ISSN 1982-3541
Belo Horizonte-MG, Brazil
2007, Vol. IX, nº 2, 91-104

Brazilian Journal of Behavioral and Cognitive Therapy

Categorization of verbalizations of the therapeutic process and the intraverbal operant[1]

Joene Vieira-Santos[2]
Carlos Barbosa Alves de Souza[3]
Graduate Programme in Behavior Theory and Research
Federal University of Pará

Abstract
Categorization of verbalizations of the therapeutic process can be interpreted as an intraverbal training. Thus, evaluation of the variables involved in this training would provide us with information about relevant variables of the categorizing activity. This work analyzed the procedures and results of the studies aiming at the training of intraverbal responses and seeking to identify relevant variables in intraverbal behavior acquisition, and therefore in categorization. The following variables were identified: presence of textual cues; use of examples (especially the exposure to a procedure of an instruction of multiple examples) and, in the context of the instructional relations, both exposure to definition tasks before the beginning of example identification tasks and identification of the concept's keys aspects. These variables seem to be related directly to those identified in the studies about categorization of verbalizations of the therapeutic process and suggest that they must be taken into account for the development of studies about this subject.

Key-words: Verbal behavior, Intraverbal, Verbalizations of the therapeutic process, Categorization.

From the moment which behavioral therapy no longer made use of an investigation model based on behavioral modification and began to deploy the so-called face-to-face verbal therapy in regular clinical practice, the investigation on the patient-therapist verbal interaction drew the attention of researchers of the behavioral therapy field (Tourinho, Carvalho Neto & Neno, 2004; Tourinho, Garcia & Souza, 2003). Within this context, some studies have been carried out (Batista, 2006; Brandão, 2002; Canaan, 2001; Chequer, 2002; Kovac, 2001; Lima, 2005; Oliveira-Silva & Tourinho, 2006) with the aim of developing systems of categories which can enable a methodological analysis of the verbal content of the therapeutic process (both therapist and patient's verbalizations). Through these tools, it becomes possible to more precisely recognize the functions of the interventions made by therapists. Moreover, such studies claim that a more accurate comprehension of the functions of the therapist's intervention on the patient behavior may aid the planning and execution of the therapeutic process.

However the variations in the categorizer's training procedures and the data analyses, studies on the categorization of the content of the therapeutic process focus on the reading of transcripts of therapeutic sessions and the categorization of excerpts from such sessions based on a system of categories. That is, given certain verbal stimuli (transcription of verbalizations), the participants (categorizers) should respond verbally and attribute one of the existent categories in the categorization system. This activity can be described (in terms of the verbal operants proposed by

1 Research partially financed by Capes (MA scholarship granted for the first author).
2 Psychologist and MA student in Behavior Theory and Research. E-mail: joenesantos@yahoo.com.br
3 PhD in Behavioral Sciences. E-mail: carlos.souza@pesquisador.cnpq.br
Translation by Leonardo Pereira Nunes. E-mail: leopereiranunes@gmail.com

Skinner[4] (1957/1992)) as an intraverbal response, i.e. a verbal behavior controlled by a verbal stimulus (which is a product of one's verbal behavior) in which there is no point-to-point correspondence nor formal similarity[5] between the previous stimulus and the response. Other examples of the intraverbal behavior are: poem reciting, formula derivation, alphabet saying and responding to questions.

Miguel, Petursdottir and Carr (2005) suggest that one of the most common types of intraverbal behavior is the ability to verbally categorize or classify objects in the environment through a prior verbal stimulus, such as 'what is this?'. This kind of activity is present in the first school years, when children are required to name toys and other objects. The most part of the studies about intraverbal behavior concerns the training of such operant in children who somehow develop atypically (Cihon, 2007).

Once there can be similarities between the training of intraverbals and the categorization of the verbal content in the therapeutic process (patient-therapist verbalizations within the therapeutic setting), this present paper has two central objectives: (1) to analyze the procedures and results of intraverbal training described in the literature, therefore identifying the variables probably (and generally) involved in the establishment and upkeep of the intraverbal behavior; (2) to evaluate whether these variables are present in the categorization of verbalizations in the therapeutic process. To reach such aim, a research with a search tool for academic articles was carried out and some papers concerning the training of intraverbals found. After the reading and analysis of these texts, it was possible to identify the controlling variables spotted in such literature and compare them with the ones identified in the literature for the categorization of the content of the therapeutic process.

