Using a large-scale screening method to detect language disability in 3-year-olds

Invited comment

INTRODUCTION
Humans probably evolved the ability to use language under the pressure to exchange thoughts, ideas and experiences that are not bound by an immediate spatio-temporal frame. By using the conventions and the structure inherent to the linguistic code, humans are capable of referring to events or properties in a context-free, efficient and flexible way. In contrast with other species that do not use language because communication among individuals is focused on rather immediate and context-bound events that are apparent to the communicating individuals, humans must have learned how to use language to refer to events occurring in settings not necessarily linked to an actual physical context (Deacon, 1997). In this sense, the ability to use a system of conventions to exchange context-free information, the ability to negotiate that very code system and to use multiple sensory dimensions to communicate with others are unique human capacities, where speech communication is clearly an important modality of information exchange. Obviously then, language handicaps most likely will curtail an individual’s capability to participate in the politico-social processes of her community, an impairment that most certainly will have negative consequences not only on a personal level but also impoverishes the society that may not have full access to that individual’s contributions. Thus, given the central role played by human speech communication, the issue addressed by Westerlund and Sundelin is of great importance.

Their article reports a screening study designed to investigate whether severe language disability could be identified in three-year-olds. Identifying language disabilities in young children is not a trivial task, especially in large-scale screening because language acquisition is a highly interactive developmental process and individual children may display a wide range of normal developmental paths (Locke, 1983; Vihman, 1996). Because of the personal and social costs of language handicaps, it is important to use effective clinical methods capable of detecting relevant deviations from normality without increasing the level of false alarms. But however desirable it may be to carry out a cost-benefit analysis of a screening method, it is its practical implementation that ultimately determines the final option, as design constraints involve two essentially conflicting demands. While the complexity of the linguistic process calls for an in depth analysis of the child’s language, extensive analysis are time-consuming and may be difficult to accommodate within the child’s attention window or within the time frame for routine clinical assessments. In this context, the results presented by Westerlund and Sundelin are very promising as the authors report high sensitivity and specificity scores using what seems to be a relatively easy to administrate procedure. Indeed their screening procedure at the age of 3 years managed to detect about 77% of the severely language disabled children.

A question that must be asked whenever large-scale screening procedures are considered is whether their hit-rates are linked to unacceptably high false detection rates. In this respect, an examination of Westerlund and Sundelin’s table 3 indicates that the proportion of false detection among the referred children was rather high. Of
the 42 children that were referred to further clinical examination, only 17 children (40% of the referred children) were found to have severe language disabilities by 4 years of age. To be sure, almost as many were assigned to the “moderate disability” class which can be taken as a close hit. At any rate, from a demographic perspective, the results are extremely promising and demonstrate that it is possible to use a relatively simple procedure to identify a small group of severely language disabled children among a population of over 2000 subjects. Thus, from the point of view of finding severe language disabilities already at 3-years of age, the screening method used by Westerlund and Sundelin must be regarded as successful.

From a broad linguistic perspective the category reassignments observed between the 3 and the 4 year assessments give a sense of the complexity of this type of judgements. For instance, according to table 3 a number of children having “no objections” at the age of 3 were subsequently assigned to one of the “disability” categories by the age of 4 years. Specifically, 262 children, out of a population of 2111 were transferred from the “no objections” category to one of the three categories associated with language disabilities. So, the question is how it is possible to miss so many children with the 3-year screening. Should the failure to detect over 10% of the children overshadow the positive results above?

The answer to this type of questions is linked to the very notion of “language disability”. In clinical terms, the definitions provided by the authors are perfectly adequate, as they can be operationalised and used as referral criteria. Phonological or grammatical deficits are not unproblematic but can be relatively easy to detect by trained nurses. Obviously, the reason why the 262 children were not detected at the age of 3 is they met the “normality” criteria of the screening procedure and they did not deviate appreciably from the trained nurses’ expectations of age-adequate behavior. Indeed, the nurses were mainly looking for the child’s ability to understand three of five questions and whether they could “express themselves in sentences of three-words or more”. This is a pretty good measure, considering that the authors’ intention was to detect severely language-impaired children. In fact, in terms of the project’s own goals, only three children who passed the screening at 3 years of age were later on assigned to the “severe disability” group, which is acceptable.

Finally, although many children with moderate disability at the age of 4 were not detected in the first assessment, it should be pointed out the good positive development of language performance for the group of children who were referred to the speech therapist. As indicated by table 4, interventions after the age of 3 led to improvements in some children’s language performance. This is an extremely important aspect, as it shows that a combination of a screening method and therapeutic intervention may in some cases alleviate the children’s language problems and personal and social impact of this improvement should not be underestimated.