The French Quebec adaptation of the Melbourne Low Vision ADL index, weighted version: preliminary results of its reliability

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The Institut Nazareth et Louis-Braille

- The only rehabilitation center with a unique specialization in visual impairment, in the province of Quebec (Canada)
- Services provided in French
- 2013 - 2014: > 6 300 active VR service users

The MIDVAQ

- Mesure de l’Impact de la Déficience Visuelle dans les Activités Quotidiennes
- French-Quebec translation and adaptation of the Melbourne Low Vision ADL Index – Weighted version


Objective of the MIDVAQ

- To measure the personal impact of disability caused by the visual impairment (VI) in instrumental activities of daily living (IADL’s), considering:
  - the ability to perform the task
  - the personal importance of the activity

The only rehabilitation center with a unique specialization in visual impairment, in the province of Quebec (Canada)

The MIDVAQ

- Ecological adaptation; to be used in / with the persons...
  - own environment
  - own strategies
  - own visual & non visual aids
Part A – Observed performance, 16 items

- Writing a check
- Telling time: wrist watch, digital display, wall clock
- Reading newspaper print, headlines
- Finding information: medicine label, account, letter of typed print, packet labels, telephone number
- Recognizing celebrity faces
- Identifying coins
- Using a telephone
- Threading a sewing needle
- Pouring water

Parallel versions of printed material

V1  V2

Part B – Questionnaire, 9 items

- Shopping
- Preparing meals
- Housework
- Managing medicine
- Eating
- Dressing
- Grooming
- Mobility
- Bathing

Ability scale

Part A Observed performance

0  Very satisfactory  Ø help, quickly & efficiently
1  Satisfactory        Ø help, a little slowly
2  Borderline          With some help
3  Unsatisfactory      With great deal of help
4  Very unsatisfactory Completely unable

Part B Questionnaire

Considering the time and accuracy of performance

Recoding if disability is caused partially or totally by another factor than vision

Importance scale

0  Totally unimportant
1  Slightly important
2  Moderately important
3  Very important
4  Essential

Disability impact composite score

Disability impact = Ability x Importance

Maximal impact (16) = Very unsatisfactory Ability (4) AND Essential task (4)

No impact (0) = Very satisfactory Ability (0) OR Totally unimportant task (0)
Partial and total scores

<table>
<thead>
<tr>
<th>Ability</th>
<th>Importance</th>
<th>Disability impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part A</td>
<td>/64</td>
<td>/64</td>
</tr>
<tr>
<td>Part B</td>
<td>/36</td>
<td>/36</td>
</tr>
<tr>
<td>Total</td>
<td>/100</td>
<td>100</td>
</tr>
</tbody>
</table>

Clinical & Research usefulness

- To guide the planning of the LVR interventions
- To evaluate the LVR outcomes
- To evaluate the VI progression

Research objectives

- Test-retest reliability
- Interjudge reliability
- Reliability of Part A parallel versions
- Construct validity
- Internal consistency

Subjects recruitment

- Inclusion criteria
  - Aged ≥ 18 yrs
  - No active rehabilitation services episode
  - Recent LV exam (>3 - 4 months ago)
  - Moderate to profound LV
  - Stable visual condition during the experimental phase
- Exclusion criteria
  - Cognitive impairment
  - Regular and significant assistance in IADL's

Method

- MIDVAQ administration
  - By 3 senior or retired LVRS (27-38 yrs of experience)
  - At home, with the person's visual and non visual aids
  - Twice, at 2 weeks interval (test – retest, T1 – T2)
    - T1 administration details noted, to be reproduced at T2
    - T1: parallel rating by a 2nd examiner (interjudge)
- Part A material
  - Half the sample evaluated with V1 at T1; V2 at T2
  - Reversed order for the other half

The research project
Duquette & Wanet-Defalque, French Quebec adaptation of the MLVIAIW (MIDVAQ)

**Sociodemographics**
- N = 36
- 15 F, 21 M
- 69 ± 14 yrs old (range 36 - 90)
- Living in a house or apartment (n = 32)
  - … with someone (n = 29)
- Education ≥ high school (n = 30)