4 See Peterson (1978), Ribeiro (2004) and Passos (2004) for an introduction to the proposal of Skinner (1992).

5 There is point-to-point correspondence between an antecedent and a verbal response when both are made of more than two components and the first component of the antecedent controls the first component of the response, and so forth. There is formal similarity between an antecedent and a verbal response when both are within the same sensorial modality (Peterson, 1978).

Researches involving the training of intraverbal behavior

Some researches on intraverbal behavior are carried out with children with atypical development, since they need to be taught to functionally use language. In this line of studies, Finkel and Williams (2001) intended to compare and evaluate the effects of textual and echoic cues about the intraverbal ability of a six-year-old autistic boy by using a fading procedure. Such procedure was used to set the intraverbal repertoire and to prevent the participant (throughout the learning/training process) from being under control of the shape of the cue instead of being under the influence of the verbal stimulus previously set to control the desired intraverbal response.

Throughout the study, the following target-responses (emitted in response to the direct questions presented by the researchers) were measured: (1) the number of complete and correct sentences and target responses to the presented questions (2) the number of partial correct responses which made sense to the same questions and (3) the number of responses which did not make sense or the absence of responses to the presented questions. These variables were measured in four distinct moments: (1) the baseline stage, in which tests were made before the intervention; (2) the intervention or training stage, in which the results were obtained during the fading procedure; (3) the testing stage and (4) the follow up stage (7 and 14 days after the post-fading sessions). The fading procedure consisted of teaching the child to respond to questions by using written textual cues and/or written echoic cues (the authors name such type of cue as *scripted echoic prompts*, since the researcher holds the written response to be given, but the child only has access to the oral response). This can be

accounted by the fact that the researcher does not show what is written, but only requires that the child repeats what he says. When textual cues were deployed (these were presented in the written form), the responses to the questions were also in the written form whenever the researcher orally said 'Read this'. From each of the written responses and in each new presentation, a word was systematically removed (starting by the last word of the sentence). The same procedure was followed for written echoic cues. The only difference was that the researcher said 'Say' and then orally provided the correct response which should be given, instead of requiring the child to read the written response. Like the written textual cues, a word from the correct response was removed in every new presentation of an echoic cue. During the testing stage (called the post-fading stage), all the textual and echoic cues were completely suppressed in order to evaluate the effects of the teaching procedure used. Moreover, seven and fourteen days after the post-fading stage, a test was made to assess the maintenance of the responses taught through the fading procedure.

The collected data showed that despite both cues (textual and echoic) appeared to be effective for the acquisition of the intraverbal behavior, the textual ones are apparently more striking for the setting of such behavior in children with atypical development. One of the reasons Finkel and Williams (2001) attribute this result to is the fact that children with atypical development have difficulties interacting with people, and such interaction is involved in the use of echoic cues. Furthermore, the authors suggest that the child who has taken part in this study has probably had a long history of previous flaws with echoic cues and an absence of a similar history with textual cues, which may have contributed to his/her resort to textual cues.

One of the limitations of the study conducted by Finkel and Williams (2001), which is recognized by the own authors, is that if one compares the effectiveness of the textual and echoic cues, other variables (apart from the type of cue) may have varied. For instance, when textual cues were used, they were available for as long as the participants read them, therefore increasing the time of exposure to the response which should be acquired. However, when echoic cues were used this did not happen, since the spoken cue was brief and then it disappeared. This limitation may as well have contributed to a greater effectiveness of textual cues if compared to the echoic ones.

Skinner (1957/1992) proposed that each of the verbal operants would be acquired separately and that the fact that the individual learned a response in a certain operant does not guarantee that the same will be used in another operant. Thus, a child saying 'water' when there is a glass of water near (tact) does not guarantee that this child will be capable of asking for water when thirsty ('mand')[6] . Partington and Bailey (1993) sought to determine whether responses of tacts and intraverbal responses would be verbal operants separate for children with typical development. These authors also tried to observe if the transferring of stimulus control designed for children with atypical development to children with typical development would be effective if this distinction was confirmed. Still, the authors evaluated whether an altering in the transferring procedure would simplify the transferring of stimulus control and the development of a generalized intraverbal repertoire. For the reaching of such aims, two experiments were carried out.

