

Delayed encephalopathy after carbon monoxide poisoning can be predicted by acute symptom

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一酸化炭素中毒の急性期重症度と
遅発性脳症発症の関係

Abstract

- To predict delayed neurological sequelae (DNS), the most useful subtest in WAIS (-III and -IV) was block design.
- Likewise, the most useful IQ or index was performance IQ in WAIS-III.

ROC曲線下面積（AUC）を指標にすると、遅発性脳症発症の予測に最も有用な、WAIS-III, -IVに共通な下位検査は「積木」だった。

同様にAUCを指標にすると、複合的「指標」の中でもっとも有用なのは動作性IQだった。

Objectives

- Last year, we presented the relationship between delayed CO encephalopathy and acute symptom (CK value and period unable to walk).
- This year, we present the relationship between occurrence of delayed CO encephalopathy and cognitive function in intermittent period.

我々は、昨年に引き続き、一酸化炭素中毒の遅発性脳症が、急性期に予測可能かを検討した。

Methods

- Retrospective research
- Twenty-nine patients of CO intoxication underwent WAIS
- Patients were followed for 6 weeks to check occurrence of DNS.
- Four patients developed Delayed Neurological Sequelae (DNS) at days 17, 18, 30, and 41 after CO exposure.
- Days of cognitive examination from CO exposure: IQR 6-12; mean 11.4; median 9
- Subtests and Indexes with large AUC are shown.
- Number of HBO sessions are added in bivariate analysis.

CO中毒29例で暴露後約10日後にWAIS を施行し、成績とその後の遅発性脳症発症の関係を調べた。

Results

Subtests which were related to occurrence of DNS

	Subtest	Threshold (Youden)	sensitivity	specificity	AUC	
理解	Comprehension	8	1	0.67	0.83	Excluded from WAIS IV, verbal test
組み合わせ	Object assembly	6	1	0.8	0.83	Excluded from WAIS IV
積木	Block design	5.5	1	0.82	0.82	
絵画配列	Picture arrangement	8	1	0.57	0.80	Excluded from WAIS IV
行列	Matrix reasoning	9.5	1	0.5	0.76	
符号	Digit symbol	4.5	0.75	0.77	0.73	