**Visual status**

<table>
<thead>
<tr>
<th>Main visual diagnostic</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARMD or central vision loss</td>
<td>13</td>
</tr>
<tr>
<td>Degenerative myopia</td>
<td>5</td>
</tr>
<tr>
<td>Congenital cataracts</td>
<td>4</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>4</td>
</tr>
<tr>
<td>Optical nerve atrophy</td>
<td>3</td>
</tr>
<tr>
<td>Diabetic retinopathy</td>
<td>2</td>
</tr>
<tr>
<td>Peripheral visual field loss</td>
<td>2</td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
</tr>
</tbody>
</table>

Last visual examination: 4.5 ± 0.5 months

**Interjudge reliability**

<table>
<thead>
<tr>
<th>Ability</th>
<th>Importance</th>
<th>Disability impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>part A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>part B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ICC (part A, part B, Global)

<table>
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<tr>
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<th>Importance</th>
<th>Disability impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>part A</td>
<td></td>
<td></td>
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<tr>
<td>part B</td>
<td></td>
<td></td>
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<tr>
<td>Global</td>
<td></td>
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</tbody>
</table>

Interjudge reliability, 3 pairs of experimenters, 11-12 subjects / pair

**Test-retest reliability**

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<tr>
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<th>Disability impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>part A</td>
<td></td>
<td></td>
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<tr>
<td>part B</td>
<td></td>
<td></td>
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<tr>
<td>Global</td>
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</table>

P < 0.001

**Test-retest reliability, Part A**

<table>
<thead>
<tr>
<th>Ability</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td></td>
</tr>
<tr>
<td>Clock</td>
<td></td>
</tr>
<tr>
<td>Pouring water</td>
<td></td>
</tr>
<tr>
<td>(Wall) Clock</td>
<td></td>
</tr>
<tr>
<td>Watch</td>
<td></td>
</tr>
<tr>
<td>Journal article</td>
<td></td>
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<tr>
<td>Cheque</td>
<td></td>
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<tr>
<td>Journal titles</td>
<td></td>
</tr>
<tr>
<td>Face recog.</td>
<td></td>
</tr>
<tr>
<td>Needle</td>
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</tbody>
</table>

KappaW or PABAK

P < 0.05

**Test-retest reliability, Part A (cont’d)**

<table>
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<tr>
<th>Ability</th>
<th>Importance</th>
<th>Disability impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packet labels</td>
<td></td>
<td></td>
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<tr>
<td>Tel # comp.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coins</td>
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<tr>
<td>Medic. label</td>
<td></td>
<td></td>
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<tr>
<td>Letter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tel # search</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Account</td>
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</tr>
</tbody>
</table>

KappaW or PABAK

P < 0.05
Probable different levels of difficulty between versions

Probable learning bias

Test-retest reliability, Part A
Disability impact: mean T2-T1 scores

Test-retest reliability, Part B
Disability impact: mean T2-T1 scores (cont’d)

Test-retest reliability, part A
Disability impact: mean T2-T1 scores (cont'd)
Duquette & Wanet-Defalque, French Quebec adaptation of the MLVAIW (MIDVAQ)

Research limits

- Small sample size
- Interjudge reliability tested by simultaneous rating
  - Experimenter 1 administers and rates the items while Experimenter 2 simultaneously observes and rates.
  - Results may have been different if the test was administered independently by both Experimenters.

Conclusion

- Global and partial scores of the MIDVAQ show excellent to perfect interjudge and test-retest reliability, which are essential qualities for any assessment tool.
- Some items show lower test-retest reliability. Final results analysis will provide a better understanding of the underlying probable explanatory factors, to orient their revision and modification for improvement.

Future plans

Short term plan
- Final sample of N = 100
- Reliability analysis
  - Test-retest
  - Part A parallel versions of printed material
- Construct validity
- Revision of the MIDVAQ

Long term plan
- Reliability of the modified items
- Sensitivity to change

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