

Decomposing patient-caregiver discrepancy to measure anosognosia

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INTRODUCTION

Anosognosia, defined as reduced awareness of cognitive, behavioral, or functional deficits, is a common feature of Alzheimer's disease (AD). Awareness is often assessed using instruments such as the **Anosognosia Questionnaire-Dementia (AQ-D)** and the **Everyday Cognition scale (ECog)**, where anosognosia is quantified as the **discrepancy** between patient and caregiver ratings of the patient's symptoms [1,2].

Although simple, discrepancy-based scores have a key limitation: a near-zero discrepancy may reflect true agreement, but may also mask substantial disagreement when opposite item-level differences cancel each other out [3].

Aim: to propose a novel index capable of identifying cases in which **low discrepancy may be misleading**.

✓ true agreement

	Patient	Caregiver
Item 1	1	1
Item 2	2	2
Item 3	2	2
	5	5

Total discrepancy = 0
Compatible with preserved awareness

✗ apparent agreement

	Patient	Caregiver
Item 1	1	3
Item 2	2	2
Item 3	3	1
	6	6

+2
-2
Total discrepancy = 0
Disagreement masked by cancellation

METHODS

Thirty-eight patients (10 males; 72.5 ± 6.9 years of age) diagnosed with AD were recruited for our study. Their level of anosognosia was assessed using AQ-D and ECog.

A novel score, termed the **Inconsistency Index (II)**, was developed for use alongside traditional discrepancy measures.

Classic discrepancy

Signed difference between caregiver and patient ratings, indicating if the patient tends to underestimate or overestimate their difficulties

Absolute discrepancy

Overall amount of patient-caregiver disagreement across items, regardless of direction

Absolute disagreement (d_a)

Quantifies item-level disagreement regardless of direction
 $d_a=0$ indicates perfect item-by-item agreement

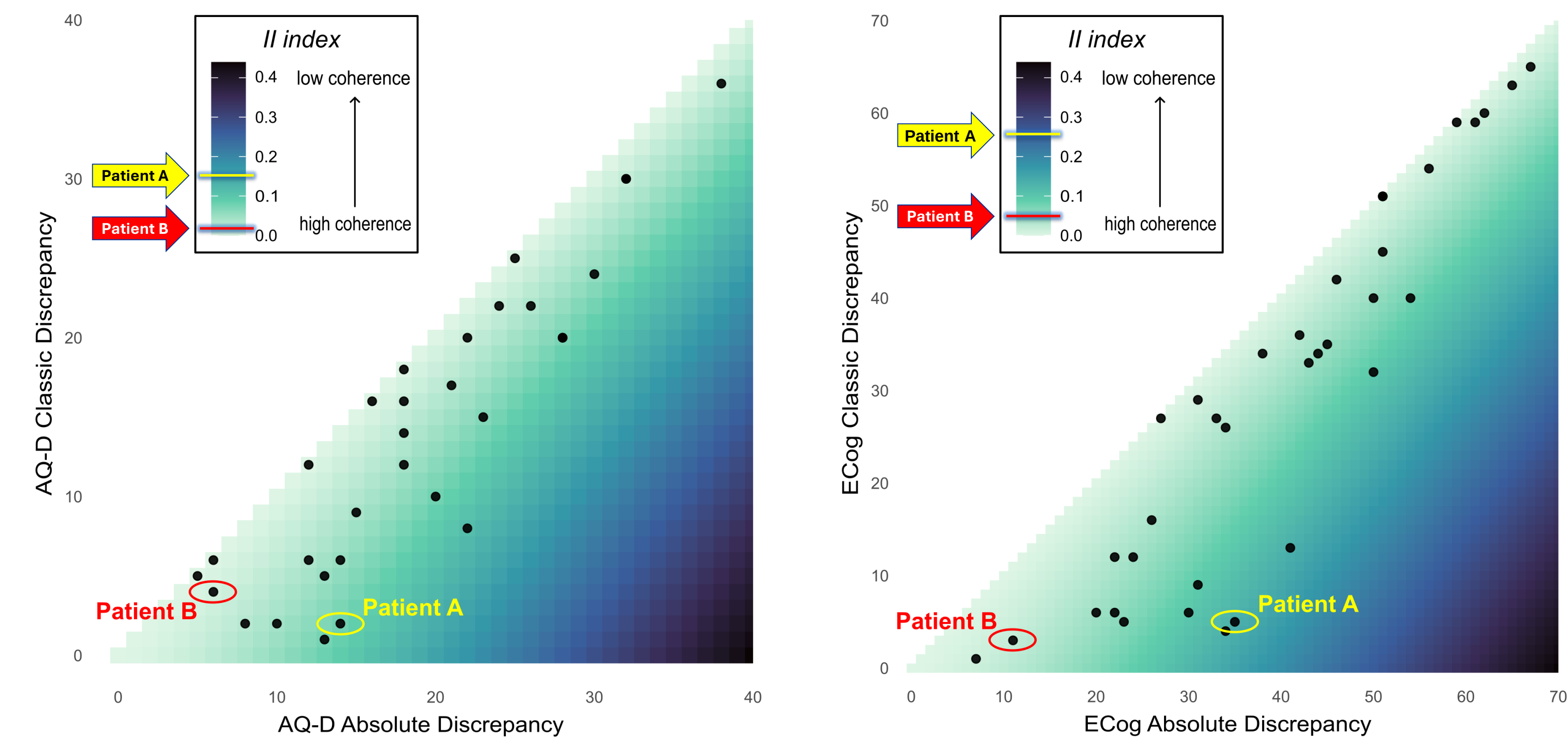
Bidirectional disagreement (d_b)

