***Computerized Adaptive Testing: An Efficient and Accurate Method of Screening***

***for Suicide Risk***

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**Background:** Current suicide risk screening and measurement is inefficient, has limited measurement precision, and focuses entirely on suicide related items. We have developed a psychometric harmonization between suicide, depression, anxiety and mania domains which provide a more balanced and complete spectrum of suicidal symptomatology. **Methods:** Data from psychiatric outpatients at the University of Pittsburgh and a community health clinic were collected from January 2010-June 2012. 789 participants were enrolled in the calibration phase; 70% were female and 30% were male. The rate of major depression was 47%. The item bank contained 1,008 items related to depression, anxiety, and mania, including 11 suicide items. Data were analyzed using a bifactor model to identify a core dimension between suicidal ideation, depression, anxiety, and mania items. A computerized adaptive test was developed via simulation from the actual complete item responses in 308 subjects.  The scale was validated against clinician CSSRS ratings of suicidal ideation. **Results:** 111 items were identified that provided a crosswalk between depression, anxiety and suicidal ideation (no mania items were retained). All items had high loadings on the primary suicide dimension (average = 0.67, range 0.49-0.88). Analyses revealed that an average of 10 items (5-20) correlated 0.96 with the 111 item scale, with precision of 5 points on a 100-point scale metric.  Contrasting the no risk and high risk groups on CAT-SS had sensitivity of 1.00 and specificity of 0.95 for the CSSRS any ideation categorization with agreement of kappa=0.81, and sensitivity of 1.00  and specificity of 0.92 for the CSSRS active ideation categorization with agreement of kappa=0.66. **Conclusions:** The Computer Adaptive Test — Suicide Scale is able to accurately measure the latent suicide dimension with an average of 10 items in approximately 2 minutes. Validation against an independent clinician administered suicide risk assessment has been documented and prediction of future suicidal behavior in underway.  The development of a version of the CAT-Suicide Scale for children will be discussed.