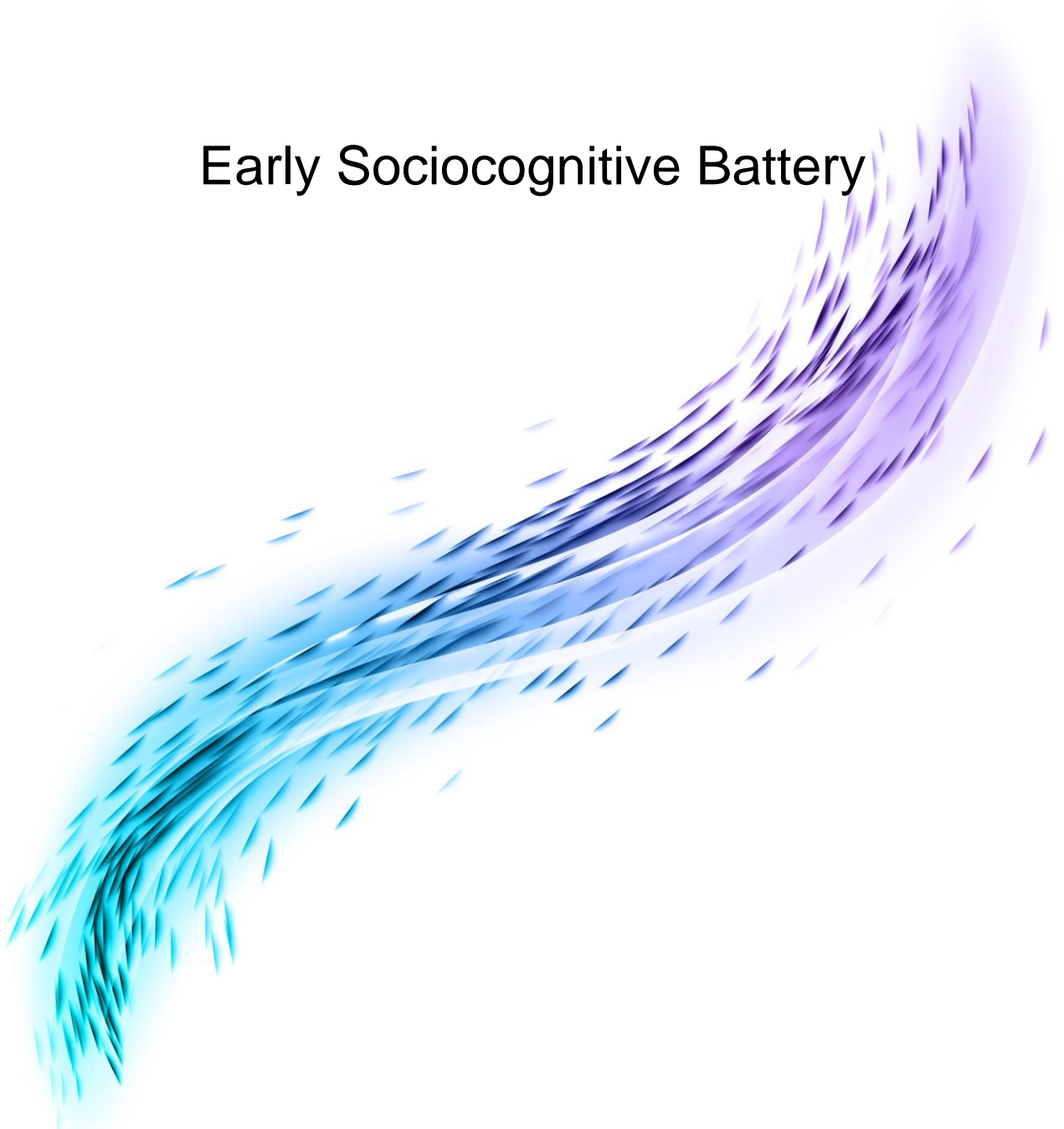




the british
psychological society
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Test Review

Early Sociocognitive Battery



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Test Review of Early Sociocognitive Battery

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GENERAL INFORMATION AND DESCRIPTION OF THE INSTRUMENT

The ESB is a pre-school clinical tool for use with children aged 2 years to 4 years 11 months which assesses early skills associated with social engagement and social understanding. These underpinning skills are important in terms of a child’s language development and are known to be impaired in children with social communication deficits (SCD) and autism spectrum disorder (ASD). The ESB subtests measure social responsiveness, joint attention and symbolic comprehension. This tool provides a means of identifying children at risk of social communication difficulties and ASD at an early stage, helping to identify deficits in key sociocognitive skills and enabling early years professionals to target their intervention strategies appropriately.

