

VALIDATION STUDY FOR SOCIAL MOBILITY COMMON METRICS

A joint study by

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Executive Summary

This study assessed a set of behavioural, socio-emotional and psychosocial scales for their reliability, construct validity, and practical utility among children and adolescents aged 9 to 16 in Singapore. A cross-sectional sample of 300 respondents was split evenly between a primary-school cohort (ages 9–12) and a secondary-school cohort (ages 13–16). Respondents were recruited through Family Service Centres (FSCs) and non-FSC channels, with broadly balanced gender representation.

The primary-school instruments included the 33-item **Child Self-Control Rating Scale** (CSCRS) and the 25-item **Strengths and Difficulties Questionnaire** (SDQ). The secondary-school instruments included the five-item **Mental Health Inventory** (MHI-5) and nine selected items from the **ACT-SG**¹ framework covering self-efficacy, positive relationships and safety and risk awareness. Analyses examined reliability, factor structure, subgroup patterns and associations between measures.

OVERALL CONCLUSION

All four measures showed acceptable to excellent internal consistency, but confirmatory factor analysis (CFA) did not provide convincing evidence of model fit in this sample. The CSCRS and SDQ performed best overall and are the strongest candidates for further field use, although any field deployment should avoid high-stakes use until further validation is conducted.

The study therefore recommends retaining the CSCRS and SDQ for Primary 3 to Primary 6 respondents and considering the SDQ for Secondary 1 to Secondary 4 respondents. Any field deployment should avoid high-stakes use until further validation is completed. Where feasible, parent or teacher reports should be collected alongside, or instead of, direct child self-report, particularly for younger respondents.

1. Study Purpose and Rationale

The study was commissioned by Quantedge Foundation (Singapore), whose mission is to promote upward social mobility for lower-income children and youths in Singapore. The Foundation selected and developed a set of common indicators (see Annex A) to guide its evaluation of programmes. These indicators² focus on developmental domains such as **self-control, behavioural and emotional well-being, mental health, self-efficacy and relationships** that have been theoretically established to affect later life outcomes. Reference was also taken from the National Council of Social Services' Sector Evaluation Framework for Children & Youth programmes.

The study did not seek to diagnose individual children. Rather, it examined whether established measures functioned reliably and plausibly when administered within Singapore's context.

¹ACT-SG is a standardised evaluation tool developed by the Ministry of Social and Family Development and the National Council of Social Services (NCSS) to measure positive youth development outcomes, particularly for at-risk youths.

² Reference was taken from the NCSS Sector Evaluation Framework for Children & Youth programmes but final selection of indicators was based on more direct links to mobility outcomes later in life.

Measures Examined

Cohort	Measure	Primary Construct	Items
P3–P6	CSCRS	Self-control / behavioural regulation	33
P3–P6	SDQ	Behavioural and emotional difficulties; prosocial behaviour	25
S1–S4	MHI-5	Mental health / psychological wellbeing	5
P3–P6; S1–S4	ACT-SG extract	Self-efficacy, positive relationships, safety and risk awareness	9

2. Methodology

The study used a quantitative, cross-sectional survey design. There were 150 respondents in each age cohort, recruited through FSC and non-FSC channels. Surveys were administered through Qualtrics using generic, non-traceable links and were conducted mainly in-person, with virtual sessions available on request.

- P3–P6 respondents typically completed the survey in about 15–20 minutes; S1–S4 respondents typically required about 10 minutes.
- A small number of younger respondents with mild ADHD required substantially longer administration and additional support.

Analyses included reliability checks, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), benchmark comparisons, and descriptive/subgroup analyses.

Psychometric Decision Criteria

EFA used Bartlett's test of sphericity, the Kaiser-Meyer-Olkin (KMO) statistic and reliability coefficients. CFA focused on Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI), with Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) used for model comparison.

Measure	KMO	Reliability	EFA Reading	CFA Reading
CSCRS	0.914	0.952	Very good sampling adequacy; excellent consistency	Best of the four, but CFI/TLI below accepted thresholds; RMSEA acceptable only under a more permissive reading
SDQ	0.743	0.803	Good sampling adequacy; good consistency	Poor overall CFA fit in this sample
MHI-5	0.678	0.732	Mediocre KMO; acceptable consistency	Poor overall CFA fit

Measure	KMO	Reliability	EFA Reading	CFA Reading
ACT-SG extract	0.789	0.799	Good KMO; acceptable-good consistency	Poor overall CFA fit; selective item extraction may have limited information content

All Bartlett's tests were statistically significant ($p < .001$), indicating that the item correlation matrices were sufficiently related for factor analysis. The main concern was not whether the items were consistent with each other, but whether they grouped together in the way the measures were designed to. On that basis, the report concludes that the scales were **reliable but not convincingly validated** for this particular sample and administration approach.

