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# Adolescent mental health

## time trends and validity of self-report measures

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### Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för avläggande av medicine doktorsexamen framläggs till offentligt försvar i Bergasalen, målpunkt QO, Norrlands Universitetssjukhus, fredagen den 21 december, kl. 09:00. Avhandlingen kommer att försvaras på engelska.

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Adolescent mental health - time trends and validity of self-report measures

**Abstract**

**Background:** Studies of time trends of adolescent self-reported mental health suggest an increase of mental health symptoms globally. Unfortunately, several studies within the field have methodological problems, such as short time-period between measurements and different mental health measures over time. When estimating mental health through self-report measures, the measures need to be both valid and reliable. Reports from the Swedish National Board of Health and Welfare have shown that several self-report scales used in Child- and Adolescent Psychiatry lack validation in Swedish, and some are direct translations of adult self-report scales without proper age-adaption.

**Aims:** This thesis aims to add to previous knowledge regarding time trends of self-reported mental health among Swedish youth and to validate internationally used reliable self-report measures for use in Sweden.

**Methods:** In Study I, we investigated changes in self-reported mental health symptoms, both internalized and externalized, in two samples: The first sample in 1981 and the second in 2014, both samples including all grade 9 students of Luleå. The same composite self-report measures were used at both time points. In study II we translated and validated the Reynolds Adolescent Depression Scale second edition (RADS-2) with classical test theory. In study III, eight pediatric Patient-Reported Outcomes Measurement Information System (PROMIS®) item banks were translated to Swedish and culturally adapted using the Functional Assessment of Chronic Illness Therapy (FACIT) methodology. Study IV describes the item response theory (IRT) validation of two item banks, the PROMIS Pediatric Bank v2.0 – Anxiety and the PROMIS Pediatric Bank v2.0 - Depressive Symptoms, in a school- and Child- and Adolescent Psychiatry patient sample.

**Results:** Study I: There has been an increase in internalizing symptoms, especially among girls. Externalizing symptoms have decreased, especially among boys, and in 2014 compared to 1981; there is no significant difference between girls and boys. Study 2: The factor structure of the Swedish version of RADS-2 was confirmed and measurement invariance for sex and age-group. Reliability was acceptable to excellent for all subscales and the RADS-2 total scale. Concurrent, convergent, and discriminant validity was acceptable. Study III: All of the eight pediatric PROMIS item banks had translation issues to resolve. However, the translated and adapted versions were linguistically acceptable. Study IV: After removing a few items, the pediatric PROMIS item banks of anxiety and depressive symptoms showed good IRT fit statistics and no differential item functioning. A computer adaptive test (CAT) simulation supports the idea of the item banks to be appropriate to use with CAT.

**Conclusion:** This study supports the previous knowledge pointing to a rise in self-reported internalized mental health, especially among girls. Valid and reliable diagnostic measures are needed in Child- and Adolescent Psychiatry. RADS-2 is an internationally established measure, and the Swedish version is now validated in a relatively large school sample. Item response theory has several advantages compared to classical test theory. We have translated eight PROMIS item banks to Swedish, and two of them, anxiety and depressive symptoms, have been validated with IRT in a school- and patient sample.

**Keywords**

Adolescent, classical test theory, computer adaptive testing, cross-sectional, differential item functioning, graded response model, item banks, item response theory, measurement invariance, mental health, Patient-Reported Outcomes Measurement Information System, Reynolds Adolescent Depression Scale second edition, self-report measures, time trends.

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