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EFFECT OF INTENSIVE TACT INSTRUCTION ON SPONTANEOUS VERBAL BEHAVIOR IN THREE CHILDREN WITH DEVELOPMENTAL DISABILITY

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ABSTRACT. The present study is a partial replication of the intensive tact instruction tactic, in three students with developmental disability. The dependent variable was tacts emitted in Non Instructional Settings (NIS) prior and after the mastery of sets of 5 different stimuli. The NIS included the toy area of the classroom, lunchtime, and group activity. All probe sessions were conducted daily for a cumulative 15 minutes, 5 minutes in each NIS for three different days. Intensive tact instruction involved increasing the tact instructions to 100-tact learn units above the daily learn units students were receiving daily. The results showed a significant improvement of vocal verbal operants (tacts and mands) emitted by the students in natural environment.

***Keywords*:** *Intensive Tact Instruction, Tact, Mand, Disability, Verbal Behavior*

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ZUSAMMENFASSUNG. ***Wirkung von intensiv Tact Anweisung auf spontanes Verbalverhalten bei drei Kindern mit Entwicklungsbehinderung*****.** Die vorliegende Studie ist eine teilweise Replikation von "intensive tact Instruction Tactic", in drei Studenten mit evolutionärer Behinderung. Die abhängige Variable war die Nummer von Tacts, die in unstrukturierten Kontexten vor und nach dem Erwerb von Sets 5 verschiedener Stimuli produziert werden. Die unstrukturierte Kontexte schlossen den Spielberich der Klasse, das Essen und Gruppenaktivitäten ein. Alle Probe-Sitzungen wurden täglich, für insgesamt 15 Minuten, 5 Minuten in jedem Kontext an 3 verschiedenen Tagen, durchgeführt. "Intensive Tact Instruction" umfasste die tägliche Zunahme von 100 Lernmöglichkeiten von "Tact" für jeden Schüler. Die Ergebnisse zeigen eine signifikante Zunahme der verbalen Stimmoperanten (Tacts und Mands), die die Schüler in natürlicher Umgebung produzierten.

Schlüsselwörter**:** *Intensive Tact Instruction, Tact, Mand, Behinderung, Sprache*

INTRODUCTION

The acquisition of language typically occurs in the first years of life, quickly and spontaneously, as a result of the opportunities for socialising among children with the caregivers (Greenwood, Hart, Walker & Risley, 1994) and the entity of words repertoire present in children with typical development is not attributable to learning through direct teaching (Greer & Ross, 2008). The majority of children with autism spectrum disorders have a delay in language development (Stevens et al., 2000; Tager-Flusberg, 1988; Tager-Flusberg & Sullivan, 1998), the onset and frequency with they reach the different stages of linguistic development are often delayed when compared to children with typical development (American Psychiatric Association, 2013).

Different studies in literature (Delagado & Oblak, 2007; Greer & Du, 2010) tried to identify the most efficient strategies to stimulate the spontaneous language of children with disabilities and the analysis of verbal Behavior of Skinner (1957) forms the conceptual basis for many effective language training that received attention both in literature and in practice (Leaf & McEachin, 1999; Sundberg & Michael, 2001; Sundberg & Partington, 1998). Skinner (1957) defines verbal Behavior as a Behavior reinforced through the mediation of another person's Behavior. In the text Verbal Behavior, Skinner (1957) identified six types of verbal operants based on their function: Echoic, Mand, Tact, Intraverbal, Textual responding and Transcription. Among these verbal operants, Mands and Tacts are particularly relevant for the present study.

Mand is a verbal operant in which the response is reinforced by a specific consequence and is functionally controlled by relevant conditions of deprivation or adverse stimulation (Greer, 2002; Greer & Ross, 2008; Skinner, 1957). Tact is a verbal operant controlled by a nonverbal antecedent stimulus that function as discriminative stimulus (Sundberg, Juan, Dawdy & Arguelles, 1990), and is reinforced by generalized reinforcements (Greer & Ross, 2008; Tsiouri & Greer, 2003). Several studies (Greer & Du, 2010; Greer & Ross, 2008; Pistoljevic & Greer, 2006;) suggest that tact repertoire is critical for verbal development of children, as it is the basis for the acquisition of more complex verbal Behaviors, like naming (Greer et al., 2005; Lowe et al., 2002), conversational units (Lodhi & Greer, 1989) and reading (Greer & Ross, 2008).

Many studies (Delgado & Oblak, 2007; Pistoljevic & Greer, 2006; Schauffler & Greer, 2006) suggest that the Intensive Tact Instruction protocol helps preschool and school age children with typical and atypical development, to increase the number of verbal operants, Pure Tacts and Pure Mands, in natural environments. Most of Tacts that participants in different researches (Delgado & Oblak, 2007; Pistoljevic & Greer, 2006; Schauffler & Greer, 2006) emitted in non-educational situations were not limited to Tacts taught in the Intensive Tact Instruction protocol. This

seems to suggest, as pointed out by Pistoljevic and Greer (2006), that students have learned to emit Tacts to get generalized reinforcement in the form of attention from teachers.

