

Validity of the Dutch ABILHAND-Kids in adolescents with cerebral palsy



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INTRODUCTION

The ABILHAND-Kids questionnaire¹ was developed to measure manual ability in children with cerebral palsy (CP). The instrument is developed in French speaking children with CP, aged 6 to 15 years, and consists of 21 items measuring bi-manual activities, such as buttoning up trousers, or taking off a t-shirt.

The purpose of this study was to establish cross-cultural validity (item fit and item hierarchy) of the Dutch version of the ABILHAND-Kids.

METHODS

Subjects

• Adolescents with CP (n=94, GMFCS I-V, uni- (n=36) and bilateral (n=58) involvement), aged 12, 14 and 16 years.

ABILHAND-Kids (www.abilhand.org)

ABILHAND-Kids measures perception of the difficulty of 21 bimanual activities on a 3-point scale (impossible: 0, difficult: 1, easy: 2), filled in by the parents.

Examples of items of the ABILHAND-kids:

- Washing the upper body
- Unscrewing a bottle cap
- Taking a coin out of a pocket

Rasch analysis

To investigate the unidimensionality and item hierarchy of the Dutch ABILHAND-Kids version, the Rasch measurement model was applied:

- If the items fit the model, item scores can be used to determine item difficulty and person ability on a common interval measure, expressed in logits (log-odds units)
- Ordinal scores of the questionnaire are converted into interval measures
- Item difficulty and person ability are expressed on the same interval scale (in logits)

RESULTS

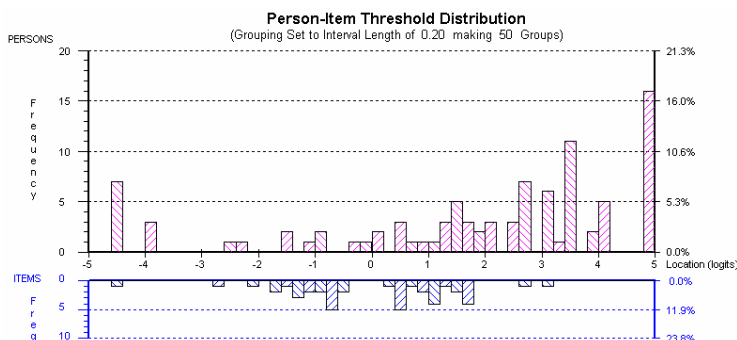


Figure 1: Person ability and item (threshold) difficulty (in logits) distribution of the Dutch ABILHAND-Kids in adolescents with CP. Floor and ceiling effect are indicated by the number of children at the extremes of the scale.

RESULTS (continued)

Sixteen children showed the maximal score, indicating normal manual ability) and seven children had minimal scores (very poor/no manual ability). Distribution of person abilities and item difficulties (in logits) is shown in Figure 1.

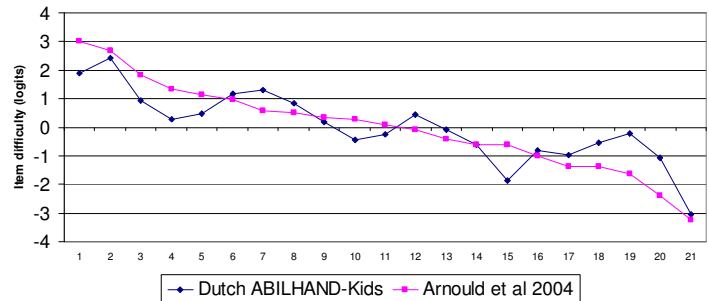


Figure 2: Item hierarchy of the Dutch ABILHAND-Kids in comparison to the French version¹

Rasch analysis showed that all 21 items (except one: 'Rolling up a sleeve of a sweater') fitted to the Rasch model, indicating that one underlying construct (manual ability) is measured.

Although absolute item difficulty could not be directly compared, because of the dependency on the ability of the subject group, differences in item hierarchy (item order) were found between the Dutch and original French version (Figure 2).

DISCUSSION and CONCLUSION

The present findings confirm the unidimensional character (i.e. all items measure the same construct) of the Dutch ABILHAND-Kids in adolescents with CP, indicating that the ABILHAND-Kids can be validly used in adolescents with CP.

A direct comparison (in a combined analysis) of results of the Dutch and French versions might provide further insight in differences in item hierarchy. The present results indicate that direct comparison between the Dutch and French version is not recommended, because of differences in item hierarchy.

The unidimensionality and item hierarchy remains to be investigated in younger Dutch children.

References

1. Arnould C, Penta M, Renders A, Thonnard JL. ABILHAND-Kids. A measure of manual ability in children with cerebral palsy. *Neurology* 2004;63:1045-52

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