Quantifies the amount of item-level disagreement masked by cancellation
 $d_b=0$ indicates that the dyad disagrees consistently in one direction

Inconsistency Index (II)

Combines d_a and d_b to assume high values when substantial cancellation occurs, penalizing also high overall disagreement

RESULTS



Patient A and Patient B illustrate two cases with near-zero classic discrepancy scores. However, Patient A shows higher II, suggesting hidden disagreement.

This is reflected by ECog subscores, which indicate **memory-specific anosognosia** alongside heightened awareness in other cognitive domains.

Patient A

ECog = 5
 $II_{ECog} = 0.26$

Memory = 17

Language = -6
Visuospatial abilities = -4
Executive functions = -2

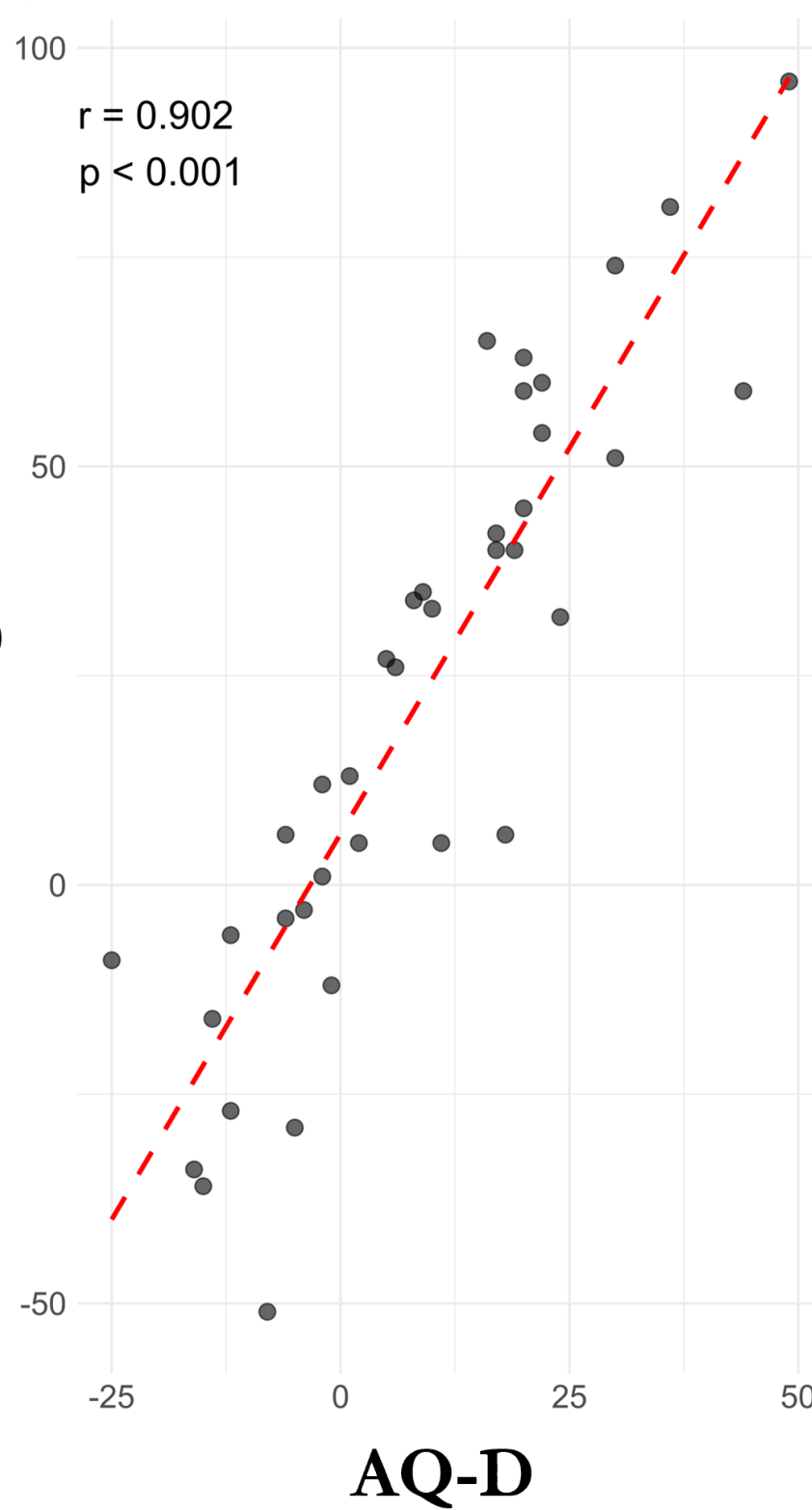
Patient B

ECog = -3
 $II_{ECog} = 0.07$