The present study aims to evaluate the effectiveness of Intensive Tact Instruction procedure (Pistoljevic & Greer, 2006; Delgado & Oblak, 2007) on the number of Pure Tacts and Pure Mands emitted, in non-educational contests, by two students with Autism Spectrum Disorder and a student with difficulties in verbal and non-verbal communication still in diagnostic assessment phase.

METHODOLOGY

Research Objective

The objective behind the development of this research was to elaborate and investigate the benefits, in term of effectiveness and efficiency of an Intensive Tact Instruction in two children with Autism Spectrum Disorder and in a student with difficulties in verbal and non-verbal communication still in diagnostic assessment phase.

Research hypothesis

The application in students with Autism Spectrum Disorder and disability of an intensive tact protocol produced an increased number of verbal operants in natural settings. In this research we focused on the coordinate described as a specific hypothesis: increasing the tact instructions to 100-tact learn units above the daily learn units students improvement the emission of pure tacts and pure mands in non-istructional setting.

Research variables

The dependent variables measured in this study was the numbers of pure tacts and pure mands emitted during the 5-minute probes across three non-instructional settings.

The independent variables in this study was the Intensive Tact Instruction Procedure. During the intervention the presentation of additional 100 tact learn units were delivered throughout the day (Albers & Greer, 1991; Greer & McDonough, 1999; Greer, 2002).

Four sets of multimedia digital picture of stimuli depicting various objects were used. Five categories with four target stimuli in each category were included in each set. The five categories targeted included food, animals, parts of human body, house objects and community helpers. There were multiple exemplars of each stimuli (at least three) and they were all interspersed in all teaching conditions. Twenty learn units were presented for each of the five categories within a specific set on a daily basis. The target sets were rotated until 100 tact learn units were presented to the participant. The same sets of stimuli were repeatedly presented until the participant achieved mastery for all four sets of stimuli within the targeted five categories.

Procedure

During the initial probe, and following the mastery of each set, data were collected during 5-minute observation probes conducted across 3 different non-instructional settings; the lunch table, the group activity and the play area of the classroom. We used event recording to record the numbers of tacts and mands emitted by the students during the probes. We counted each tact and mand emitted in the three non-instructional settings, by writing all the utterances students emitted during the designated time period.

During the tact intervention, a correct response was recorded when the participant vocally labelled the target item in the picture accurately and independently within 3 seconds of the presentation of the

stimuli. The antecedent for a pure tact operant is non-verbal and consists in a multimedia digital picture. Positive reinforcement in the form of generalized social praise (i.e. verbal praise such as "Well done", "Good job" or tickles) was then presented immediately contingent on a correct response. Responses that deviated from the correct response were omitted, or those that occurred outside of the three-second intraresponse time resulted in the delivery of a simple correction procedure by the teacher. In the simple correction, the target antecedent (picture) was represented and accompanied by an echoic prompt.

We recorded a plus (+) on a data collection sheet when the student emitted a correct response to a learn unit, and a minus (-) was recorded if a student emitted an incorrect response or no response. Each intensive tact instructional session consisted of 20-learn units delivered per category; therefore, five learn units were delivered per target stimuli in a single category. Criterion was defined as responding correctly with at least 90% accuracy across 2 consecutive sessions. After achieving criterion on one of the training sets, a new set of tacts was implemented. Students mastered a single set, all five categories, before they were taught the next set.

Results

This study investigating the effectiveness and efficiency of Intensive Tact Instruction procedure (Pistoljevic & Greer, 2006; Delgado & Oblak, 2007) on the number of Pure Tacts and Pure Mands emitted, in non-educational contests, by two students with Autism Spectrum Disorder and a student with difficulties in verbal and non-verbal communication still in diagnostic assessment phase. Figure 1 shows the delayed multiple probe design used in the study.

Student A emitted a total of 1 tact, in the second probe, and 4 mands across 3-probes sessions respectively 0 in the first, 1 in the second, and 3 in the third. Following mastery of Set 1, Student A emitted a total of 16 tacts and 12 mands in a single session. Following the mastery of Set 2 Student A emitted a total of 22 tacts and 15 mands in a single

session. After the mastery of Set 3, Student A emitted 27 tacts and 19 mands in a single session. Following the mastery of Set 4, mands in a single session. Following the mastery of Set 2 Student B emitted a total of 15 tacts and 10 mands in a single session. After the mastery of Set 3, Student B emitted 21 tacts and 10 mands in a single session. Following the mastery of Set 4, Student B emitted a total of 24 tacts and 12 mands across all three probes.

