

The number of schoolchildren in France growing up with French and another language is constantly increasing.

Identifying Specific Language Impairment (SLI) in these children remains very difficult:

- Studies comparing children with SLI and children acquiring a second language (L2) reveal important similarities in linguistic performance (Armon-Lotem, 2012; Chilla, 2008; Paradis, 2010)
- French Speech-Language Pathologists are generally not capable of assessing the First Language (L1) of bilingual children.
- French standardized tests have exclusively monolingual norms

→ Language assessment in bilingual contexts often leads to misdiagnosis (Bedore & Peña, 2008; Crutchley et al., 2000; de Jong, 2010; Grimm & Shultz, 2014; Salameh et al., 2002; Tuller et al., 2014)

One possible direction for identifying SLI in bilingual children is assessing their nonlinguistic ability.

Previous studies suggest that monolingual children with SLI (Mo-SLI) show deficits in some Executive Functions (EF) such as attention, inhibition, shifting and working memory (WM) (Kohnert & Windsor, 2004; Finneran, Francis & Leonard, 2009; Im Botler, et al., 2006; see, Kohnert et al., 2009 for a review).

Do bilingual children with SLI (Bi-SLI) show the same deficits that have been observed in monolinguals or does bilingualism give them an advantage as proposed in previous studies (Bialystok & Viswanathan, 2009; Calvo & Bialystok, 2014; Iluz-Cohen & Armon-Lotem, 2013; a.o.)?

Participants:

	Bi-TD	Bi-SLI	Total/Language
Portuguese-French	17	6	23
Turkish-French	20	5	25
Total/Group	37	11	48

	Bi-TD – Mean (SD)		Bi-SLI – Mean (SD)
Age	7;2 (0;11)	ns	7;9 (1;1)
Age of Onset (Fr)	1;2 (1;9)	ns	2;2 (2;10)
Length of Exposure (Fr)	6;0 (1;11)	ns	5;3 (2;3)
SES (mother's education)	9.3 (3.30)	ns	9.33 (2.4)

Inclusionary criteria in all groups:

Age 5;6-8;11

Raven's Progressive Matrices > 9th percentile (or equivalent score)

Minimum Length of Exposure to French: 1 year

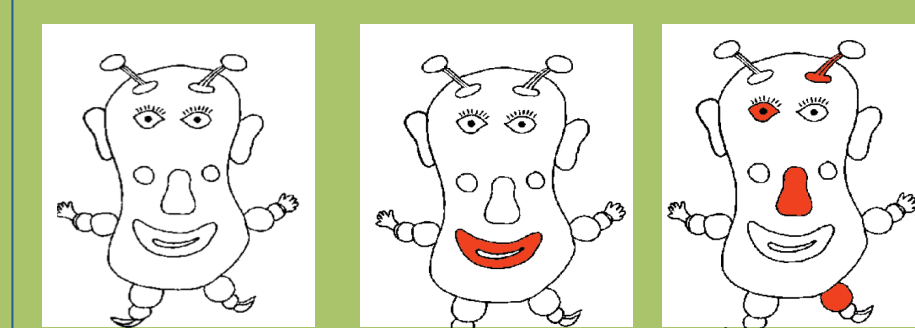
Inclusionary criteria in the Bi-SLI group:

Low performance on standardized tests in both L1 & L2. Adapted cut-offs were applied on monolingual norms (Thordordottir, 2015)

Tasks:

- Verbal Short Term Memory: Forward Digit Span
- Working Memory: Backward Digit Span (WISC-IV, FV, 2005)

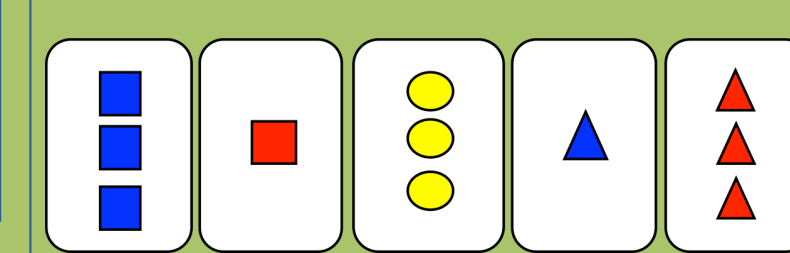
Visuospatial WM: Mr. Peanut (Zebib, 2009 – adapted from Case, 1985)



Selective Attention & Inhibition: The Hidden Mouse (Iluz-Cohen & Armon-Lotem, 2013)



Sorting & Shifting: Card Sorting (Iluz-Cohen & Armon-Lotem, 2013)



