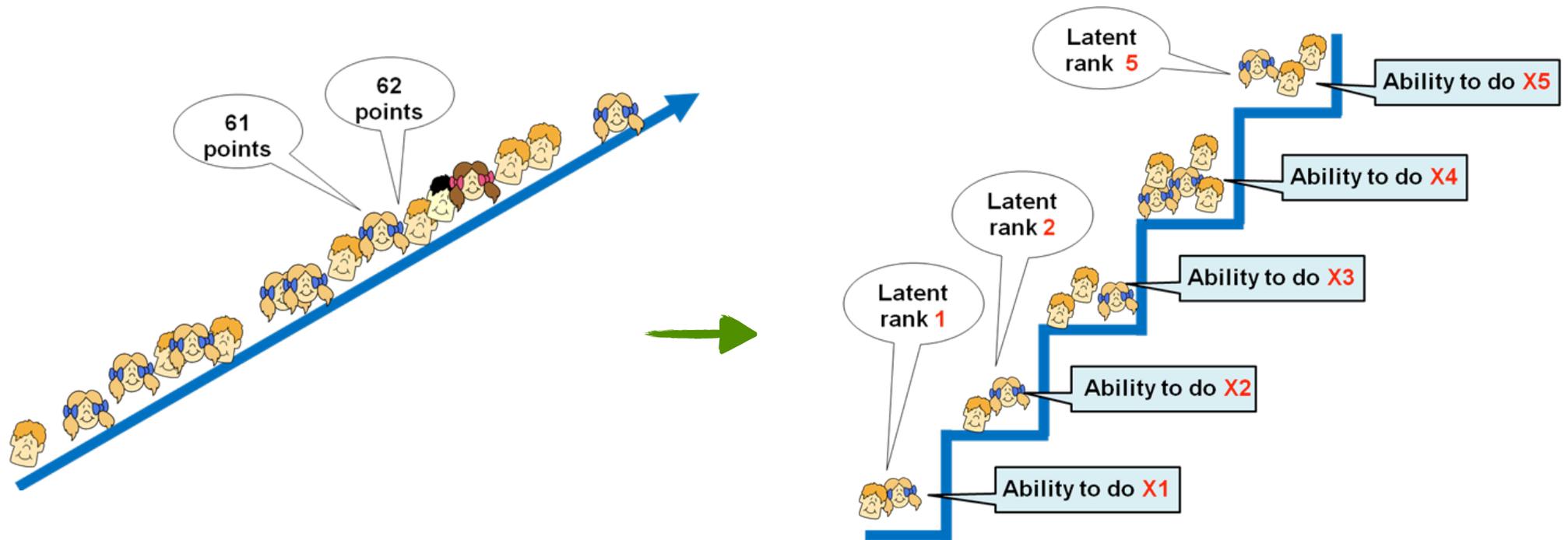


Developing the Can-do System Based on the NCUEE Test Results: An Application of the Neural Test Theory

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Neural Test Theory: continuous to ordinal scaling