The kit comes with more than 60 items including colourful, engaging toys and test materials that should be appealing to young children. The ESB builds on and supports clinical observations by providing a theoretically driven, evidence base that is systematic – evaluating a representative range of sociocognitive responses elicited through carefully selected and well specified activities – and informative – revealing children’s skills and needs according to evidence of the relations between their performance on the ESB and the development of their language and social communication.

The tasks are age-appropriate, and the test takes a total of 15 minutes to complete. Performance is rated numerically in terms of the child’s ability in each domain. The total raw score in each domain is then converted into an age-normed scaled score which indicates whether the child is within the normal, borderline or low range in relation to each of the three domains as well as providing an overall ESB score. Guidelines are provided around interpreting findings and reporting to parents.

Date of current review: June 2023

Date of previous review: n/a

Test name: Early Sociocognitive Battery

Shortname of the test (if applicable): ESB

Original test name: n/a

Authors of the original test: Penny Roy, Shula Chiat and Jennifer Warwick

Authors of the local adaptation: n/a

Local test distributor/publisher: Hogrefe Ltd

Publisher of the original version of the test: n/a

Date of publication of current revision/edition: December 2019

Date of publication of adaptation for local use: n/a

Date of publication of original test: December 2019

ISBN:

General description of the instrument

Classification

Content domains:

Cognitive styles

Other: Sociocognitive - a range of pivotal skills in interpersonal engagement and understanding.

Intended or main area(s) of use:

Clinical

Description of the populations for which the test is intended

2 to 5-year-olds for whom there are concerns about their social communication or language development.

Number of scales and brief description of the variables measured by the instrument

1. Social responsiveness: Attending to other people when they express themselves.
2. Joint attention: Attending to what other people are attending to when they talk.
3. Symbolic comprehension: Understanding when people use a symbol to convey a message and working out what the message conveys.

Response mode

Direct observation

Demands on the test taker:

Manual capabilities

Necessary information given

Handedness

Irrelevant / not necessary

Vision

Necessary information given

Hearing

Necessary information given

Command of test language

Necessary information given

Reading

Irrelevant / not necessary

Writing

Irrelevant / not necessary

Items format

Other: For some items, a range of points is awarded for the level of response from the test taker (i.e. Social responsiveness, Joint attention: gaze monitoring). For other items, the point is awarded only if the test taker selects the correct response (i.e. Symbolic comprehension, Joint attention: gaze switch).

Ipsativity:

Not relevant

Total number of test items and number of items per scale or subtest

Social Responsiveness – Assessor acts out a sequence of scenarios where they express six different feelings.

Joint Attention – Assessor takes out six plastic eggs one at a time each of which contain a small object.

Symbolic Comprehension – Assessor asks the child to find an object from a set of six objects

Intended mode of use:

Managed mode: Where there is a high level of human supervision and control over the test-taking environment. In CBT testing this is normally achieved by the use of dedicated testing

centres, where there is a high level of control over access, security, the qualification of test administration staff and the quality and technical specifications of the test equipment.

Administration mode(s):

Interactive individual administration

Other: These would include a quiet, well-lit and well-ventilated room with adequate desk-space and seating for the necessary administrator(s) and candidate(s).

Time required for administering the instrument

Preparation: 5-10 minutes

Administration: 15 minutes

Scoring: 5 minutes

Analysis: 15 minutes

Feedback: There are two stages of feedback: Immediate feedback based on risk categories derived from raw scores (see time taken to obtain raw scores above), and more detailed, nuanced feedback using norms and profiles would take the additional 15 minutes as described above under analysis.