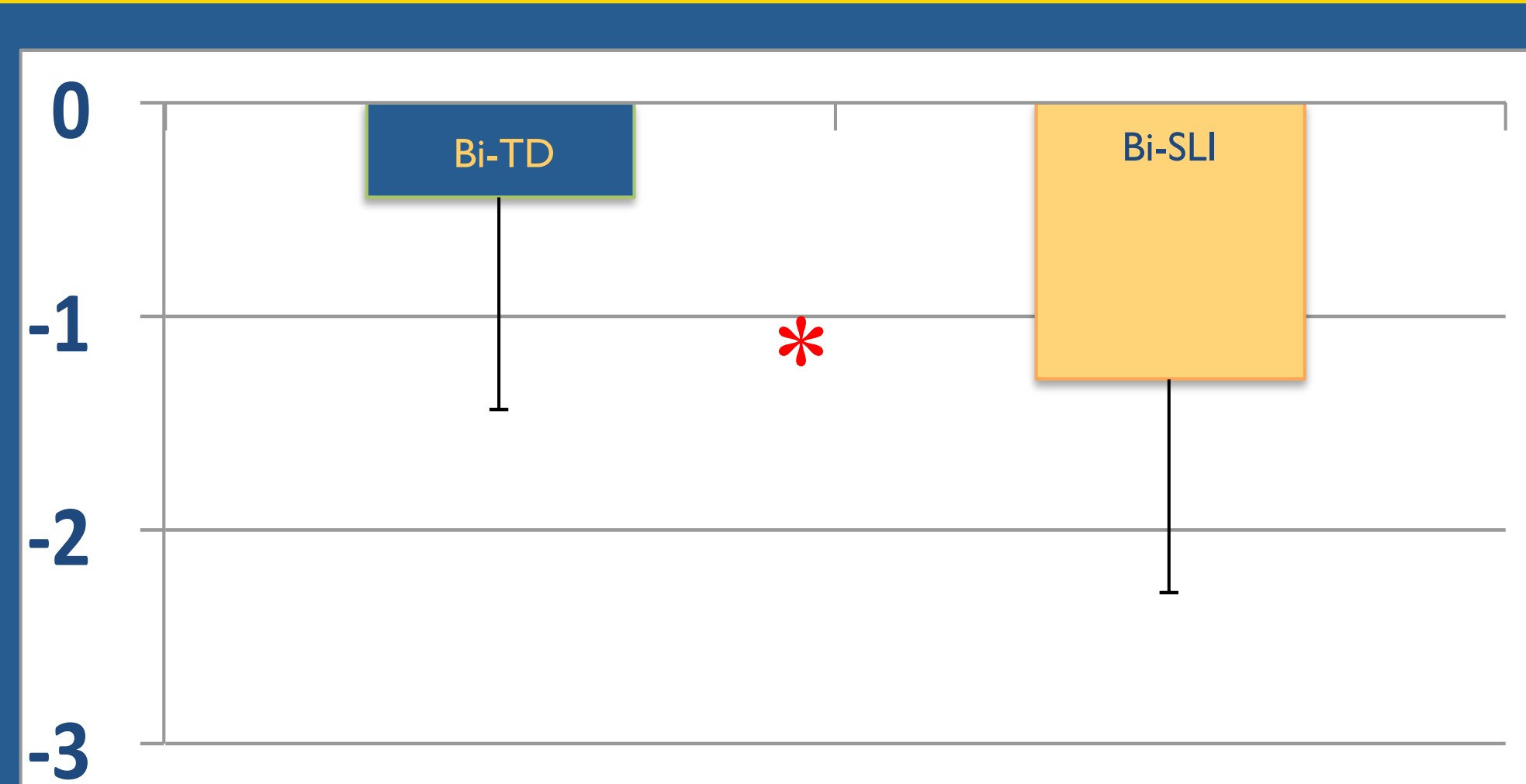
Language Measures in French (L2):

- LITMUS-Sentence Repetition-French (Prévost, Tuller & Zebib, 2012)
- LITMUS-NonWord Repetition-French (Ferré & dos Santos, 2015)