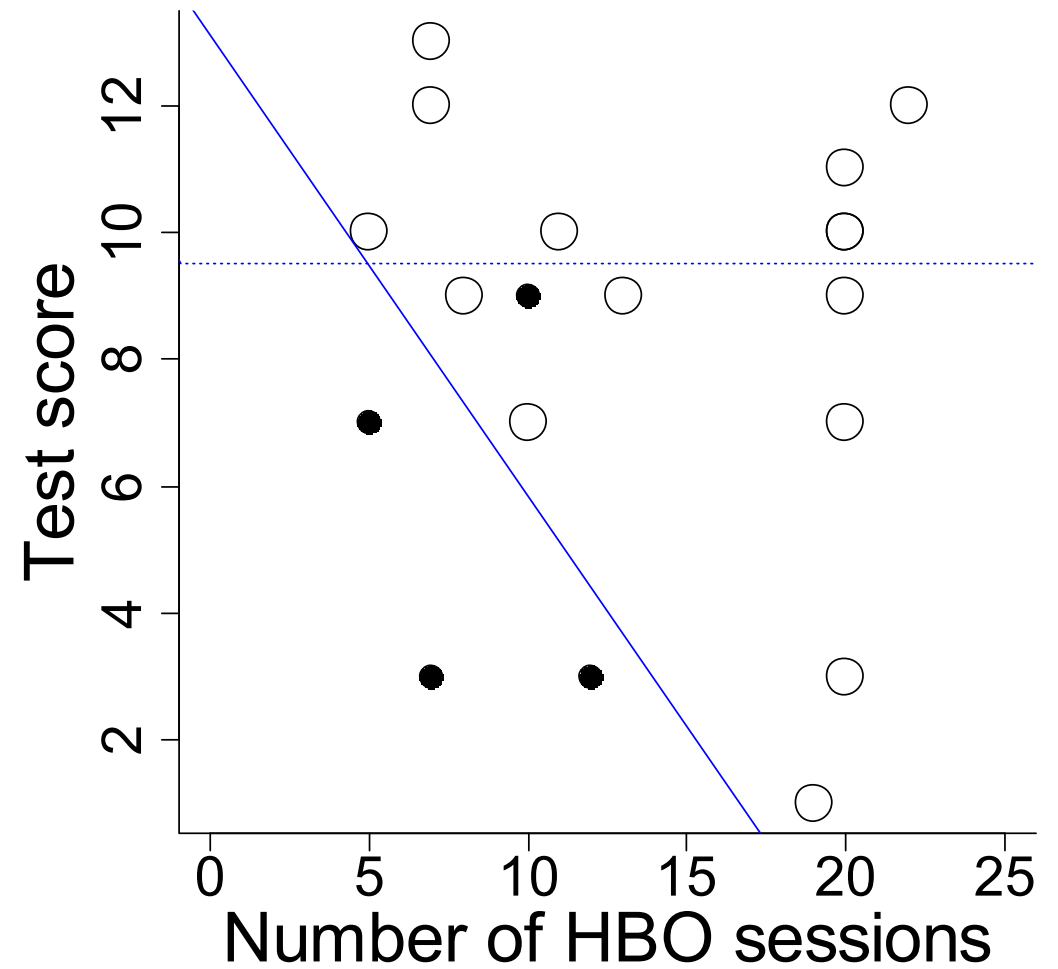
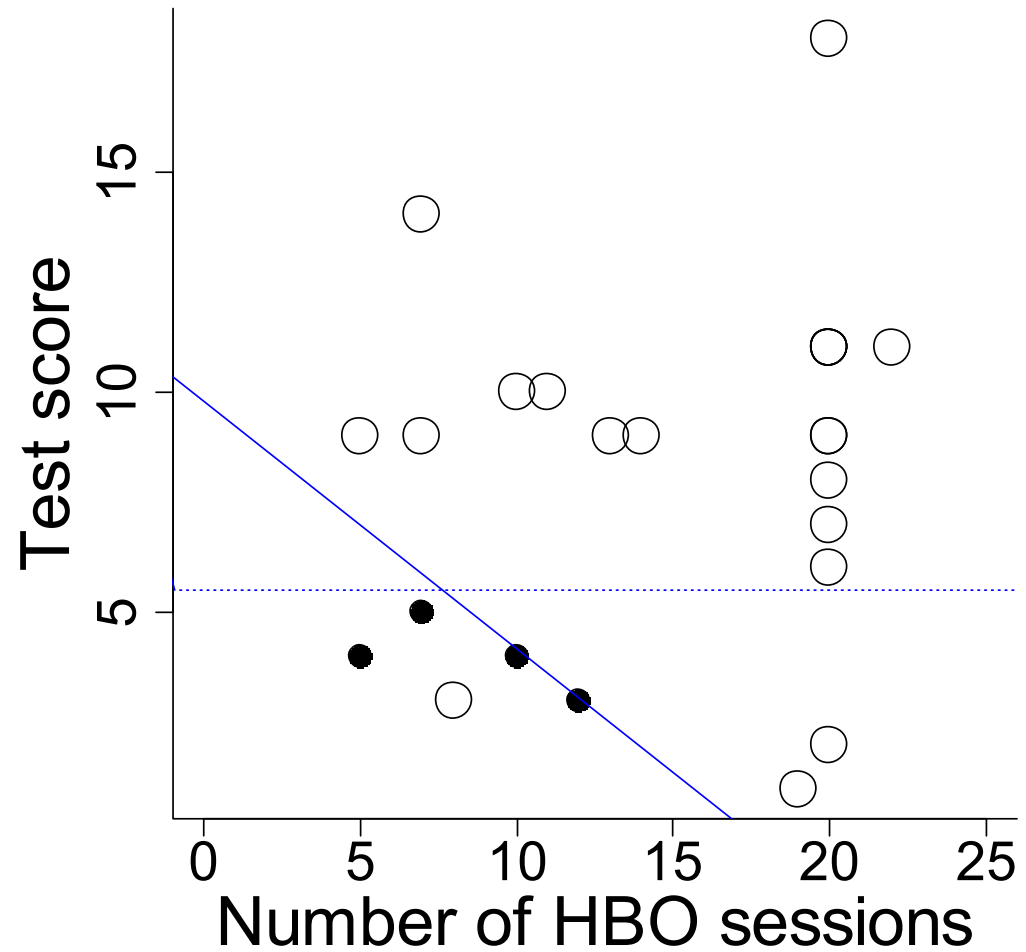
遅発性脳症発症と関係が深いWAISの下位検査

Block Design

Matrix Reasoning

○ recover ● delayed encephalopathy

--- threshold by Youden method — discriminating line by two variate logistic regression