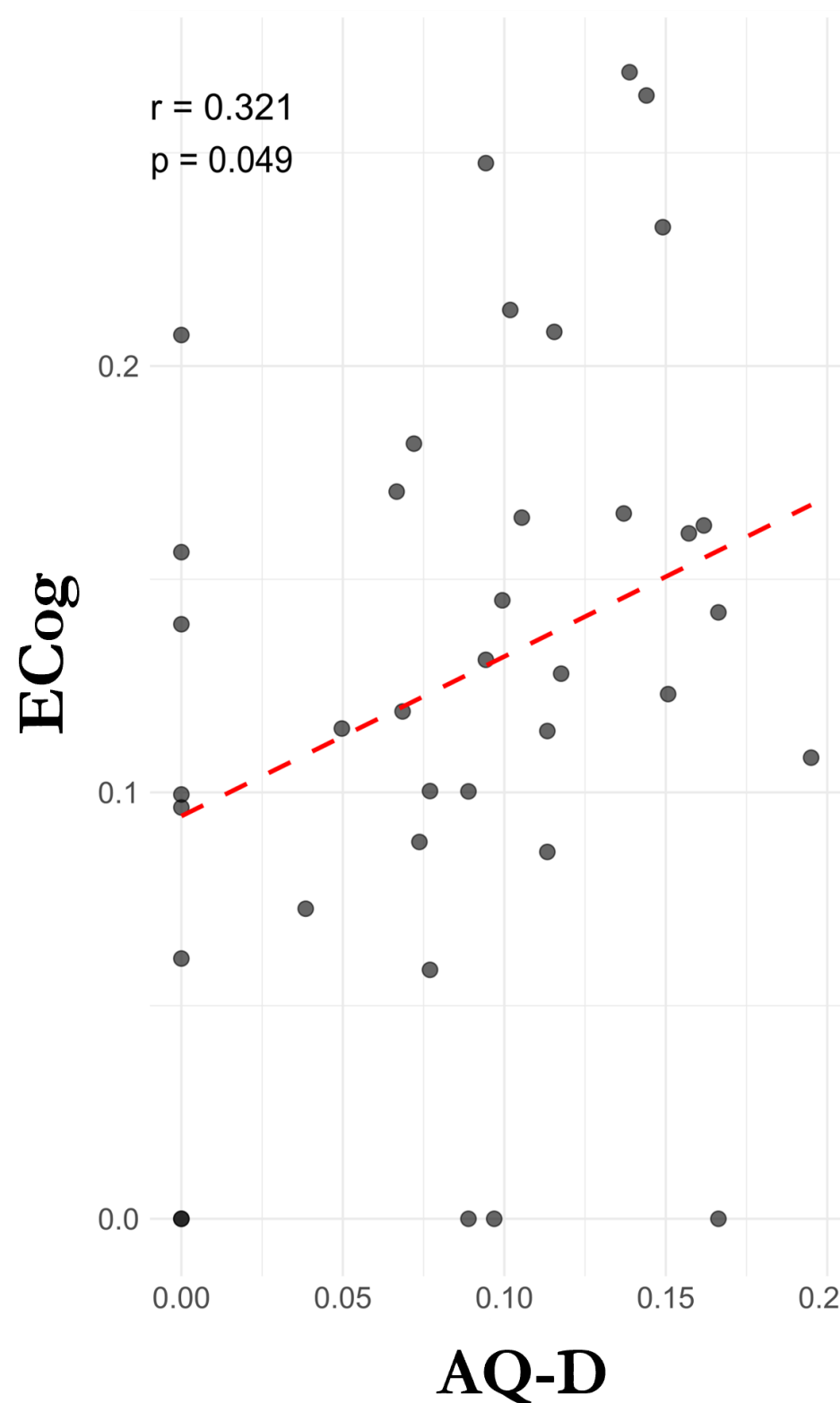
Memory = -1

Language = -2
Visuospatial abilities = 0
Executive functions = 0

Classic discrepancy



Inconsistency index



AQ-D and ECog classic discrepancies are strongly correlated (left), but also Inconsistency Indices are significantly correlated (right). This suggests that cancellation effects tend to be consistent across questionnaires.

CONCLUSION

In clinical practice, a near-zero AQ-D or ECog discrepancy is typically interpreted as preserved awareness. Our approach restricts this conclusion to cases with low II.

Elevated II may indicate clinically meaningful patterns, such as **domain-specific anosognosia** or **inconsistent awareness**, and may require closer item-level inspection or further clinical interviewing.

REFERENCES

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