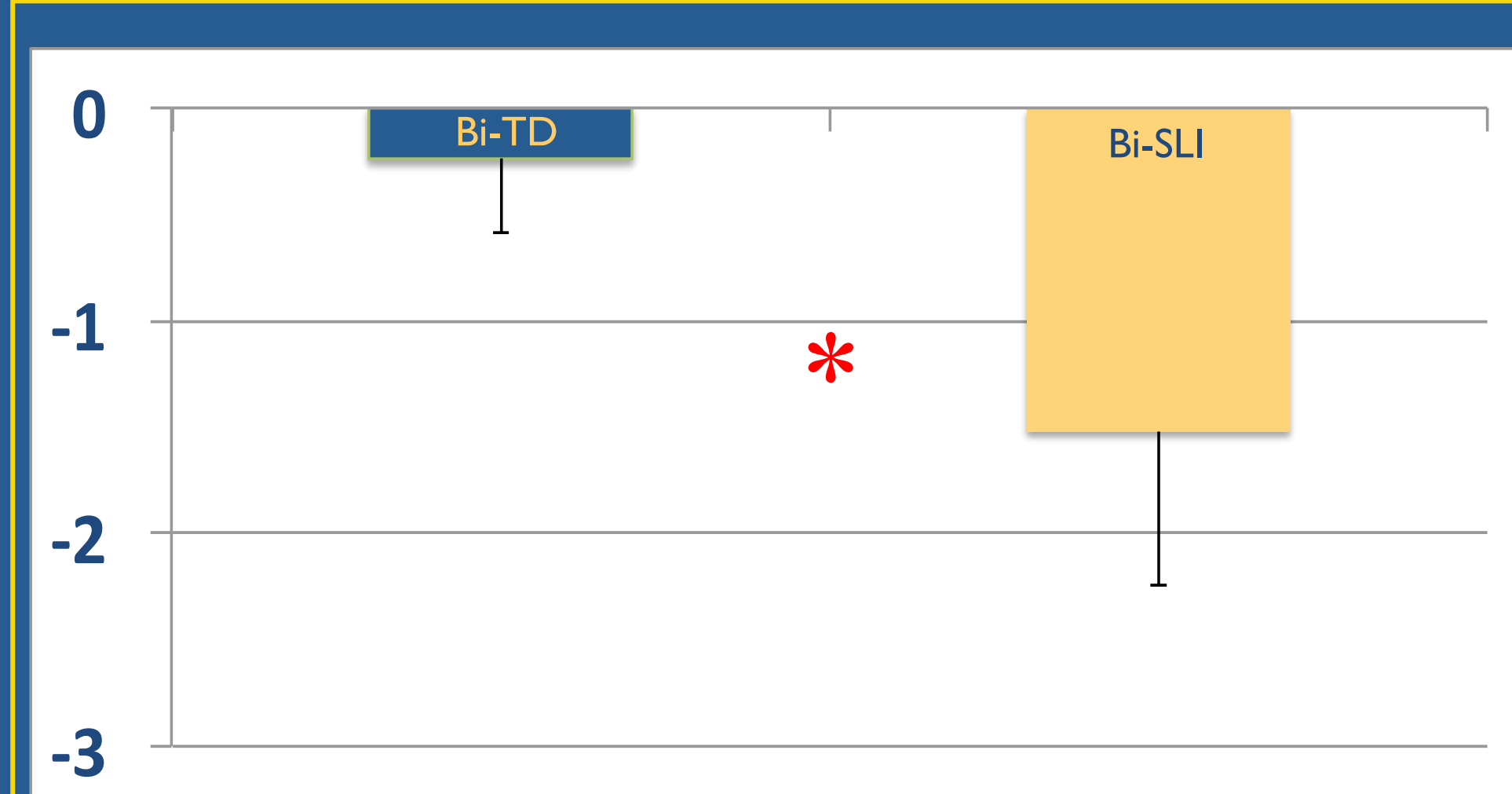
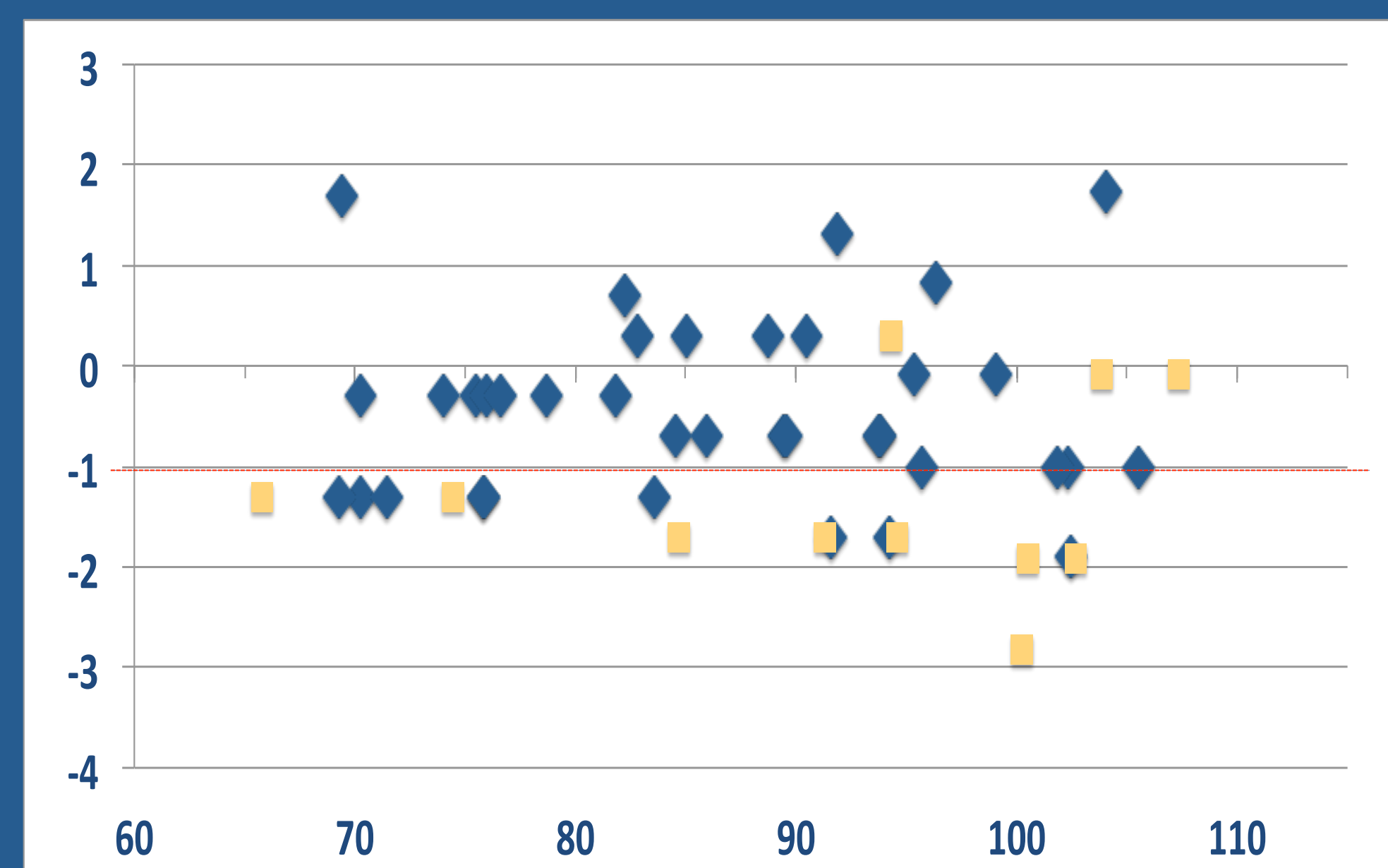
Results:

Bi-TD (n = 37)