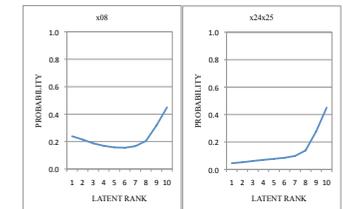
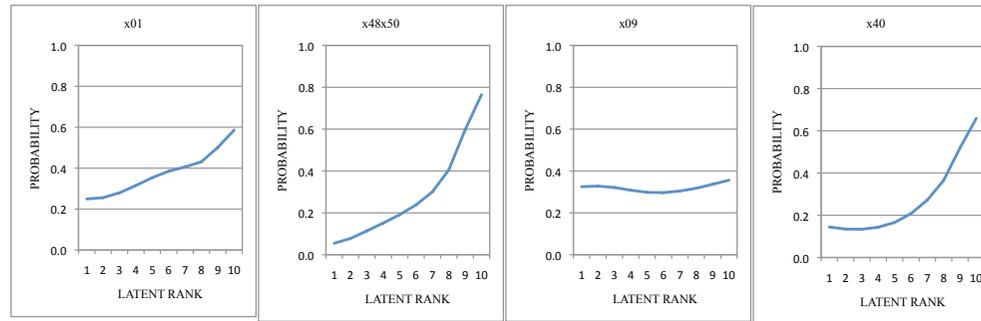
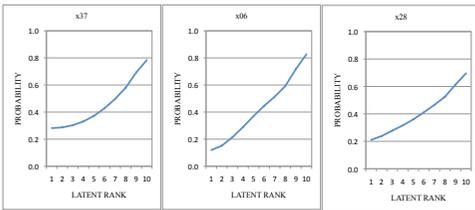
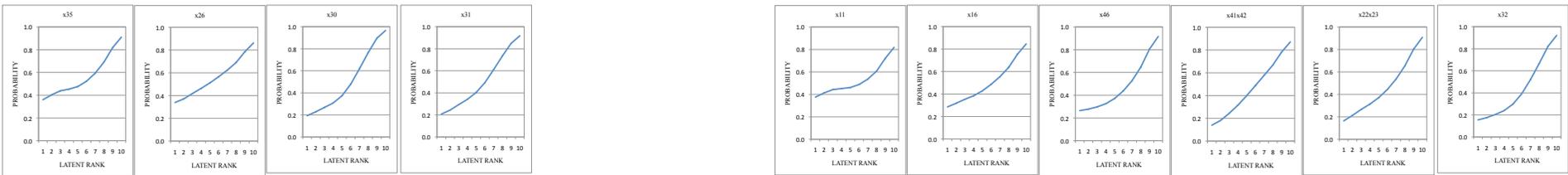
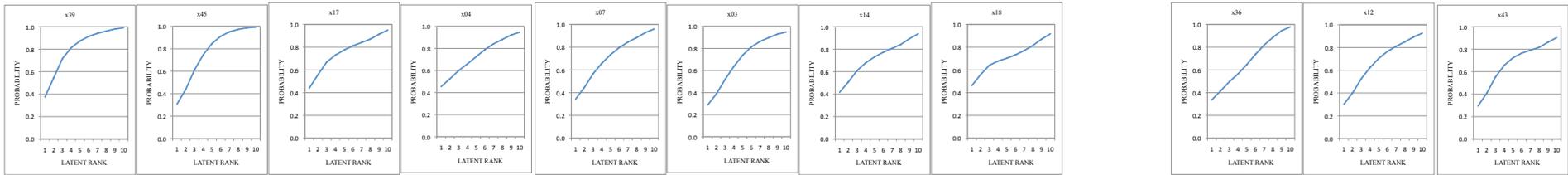
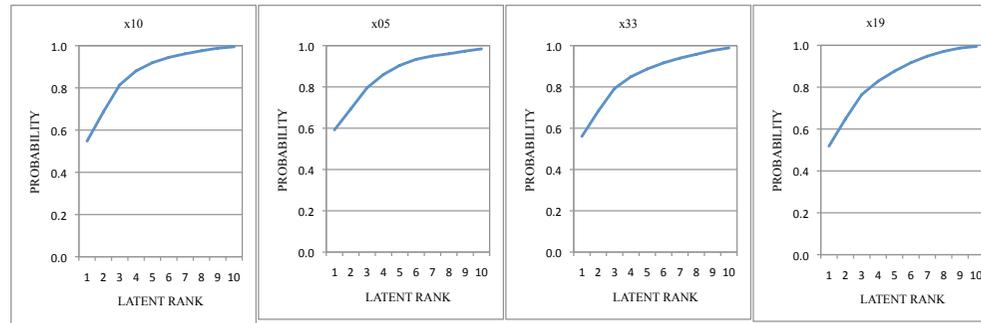
- Tests do not have sufficient “resolution” to place learners on a continuous scale; instead, NTT detects latent ranks and places learners on a ordinal scale.

The NCUEE Test:

- developed and administered by the National Center for University Entrance Examinations
- developed in accordance with the *Course of Study* by the Japanese Ministry of Education (MEXT)
- a nationally-applied university entrance examination
- increasing numbers of universities, both public and private, require their applicants to take the test
- in 2004, more than 40% (587,350) of the 18-year-olds (1,381,000) took the NCUEE Test
- more than 90% of the NCUEE Test takers (536,748) took English
- **randomly sampled 40,000 cases from the actual test-takers' data**

The NCUEE Test:

