

Generalized Reduction of Stereotypic Behavior by Presenting Strong Motivational Stimuli

Monica M. Garty, B.A., Robert L. Koegel, Ph.D., Lynn K. Koegel, Ph.D.

University of California, Santa Barbara

BACKGROUND

Stereotypic behaviors are a defining feature of autism and greatly interfere with learning and appropriate behaviors, such as communication and play (Koegel & Covert, 1972; Koegel, Firestone, Kramme, & Dunlap, 1974), with more complex types appearing in older children (Mooney, Gray, & Tonge, 2006). These behaviors, including delayed echolalia, appear to serve no function other than providing sensory stimulation for the individual (Frea, 1997, Lovaas, Varni, Koegel, & Lorsch, 1977). Studies have found a relationship between repetitive stereotypic behavior and appropriate behavior, such that when one area is targeted successfully, the other will covary via a collateral effect (Loftin, Odom, & Lantz, 2007; Kern, Koegel, Dyer, & Blew, 1982).

The purpose of this study was twofold. In Study I, we assessed whether a correlation between stereotypic behavior and communication existed in children with autism as measured by the ADI-R. In Study II, we assessed whether intervention focusing on improving social communication using highly motivational reinforcers in the natural environment would result in decreases in untreated delayed echolalia with generalization to settings with a new conversational partner. We hypothesize that if vocal stereotypic behavior and appropriate social communication are competing reinforcers, and if delayed echolalia is a form of vocal self-stimulatory (stereotypy) behavior (i.e., it competes with other behaviors for sensory reinforcement), then: (1) Increases in appropriate speech following intervention should correlate with decreases in untreated stereotypic behavior; (2) Experimental procedures that result in sudden increases in appropriate social communication should result in sudden decreases in vocal stereotypy, and (3) Sustained increases in appropriate speech over time should result in a generalized long-term decrease in vocal stereotypy without intervention.

METHODOLOGY

Participants: All participants exhibited communication deficits (i.e., were either nonverbal or exhibited delayed echolalia). In Study I, all participants (N=26) had the diagnosis of autism and were under four years of age at the start of intervention. In Study II, one child with high-functioning autism was selected for participation because she exhibited difficulty producing socially appropriate communication and a high frequency of delayed echolalia.

Design: In Study I, we conducted a correlation between stereotypy and appropriate communication on the ADI-R at pre-intervention and following Pivotal Response Treatment for appropriate speech. In Study II, an ABA repeated reversals design (Barlow & Hersen, 1984) was employed to assess whether: (1) Experimentally produced sudden changes in appropriate speech (by presenting a highly reinforcing object which the child would appropriately request) would result in sudden decreases in vocal stereotypy without intervention, and (2) If long-term changes resulting from presenting such highly motivational stimuli for a lengthy period of time (2 months) would produce generalized changes across people.

RESULTS & DISCUSSION

In Study I, there was a strong correlation showing that untreated stereotypy decreased as appropriate speech increased. In Study II, we manipulated increases in appropriate speech in an ABABAB experimental design, and the results showed that when we produced a large sudden increase in appropriate speech ($d = 5.78$), there were sudden decreases in stereotypic delayed echolalia ($d = -4.04$). Finally, these changes maintained over time with a new conversational partner. That is, when we produced long-term increases in generalized appropriate speech, there were long-term generalized decreases in stereotypic delayed echolalia across people without direct intervention. The results of these studies may suggest that the ability to communicate socially may be more reinforcing than stereotypic behavior such that once a child learns to communicate, he or she no longer needs the sensory stimulation from stereotypy (Kern, Koegel, Dyer, Blew, & Fenton, 1982). Another possibility may be that appropriate social communication is incompatible with stereotypic delayed echolalia (Koegel & Covert, 1972; Loftin, Odom, & Lantz, 2007).