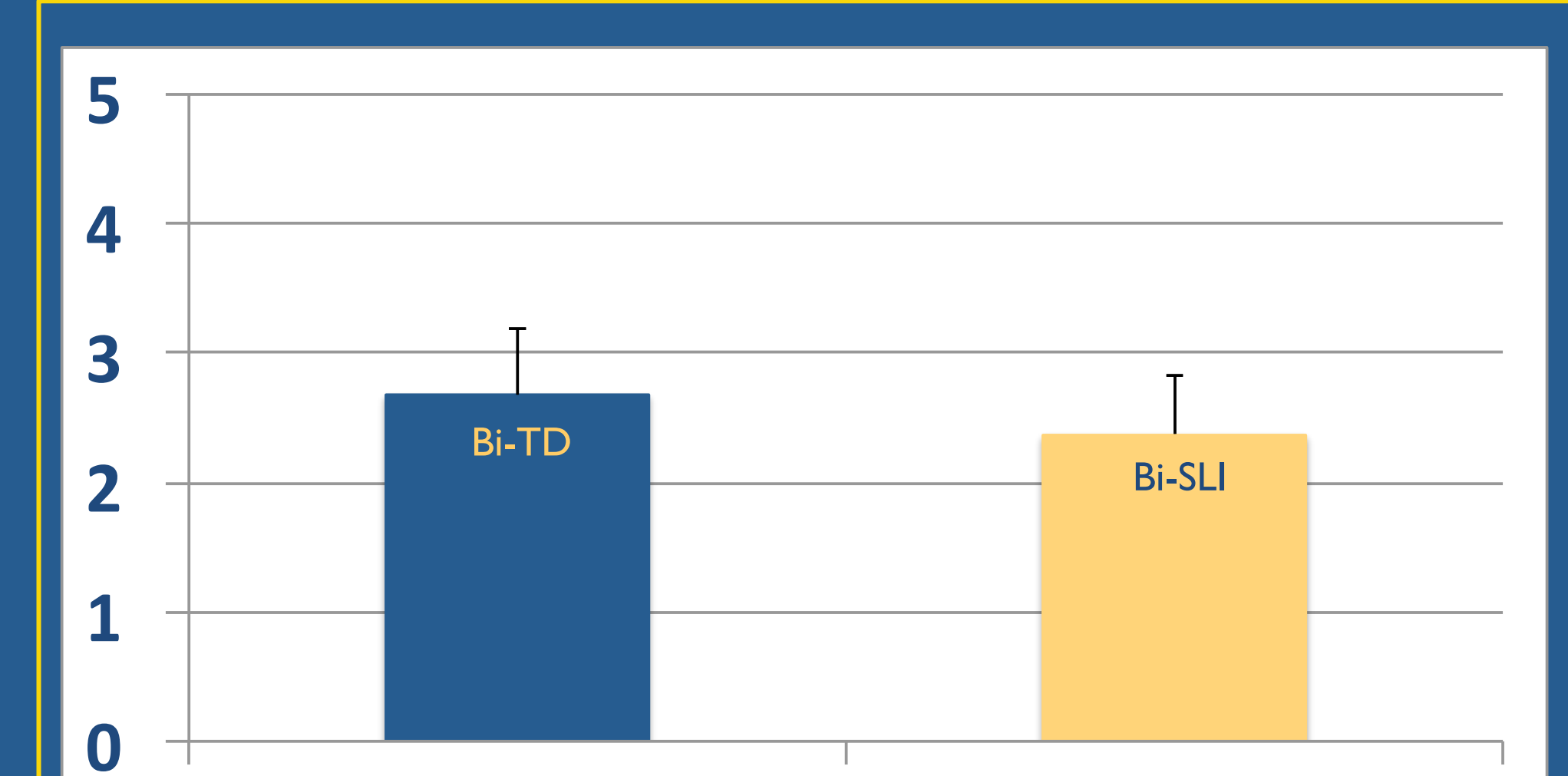