In the first experiment, four preschool children were taught to tact a group of pictures (shown in standard cards), but they were unable to emit the same responses under the intraverbal condition. After the training of tact responses, these children underwent a training of intraverbal responses in which

6 'Mand' is a verbal response emitted under the control of an establishing operation (Skinner, 1957; Peterson, 1978). For instance, an individual deprived of water for some minutes or hours will probably say 'I'm thirsty' if there is a listener near. Tact, on the other hand, is the verbal response emitted under a non-verbal stimulus, which can be an object, an event or the property of an object or an event (Skinner, 1957; Peterson, 1978). For instance, if there is a dog near, I may emit the word 'dog'.

five responses were taught to each one of the three verbal stimuli. During this training procedure, the child was given a verbal stimulus (e.g 'Which of these are toys?') and a generalized social reinforcement was uttered after each correct response (e.g. 'It is correct!'). In case the child did not emit five correct intraverbal responses, other verbal cues would be uttered by the experimenter, such as 'And…' or 'What else?' If the child proved incapable of emitting five correct intraverbal responses, the experimenter would signal a specific response by presenting an appropriate card which the child had already learned how to tact. Thus, the card acted as a non-verbal cue for a correct answer. After the child had emitted the tact to the corresponding picture, this picture was taken from him/her and the verbal stimulus was once again presented in a way that the non-signaled correct intraverbal response could be reinforced. Finally, after the training of intraverbal responses for three verbal stimuli, a fourth stimulus not trained previously was presented to test the generalization of non verbal responses.

The results of Experiment 1 conveyed that the procedure of transferring of stimuli control was effective in the setting of verbal behavior, which showed a considerable increase in the intraverbal responses (compared to the tact responses) for each one of the three trained verbal stimuli occurring after such procedure. Nevertheless, it was not possible to observe the occurrence of generalization for the fourth verbal stimulus (untrained) presented at the end of the training of intraverbal responses, given that the children did not emit responses for it. The results of this first experiment also suggested that tact and intraverbal responses are independent verbal operants, and that the teaching of a tact repertoire for preschool children is not sufficient to place such responses under the control of verbal stimuli (intraverbal response).

The second experiment aimed at evaluating the other manners which could facilitate the transferring of stimuli control, once the first experiment had shown that the teaching of the tact repertoire was not sufficient to set the intraverbal behavior. Instead of directly teaching the intraverbal responses, a common approach is to teach children to tact not only the presented picture, but also the class to which the non-verbal stimulus belongs. Thus, in the second experiment, the authors attempted to study the effect of such type of teaching on the acquisition of intraverbal responses. The procedure applied in this experiment was similar to the one applied in the first, with the exception that, during the training of tacts, the participants were firstly taught to tact twenty pictures (shown in standard cards) and later on to tact classes to which each one of the pictures belonged. After each correct tact, the experimenter would then provide the tact for the class to which the picture belonged (e.g. 'and it is a fruit') and would alert the child to tact the class. After that, he would fade de cue. The experimenter would then tact the picture or the class of the picture and require the child to emit an echoic response. Four preschool children partook in this experiment, and none of them participated in the first experiment.

The results of this second experiment showed that teaching children to tact either the picture or the class to which it belongs resulted in an increase of the intraverbal responses for two participants, but was insufficient for the acquisition of intraverbal responses for other two participants. Moreover, it was possible to observe some generalizations of intraverbal abilities in this second experiment.

Whereas the results of experiment 1 confirmed the functional independence of tacts and intraverbals and the effectiveness of the transferring procedure of stimulus control in children with typical development, the findings of Experiment 2 indicate that teaching a child how to tact either the picture of the class to which it belongs may facilitate the acquisition of intraverbal repertoires for some individuals. Furthermore, the training of tacts during the second experiment possi-

bly involved an intraverbal component. The child would emit tacts in sequence (e.g. 'it's a car toy…it is a toy), which may have resulted in an intraverbal connection established between the tacts, therefore transforming the product-response of the first tact into a verbal stimulus in the second (response under multiple control, i.e. under the control of variables involved in the emission of tact and under the control of variables in the emission of intraverbal responses). However, even with the presence of such intraverbal component in the training procedure, it was not possible to achieve a consistent intraverbal performance.

