

## ORGANIZATION NEWS

### Highlights From the Rehabilitation Measures Database

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## Measurement Characteristics and Clinical Utility of the Awareness Questionnaire in Individuals With Traumatic Brain Injury

Edeth Engel, BS, Allison Peipert, BS, Linda Ehrlich-Jones, PhD, RN

Traumatic brain injury (TBI) is an injury that disrupts normative function of the brain by means of a bump, blow, or jolt to the head and ranges in severity from mild (concussion) to severe.<sup>1</sup> Approximately 30% of all injury deaths are caused by TBI.<sup>1</sup> Patients with TBI often demonstrate impaired awareness to their limitations, which leads to low motivation for treatment.<sup>2</sup> The Awareness Questionnaire (AQ) is an assessment developed to measure the awareness of patients with TBI in terms of cognitive, behavioral/affective, and motor/sensory characteristics. The AQ focuses on differences in functioning pre- and postinjury. The AQ is administered to the patient and a family member or clinician. The patient and family member versions have 17 items, whereas the clinician version contains 18 items.<sup>3</sup> Each question is scored on a 5-point Likert-type scale with answers ranging from much worse to much better after injury.<sup>4</sup> Differences between patient-clinician scores and patient-family scores are calculated to assess awareness; higher difference scores indicate lower awareness of limitations. The AQ has adequate construct and criterion validity,<sup>3,5-8</sup> adequate to excellent test-retest reliability,<sup>4</sup> and excellent internal consistency.<sup>2,4</sup> Administration of the AQ is free and simple, requiring <10 minutes, and only involves the questions themselves. The Traumatic Brain Injury Taskforce states that the tool is appropriate for use in intervention research studies. The assessment can be found on the TBI Model Systems website created by the Center for Outcome Measurement in Brain Injury.<sup>3</sup>

#### BIBLIOGRAPHY

1. Centers for Disease Control and Prevention. Traumatic brain injury & concussion. 2017. Available at: [https://www.cdc.gov/traumaticbraininjury/get\\_the\\_facts.html](https://www.cdc.gov/traumaticbraininjury/get_the_facts.html). Accessed December 7, 2017.
2. Sherer M, Bergloff P, Boake C, High W Jr, Levin E. The Awareness Questionnaire: factor structure and internal consistency. *Brain Inj* 1998;12:63-8.
3. Sherer M. The Awareness Questionnaire. The Center for Outcome Measurement in Brain Injury. 2004. Available at: <http://www.tbims.org/combi/aq>. Accessed December 7, 2017.
4. Hellebrekers D, Winkens I, Kruiper S, Van Heugten C. Psychometric properties of the awareness questionnaire, patient competency rating scale and dysexecutive questionnaire in patients with acquired brain injury. *Brain Inj* 2017;31:1469-78.
5. Sherer M, Hart T, Nick TG. Measurement of impaired self-awareness after traumatic brain injury: a comparison of the patient competency rating scale and the awareness questionnaire. *Brain Inj* 2003;17:25-37.
6. Bivona U, Ciurli P, Barba C, et al. Executive function and metacognitive self-awareness after severe traumatic brain injury. *J Int Neuropsychol Soc* 2008;14:862-8.
7. Sherer M, Bergloff P, Levin E, High WM Jr, Oden KE, Nick TG. Impaired awareness and employment outcome after traumatic brain injury. *J Head Trauma Rehabil* 1998;13:52-61.
8. Evans CC, Sherer M, Nick TG, Nakase-Richardson R, Yablon SA. Early impaired self-awareness, depression, and subjective well-being following traumatic brain injury. *J Head Trauma Rehabil* 2005;20:488-500.

This abbreviated summary provides a review of the psychometric properties of the AQ in people with traumatic brain injury. A full review of the AQ and reviews of >400 other instruments for patients with various health conditions can be found at [www.sralab.org/rehabilitation-measures](http://www.sralab.org/rehabilitation-measures).

Please address correspondence to [rehabmeasures@sralab.org](mailto:rehabmeasures@sralab.org).

This instrument summary is designed to facilitate the selection of outcome measures by clinicians. The information contained in this summary represents a sample of the peer-reviewed research available at the time of this summary's publication. The information contained in this summary does not constitute an endorsement of this instrument for clinical practice. The views expressed are those of the summary authors and do not represent those of the authors' employers, the instrument owner(s), the *Archives of Physical Medicine and Rehabilitation*, the Rehabilitation Measures Database, or the U.S. Department of Health and Human Services. The information contained in this summary has not been reviewed externally.

