

Construction & Validation of the ESCBQ: Early Social Communicative Behavior Questionnaire

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Background

There has been an increasing interest in diagnosis Autism Spectrum Disorders (ASD) in **children younger than 4 years**. These children have limited social communication skills, such as poor joint attention, imitation and symbolic play.

In ASD diagnostics, **parent questionnaires** are often used. However, for such young children a specific parent questionnaire focusing on early social communicative behavior was not available for clinical use.

In 2009, we developed the Early Social Communicative Behavior Questionnaire (ESCBQ; Blijd-Hoogewys & Buruma, 2009). The **ESCBQ** items are formulated, based on 1) literature research concerning both typical and atypical development of early social communicative behavior in infants, 2) existing instruments concerning this topic, and 3) clinical expertise with young children with ASD.

The **following topics are questioned** in the ESCBQ: eye contact, social interest, reaction to name, emotions, attachment, sharing pleasure, taking turns, looking, following gaze, following a point, pointing, showing, giving, playing, interaction games, imitation, gestures, and language (Buruma et al., 2016).

Objectives

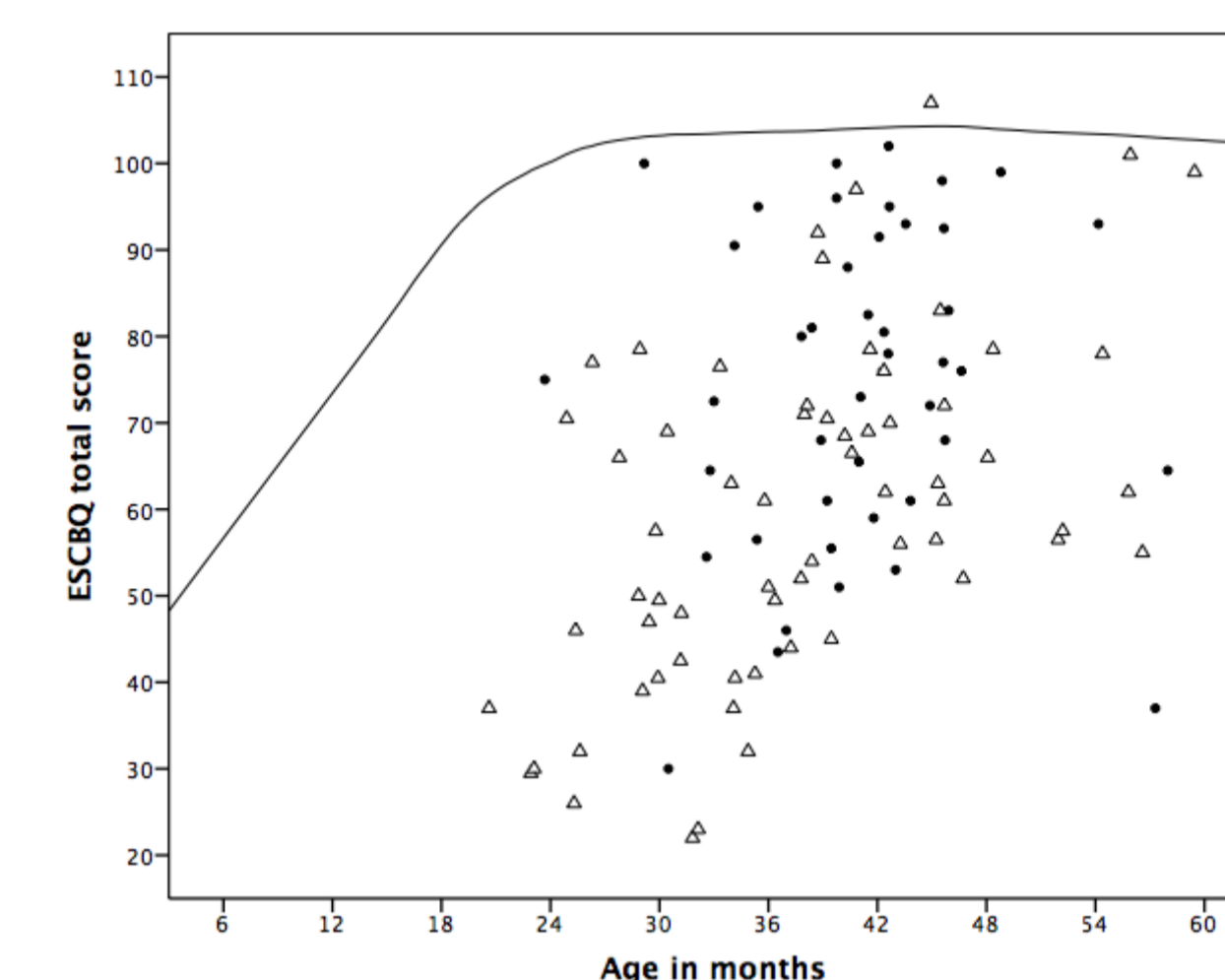
The objective of this study was to develop a parent questionnaire that can be easily used to measure early social communicative behavior in young children in a reliable and valid way.