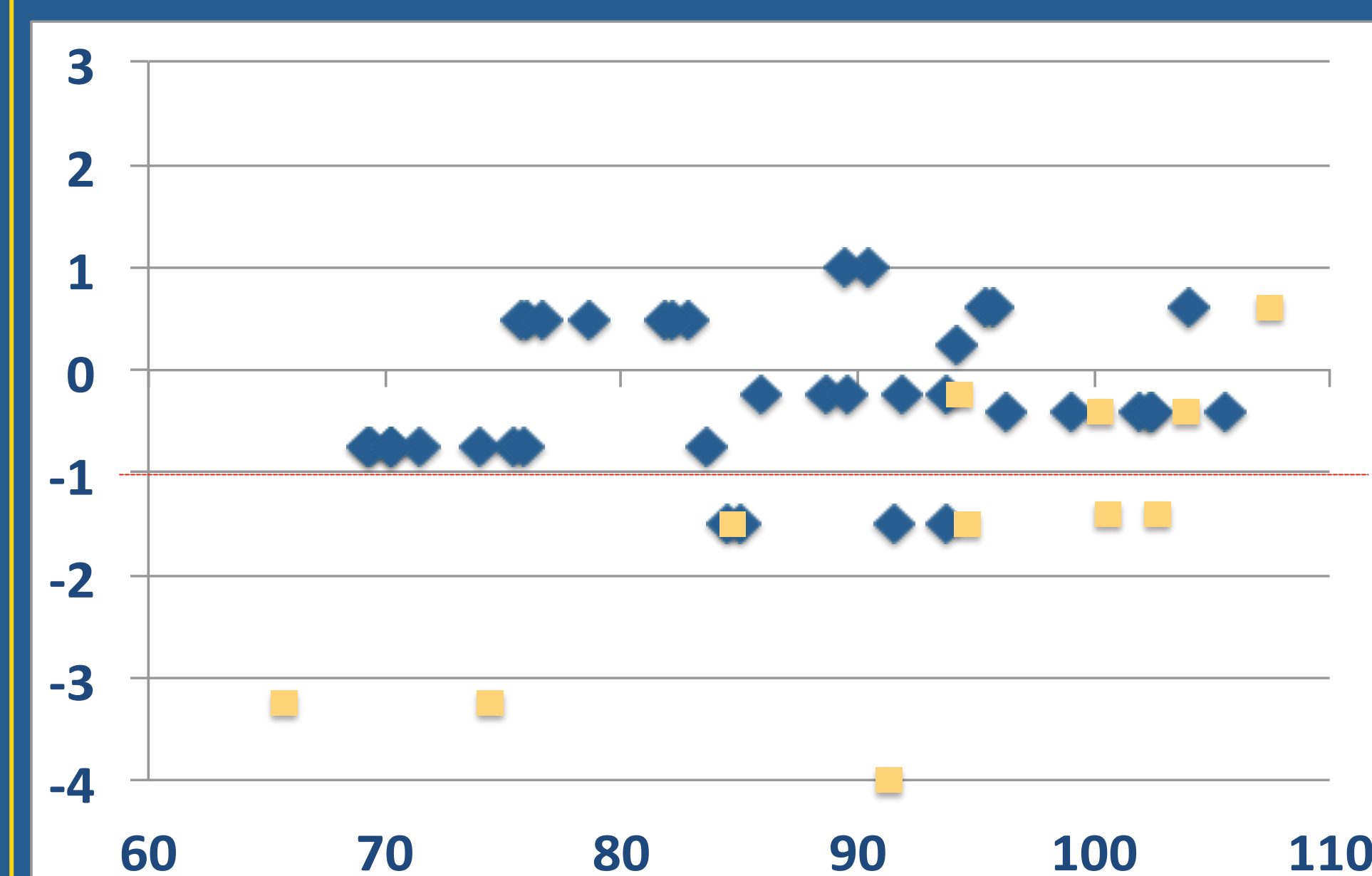
Bi-SLI (n = 11)