Indicate whether different forms of the instrument are available and which form(s) is (are) subject of this review: Paper and pencil

Measurement and scoring

Scoring procedure for the test:

Simple manual scoring key – clerical skills only required

Scores:

3 raw scores are transferred by the test taker onto the Profile sheet in the Record form. From this a simple line can be drawn between the 3 points to form a profile for the test taker and a score category (Low/Normal/High) can be determined.

Raw scores can be converted to scaled scores using the tables provided in the ESB test manual.

Scales used:

IQ deviation quotients etc (e.g. mean 100, SD=15 for Wechsler or 16 for Stanford-Binet)

Other: The standard score for Total ESB score is the IQ deviation quotient - though not measuring IQ.

Other: Scaled score conversion. Standard scores and scaled scores are provided for six-month age bands. Three subscales each use a scaled score of 1-20 or standard score 50-150. Corresponding percentile scores are provided in the test manual.

Score transformation for standard scores:

Normalised – standard scores obtained by use of normalisation look-up table

Computer- Generated Reports

Are computer generated reports available with the instrument?

No

Supply Conditions and Costs

Documentation provided by the distributor as part of the test package: (select all that apply)

User Manual

Books and articles of related interest

Methods of publication:

Paper

Start – up costs:

£479.00 excl. VAT. This include 25 record forms which enables 25 test administrations.

Packs of 25 record forms cost £59.00 excl. VAT.

The test manual is available to buy separately at £59.00 excl. VAT.

Recurrent costs:

Record forms (x25) = £59.00 excl. VAT.

Test – related qualifications required by the supplier of the test: (select all that apply)

Accreditation in general ability and aptitude testing: measures of maximum performance in relation to potential for attainment (equivalent to EFPA Level 2)

Other (specify):

The ESB can be used by speech and language therapists, clinical and educational psychologists and paediatricians. Also by early years' professionals who are either have certified training and experience in a relevant discipline, have membership of a professional

organisation appropriate to the focus of the test, and have evidence of competence in the use of relevant psychometric tests.

Professional qualifications required for use of the instrument:

Practitioner psychologist with qualification in the relevant area of application

Practitioner psychologist

Research psychologist

Practitioner in relevant related professions (therapy, medicine, counselling, education, human resources etc.). Specify: Speech and Language Therapist

Other:

The ESB can be used by speech and language therapists, clinical and educational psychologists and paediatricians. Also by early years' professionals who are either have certified training and experience in a relevant discipline, have membership of a professional organisation appropriate to the focus of the test, and have evidence of competence in the use of relevant psychometric tests.

EVALUATION OF THE INSTRUMENT

Key to symbols:

[n/a]	This attribute is not applicable to this instrument
0	Not possible to rate as no, or insufficient information is provided
★	Inadequate
★★	Adequate
★★★	Good
★★★★	Excellent

Quality of the explanation of the rationale, the presentation and the information provided

Quality of the explanation of the rationale

Theoretical foundation of the constructs	★★★★★
Test development (and/or translation or adaption) procedure	★★★★
Thoroughness of the item analyses and item analysis model	★★★★
Presentation of content validity	★★★★
Summary of relevant research	★★★★★
Overall rating of the quality of the explanation of the rationale	★★★★

Adequacy of documentation available to the user (user and technical manuals, norm supplements, etc.)

Rationale	★★★★★
Development	★★★★
Development of the test through translation/adaption	n/a
Standardisation	★★★★★
Norms	★★★★★
Reliability	★★★★★
Construct validity	★★★★★
Criterion validity	★★★★★
Computer generated reports	n/a
Adequacy of documentation available to the user (user and technical manuals, norm supplements, etc.)	★★★★★

Quality of the procedural instructions provided for the user

For test administration	★★★★★
For test scoring	★★★★★
For norming	★★★★★
For interpretation and reporting	★★★★
For providing feedback and debriefing test takers and others	★★★★
For providing good practice issues on fairness and bias	★★★★
Restrictions on use	★★★★
Software and technical support	n/a
References and supporting material	★★★★★
Quality of the procedural instructions provided for the user	★★★★

Overall adequacy	★★★★
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Reviewer's comments on the documentation

Overall, the ESB comes with excellent documentation that is clear and easy to follow. It is comprehensive without being excessive. The Manual is clear and easy to follow. After an overview of the ESB, there is a thorough section setting out the academic research on which the ESB is based, especially the importance of sociocognitive skills for subsequent language development. The development of the ESB is then clearly explained.