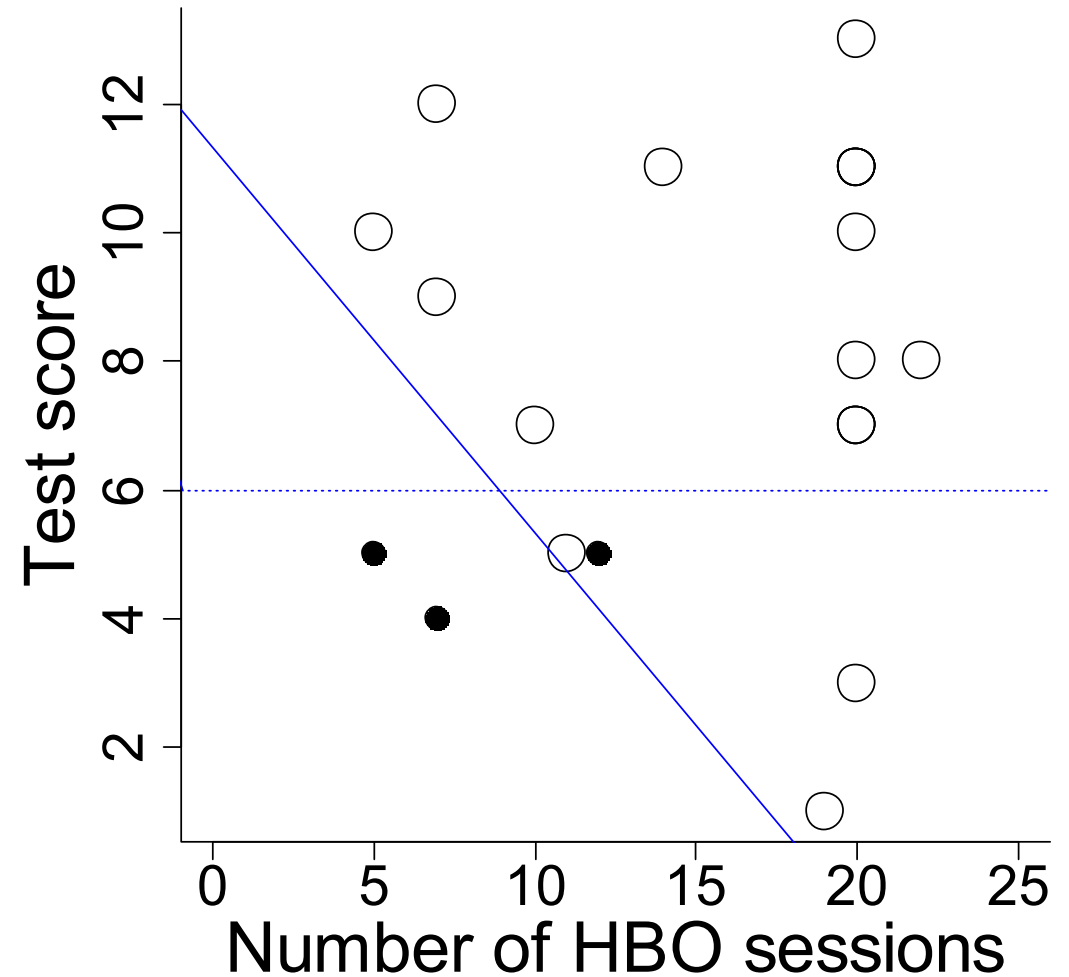
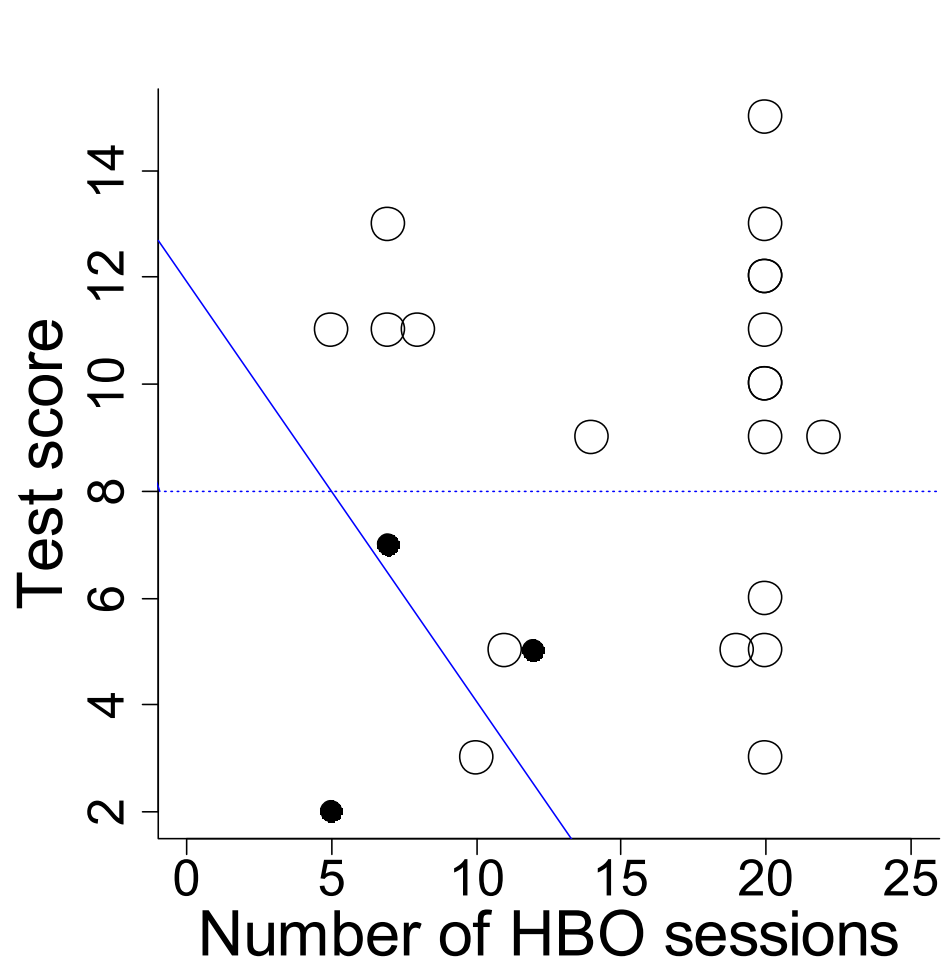
「積木」「行列」はWAIS-IVにも採用された検査でもっとも有用

Comprehension

Object assembly

○ recover ● delayed encephalopathy

--- threshold by Youden method — discriminating line by two variate logistic regression



