

Correlation between SELSI and Bayley according to gestational age and brain abnormalities.

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Objective

Both the Bayley Scales of Infant Development (BSID) and the Sequenced Language Scale for Infants (SELSI) are for screening high-risk infant populations after premature birth or perinatal insults. BSID can be helpful in identifying infants and young children who are at risk for developmental delays by evaluating both cognitive and physical functions. On the other hand, SELSI can assess only language function in infants from the ages of 4 to 35 months. However, there are no previous studies about correlation of subcategories between these two tests according to gestational age(GA) and brain image. So, this study is aimed to find any significant correlations of two tests in infants with premature gestational age and different brain images.

Subjects and Method

We reviewed recordings of 24 infants who have visited our hospital and performed both Bayley Scales of Infant Development-II (BSID-II) and SELSI. BSID-II is subdivided into three subcategories including cognition, motor, and behavior scales. And SELSI is also subdivided into two subcategories including receptive and expressive language abilities. We calculated quotient scores by dividing estimated age by corrected age and multiplying it by 100. First, we compared quotient scores of each group and then, analyzed the correlation of these scores between cognition scale of BSID-II and two subcategories of SELSI. We applied the same method after dividing subjects into two groups according to GA (<32 weeks, ≥32 weeks) and the presence of abnormalities (normal, abnormal: cyst, PVL, hemorrhage, ischemia) in brain image.

Result

Infants with less than 32 weeks of GA showed significantly higher quotient scores than infants with more than 32 weeks of GA in cognition scale of BSID-II and expressive language abilities of SELSI (Table1). Also, the correlations of quotient scores between receptive language abilities of SELSI and cognition scale of BSID-II ($r=0.64$, $p<0.01$), between expressive language abilities of SELSI and cognition scale of BSID-II ($r=0.73$, $p<0.01$) were statistically significant. And these correlations were more prominent in infants with more than 32 weeks of GA (receptive: $r=0.93$, $p<0.01$; expressive: $r=0.75$, $p<0.05$) than in infants with less than 32 weeks of GA (receptive: $r=0.54$, $p<0.05$; expressive: $r=0.69$, $p<0.01$). Also, infants with abnormal brain images showed higher correlation (receptive: $r=0.89$, $p<0.01$; expressive: $r=0.83$, $p<0.05$) than infants with normal brain images (receptive: $r=0.54$, $p<0.05$; expressive: $r=0.69$, $p<0.01$) (Table 2).

Conclusion

This study shows that infants with more than 32 weeks of GA performed low scores on BSID-II and SELSI. So, we should carefully consider BSID and SELSI to infants with even higher GA. Also, correlations between language abilities of SELSI and cognition scale of BSID-II were statistically significant and this correlations were more prominent in infants with more than 32 weeks of GA and with abnormal brain images.

Table 1. Difference between quotient scores between each groups

	Gestational Age			Brain Image		
	<32 Weeks (n=14)	≥32 Weeks (n=10)	p-value	Normal (n=17)	Abnormal (n=7)	p-value
Cognition scale of BSID-II	15.4	8.5	0.02*	13.6	9.9	0.26
Receptive Language Abilities of SELSI	14.4	9.6	0.12	13.5	10.0	0.29
Expressive Language Abilities of SELSI	14.9	9.2	0.04*	13.9	9.2	0.15

Values are mean rank.

BSID-II: Bayley Scales of Infant Development

SELSI: Sequenced Language Scale for Infants

* $p < .05$ ** $p < .01$

Table 2. Correlation of quotient scores between SELSI and Bayley subcategories

Cognition scale of BSID-II SELSI	Total	Gestation Age		Brain Image	
		<32 Weeks (n=14)	≥32 Weeks (n=10)	Normal (n=17)	Abnormal (n=7)
Receptive Language Abilities	0.64**	0.54*	0.93**	0.54*	0.89**
Expressive Language Abilities	0.73**	0.69**	0.75*	0.69**	0.83*

Values are correlation coefficients.

BSID-II: Bayley Scales of Infant Development

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* $p < .05$ ** $p < .01$