FIGURES

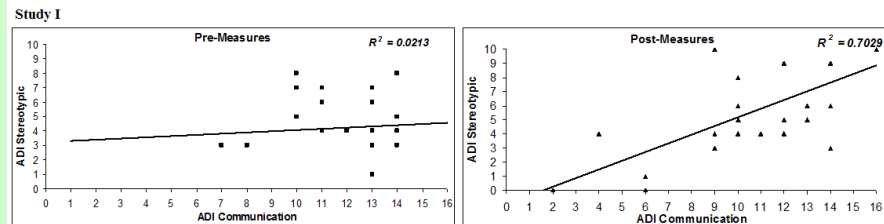


Figure 1. A comparison in ADI scores of communication and stereotypic behavior domains at pre-intervention (N=26).

Figure 2. A comparison in ADI scores of communication and stereotypic behavior domains at follow-up following an intervention program targeting language acquisition (N=26).

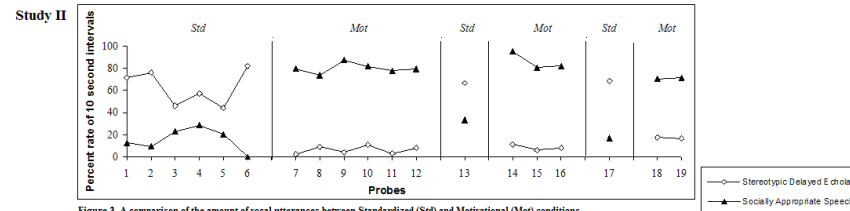


Figure 3. A comparison of the amount of vocal utterances between Standardized (Std) and Motivational (Mot) conditions.

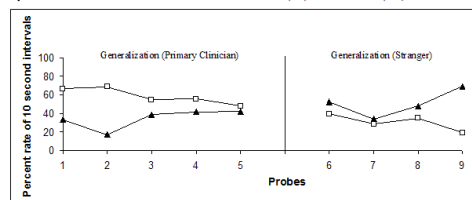


Figure 4. Generalization measures after 2 months of presenting highly motivational stimuli.

REFERENCES

- Barlow, D.H., & Hersen, M. (1984). Single case experimental designs: Strategies for studying behavior change (2nd ed.). Elmsford, NY: Pergamon.
- Frea, W.D. (1997). Reducing stereotypic behavior by teaching orienting responses to environmental stimuli. *The Journal of the Association for Persons with Severe Handicaps*, 22, 28-35.
- Kern, L., Koegel R.L., Dyer, K., Blew, P.A., & Fenton, L.R. (1982). The effects of physical exercise on self-stimulation and appropriate responding in autistic children. *Journal of Autism and Developmental Disorders*, 12-4, 399-419.
- Koegel, R.L., & Covert, A. (1972). The relationship of self-stimulation to learning in autistic children. *Journal of Applied Behavior Analysis*, 5, 381-387.
- Koegel, R.L., Firestone, P.B., Kramme, K.W., & Dunlap, G. (1974). Increasing spontaneous play by suppressing self-stimulation in autistic children. *Journal of Applied Behavior Analysis*, 7, 521-528.
- Loftin, R.L., Odom, S.L., & Lantz, J.F. (2008). Social interaction and repetitive motor behaviors. *Journal of Autism and Developmental Disorders*, 38, 1124-1135.
- Lord, C., Rutter, M., & Le Couteur, A. (1994). Autism Diagnostic Interview-Revised: A revised version of a diagnostic interview for caregivers of individuals with possible pervasive developmental disorders. *Journal of Autism and Developmental Disorders*, 24-5, 659-685.
- Lovaas, O.I., Varni, J.W., Koegel, R.L., & Lorsch, N. (1977). Some observations on the nonextinguishability of children's speech. *Child Development*, 48, 1121-1127.
- Mooney, E., Gray, K. M., & Tonge, B. J. (2006). Early features of Autism: Repetitive behaviors in young children with Autism and developmental delay. *European Child and Adolescent Psychiatry*, 15, 12-18.