Methods

The **ESCBQ** (Blijd-Hoogewys & Buruma, 2009) is a parent questionnaire, consisting of **108 dichotomous items**, questioning early social communication skills that typically developing children should master at the age of 24 months. In order to explore the psychometric properties of the ESCBQ, **1230 parents** of typically developing children aged 0-6 years filled in the questionnaire. Also, **108 parents of children with ASD** filled in the ESCBQ.

The **ESCBQ-2** (Buruma & Blijd-Hoogewys, 2014) is a shortened version of **58 dichotomous items**. Data collection is ongoing. Currently, **513 parents of typically developing children (TD)** aged 0-4 years have filled in the questionnaire (267 boys, 246 girls). Also, 81 parents of children with ASD filled in the ESCBQ-2 (61 boys, 20 girls): **26 parents of children with ASD** and **55 parents of children with ASD and developmental delay (ASD+DD)**. All children with ASD were diagnosed by trained clinicians. ASD assessment was based on an extensive psychiatric examination, a standardized ASD interview, a developmental interview with parents, psychological assessment (ADOS-2, non-verbal cognitive development & language), an observation at home and an observation at the day care or school.

Figure 1: ESCBQ total score



Legend: bullets = children with ASD with normal cognitive functioning, triangles = children with ASD and a non-verbal developmental and/or language delay, line = Loess curve (50%) of typically developing children.