Set-up and administration of the ESB is clearly explained, with very thorough administration instructions. A diagram showing the room set-up is a helpful part of the guidance. Information is also given on interpretation and how to give feedback on the ESB, though it would be helpful if more information was given around providing written feedback – clear guidelines on structuring a written report and key points to cover may also be helpful for some users who are unfamiliar with reporting on assessments like the ESB. Case studies are given in the appendix with examples of interpretation, but further information on interpreting each of the subtests might be useful for some users. One omission from the administration is that no information or necessary adaptations around testing children with physical or sensory impairments is given.

The technical sections of the manual are clear and well set out, providing the necessary information about the key properties of the test without digressing into technical discussions of the concepts or methods used. This section would have been strengthened by providing more technical details of the development and item functioning. Scoring and conversion of raw scores to standard scores is straightforward, and individual record forms have a section where the scores from the subtests and the overall score can be collated and plotted to give a graphical profile.

Quality of the test materials

Quality of the test materials paper-and-pencil tests

General quality of test materials (test booklets, answer sheets, test objects etc)	★★★★★
Ease with which the test taker can understand the task	★★★★★
Clarity and comprehensiveness of the instruction (including sample items and practice trials) for the test taker	★★★★★
Ease with which responses or answers can be made by the test taker	★★★★★
Quality of the formulation of the items and clarity of graphical content in the case of non-verbal items.	★★★★★
Quality of the materials of paper-and-pencil tests	★★★★★

The overall quality of the materials is very good. The individual toys and other objects that form the test materials are bright, colourful and should be appealing to children. The test materials are quite extensive but are well organised and helpfully packaged in a wheelee suitcase. The ESB Manual and record forms are clear and easy to use. Detailed administration instructions are given to help users ensure the ESB is administered consistently, which also include helpful tips that have been compiled from practical experience of using the ESB. There is also a really useful laminated Quick Start Guide which administrators can use to check they have all necessary materials, and the room is arranged appropriately prior to testing.

Norms

Is the test norm referenced? Yes

Norm referenced interpretation

Appropriateness for local use	★★★★★
Appropriateness for intended applications	★★★★★
Sample sizes (classical norming)	★★
Sample sizes continuous norming	-
Procedures used in sample selection	Probability sample - stratified
Representativeness of the norm sample(s)	★★★
Quality of information provided about minority/protected group differences, effects of age, gender etc.	★★★★★
How old are the normative studies?	★★★★★
Practice effects	n/a

Is the test criterion referenced? No

Overall adequacy of norms	★★★★
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Reviewer's comments on the norms

The norms are based on a total sample of 384 respondents and were collected between 2015 and 2018. A stratified sampling approach based around 'child-related factors' was used that resulted in a broadly representative sample, except for geographic region. Some groups were initially over-sampled, but respondents were removed from these groups to improve the representativeness. Where respondents were removed, checks were conducted to ensure this did not adversely affect the ESB scores. The effect of background factors on ESB performance is thoroughly explored. The only factor that had a significant effect was age, with mean ESB scores increasing with age, so justifying the need to include age-related norms. Given the representativeness of the norms, the expectation is that the ESB will be valid for use with children from diverse language and cultural backgrounds.

The norms were derived in relation to five separate age groups: four cover 6-month age groups from 2 years to 4 years and the fifth covers a 12-month age group for older children aged 4 years to 4 years 11 months. The rationale for having a single 12-month age band for

older children is clearly explained in the context of this being a measure designed to pick up sociocognitive primarily in the younger age groups. Norms are given for each of the three subtests and score the overall ESB score. The norms for the overall ESB are based on the raw score total of the three tests, rather than a sum of the standardised scores from each subtest. This means that each subtest will not contribute equally to the overall ESB score. It must also be noted that although the overall sample size is adequate, the sample sizes for each of the age bands are quite modest, ranging from a low of 70 to a high of 86.

No information is given in the manual about the updating of norms, though currently this is not an issue as the norms are less than ten years old.

