Cognitive Functioning in a Combined Normative and Clinical Sample: A Cluster Analytic Study of the WISC-IV

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Abstract

WISC-IV core subtest scores of 970 children (aged 8 to 16) in a combined normative and referred sample were cluster analyzed to determine if reliable and meaningful subgroups would emerge. Five reliable subtype groupings were identified. The mean subtest profiles of the derived clusters were reasonably consistent with previous research conducted with normative or referred samples.

Rationale

- Previous studies have identified reliable and valid core (normative) and clinical subtest profiles based on earlier WISC versions
- The WISC-IV revision involved significant alterations to content and structure.
- The generalizability of earlier clustering research to the WISC-IV is unclear.
- No study to date has simultaneously investigated normative and clinical WISC profiles.

Hypotheses

- It was predicted that reliable subtypes comparable to those found in previous research with normative and referred samples would be identified
- It was also expected that subtypes unique to the WISC-IV may emerge.

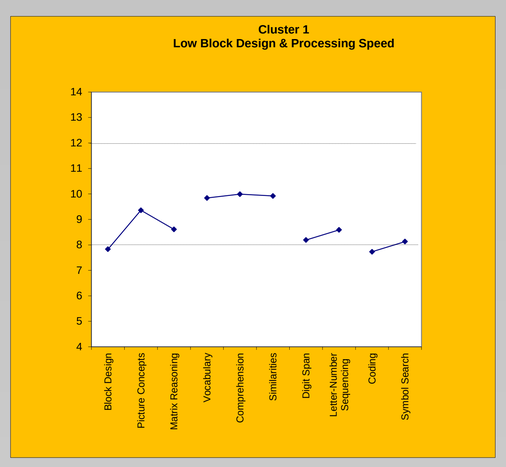
Method

Participants

- Ages: 8 – 16 FSIQ: 70 – 130
- Drawn from 2 sources: a) referred sample, b) standardization sample then matched on age.

Procedures

- Scaled subtest scores were subjected to hierarchical (Ward's Method with Squared Euclidean Distance) and K-means iterative partitioning cluster analyses.
- Reliability of the final cluster solution was examined via multiple-method and split-half techniques.



Results

- A five-cluster solution was selected.
- All five of the clusters derived by the four hierarchical methods were significantly correlated ($p.< .01$). The stability of participant membership in clusters was also significant across the multiple methods as assessed by Cohen's Kappa ($p<.01$).
- Three of the five split-half intraclass correlations were significant ($p < .005$). Both of the nonsignificant clusters* were primarily defined based on elevation rather than pattern, making a significant linear association less likely. Further, these profiles exhibited very good pattern similarity via visual inspection.
- The five subtypes were labeled:

Cluster 1:

Low Block Design & Processing Speed

Cluster 2:*

Low Ability

Cluster 3:

Average with higher Perceptual Reasoning

Cluster 4:*

High Average

Cluster 5:

Low Verbal

Conclusions

- Reliable patterns of WISC-IV core subtest scores can be identified in a combined normative and clinical sample.
- The majority of subtypes reflect cognitive processing profiles identified in studies using earlier versions of the WISC.
- Research is needed to replicate the results with varied methodology, assess the external validity of the derived typology and to explore the nature of cluster membership.

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