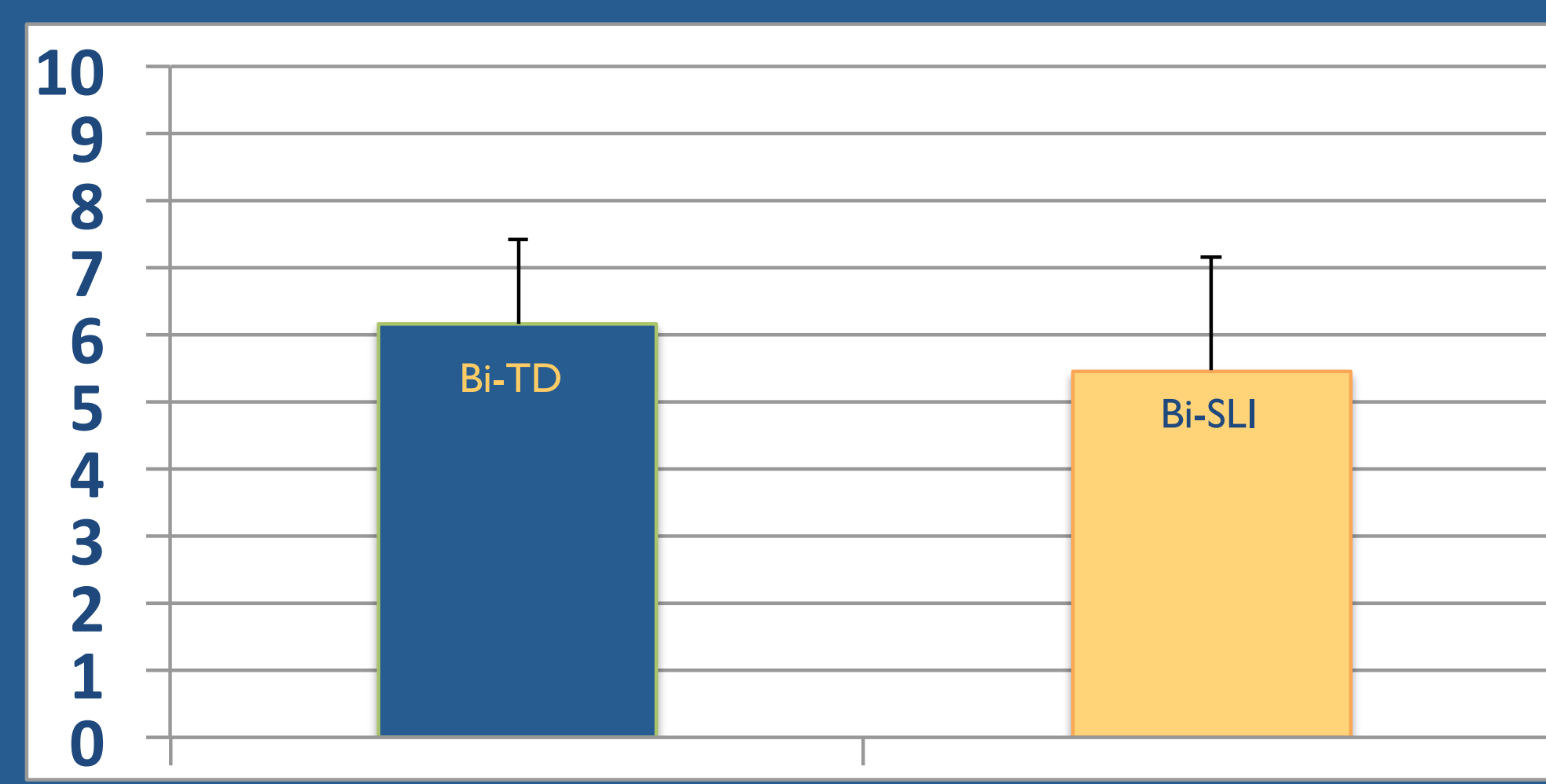
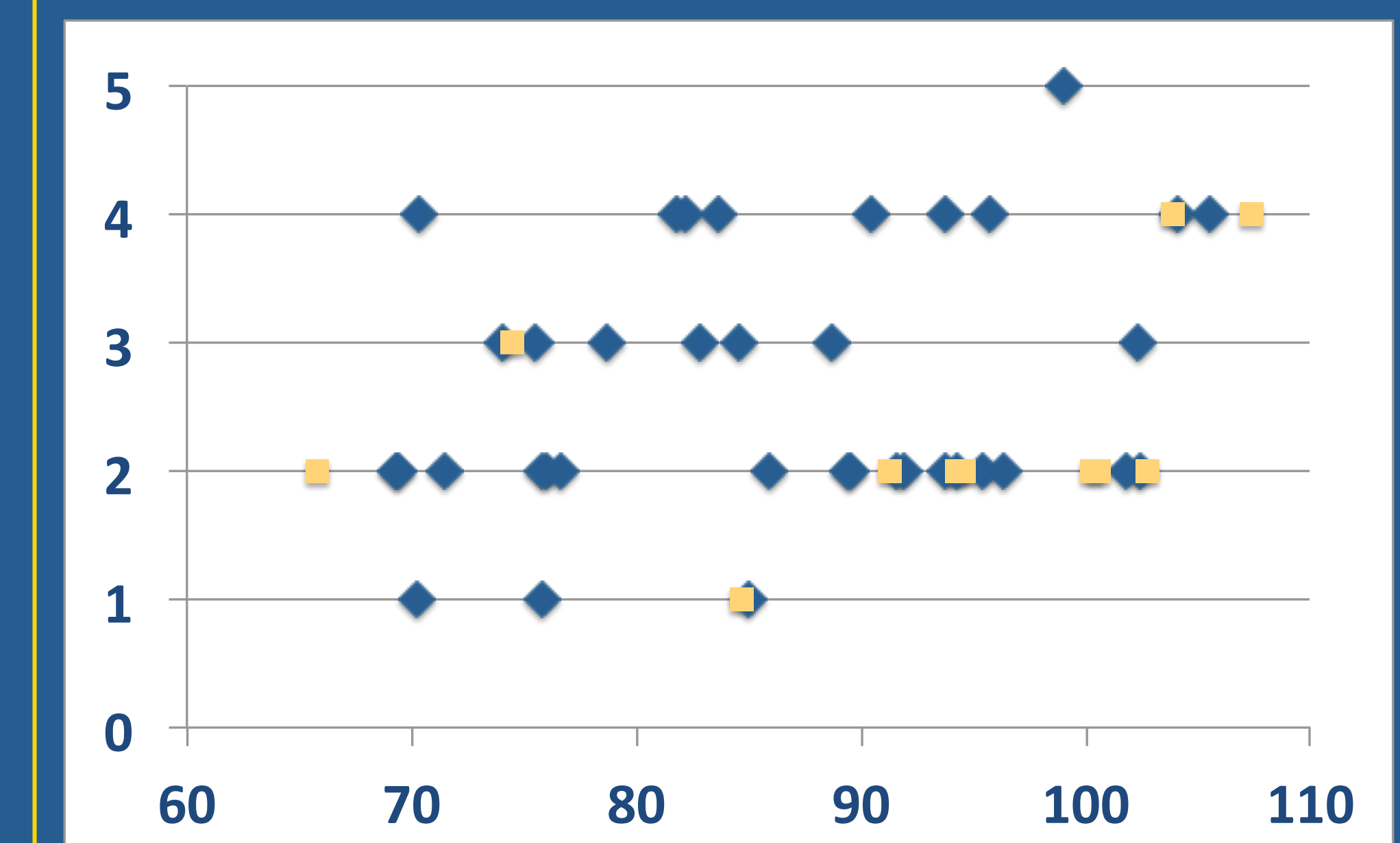
Forward Digit Span: z-scores