Also based on the Skinnerian presupposition that a very same word or form of verbal behavior is at times a component of different verbal operants, Greer, Yaun and Gautreaux (2005) sought to evaluate the acquisition of intraverbal responses and original dictation as the function of a history of instruction of multiple examples. The instruction of multiple examples is an instructional operation aimed at teaching concepts, in which instances of subgroups of a category of stimuli are taught through presentations which include a chain of irrelevant properties, as the essential attribute of the classification is identified in the responses which are not directly taught.

The objective of the study conducted by Greer et al (2005) was to test whether teaching a group of words through spoken and written spelling as a common response class for an example or a subgroup of words (by using tactics of instruction of multiple examples) would result in the emission of topographically related responses to original words. In case the results showed the presence of stimulus control joint function in two classes of operants, it would then be possible to teach the students new words in one of the responding forms (spoken or written spelling) and expect that these new words were uttered without instruction in the other manner of response as a result of the experience of multiple examples common with the group of words. To reach this aim, two experiments were thus carried out.

Experiment 1, which consisted of five stages, was made with four preschool children who presented initial repertoires of reading and writing. Firstly, pre-experimental tests were made to assure that none of the participants was capable of spelling the words orally or in writing. Next, the children were taught to spell a group of words (G1) in writing or orally and then the untaught responses would be tested. In the third stage, the children were taught (through instructions of multiple examples) to spell a second group (G2) of words, and they should alternate between the form of the responses (written and spoken). The fourth stage consisted of once again testing the G1 untrained responses. Finally, the children underwent training with a third group of words (G3) and an only response (written or spoken spelling). They were then tested with the new words untaught throughout the study. Two children did not spell any of the untaught responses in G1 before the instruction of multiple examples, whereas the other two spelt the words accurately: one spelt 10% of the tested words and the other spelt 60%. However, after the instruction of the G2 multiple examples, all the students spelt the untaught responses of G1 and G3. The instruction of multiple examples resulted in a stimulus joint function, since the formally independent responses were under the same stimuli control.

In experiment 2, the same procedures deployed in experiment 1 were used. However, the participants of this second experiment were four children diagnosed with atypical development. All the children responded to the untaught words of G1 and G3 after the instruction of multiple examples of G2. The data obtained were similar to those found in experiment 1, since they replicated its findings and extended the effects to children with atypical development.

The obtained results in the study of Greer et al. (2005) not only confirmed the independence of the acquisition of verbal operants proposed by Skinner (1957/1992), but also suggested that, despite the indepen-

dence of such repertoires, the mechanisms for the development of joint control which rapidly grow in children with typical development are related to an experience of multiple examples. Nevertheless, children with development deficits do not seem to acquire this stimuli joint control so easily and quickly. This joint function requires that the child has in his/her repertoire listener responses, i.e. the child must be able to respond adequately to the responses emitted by the speaker, therefore reinforcing the behavior of the latter. Also, the children should also emit verbal responses after certain stimuli, and these abilities seem to be absent in part of the children with development deficiencies. In this sense, the procedure of instruction of multiple examples seem to be efficient to promote such transformation in the function of stimulus control in children who do not have these abilities. Furthermore, the authors suggest that what they deem as a stimuli joint function was a result of training of multiple examples in which the participant was taught to respond through two types of responses (spoken and written) for a certain group of words. They also suggest that the training led to a correct response for untaught responses which the participants did not emit before the instruction of multiple examples. This phenomenon is what Catania (1998/2006) names as *higher order behavior*.

Jonhson and Chase (1981) (quoted by Chase, Jonhson & Sulzer-Azafroff (1985)) tried to categorize the verbal tasks according to the system of functional classification proposed by Skinner (1957/1992) and observed that the intraverbal operant could have been divided in three subclasses: 'definitions', 'providing of original examples' and 'identification of written examples'. These results provided the base for the investigation carried out by Chase et al. (1985) with the aim to evaluate whether and how the intraverbal operant could be divided in functional subclasses.

