effect that reflect the results of interventions. The BIMAS is the first measurement tool explicitly designed to be change-sensitive based on the IISRs model. This characteristic allows the BIMAS to work perfectly within the RTI and MTSS frameworks.

Scott T. Meier, Ph.D.

One of the best summaries of the advantages of the BIMAS-2's use of change-sensitive items was provided in Castro-Villarreal's Mental Measurement Yearbook's (19th edition) review of the BIMAS scale. She wrote that "perhaps the greatest strength of the BIMAS is the empiricism underlying item selection and scale development and the detail with which test psychometrics were established and presented." In contrast to other measures, the IISRs resulted in the selection of BIMAS test items specifically chosen to be sensitive to change. This results in greater power to detect the effects of psychosocial interventions employed to help children identified as at-risk for social, emotional, and behavioral problems.

Rule 1.	Ground scale items in theoretical and empirical literature relevant to applicable interventions, clinical populations, and target problems.
Rule 2.	Aggregate intervention-sensitive items across individuals, but not across items or occasions (as with trait-based tests). Aggregation across individuals decreases random error and increases the likelihood of detecting item scores responsive to intervention effects.
Rule 3.	Review range of scores at pre-test so that items demonstrating obvious ceiling or floor effects may be removed.
Rule 4.	Scores on intervention-sensitive items must demonstrate change over time in intervention groups.
Rule 5.	Examine whether scores on intervention-sensitive items exhibit change over time in the expected direction. This ensures that the items are indeed change sensitive and are able to monitor change in the expected direction.
Rule 6.	Examine whether change observed in an intervention group differs relative to a non-treated comparison group.
Rule 7.	Examine whether items demonstrate differences between intervention and treatment groups prior to intervention.
Rule 8.	Evaluate whether item change is related to systematic error sources such as social desirability.

Rule 9.	Steps 3 through 8 should be cross validated with repeated studies of new samples from the population of interest.

Dr. Meier discusses progress monitoring and outcome assessments in his most recent book

Meier, S. (2015). Incorporating progress monitoring and outcome assessment in counseling and psychotherapy: A primer. Oxford, UK: Oxford University Press.

References to IISRs:

Meier, S. T. (1997). Nomothetic item selection rules for tests of psychological interventions. Psychotherapy Research, 7, 419–427.

Meier, S. T. (1998). Evaluating change-based item selection rules. Measurement and Evaluation in Counseling and Development, 31, 15–27.

Meier, S. T. (2000). Treatment sensitivity of the PE Form of the Social Skills Rating Scales: Implications for test construction procedures. Measurement and Evaluation in Counseling and Development, 33, 144–156.

Meier, S. T. (2004). Improving design sensitivity through intervention-sensitive measures. American Journal of Evaluation, 25, 321–334.

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