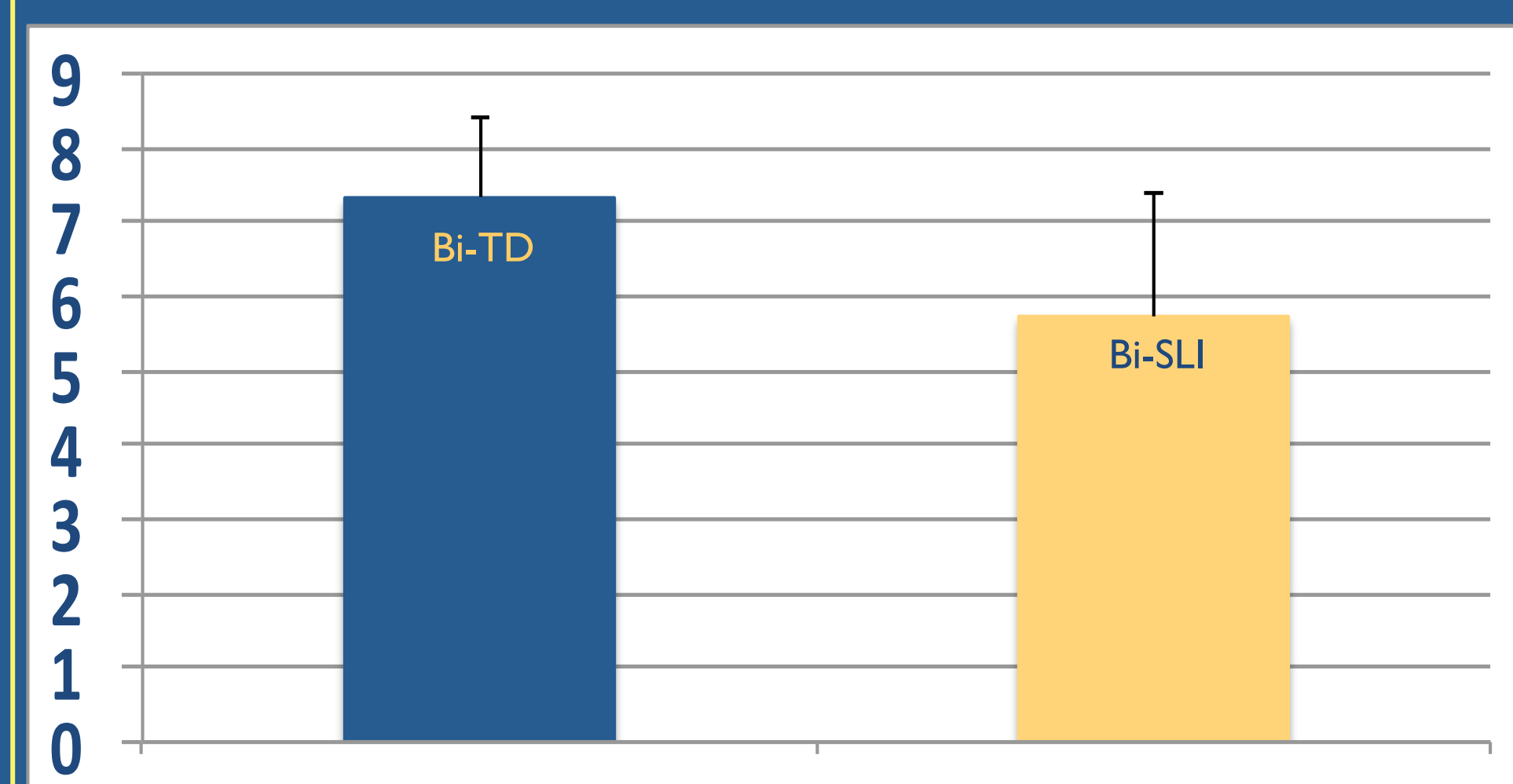
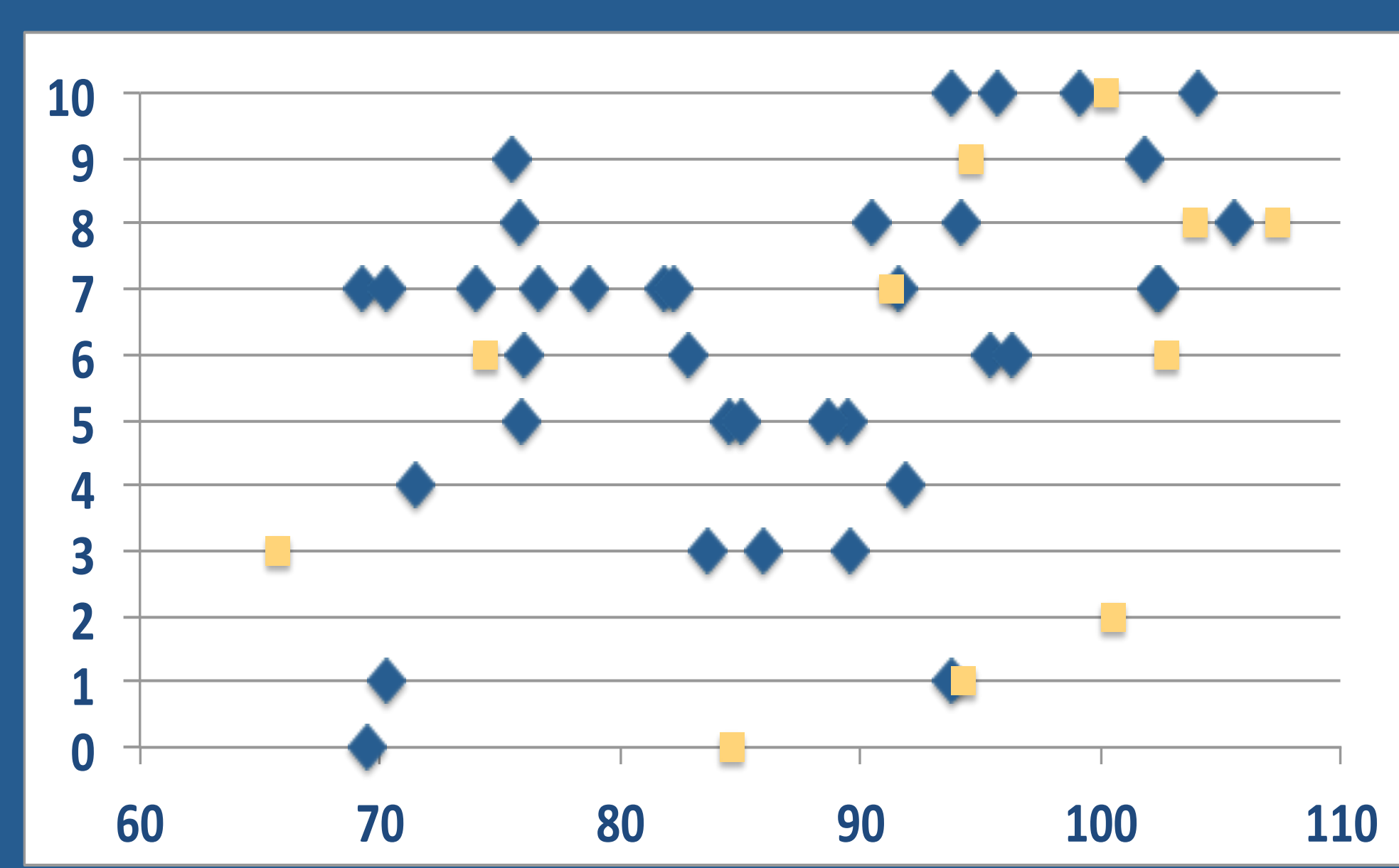
Backward Digit Span: z-scores