WAIS-IVのコアテストから除かれた「理解」「組み合わせ」も有用

Index scale which were related to occurrence of DNS

	Index	Threshold (Youden)	sensitivity	specificity	AUC	
動作性IQ	Performance IQ	67.5	1	0.84	0.84	Excluded from WAIS IV
知覚統合	Perceptual organization	86	1	0.63	0.78	
全IQ	Full IQ	89.5	1	0.56	0.77	
言語性IQ	Verbal IQ	91.5	1	0.56	0.76	Excluded from WAIS IV
処理速度	Processing speed	77.5	1	0.44	0.67	

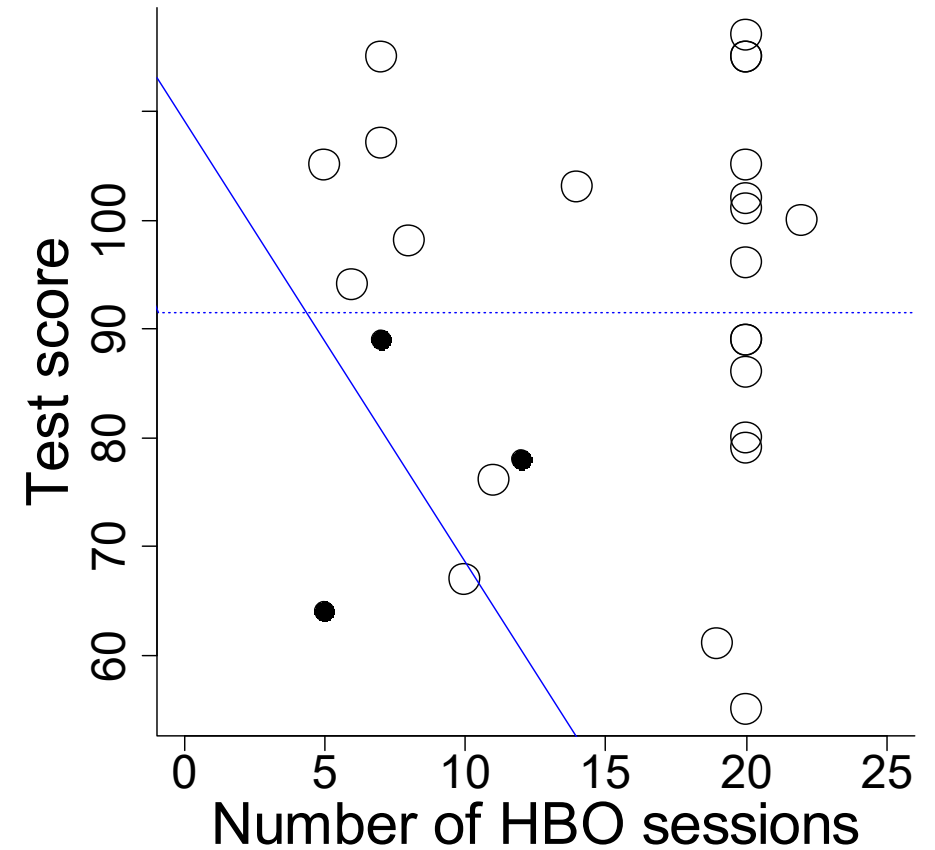
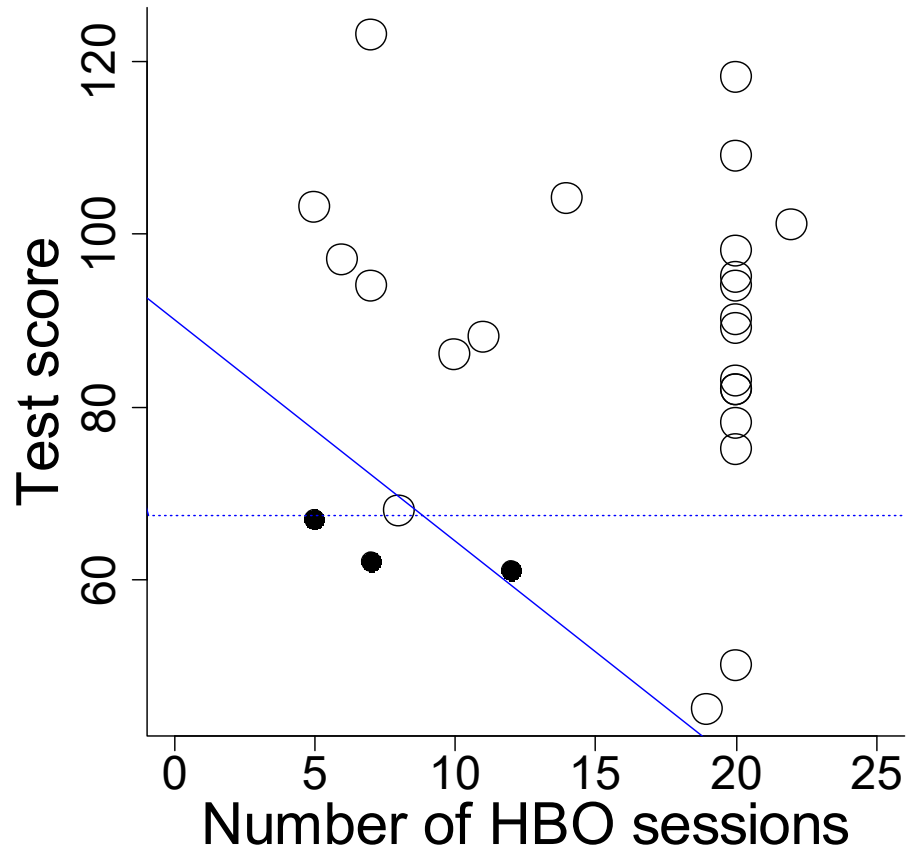
遅発性脳症発症と関係が深いWAISの指標