The guiding issues in the study were (1) whether different classes of intraverbals had characteristic and distinct patterns of acquisition and (2) whether the transferring of learning occurred along these classes. Thus, the authors sought to verify if there were sufficient differences between the various intraverbal relations to sustain the proposed subclassification. The three types of intraverbals investigated were: 'definition tasks', 'example identification tasks' and 'exemplification tasks'.

Six psychology undergraduate students and two research assistants took part in the experiment. The students (direct participants) had introductory knowledge about the basic principles of learning and experimental methodology, and did not respond correctly to the pre-test questions (which evaluated their grasp of the concepts taught during the experiment). The research assistants (graduated in psychology) had been trained by the experimenter to apply the procedure to the experimentees.

Chase et al. (1985), in general terms, defined (for the sake of operationalizing the response to be observed) the class of intraverbal response as the presentation of a written question and the conclusion of a written question different from the presented one. The material used in the experiment consisted of three written excerpts and each one defined an esoteric psychological concept, which are: aboulia (relative or temporary inability to make decisions), constructional approach and tau effect (perceptive phenomenon in which distance between successive stimuli is perceived as being greater when the interval between them is bigger). For each one of these concepts, a task of copying, a group of tasks of identification of examples, a series of 'definition tasks', a series of 'exemplification tasks' and two 'combined tasks' were planned. Still, the following selection criteria to control the level of difficulty of the concepts were used: (1) each concept could be divided in five critical and defining features; (2) each concept could be defined in between 125 and 150 words; (3) the experimenters could provide 25 or more different instances for each

concept; (4) a pilot test (see details in Chase et al. 1985) showed a similar level of difficulty among the selected concepts.

The tasks carried out in this study were also tested through a pilot test made in order to eliminate the very difficult or very simple ones, and also to auxiliate the experimenter in deciding how to distribute the tasks along the training and testing stages of the experiment. Whereas the level of difficulty increased gradually in the training stages, only the more difficult tasks among each type of task were included in the testing stages. 'Identification tasks' required the participant to spot within the example all the five critical and defining features. 'Exemplification tasks' meant that the participant had to exemplify all the five critical and defining characteristics. 'Definition tasks' required the experimentee to describe all the five critical and defining features. During the 'combined tasks', the participants had to describe the critical and defining characteristics present in the problem and illustrate those which were absent. Each participant was exposed individually to the procedure, which was composed by four sessions lasting one hour each. The first sessions consisted of a pre-test which assessed the participant's repertoire in relation to the three concepts that would be used throughout the experiment (aboulia, constructional approach and tau effect). In the remaining sessions, there was first the training of concepts and then the test, which included new questions similar to those used in the training (extented tasks), and questions which had not been used in the training but were deemed as intraverbal relations (combined tasks). In each one of the sessions 2, 3 and 4, one of the concepts was dealt with. These sessions differed among themselves regarding the type of intraverbal task used in the training (defining task, example identification task and exemplification task). Furthermore, the participants were grouped in pairs and to each pair it was shown a distinct condition of training sequence in a way that the effect of the order of presentation of intraverbal tasks could be controlled.

The results were evaluated according to two dimensions: 1) the rate of responses (the amount of correct responses per time unit), which could be deemed as fast or slow; 2) the accurateness of the response, i.e. whether it was in accordance with the concept's critical and defining features, and therefore could be reckoned as being precise or imprecise. The training results concerning the response rates showed that all the six participants responded more quickly to the example identification questions when compared to the other questions. However, the former were responded with less precision than the latter. Still, taking into consideration the order of the tasks presented in each session (under the condition that the training of definition was realized previously to the training of the example identification task), the performance of the 'extended task' after the training of example identification would take place in a sessions previous to the training of definition. Conversely, the group analysis suggests that variables such as concept, order of training and interaction between order and concept did not significantly affect the obtained results during the concept acquisition stage (training).

Concerning the rate of responses, the test results revealed that for all participants the rates of 'extented tasks' responded correctly after the training of example identification were superior to the rates of 'extended tasks' responded correctly after the training of definition and exemplification. This means that experimentees responded more quickly to 'extended tasks' after the training of example identification rather than after the training of definition and exemplification.