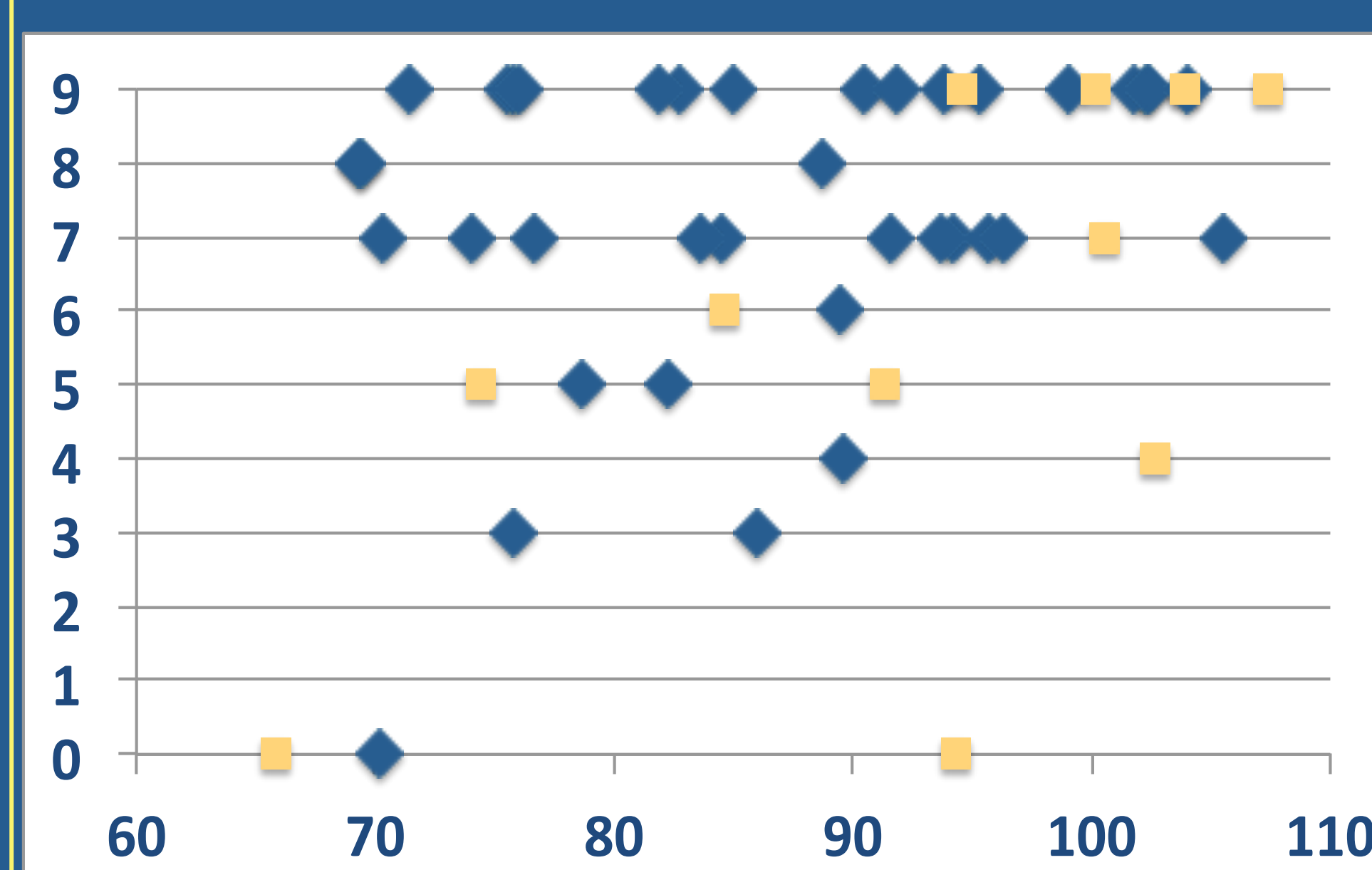
Mr. Peanut: Span /5



The Hidden Mouse: Score /10



Card Sorting: Score /9



Correlations: All groups (n = 48)

	Forward DS	Backward DS	Mr. Peanut	Hidden Mouse	Card Sorting
Age			.20 p=.169	.38 p=.008	.29 p=.050
Age of Onset (Fr)	.30 p=.037	.05 p=.760	.07 p=.646	.29 p=.046	.06 p=.678
Length of Exposure (Fr)	.22 p=.131	.12 p=.416	.06 p=.674	.02 p=.915	.16 p=.269
SES (mother's education)	.12 p=.415	.12 p=.423	.33 p=.023	.21 p=.157	.25 p=.096
NonWord Repetition	.26 p=.081	.45 p=.002	.12 p=.409	.12 p=.415	.27 p=.064
Sentence Repetition	.40 p=.005	.41 p=.004	.11 p=.462	.10 p=.482	.50 p=.000
Raven's PM	.32 p=.029	.21 p=.148	.42 p=.003	.17 p=.243	.20 p=.166



Agence Nationale de la Recherche
grant ANR-12-FRAL-0014-01



Conclusion: The only significant difference between Bi-SLI and Bi-TD children was found on verbal WM tasks (Forward DS & Backward DS). These WM measures were also correlated to language measures. However, the overlap in individual results in all of the tasks indicates low sensitivity and/or specificity and suggests that these tools are not valid to identify SLI in bilingual contexts. Moreover, these results fail to support the hypothesis of nonverbal WM and EF deficits in Bi-SLI children. This latter result does not contradict, however, the hypothesis of subtle nonverbal deficits in monolingual children with SLI as it may be explained by the hypothesis of enhanced WM and EF in bilinguals. Bilingualism may have boosted the nonverbal abilities of the children with SLI, reducing the gap between their performance and the performance of the Bi-TD children.