		Text	Genre	Skills/Knowledge Required	Point allocation
1	A	individual sentence	n/a	Knowledge of word accent patterns	@ 2 x 2 = 4 pts.
	B	casual conversation of 9 turns	dialogue	Understanding of stress in verbal, interactive context	@ 3 x 4 = 12 pts.
2	A	individual sentence	n/a	Discrete grammatical/vocabulary/idiomatic knowledge	@ 2 x 10 = 20 pts.
	B	short 3 to 4 turn conversation	dialogue	Norms of social interaction	@ 2 x 3 = 6 pts.
	C	individual sentence	n/a	Knowledge of syntax and sentence-level word order	@ 4 x 3 = 12 pts.
3	A	one paragraph	expository	Knowledge of logical connectors	@ 2 x 2 = 4 pts.
	B	two paragraphs, each w/ 3 sentences for 1 gap	expository	Sequencing sentences coherently	@ 5 x 2 = 10 pts.
	C	4-paragraph passage, w/ 6 gaps for 3 sentences	expository	Sequencing information across paragraphs	@ 6 x 3 = 18 pts.
4		6-paragraph passage w/ a visual prompt (graph)	expository	Applying information to visual prompt and interpreting data	@ 7 x 5 = 35 pts.
5		dialogue of 20 turns	dialogue	Applying information to visual prompt; Knowledge of conversational set phrases; Identifying referent	@ 6 or 7 x 5 = 32
6		narrative of about 600 words	narrative	Making inferences; Fact finding	@ 5 or 6 x 8 = 45



