**Testing the precision of Bangla Communication Scale: Item Response Theory Guided Analysis**

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# Abstract

**Background:** Often, teenagers are viewed as having inept communication skills. However, the question remains whether teenagers lack communication skills in general or their understanding and perception of communication are different from the adults. To answer this, one needs to measure the communication skills of both groups preciously.

**Rationale:** There is no psychometrically valid instrument in Bangla to measure communication skills among teenagers. As such, in this study, we translated the famous “Communication Scale” and presented item response theory (IRT)-based initial precision calibration.

**Method:** A graded response model was fitted on 202 teenager respondents’ data (Age:15.43±1.16, 163 female, 39 male; convenient sampling) collected using a cross-sectional survey method. Measurement equivalence between subgroups: boy and girl was established using the Differential Item functioning (DIF) detection method.

**Result:** All 23 items translated items were subjected to the IRT analysis. IRT analysis retained 11 items by discarding items providing low information (I(θ)<.20). Item discrimination indicated sufficient discriminating power of the items (1.13±.32) ranging between 0.69-1.7. Item information curves showed that the items have different sensitivity to different levels of communication skills. Test information curve revealed the scale's adequate ability to discriminate among different levels of underlying communication skills with the highest precision across the underlying construct ranging between -3 to 1. The marginal reliability coefficient was .80 for the scale indicating satisfactory reliability. DIF analysis demonstrated that all items had measurement equivalence.

**Conclusions:** The psychometric sound properties suggest the plausible use of this scale to assess communication skills among teenagers in clinical and counselling settings..

**Keywords:** Communication skill; Teenager; Item-Response Theory; Differential Item Functioning