

BRIEF REPORT: IBI Training: Predictors of Outcome in the Area of Language Acquisition in Children with Autism Spectrum Disorder

Abstract

This study examined the relationship between children's ability to label objects and events at the time of entry into an Intensive Behaviour Intervention (IBI) program and their language skills at program completion. It also investigated whether the presence of speech at program entry was related to language skills at program completion. Results revealed that children's ability to tact at program entry was correlated with significant gains in some language skills at program completion, and, children who had speech performed better in the labeling domain than children who were non-verbal. However, even children who were non-verbal made measurable gains in receptive and expressive language domains by the time of program completion.

It is well documented that Intensive Behaviour Intervention (IBI) is effective in improving abilities in children with Autism Spectrum Disorder (Lovaas, 1987; McClannahan & Krantz, 1997; Sheinkopf & Siegel, 1998; Smith, 1999; Whalen, Schreibman, & Ingersoll, 2006). Yet, the extent to which certain characteristics may affect the degree of improvement experienced has not been systematically examined, nor have the interrelationships among the various skills addressed in the IBI program. Relying on the Assessment of Basic Language and Learning Skills Revised (ABLLS R; Partington, 2006) this study attempted to determine the following:

- 1) How the children's ability to label objects or events at program entry was related to their ability in all language-related measures (i.e., Receptive, Labeling, Requesting, and engaging in Conversation) at program completion (i.e., after a minimum of one year of IBI treatment).
- 2) How the presence of speech at the time of program entry was related to all language skills at program completion.

Method

Analyses are based on assessment of sixteen children, who have a diagnosis of Autism Spectrum Disorder (ASD), as evaluated by an independent assessment, and who attended an Intensive Behaviour Intervention (IBI) program for twenty hours per week (four hours per day, five days per week) for at least one year. The children ranged in age from 3 to 11 years and all met the eligibility criteria for the Ontario IBI program. ABLLS-R (Partington, 2006) Functional curricu-

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Keywords

Applied Behaviour
Analysis (ABA),
behaviour,
Autism (ASD),
Language Acquisition,
Intensive Behaviour
Intervention (IBI)

lum assessments were conducted upon program entry and every 6 months afterwards. Daily probe data was collected for all teaching targets (i.e., C-Receptive Language, G-Labeling, F-Requests, and H-Intraverbals). Verbal ability scores at program entry were also measured using the criterion of one or more spoken utterances constituting verbal and no spoken utterances for non-verbal.

Each four-hour session consisted of 3 hours of intensive 1:1 therapy, and 1 hour of following daily routines (classroom and personal care), structured small group, and snack time. In addition to attending the IBI program, all children were enrolled in school for half-days and attended either morning or afternoon IBI sessions each day, Monday to Friday. All information used here were collected as part of regular practice in the participating agency and analyzed anonymously; confidentiality of information was not breached.

Results

A series of pair-wise t-tests compared labeling ability upon entry to: C-Receptive Language, F-Requesting, G-Labeling, and H-Intraverbals (Conversation) at program completion. Results

showed that the ability to label resulted in significant gains in: Receptive Language, $t_{(15)} = -8.163$, $p < .000$, and Labeling, $t_{(15)} = -4.320$, $p < .001$. All correlations between Labeling at program onset and the four variables examined after exit from the program were significant (Table 1).

We also examined how the presence of spoken language was related to outcome on the same language domains using pair-wise t tests. The presence of speech at program onset was significantly related to improvement in the following domains after exit from the program; Receptive Language, $t_{(15)} = -7.82$, $p < .000$, Requests, $t_{(15)} = -5.79$, $p < .000$, Intraverbals $t_{(15)} = -3.30$, $p < .005$, and Labeling, $t_{(15)} = -3.68$, $p < .002$. The correlations between Labeling at onset and each of the four language domain after completion of the program were all significant among children who were verbal (Table 2).

The pre- and post-language measures were also compared for children who communicated non-verbally using a paired samples t-test. The results showed that these children experienced significant improvement over the course of the program in Receptive Language ($t_{(7)} = -3.338$, $p < .012$), Requests ($t_{(7)} = -3.603$, $p < .009$), Labeling ($t_{(7)} = -1.980$, $p < .088$), and Intraverbals ($t_{(7)} = -2.684$, $p < .031$).

Table 1. Paired Sample Correlation Between Labeling (G) at Pre and Receptive Language (C), Requesting (F), Labeling (G) and Intraverbals (H) at Post Using ABLLS-R Language Measures

Pairs	N	Correlation	Sig.
1 Pre-G and Post-C	16	.743	.001
2 Pre-G and Post-F	16	.888	.000
3 Pre-G and Post-G	16	.975	.000
4 Pre-G and Post-H	16	.984	.000

Table 2. Paired Sample Correlation Between Presence of Speech at Pre and Receptive Language (C), Requesting (F), Labeling (G) and Intraverbals (H) at Post Using ABLLS-R Language Measures

Pairs	N	Correlation	Sig.
1 Verbal and Post-C	16	.609	.012
2 Verbal and Post-F	16	.655	.006
3 Verbal and Post G	16	.753	.001
4 Verbal and Post-H	16	.717	.002

Discussion

The findings from the present study reveal that children's ability to label was significantly related to language development in receptive and expressive language. More specifically, children's ability to label at the time of program entry was significantly related to language development in receptive communication and labelling by the time of program exit. There is little doubt that, for some children with ASD, the ability to employ labeling is crucial for acquisition of speech in all communication domains, including more advanced abilities such as labeling and conversations. When the ability to speak was taken into account, the children who communicated verbally at program onset were shown to do better than those who were non-verbal, at least in the domain of labeling. It was most encouraging that even children who were non-verbal significantly improved in various language domains. Therefore, this study provides preliminary support for the effectiveness of IBI in improving language skills in children with ASD (Tager-Flusberg, Paul, & Lord, 2005).

Limitations

There are several limitations with respect to this study. In particular, only a small group of subjects was used, subjects were not randomly assigned, and there was no control group to which to compare the results. Longitudinal research needs to be conducted in order to replicate and extend these findings as we strive to find ways for all children with ASD to improve in all language domains, regardless of whether they communicate verbally or non-verbally at onset of treatment.

Acknowledgements

The authors would like to thank Dr. Mary Konstantareas and the IBI team at Kerry's Place Autism Services for their support.

References

- Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology, 55*, 3-9.
- McClannahan, L. E., & Krantz, P. J. (1997). Princeton Child Development Institute. *Behavior and Social Issues, 7*(1), 65-68.
- Partington, J. (2006). *The assessment of basic language and learning skills revised*. Pleasant Hill, CA: Behavior Analysts Inc.
- Sheinkopf, S. J., & Siegel, B. (1998). Home-based behavioral treatment of young children with autism. *Journal of Autism and Developmental Disorders, 28*(1), 15-23.
- Smith, T. (1999). Outcome of early intervention for children with autism. *Clinical Psychology: Science and Practice, 6*(1), 33-49.
- Tager-Flusberg, H., Paul, R., & Lord, C. (2005). Language and communication in autism. In V.R. Volkmar, A. Paul, A. Klin, & D. Cohen (Eds.) *Handbook of autism and pervasive development disorders (3rd ed., pp. 335-364)*. Hoboken, NJ: Wiley and Sons.
- Whalen, C., Shreibman, L., & Ingersoll, B. (2006). The collateral effects of joint attention training on social initiations, positive affect, imitation and spontaneous speech for young children with autism. *Journal of Autism and Developmental Disorders, 36*(1), 655-664.