Performance IQ

Verbal IQ

○ recover ● delayed encephalopathy

--- threshold by Youden method — discriminating line by two variate logistic regression



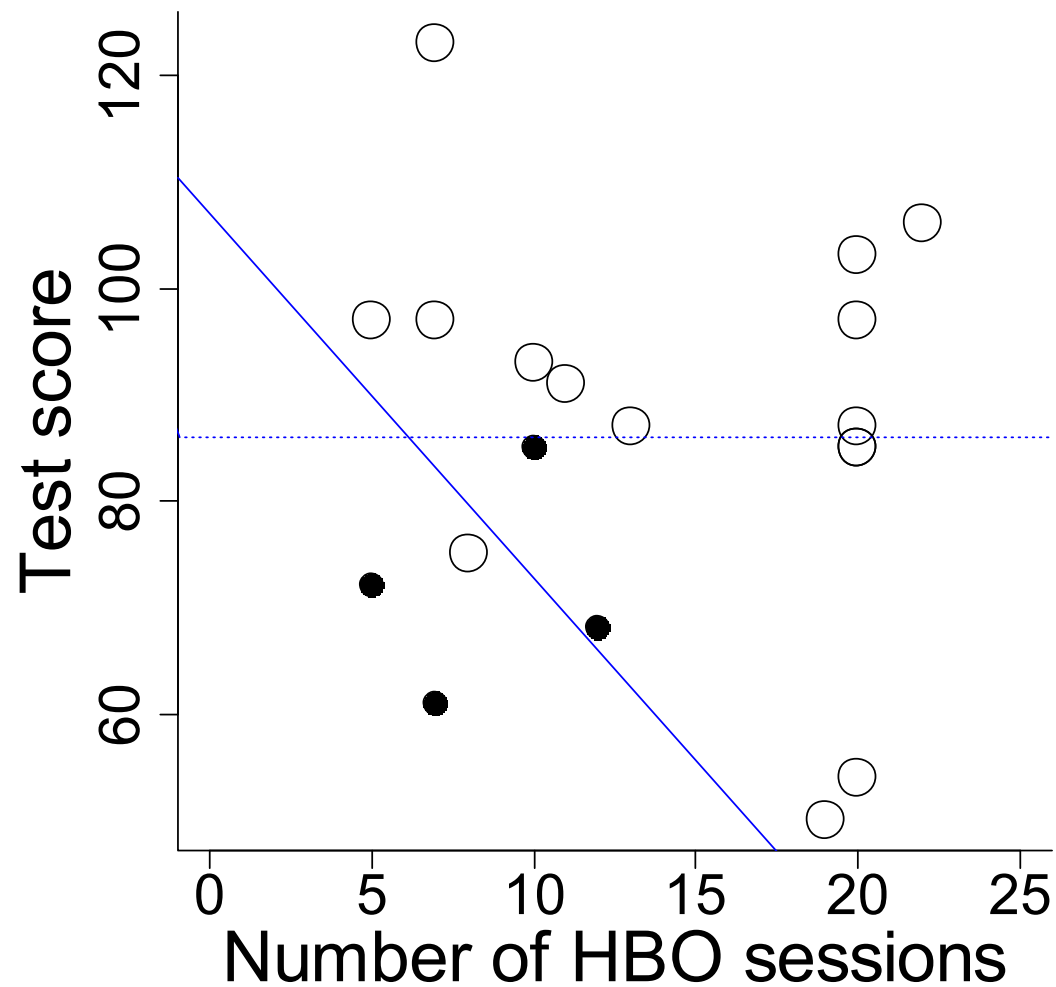
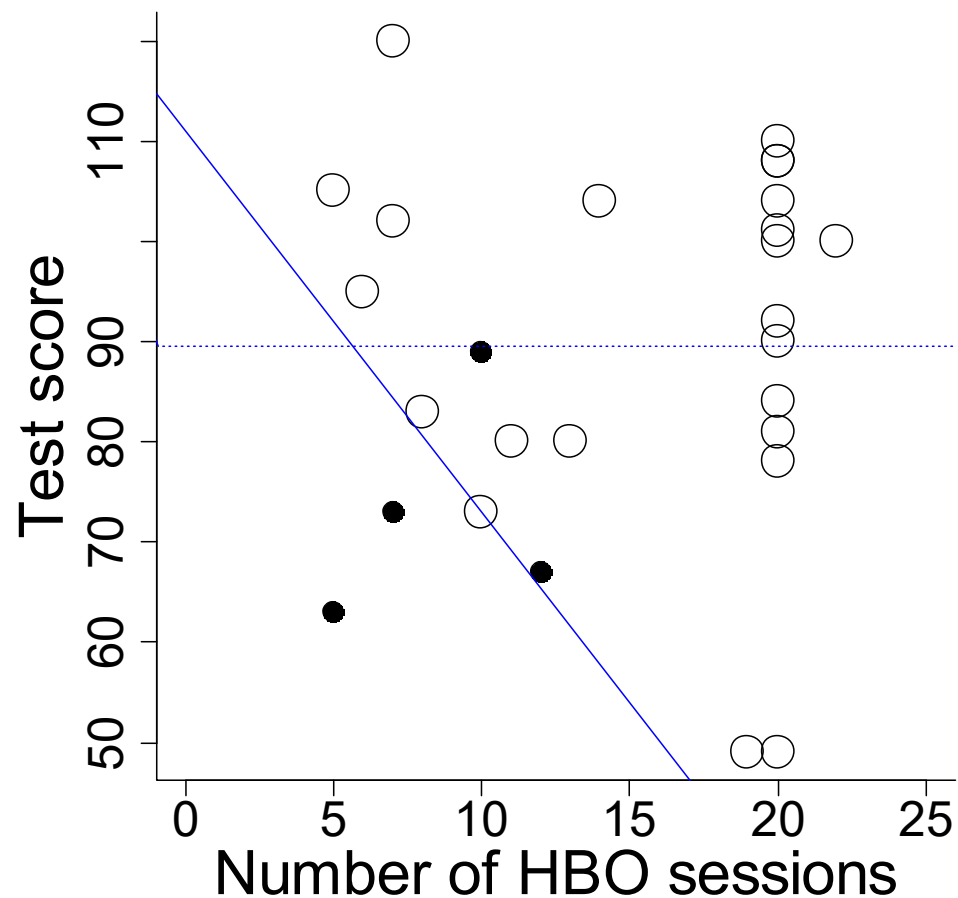
「指標」のうちでは「動作性IQ」がもっとも有用