Reliability

Reliability	
Data provided about reliability (select two if applicable)	<ul style="list-style-type: none"> ➤ Reliability coefficients for a number of different groups (for each scale or subscale) ➤ Standard error of measurement given for a number of different groups (for each scale or subscale)
Test related reliability-temporal stability:	
Sample size	★
Size of coefficients	★★★★★
Data provided about test-re-test interval	Within two weeks
Reliability coefficients are reported with samples which.....(select one). match the intended test takers [X]
Inter-rater reliability:	
Sample size	★
Kind of coefficients reported (select as many as applicable)	➤ Intra Class Correlation
Size of coefficients	★★★★★
Overall adequacy of reliability	★★

Reviewer's comments on reliability

This test is unique in that it is seeking to formally measure something which is not already measured in other tests or batteries. While there is limited test-retest data, the data which is

available is strong, with subtests showing average interclass correlations of 0.72 (Social Responsiveness), 0.84 (Joint Attention) and 0.96 (Symbolic Comprehension), and an overall test-retest coefficient of 0.91. This indicates that the constructs measured by the ESB appear to be relatively stable over short periods of time in a representative sample of children. It is unfortunate that the mean scores for both first test and retest are not reported as this would have given an indication of how absolute scores might change on retesting.

Inter-rater reliability is reported as ranging from 0.90 (Social Responsiveness) to 0.96 (Symbolic Comprehension). Limited information is given on this study and no values are given for Join Attention subtest or the overall ESB score. Despite this, the reported interclass correlations show a high degree of consistency between raters. Much of this is probably due to the nature of the test making it easy to administer and record responses, thanks to the detailed administration instructions and simple-to-use record form. A summary of an inter-rater reliability study conducted with 16 children from Saudi Arabia is also given and again suggests very high inter-rater agreement.

The main limitation with the reliability evidence for the ESB, and that prevents it getting a higher rating, are the very modest sample sizes. Whilst it is appreciated that conducting this type of research with very young children can be difficult, all sample sizes are less than 50 meaning the stability of these results is uncertain.

Validity

Construct validity:	
Design used (select as many as are applicable)	<ul style="list-style-type: none"> ➤ Difference between groups ➤ Correlations with other instruments and performance criteria
Do the results of (exploratory or confirmatory) factor analysis support the structure of the test?	0
Do the items correlate sufficiently well with the (sub) test score?	0
Is the factor structure invariant across groups and/or is the test free of item-bias (DIF)?	0
Are the differences in mean scores between relevant groups as expected?	★★★
Median and range of the correlations between the test and tests measuring similar constructs	★★
Do the correlations with other instruments show good discriminant validity with respect to constructs and the test is not supposed to measure?	0

If a Multi-Trait-Method design is used, do the results support the construct validity of the test (does it really measure what it is supposed to measure and not something else)?	n/a
Other, e.g. IRT-methodology, (quasi-) experimental designs (describe):	0
Sample sizes	n/a
Quality of instruments as criteria or markers	No information given
How old are validity studies?	Number of years 8 or less
Construct validity – Overall adequacy	★★
Criterion – related validity:	
Type of criterion study or studies (select as many as applicable)	Concurrent Predictive
	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Sample sizes	★★
Quality of criterion measures	No information given
Strength of the relation between test and criteria	★★★★
How old are the validity studies	Number of years – less than 8
Criterion – related validity – overall adequacy	★★★★

Validity – overall adequacy	★★
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Reviewers' comments on validity

Validity evidence for the ESB relates to the internal structure of the subtests, construct validity against other measures and predictive validity over 18 months and seven years. Note the manual details correlations with other measures as concurrent validity, but to align with the EFPA criteria, we have considered this as construct validity. The exception is data relating ESB scores with the MacArthur Communication Development Inventory (MCDI-UK). As this is a parental rating, we have considered this more criterion validity than construct. In

addition to this statistical validity, is the strong theoretical background to the ESB which is set out in Chapter 2 of the Manual.

The intercorrelations between the subtests are reported for a clinical sample (with and without children scoring 2 SDs below the mean on the British Picture Vocabulary Scale included) and the standardisation sample. Notable differences are seen between these samples, with the clinical sample showing far higher intercorrelations between the subtests than the standardisation sample. The authors note that this is in line with a previous meta-analytic study.