Item #	Test Item	Skills/Knowledge Tested	CRR	SD	Item-Test Cor.	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Rank 10
x10	Akiko has her bag () and lost all her money.	grammar: <i>have O Ven</i>	0.907	0.291	0.377	0.548	0.686	0.814	0.881	0.919	0.944	0.962	0.976	0.988	0.995
x05	it's going to be a surprise party.	sentence stress in "... it's going to be a surprise party."	0.897	0.304	0.340	0.592	0.694	0.796	0.860	0.904	0.934	0.950	0.961	0.974	0.984
x33	expository text w/ a diagram; captions	matching information in an expository text to a <i>visual prompt</i> ; local	0.889	0.314	0.355	0.561	0.683	0.793	0.849	0.887	0.916	0.939	0.958	0.976	0.989
x19	When do we have to hand in the report? / I don't remember. () / Oh, good. Could you let me know what you find out from her?	<i>discourse comprehension</i> : making a promise	0.885	0.320	0.397	0.519	0.647	0.765	0.829	0.877	0.917	0.948	0.971	0.987	0.995
x39	---	matching understanding of the interaction to <i>visual prompt</i> ; global	0.861	0.346	0.446	0.374	0.545	0.717	0.812	0.873	0.914	0.941	0.961	0.980	0.991
x45	Why did Kate want to help Angela?	<i>inference</i> of a character's feeling; local	0.839	0.368	0.508	0.308	0.439	0.612	0.748	0.847	0.912	0.951	0.974	0.987	0.993
x17	It's very hot and humid today. Will it be any better tomorrow? / I heard it's going to be even worse! / ()	<i>discourse comprehension</i> : response to a negative prospect	0.796	0.403	0.359	0.440	0.559	0.669	0.731	0.775	0.812	0.841	0.871	0.914	0.950
x04	... we could study a bit.	sentence stress in "... we could study a bit."	0.779	0.415	0.384	0.455	0.525	0.600	0.660	0.725	0.790	0.842	0.882	0.922	0.948
x07	Does this answer () sense to you? I can't understand it.	idiom: <i>make sense</i>	0.770	0.421	0.435	0.344	0.446	0.566	0.658	0.734	0.797	0.845	0.884	0.928	0.960
x03	He didn't send me one.	sentence stress in "He didn't send me one."	0.763	0.425	0.463	0.288	0.389	0.521	0.637	0.738	0.814	0.864	0.899	0.930	0.950
x14	The beach was beautiful! I wish I () stay longer.	grammar: subjunctive	0.762	0.426	0.370	0.416	0.509	0.610	0.679	0.731	0.773	0.807	0.842	0.894	0.937
x18	I'm hungry. Shall we go for lunch now? / There isn't time. The meeting is about to start. / () / That's right. Let's hurry. Everyone must be waiting.	<i>discourse comprehension</i> : response to an unexpected schedule change	0.750	0.433	0.322	0.463	0.559	0.641	0.678	0.703	0.732	0.771	0.815	0.871	0.917
x36	Among the five countries, () are similar in that their workers receive more vacation time and spend fewer hours at work than the others.	sentence completion based on <i>inference</i> from a <i>visual prompt</i> ; global	0.740	0.439	0.478	0.338	0.415	0.496	0.564	0.646	0.737	0.818	0.886	0.945	0.979
x12	The laundry won't dry quickly () it's sunny.	vocabulary: <i>unless</i> (as differentiated from <i>if</i> , <i>whether</i> , and <i>since</i>)	0.735	0.442	0.426	0.302	0.401	0.527	0.624	0.704	0.766	0.811	0.850	0.893	0.926
x43	How did Kate feel after Angela joined the swimming club?	<i>inference</i> of a character's feeling; local	0.727	0.445	0.388	0.294	0.408	0.552	0.656	0.723	0.765	0.791	0.816	0.861	0.903
x34	Japan leads the five nations in the number of ().	sentence completion based on information in an expository text; local	0.719	0.449	0.411	0.408	0.450	0.513	0.575	0.639	0.700	0.760	0.824	0.900	0.951
x15	I think I did well on the English listening test. I understood () on the tape.	collocation: adverb based on <i>any/every/no/some-thing</i>	0.696	0.460	0.324	0.426	0.482	0.547	0.596	0.644	0.694	0.738	0.775	0.822	0.864
x13	Would you mind () an eye on my luggage while I make a phone call?	vocabulary: <i>mind Ving</i>	0.648	0.478	0.373	0.301	0.371	0.462	0.538	0.604	0.657	0.697	0.734	0.796	0.856
x27	The English expression, (), reflects this fact about the human body.	logical connector: <i>therefore</i>	0.643	0.479	0.457	0.248	0.322	0.418	0.488	0.546	0.612	0.687	0.766	0.857	0.922
x44	Why did the coach talk to Kate before the trial races?	<i>inference</i> of a character's intention; local	0.640	0.480	0.309	0.310	0.389	0.489	0.564	0.622	0.666	0.699	0.727	0.756	0.775
x29	---	<i>coherent sequencing</i> of sentences in one paragraph	0.636	0.481	0.313	0.398	0.464	0.517	0.542	0.563	0.592	0.633	0.691	0.777	0.846
x20x21	The gallery has many ____ () ____ () ____ miss.	syntax/word order: relative clause construction	0.635	0.481	0.496	0.167	0.256	0.368	0.466	0.557	0.634	0.699	0.769	0.860	0.928
x47	What did Angela mean when she said, "You're not the only one"?	<i>inference</i> of a character's feeling; local	0.633	0.482	0.353	0.374	0.414	0.466	0.513	0.556	0.599	0.644	0.703	0.793	0.867
x38	---	social norm of interaction; back channeling markers	0.619	0.486	0.455	0.229	0.293	0.374	0.444	0.518	0.598	0.677	0.751	0.834	0.894
x02	The president's ____ comments ____ on energy resources were general; she didn't deal with ____ particular ____ problems.	accent patterns of comments and particular	0.612	0.487	0.352	0.336	0.374	0.429	0.484	0.544	0.603	0.655	0.702	0.763	0.814
x35	Japan is different from the other nations in that ().	sentence completion based on information in an expository text; local	0.609	0.488	0.399	0.360	0.403	0.439	0.454	0.476	0.523	0.594	0.691	0.819	0.911
x26	... The two different meanings of "hot" may seem confusing to Japanese students, but (), the word is the right one for describing the way	logical connector: <i>as a matter of fact</i>	0.606	0.489	0.380	0.339	0.371	0.418	0.463	0.511	0.565	0.624	0.690	0.784	0.863
x30	---	<i>coherent sequencing</i> of sentences across several paragraphs	0.578	0.494	0.553	0.193	0.229	0.269	0.309	0.374	0.479	0.618	0.764	0.896	0.966
x31	---	<i>coherent sequencing</i> of sentences across several paragraphs	0.572	0.495	0.500	0.208	0.244	0.294	0.343	0.404	0.494	0.612	0.735	0.849	0.918
x11	By the time the 2002 World Cup was held, soccer () already become a leading sport in Japan.	grammar: past perfective	0.564	0.496	0.323	0.376	0.413	0.443	0.452	0.462	0.488	0.536	0.608	0.722	0.819
x16	As soon as the star player came in, the game ().	grammar: tense and aspect, plus a psych verb	0.551	0.497	0.404	0.285	0.319	0.354	0.385	0.429	0.487	0.555	0.638	0.754	0.846
x46	Why was Kate disappointed immediately after the final race?	<i>inference</i> of a character's feeling; local	0.540	0.498	0.470	0.265	0.278	0.298	0.326	0.372	0.439	0.528	0.647	0.805	0.916
x41x42	---	overall understanding of the interaction	0.530	0.499	0.498	0.139	0.181	0.244	0.316	0.399	0.488	0.578	0.668	0.782	0.871
x22x23	When he was tired, my brother used ____ () ____ () ____ in his room.	syntax/word order: " <i>used to</i> " and " <i>with the light on</i> "	0.528	0.499	0.509	0.164	0.213	0.267	0.314	0.371	0.444	0.538	0.655	0.803	0.908
x32	---	<i>coherent sequencing</i> of sentences across several paragraphs	0.505	0.500	0.542	0.155	0.176	0.205	0.240	0.299	0.392	0.520	0.666	0.821	0.921
x37	According to the passage and the figure, it can be said that in 1995 ().	sentence completion based on <i>inference</i> from an expository text; global	0.497	0.500	0.381	0.282	0.287	0.303	0.331	0.372	0.428	0.497	0.580	0.692	0.784
x06	it was a surprise party.	sentence stress in "... it was a surprise party."	0.484	0.500	0.477	0.120	0.152	0.214	0.289	0.371	0.446	0.514	0.592	0.717	0.827
x28	---	<i>coherent sequencing</i> of sentences in one paragraph	0.451	0.498	0.351	0.210	0.239	0.278	0.316	0.360	0.411	0.466	0.525	0.613	0.696
x01	The huge ____ network ____ of canals is a ____ fascinating ____ feature of the old city.	accent patterns of network and fascinating	0.403	0.490	0.265	0.250	0.256	0.280	0.315	0.354	0.385	0.406	0.431	0.501	0.586
x48x50	---	fact finding; global	0.342	0.474	0.499	0.055	0.078	0.114	0.151	0.191	0.238	0.301	0.405	0.597	0.765
x09	Every winter, colds are () schools.	vocabulary: <i>common</i> (as differentiated from <i>familiar</i> , <i>popular</i> , and <i>broad</i>)	0.320	0.466	0.082	0.325	0.328	0.321	0.308	0.298	0.297	0.304	0.317	0.336	0.356
x40	---	identification of pronouns' referents	0.313	0.464	0.410	0.144	0.135	0.134	0.143	0.166	0.208	0.272	0.365	0.519	0.659
x08	Taro is now devoting all his time and energy () English.	grammar: <i>devote O to Ving</i>	0.236	0.425	0.212	0.239	0.215	0.187	0.169	0.158	0.155	0.167	0.205	0.317	0.450
x24x25	I wonder ____ () ____ () ____ upstairs.	syntax/word order: " <i>what it is that is making the noise</i> "	0.160	0.366	0.360	0.045	0.052	0.062	0.070	0.077	0.085	0.098	0.138	0.276	0.450