Concerning precision, the results of the tests presented three critical differences among the conditions. The test, regardless of the training conditions previous to it, consisted of nine examples and non-examples, two definition questions, two exemplification questions and two combined questions. In such tests, one type of task was the 'ex-

tended task' (for instance, when the training concerned the 'example identification task', the 'extended task' to the nine examples and non-examples). The other two types of tasks (in the case of the previous example, two questions of definition and two questions of exemplification) evaluated the transferring between functional classes. One last type of task was the 'combined' one, which assessed whether new intraverbal relations (not trained directly) would emerge. The first critical difference among the conditions was that for the majority of participants the accurateness of the 'extended tasks' was superior to the accurateness of tasks which assessed the transferring. One second difference concerns the effect of the order of training over the accurateness of the 'extended tasks'. For four participants, this accurateness after the exemplification training was higher that the extended accurateness after the example and definition identification. Moreover, for four participants the performance of the example identification 'extended tasks' was more precise than the performance in the definition 'extended tasks'. The third critical difference refers to the precision of the transferring. Five participants showed high precision in the transferring tasks after the example identification training if compared to the results in the transferring tasks after the training of definition and exemplification.

Since it only made sense to evaluate the performance in the 'combined tasks' (considering the training sequence order), the effects for each training condition were assessed separately. Three differences between the conditions were found. Firstly, the rate of correct responses in the 'combined tasks' was directly affected by the training. When the effect of the example identification training on the 'combined task' was compared to the effect of the exemplification and definition trainings, one could perceive that the first resulted in higher rates of responses, i.e. the majority of participants responded to the 'combined task' preceded by an example identification training which was quicker than the one preceded by definition and exemplification trainings. Secondly, the precision was differently affected by the training. Five participants performed more accurately after the definition training than after the exemplification training, and four participants responded more precisely after the example identification training than after the exemplification training. Thirdly, comparisons between the performance in 'combined tasks' and performance in 'extended tasks' showed that the majority of participants carried out the extended activities more effectively.

Group analyses, which evaluated the performance in the tests, revealed a significant effect of the concepts on the rates of 'extended tasks' responded correctly. The analyses of the rates revealed a significant interaction between the order of training and the concepts. Nevertheless, regarding the precision measures, neither the effects of order nor the effects of the interaction on the measures of test performance were identified. According to Chase et al. (1985), these results have three important consequences for the study of verbal behavior. Firstly, they have confirmed the possibility of verbal behavior being classified according to functional criteria. Secondly, the functional differences between task types and the functional similarity within task types have practical implications both for the study and the teaching of verbal behavior. Thirdly, the results suggest that there are significant differences between concepts, which means there is a need of posterior refinements in a work involving a system of functional classification of verbal behavior.

Concerning the third point mentioned above, the data obtained throughout the concept acquisition (training) stage showed that the intraverbal subclass 'example identification' was substantially different from the 'definition' and 'exemplification' subclasses. The achieved results in the transferring and extension (testing) stages revealed only a partial transferring of the learning which happened during the acquisition stage, given that the participants responded

with less precision to the tasks which had not been trained ('combined tasks') and that the majority of differences found in the measures of rates and precision during the training stage were kept during the testing stage (which means that it is not sufficient to teach and test one type of intraverbal if the aim is to make the participant engage in a variety of intraverbals). Based on these results, Chase et al. (1985) support the notion that in cases of programmed verbal learning, subdividing the intraverbal behavior in distinct functional classes can be useful. According to such authors, this could facilitate the standardization of operants used in studies of a certain area, and also the communication among researchers. At the same time, it could also auxiliate instructors in teaching and evaluating different classes of verbal behavior.

Variables of control which can be involved in trainings of verbal behavior

Table 1 presents a summary of the procedures and results of the studies presented in the previous topic.

The results obtained by Finkel and Williams (2001) seem to suggest that the using of textual cues can be more effective that the deployment of echoic cues in the acquisition of intraverbal behavior, not only because of a previous history of flaws with echoic flaws, but also because of the duration of the exposition involved in the textual cues (which is higher if compared to the echoic cues). Based on these results, one relevant variable of control present in the intraverbal training involved in the categorization of the patient and therapist's verbalizations is perhaps the duration of exposition to the defini-

Table 1. Summary of the procedures and results of the studies on the training of reported intraverbals.