Figure 2: ESCBQ-2 total score

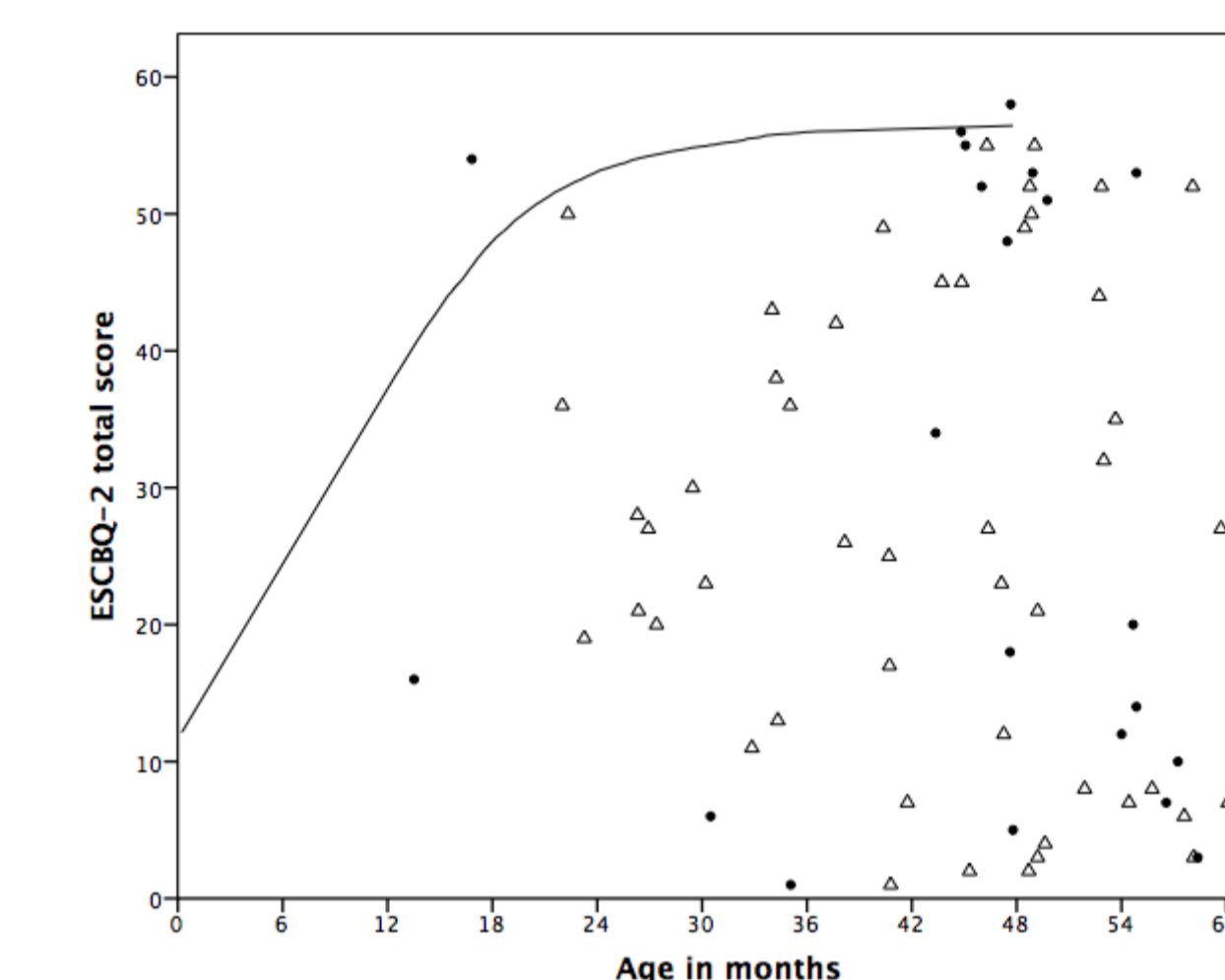


Table 1: ESCBQ-2 scores norm group

	Typically developing children	
	Number (513)	ESCBQ-2 total score M (SD)
< 6 months	28	19.64 (10.10)
6 – 11 months	68	31.50 (8.28)
12 – 17 months	75	46.17 (6.09)
18 – 23 months	61	49.46 (11.82)
24 – 29 months	81	53.30 (5.27)
30 – 35 months	88	54.50 (6.55)
36 – 41 months	58	52.90 (11.92)
42 – 47 months	54	54.76 (8.07)



References

- Blijd-Hoogewys, E.M.A., & Buruma, M.E. (2009). *Vragenlijst voor vroeg sociaal communicatief gedrag (VSCG)*. Unpublished document. Groningen: Lentis.
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- Buruma, M.E., Blijd-Hoogewys, E.M.A., Huyghen, A.N., Bezemer, M.L., & van Geert, P.L.C. (2016). De VSCG. De ontwikkeling van een vragenlijst voor het meten van vroeg sociaal communicatief functioneren bij zeer jonge kinderen met autisme. *Wetenschappelijk Tijdschrift Autisme*, 4, 159-170.

Results

Research ESCBQ

It takes **20-25 minutes** to fill in the ESCBQ. The total score shows a steady increase with age, with a plateau at 30 months, for both boys and girls (see Figure 1). The **internal consistency**, based on inter-item reliability, is good (Cronbach's alpha = .97). Also the **test-retest reliability** (second measurement after 1 week) is good ($n = 43$, $M_1 = 93.19$ vs. $M_2 = 95.63$, $r = .91$). The ASD group has significantly lower ESCBQ total scores than the TD group ($M_{ASD} = 65.66$, $SD_{ASD} = 20.49$, $M_{TD} = 95.14$, $SD_{TD} = 16.86$, with correction for age, $p < .001$, Cohen's $d = 1.75$).

From ESCBQ to ESCBQ-2

The ESCBQ is shortened and ameliorated, to make it more user friendly. This resulted in the ESCBQ-2. The shortening is based on additional item analyses – such as a Principal Component Analysis and a Differential Item Functioning analysis – and on clinical expertise.

Research ESCBQ-2

It takes **10-15 minutes** to fill in the ESCBQ-2. The total score shows a steady increase with age (see Table 1), with again a plateau at 30 months, for both boys and girls (see Figure 2). The **internal consistency**, based on inter-item reliability, remains the same (Cronbach's alpha = .97).

A Principal Component Analysis conveyed **three clusters** (64% explained variance): 1) Joint attention and imitation, 2) Sharing affect, and 3) Language, gestures, pretending and symbolic play. Items concerning Play are found in all three clusters, mainly in cluster 2 and 3.

Both ASD groups have lower ESCBQ-2 total scores than the TD group ($M_{ASD} = 30.08$, $SD_{ASD} = 21.21$, $M_{ASD+DD} = 26.29$, $SD_{ASD+DD} = 17.45$, $M_{TD} = 47.39$, $SD_{TD} = 13.04$). An **ANCOVA**, controlling for age in months, shows there is no significant difference between the groups ($F [2, 590] = 182.851$, $p < .001$, partial $\eta^2 = .383$).

Post hoc analysis was performed with Bonferroni adjustment. Results show a significant difference between the TD group and both the ASD group ($M_{diff} = 31.13$, 95% CI [24.84, 37.41], $p < .001$) as the ASD + DD group ($M_{diff} = 32.96$, 95% CI [28.38, 37.55], $p < .001$).

Conclusions

The ESCBQ(-2) is a **new questionnaire** aimed at measuring early social communicative behavior children typically develop before the age of 30 months.

The questionnaire has **good psychometric properties** (internal consistency and test-retest reliability). The three clusters found for the ESCBQ-2 coincide with what is expected from literature.

There was no difference between the two ASD groups with or without developmental delay, illustrating that merely ASD has influence on the ESCBQ-2 scores. More research is underway, focusing on the use of the ESCBQ-2 as a 'diagnostic' tool.

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