Full scale IQ

Perceptual Organization

○ recover ● delayed encephalopathy

--- threshold by Youden method — discriminating line by two variate logistic regression

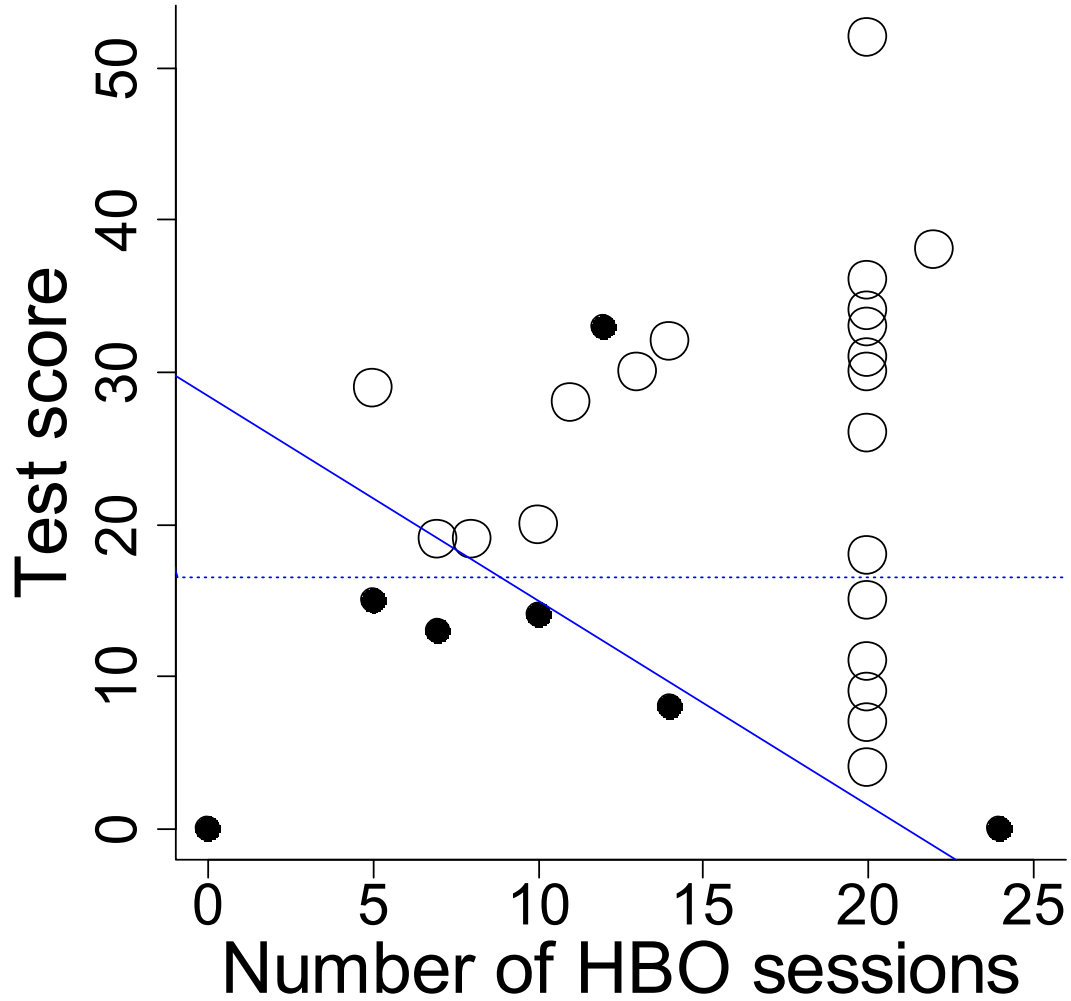


WAIS-III以後の「指標」のうちでは「知覚統合」が有用

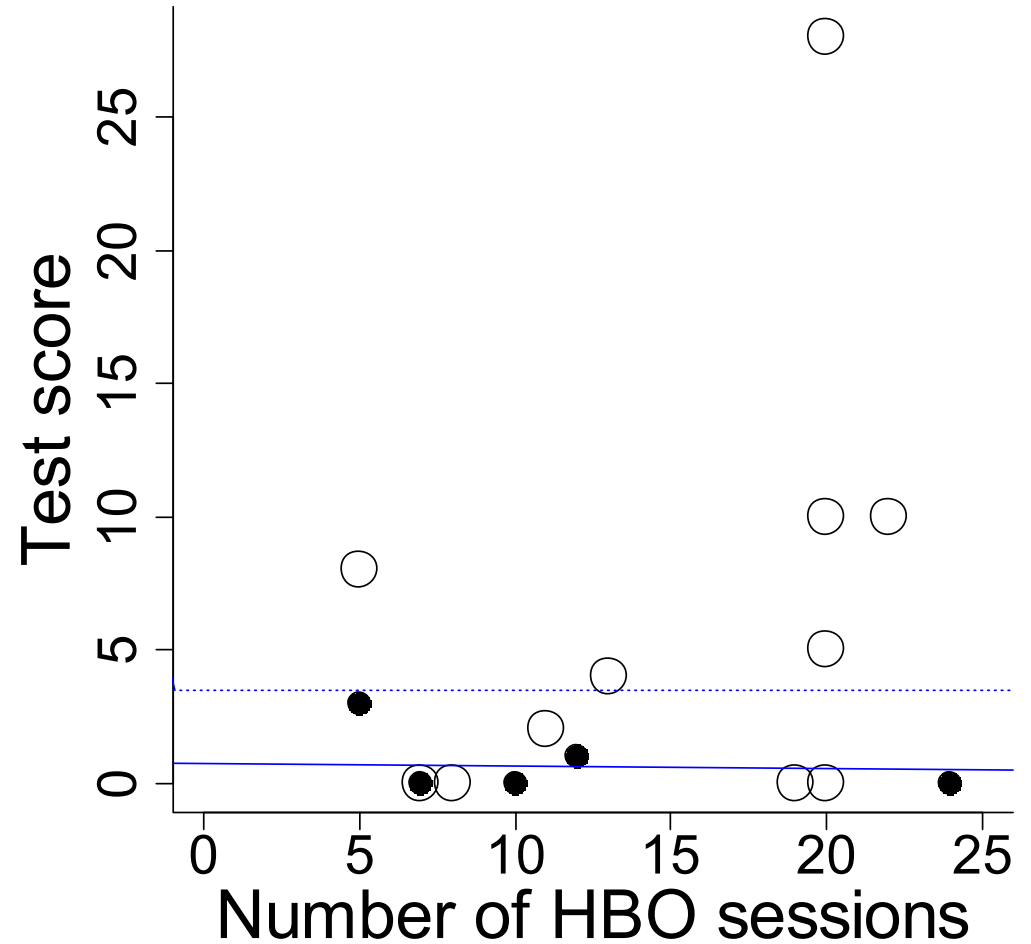
Cognitive tests other than WAIS

	Test	Threshold (Youden)	sensitivity	specificity	AUC
かなひろい	Kana pickup	16.5	0.86	0.73	0.79
三宅 無関係	Miyake non-associated	3.5	1	0.58	0.76
ミニメンタル	MMSE	26.5	0.71	0.77	0.73
改訂長谷川	HDS-R	22	0.55	0.86	0.72
三宅 有関係	Miyake associated	14	0.5	0.83	0.69