Construct validity evidence is presented by comparing scores from the UK standardisation sample and a UK clinical sample with two other measures: British Picture Vocabulary Scales (BPVS3) and Preschool Language Scales (PLS). Only correlations for the overall ESB score and not for the subscales is reported. Correlations of total ESB scores are: 0.29 (BPVS), 0.63 (Auditory PLS) and 0.55 (Expressive PLS). While correlations are significant, the median relationship is just acceptable when compared to the EFPA criteria. No details about the quality of the other measures are given in the Manual. Further information about these other measures would support interpretation, as would further construct validation evidence.

Additionally, the ESB showed discriminant validity between the normative sample with a clinical group across the age ranges. The effect sizes for each age ranged from a low of 0.84 to a high of 1.32, all of which would be classified as 'large'.

Concurrent validity data shows a correlation of .39 with parental ratings on the MCDI-UK. A predictive validity study is reported where children took the ESB at baseline and then further measures 18 months later and seven years later. After 18 months, correlations in the range of 0.46 to 0.63 were found with the Auditory and Expressive elements of the Preschool Language Scales. After seven years associations with the Clinical Evaluation of Language Fundamentals Receptive scale were 0.26 and 0.40, and with the Social Responsiveness Scales were -0.51. This last measure took ratings given by parents rather than the children. It should be noted that seven years after the baseline sample sizes had fallen, but still included a minimum of 87 children.

A further analysis of this data looked at the sensitivity and specificity of the ESB as a predictor of children who were receiving speech and language therapy (SLT) seven years later when they were aged 9 to 11 years. For those children who were categorised as scoring 'low' on the ESB at baseline, ESB scores predicted those still receiving SLT with a sensitivity of 0.80 and a specificity of 0.86. Although numbers were small, there was also some evidence that baseline ESB scores could predict children who were later diagnosed with either Autistic Spectrum Disorder or Social Communication Disorder, correctly identifying 89% of children based on parental reports of diagnosis.

The ESB is a relatively new test, so it is to be expected that validity information is still being accumulated. Evidence of construct validity is currently limited and validity data is only given for the ESB total score and not for subscale scores. The manual does provide evidence supporting the test's predictive validity. Some of the evidence reported would be strengthened by giving more details of the studies, but references are made to publications that the interested reader can follow-up.

Final Evaluation

Evaluative report of the test:

The ESB has been developed based on sound theoretical, research and clinical principles. It provides a standardised measure to clearly outline and define early sociocognitive behaviours in pre-school populations which underpin language and communication skills. As such, it provides an 'early warning system' for children at risk in relation to language and social communication deficits, including children with ASD. Early identification of at-risk children offers the opportunity for early intervention and support which may lead to better long-term outcomes. As such, the ESB is a great addition for any practitioner working with young children where screening or assessment for social communication or language skills forms part of the work. Emphasis is given not only to identification of possible ASD or SCD, but also some direction towards a personalised intervention.

The ESB materials are of a high standard if a little bulky (the complete kit comes in a wheelee suitcase). It takes just 15 minutes to administer but provides a wealth of information. Instructions and materials are clear, and the administration is lively and engaging for the child. The ESB does require an appropriate environment to enable the materials to be set up and the Quick Start Guide is very helpful in this respect. It may be that in some environments, such as when conducting home visits, the required arrangement of materials would not be possible. Although the test is relatively new, there is emerging evidence of its reliability and validity which can be expected to grow over time, though current sample sizes are lower than would be hoped in some areas.

Training in use of the ESB is optional but recommended. The Manual contains helpful information on interpreting and communicating results, along with several case studies, but it is likely that a good understanding of early child development and specifically speech and language development is required to interpret the test and provide feedback to parents and other practitioners. The Hogrefe website has some useful introductory videos, and it may be helpful for users to read background articles by the authors to fully understand the development of the ESB. There is also an on-line self-directed training course currently costing £200.

Conclusions:

The ESB is a welcome addition. It has been developed from a research tool, based on sound theory, research and clinical practice, into a practical assessment for those working with young children. It would be a useful addition to any early child development or diagnostic service practitioner's toolkit. It adds something new to knowledge of the child and could lead to better outcomes for the child.

Recommendations:

- Suitable for use in the area(s) of application defined by the distributor, by test users who meet the distributor's specific qualification requirements (at least EFPA User Qualification Level 2)