Rank	Can-Do Statements
1	have insufficient knowledge in vocabulary, grammar, accent patterns, and sentence stress, and their reading comprehension skills are limited
2	show some understanding of the basic sentence structure (Item 5), and start to display their understanding of dialogues (Item 19). Also, if they do not need to read across paragraphs, they can understand information in the text with the aid of some visual prompt (Item 33).
3	characterized by their understanding of, and making appropriate responses in, dialogues (Items 17, 18 and 19), and their successful performance in placing sentence stress (Items 3, 4 and 5). However, being able to effectively use sentence stress to emphasize a point (Item 6) needs to wait till much later (at Rank 9). With the visual aid, they can understand a longer passage (Item 39, and although slightly less successful, in Item 36).
4	start to display their ability to make inference based on information within a paragraph (Item 43), which is strengthened by a visual prompt when their understanding needs to be based on information across paragraphs (Item 36).
5	differentiated from Rank 4 learners because of their wider knowledge of vocabulary and collocation (Items 13 and 15). They can use the linguistic markers to express logical relations within a sentence (Item 12) as well as within a paragraph (Item 27).
6	display their knowledge of grammar necessary to produce more complex sentences (Item 20-21). They start to show the ability to sequencing sentences within a paragraph (Item 29).
7	characterized by improved discourse competence as indicated by Items 26, 30 and 31. Their repertoire of logical connectors appears to be wider, and they can form coherent passages with several paragraphs.
8	knowledge of grammar becomes refined (Items 11, 16 and 22-23), and their global understanding of passages is improved as evidenced by Items 41-42 and 32.
9	outperform other learners in most of the items they were capable of correctly answering. Furthermore, learners can use sentence stress effectively to make a point (at least, they have the knowledge to do so) at this rank (Item 6).
10	demonstrate better performance in Item 48-50 and Item 40, which implies their understanding of the longer passages are more accurate and precise.

False
Beginners

Sentence-level
comprehension

Dialogue comprehension

Making inferences

Logical deployment of information in short
passages

Sentence-level production

Logical deployment of information across paragraphs

Global understanding of text/discourse

Effective use of sentence stress based on the understanding of the whole
dialogue

Accurate and precise understanding of longer passages