Findings on Primary-School Cohort (Ages 9–12)

- CSCRS responses clustered around the midpoint, indicating **moderate and relatively consistent levels of self-control**. Gender and FSC/non-FSC differences were generally small.
- The mean SDQ total difficulties score was about 13.4, at the upper end of the “close to average” range and near the “slightly raised” threshold. **Hyperactivity/inattention and peer problems were the most prominent difficulty domains**.
- FSC respondents tended to show **lower prosocial scores and higher behavioural difficulty scores** than non-FSC respondents, particularly in peer relationships.
- Lower self-control was associated with higher SDQ difficulties, providing some evidence of expected construct relationships.

Findings on Secondary-School Cohort (Ages 13–16)

- MHI-5 responses indicated **generally positive reported mental health**. Male respondents reported higher scores than female counterparts on several items, but the differences between the two groups were generally small.
- ACT-SG item responses were generally in the **upper-mid range**, indicating relatively high self-efficacy, positive relationships, and avoidance of risky behaviours. Patterns were broadly similar across gender and recruitment pathways.
- MHI-5 and ACT-SG scores showed a weak positive association, with relatively little overlap between the two measures.

4. Fieldwork and Implementation Lessons

Most respondents completed the surveys independently, but a small set of questions required clarification, especially among younger respondents. Difficulties were concentrated in **demographic items on socio-economic status, questions on educational aspirations, and a few abstract or unfamiliar scale items** rather than being widespread across the questionnaires.

- Fifty respondents were unsure if they were on the MOE Financial Assistance Scheme, while some had difficulty identifying the type of housing they lived in.
- More than a quarter of respondents, especially those below S3, **needed clarification on distinctions among post-secondary education pathways**.

- Selected ACT-SG self-efficacy items were less familiar to some younger secondary-school respondents.
- The SDQ item on “fidgeting and squirming” and a CSCRS item on delayed gratification frequently required explanation.

Operationally, caregiver availability was a key challenge for scheduling surveys with younger respondents. The research team addressed this through evening/weekend sessions, the use of multiple venues, repeated caregiver engagement and additional staffing. Translated materials were available in Chinese, Malay and Tamil, although use of translated versions was limited.

5. Limitations

While the measures produced consistent responses, the CFA results did not clearly confirm that they measured the expected underlying concepts in this sample. This is especially important if the measures are intended to inform consequential decisions, such as funding decisions.

Other limitations of the study include:

- **Measures relied primarily on child self-report**, which may be affected by comprehension, response style and social desirability, especially among younger respondents.
- **Subgroup sample sizes**, particularly the FSC subgroup within the secondary-school cohort, limited power to detect smaller differences.
- **The administration approach differed from some prior literature**. For the SDQ in particular, previous Singapore studies mainly used parent or teacher reports rather than direct self-report by children.
- **The MHI-5 and ACT-SG extract were brief**. Their weaker performance may partly reflect limited information content; though longer instruments would increase respondent burden.

6. Recommendations

Area	Recommendation
P3–P6 measures	Retain the CSCRS and SDQ as the strongest candidates for continued use and further validation.
S1–S4 measures	Consider using the SDQ. The report also suggests that a fuller mental-health instrument such as the MHI-38 could be explored in future work, although this was outside the present study.
Interpretation	Report CSCRS and SDQ results separately rather than combining them into a single composite metric without a clear conceptual basis.
Administration	Where feasible, obtain parent or, preferably, teacher reports alongside or instead of direct child self-report, particularly for younger children.
Decision use	Avoid relying on these measures as major determinants of high-stakes decisions until stronger local validity evidence is established.
Future validation	Use larger samples, triangulate with teacher/parent reports and administrative educational data, and test the measures longitudinally across key educational transitions.

Overall, the findings from the study have provided an empirical basis for the use of the CSCRS and SDQ for monitoring children's outcomes, but they would need to be **complemented with other data sources and observations** to inform decision-making.

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Annex A: List of Indicators

P3 to P6

- Academic achievement
- Social-emotional development: internalising, externalising behaviours; self-control
- Positive relationships
- Aspirations

S1 to S4

- Academic achievement
- School conduct: absenteeism; suspension from school
- Delinquency or negative peer behaviours
- Self-efficacy
- Positive relationships
- Mental health
- Involvement in criminal justice system