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	<b>Measure Name:</b> Awareness Questionnaire		<b>Acronym:</b> AQ	<b>Summary Authors:</b> E. Engel, A. Peipert & L. Ehrlich-Jones													
	<b>Populations Reviewed:</b> Traumatic Brain Injury	<b>Required Equipment:</b> None	<b>Training Required:</b> None	<b>Admin Time:</b> 10 min	<b>Items:</b> 17-18	<b>Score:</b> 5 point scale											
<b>Purpose and Administration Instructions:</b> The Awareness Questionnaire measures the degree of impairment to self-awareness after an acquired brain injury. The questionnaire is administered to the patient and either a family member or clinician and compared.																	
<b>Validity:</b> <u>Predictive Validity:</u> Difference in patient and family ratings are significantly associated with employment status and productivity outcomes ( $X^2=17.71$ , $R^2=0.33$ ) <sup>7</sup> <u>Construct Validity:</u> Clinician and Patient scores have <b>Adequate</b> correlation with Satisfaction with Life Scale ( $\rho=0.34-0.39$ ) <sup>8</sup> <u>Content Validity:</u> AQ demonstrates three factors: cognitive, behavioral/affective, and motor/sensory. <sup>2</sup> A factor structure with 12 items accounts for 50.9% of the variance <sup>5</sup> <u>Convergent Validity:</u> <b>Adequate</b> correlation with Patient Competency Rating Scale (Spearman $\rho=0.50-0.69$ ) <sup>5</sup> <b>Adequate</b> correlation with Patient-Clinician Difference and Patient Family difference ( $\rho=.65$ ) <sup>5</sup> <b>Adequate</b> correlation with Wisconsin Card Sorting Test (Pearson $r=.390-.590$ ) <sup>6</sup>			<b>Reliability:</b> <u>Internal Consistency:</u> <b>Excellent</b> consistency ( $\alpha=.88$ ) <sup>2</sup> <b>Excellent</b> on patients version ( $\alpha=.80$ ) <sup>4</sup> <b>Excellent</b> on relatives version ( $\alpha=.82$ ) <sup>4</sup> <u>Test-Retest Reliability:</u> <b>Excellent</b> (ICC=0.80) overall for patients <sup>4</sup> <b>Adequate to Excellent</b> by category breakdown (ICC=0.59-0.74) <sup>4</sup> <b>Adequate</b> overall for relatives (ICC=.66) <sup>4</sup> <b>Adequate to Excellent</b> by category breakdown (ICC=.61-.82) <sup>5</sup>														
<b>Standard Error of Measurement:</b> SEM is 3.265 for the patient questionnaire and 2.800 for the family questionnaire calculated from provided values. <sup>4</sup>			<b>Professional Considerations</b> The Traumatic Brain Injury Taskforce (TBI EDGE) states that the tool is appropriate for use in intervention research studies.														
<b>Scoring Information:</b> The questionnaire is administered to both the patient and a relative or clinician. The clinician questionnaire contains one additional item.			<b>Cut-Off Scores:</b> Scores range from 17-85. A score of 51 is "about the same as before injury". <sup>8</sup> Difference scores range from -68 to 68. Difference score >20 correlates to impaired self-awareness.														
<b>Minimal Detectable Change</b> The minimal detectable change for the AQ at 95% Confidence Intervals is 7.76 for the relative questionnaire and 9.05 for the patient questionnaire based on internal consistency reliability and calculated from provided values. <sup>4</sup>			<b>Floor / Ceiling Effects:</b> None were found upon analysis. <sup>4</sup>														
			<b>Cut-off Criteria:</b>														
			<table border="1"> <thead> <tr> <th></th> <th><i>r</i></th> <th>ICC</th> </tr> </thead> <tbody> <tr> <td><b>Excellent</b></td> <td><math>\geq .6</math></td> <td><math>\geq .75</math></td> </tr> <tr> <td><b>Adequate</b></td> <td>.31-.59</td> <td>.40-.74</td> </tr> <tr> <td><b>Poor</b></td> <td><math>\leq .3</math></td> <td>&lt; .4</td> </tr> </tbody> </table>				<i>r</i>	ICC	<b>Excellent</b>	$\geq .6$	$\geq .75$	<b>Adequate</b>	.31-.59	.40-.74	<b>Poor</b>	$\leq .3$	< .4
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