Kana pick-up test

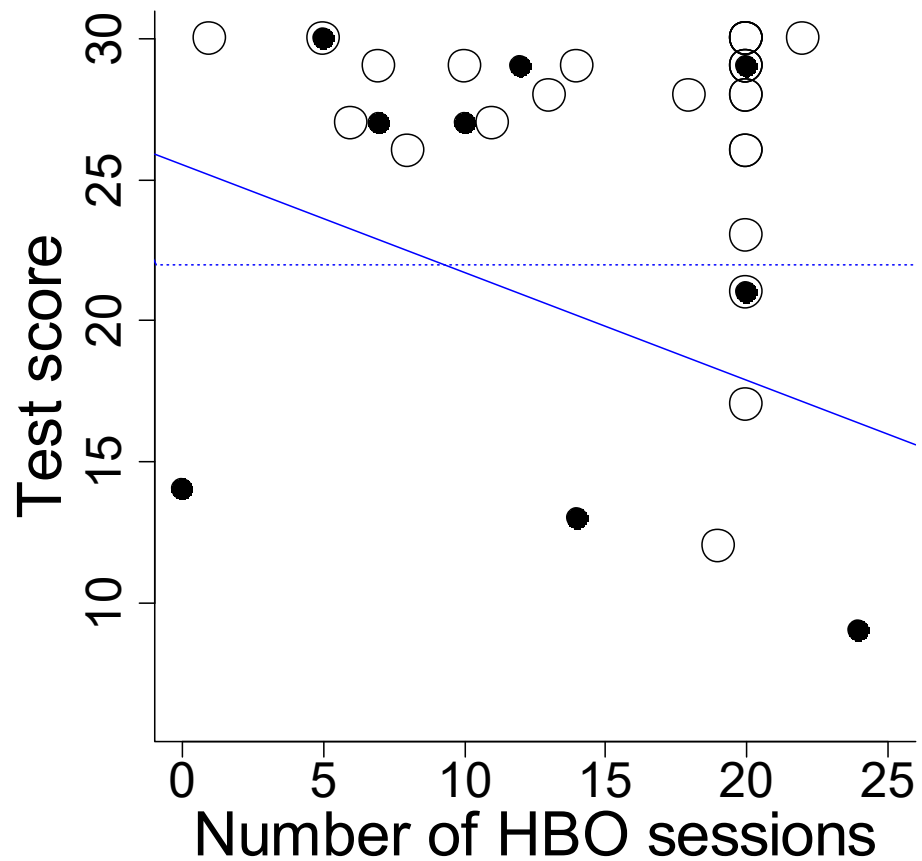


Miyake's non-associated word pair test
(Total score of three times)

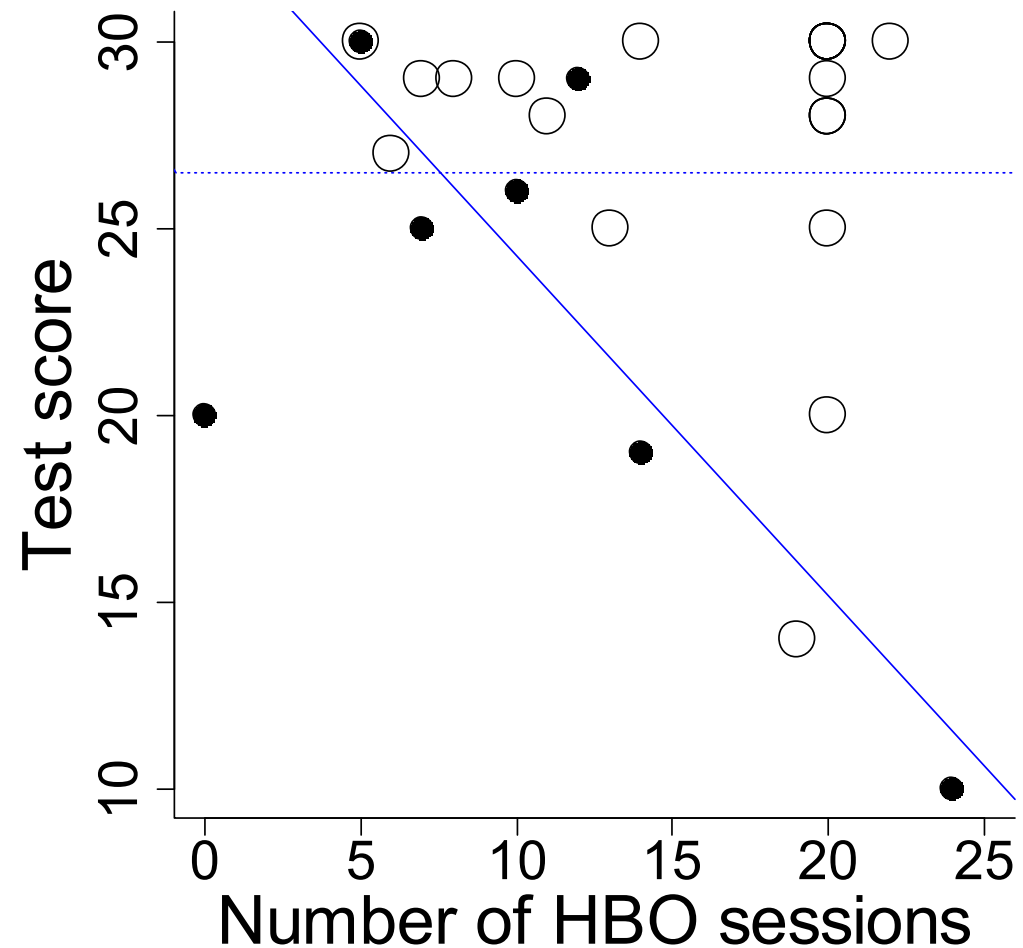


「かなひろいテスト」 「三宅式無関係対語」は有用

Hasegawa Dementia Scale-R
(n=40)



MMSE
(n=33)



「改定長谷川」 「MMSE」 はあまり役に立たない。

Conclusions

- The most predictive subtest was “block design.”
- The most predictive index was “Performance IQ.”
- WAIS-III was more predictive than WAIS-IV in that “performance IQ” was measurable.

WAIS-IIIからIVへの改変は、DNSの予測という見地からはむしろ改悪かも。

筆頭発表者：

演題発表に関連し、開示すべきCOI関係にある企業などはありません。