Student A emitted a total of 30 tacts and 25 mands across all three probes. Student B emitted a total of 8 tacts, respectively 3 in the first, 3 in the second and 2 in the third, and 7 mands across 3-probes sessions respectively 2 in the first, 2 in the second, and 3 in the third. Following mastery of Set 1, Student B emitted a total of 10 tacts and 8

Student C emitted no tact and no mand across 3-probes sessions. Following mastery of Set 1, Student C emitted a total of 2 tacts and 3 mands in a single session. Following the mastery of Set 2 Student C emitted a total of 7 tacts and 4 mands in a single session. After the mastery of Set 3, Student C emitted 9 tacts and 7 mands in a single session. Following the mastery of Set 4, Student C emitted a total of 12 tacts and 8 mands across all three probes.

This procedure did demonstrate a functional relationship between Intensive Tact Instruction and the frequency of Pure Tacts and Pure Mands emitted by the students in the non-instructional setting. These findings a consistent with the results of Pistoljevic & Greer (2006) and Pereira-Delgado & Oblak (2007) in that the Intensive Tact Instruction facilitated the acquisition of mands and tacts. In several occasion the tacts emitted by the students during post probes was different from the tact learned during the training, that can support the thesis of Tsiouri & Greer (2003) and Pistoljevic & Greer (2006) that Intensive Tact Instruction enhanced the acquisition of reinforcement for social attention.

Future studies may target the long-term effects that the intensive tact protocol has on students with and without this type of training. Further research is necessary to test other positive effects that the intensive tact protocol may have other verbal operants with other populations of learners.

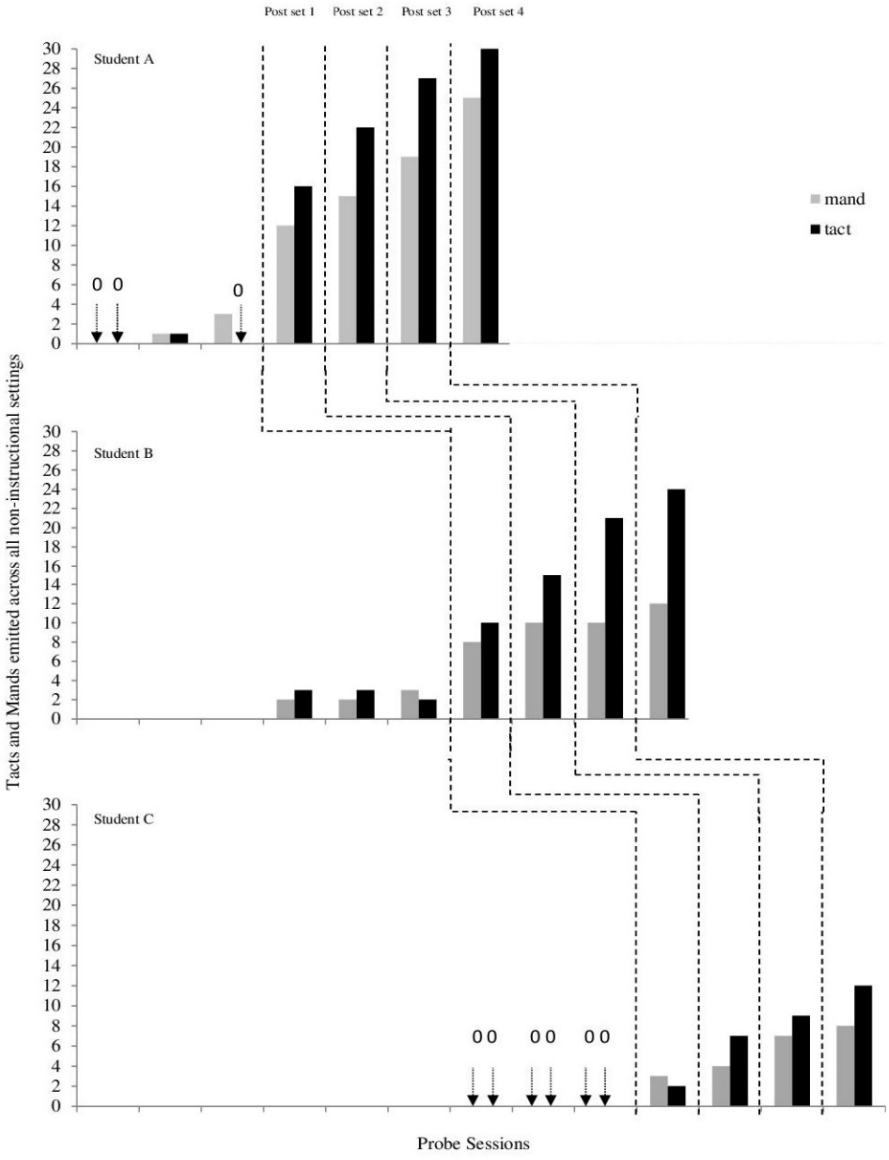

Figure 1. *Student A, B, and C's frequency of tacts and mands emitted across all non-instructional settings, blocked into 15-minute session.*

Conclusion

Our data suggest that increasing the number of pure tacts and mands children are taught could lead to a greater number of verbal Behavior and interaction with others. By learning to emit more tacts and mands, young children whit autism can recruit more attention from adults and peers in their environment, thereby creating more opportunities for verbal exchanges.

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