The significance of country norms in cognitive assessment: A WISC-V Canadian and U.S. normative comparison

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Abstract
In further support of the continued need for distinct sampling and independent normative data sets for Canadian ability measures, the goal of the current study is to determine and inform users of the differences that exist between the Canadian and U.S. WISC-V norms. One of the key uses of the WISC-IV Canadian adult norms has been suitably addressed, therefore in this study the normative differences in the WISC-V child and adolescent data were examined and illustrated in this way. (1) Presenting a comparison of country normative data across subtests and composite scores for demographically matched and unmatched samples (2) A review of Canadian-U.S. standard IQ score differences across ability level and 3) Comparison of the case detection accuracy of gifted and intellectually disabled children. Results demonstrate that there are subtle mean differences overall in the WISC-V norms when comparing the standardization samples in the two countries, Further, and importantly however, these results also show significant differences in the sensitivity of the Canadian norms compared to U.S. norms in identifying intellectually extreme cases (i.e., gifted and intellectually disabled). These differences in sensitivity directly relate to the correct identification/diagnosis of children in these categories, and this highlights the importance of the use of Canadian norms in clinical decision making. These results support the continued need for distinct WISC-V samples and norms for Canadian psychologists related to both understanding the Canadian norms compared to the American norms and the number of individuals in their samples scoring below the mean score from the Canadian mean score.

Methods
Data: Canadian and U.S. WISC-V samples & special group samples (Intelligently Disabled and Gifted cases)
- Normative data for both countries (Canadian N = 880; US N = 2200)
- Standardization sample for Canadian study (N=990) Includes special group study cases

Participants:
- Matched-sample (US-CDN) comparison group (N=665): M Age = 11.5 (SD = 3.1) and 53.1% female; Ethnicity 42.4% Caucasian & 7.6% Asian. 
  - Comparisons of other ethnic groups was not possible because of the major country differences in primary ethnic composition. Parent education level: 28% no high school diploma
  - Matched-control comparison group (ID and CT): Normative cases matched on age, parent education level, ethnicity, and sex.

Analyses:
1. Matched-sample comparison: examine the mean and standard score differences between the Canadian and U.S. and total and matched normative samples
2. FSIQ Ability Level Differences: Full CDN sample (including normative, clinical & exceptional cases) examined by ability level
3. Special group comparison: Using CDN CT & ID data and matched normative sample chi square analysis to determine the sensitivity and specificity

Results
Matched-Sample Comparison (Normative Sample)
- Canadian mean standard scores are slightly higher than U.S. mean standard scores across most subtests
- Few differences reach statistical significance (p<0.05) and where they do, effect sizes are very small
- Processing Speed Index is the only composite mean standard score where CDN performance is very slightly lower than the US norms
- Largest composite difference is seen in the Visual Spatial Index; same index with the greatest performance difference in WPPSI-IV

Overall, these results support the continued need for distinct WISC-V samples and norms for Canadian psychologists related to both understanding the Canadian norms compared to the American norms and the number of individuals in their samples scoring below the mean score from the Canadian mean score.

Conclusion
- Consistent finding: sensitivity varies with the country norms used when scoring using U.S. norms
- The normative group analyses clearly demonstrate different levels of accuracy in the diagnostic classification
- Groups are most commonly the children being assessed for identification, support, and planning

References

Discussion

- When scoring using U.S. norms, CDN mean scores are slightly lower on most subtests
- Mean FSIQ difference is ≤ 4 IQ points higher
- When demographically matched & scored using U.S. norms, score differences decrease & is most cases are no longer statistically significant
- Therefore sensitivity is similar on most subtests
- Problem with only mean group differences in the normative samples is that it does not describe what is going on in the tails of the distribution
- "Tails" are where clinicians are making important recommendations about cognitive and psychoeducational functioning and service needs
- There is equally good specificity (i.e., correctly categorizing those who are not clinically exceptional, as nonclinical/nonexceptional)
- However, the important differences lie in the sensitivity of the norms.
- Gifted sample CDN norms show 45% compared to 35% when using U.S. norms.
- IQ sample shows sensitivity when using CDN norms is 92%, compared to 75% for the U.S.
- Critical finding: sensitivity refers to the power of the assessment to detect cases (gifted and intellectually disabled) when an ascendent or special group classification) is actually present
- By using U.S. norms with the CDN sample, the range of not detecting children increases by 14% (CT) and 15% (ID)

Appendix

Given availability of WISC-V Canadian norms, clinicians can utilize the appropriate normative group that was rigorously collected and is the best available representation of Canadian children.