Study	Procedure	Results
Finkel and Williams (2001)	Participant: 1 child with atypical development. Intraverbal responses are taught through a procedure of fading of textual and echoic cues. During the testing stage (named as postfading) no cue was provided. 7 and 14 days after the postfading, a test was carried out to evaluate the maintenance of the taught responses through the postfading procedure.	Although two types of cues were effective for the acquisition of the intraverbal behavior, the textual cues seem to be more effective for the setting of such behavior in some children with atypical development.
Partington and Bailey (1993)	Participants: four preschool children with typical development. Experiment 1 Firstly, the participants were taught to tact a group of pictures. Next, they underwent training of intraverbal responses. Lastly, another previously untrained verbal stimulus was presented to test the generalization of non-verbal responses. Experiment 2 The procedure was similar to the one used in Experiment 1, with the exception that, during the training of tacts, the participants were firstly taught to tact 20 pictures and then taught to tact the classes to which each one of the pictures belonged.	Experiment 1 The transferring procedure of stimuli control was effective in the setting of the verbal behavior, thus showing a considerable increase in the intraverbal responses. It was not possible to observe the occurrence of generalization in the fourth verbal stimulus (untrained). Experiment 2 Teaching the participants to tact both the picture and the class to which it belongs resulted in an increase of the intraverbal responses for two participants, but it was insufficient for the acquisition of intraverbal responses for the other two participants.

Greer, Yaun and Gautreaux (2005)	Experiment 1 Participants: four children with initial and previously established reading and writing repertoires. After pre-experimental tests, the participants were taught to spell a group of words (G1) orally or in writing. Next, they were tested through the requirement of untaught responses. Then, they were taught to spell a second group of words through instructions of multiple examples and tested on the untrained responses of G1. Finally, the participants underwent training of a third group of words (G3) in one only response (written or spoken response) and then were tested on new untaught words throughout the study. Experiment 2 Participants: four children diagnosed with atypical development. The same procedures applied to experiment 1 were used.	Experiment 1 Two children did not spell any of the untaught responses in G1 before the instruction of multiple examples, whereas the other two spelt the words accurately (the first 10% of the tested words and the second 60% of them). However, after the instruction of G2's multiple examples, all students spelt the untaught responses from G1 and G3. Experiment 2 The data obtained were similar to the data found in experiment 1. They replicated the findings of the first experiment and can be extended to children with atypical development.
Chase, Jonhson and Sulzer-Azafroff (1985)	Participants: six university students of psychology. Firstly, they were exposed to a pre-test which evaluated the repertoire of the participant in relation to the three concepts which would be used throughout the experiment. Next, three sessions composed of a training stage and a testing stage were made. In each session, a different concept was worked on and the three stages would differ among themselves concerning the type of intraverbal task used in the training. The intraverbal tasks used throughout the experiment were: definition tasks, example identification tasks, exemplification tasks, combined and extended tasks.	The results were evaluated according to two variables: (1) the rate of responses and (2) the accurateness of the response. Concerning the trainings, the results showed that the participants responded more quickly (but less accurately) to the example identification tasks and more slowly (but more accurately) to the exemplification and definition tasks. The results from the tests indicated fast (but less accurate) responses in extended and example identification tasks and slow but accurate responses in extended and exemplification tasks. Slow and inaccurate responses were detected in extended definition tasks.

tions of the categories (which can be seen as equivalent to the textual cues in the study of Finkel and Williams (2001)). Thus, to allow the categorizers to have access to the definitions of categories during all the categorization activity is to contribute to the increase in the number of right choices regarding a predefined table containing the correct answers. The notion of the definition of categories as a variable of control which is of utmost importance for a successful achievement of results is unanimous among the researchers. (e.g. Batista, 2006; Kovac, 2001; Oliveira-Silva & Tourinho, 2006).

Categorizing patients and therapists' verbalizations involves, besides a kind of intraverbal response, a textual response, since the categorizer has to initially read the transcription of the verbal content of the therapy in order not only to attribute one category to the excerpt read. Furthermore, Matos (1991) suggested that, in a certain sense, textual responses can be considered as tacts, since the individual responds to the stimuli printed on paper by naming them. The findings of Partington and Bailey (1993) suggest that teaching the individual to tact both the item and the class to which it belongs can facilitate

the acquisition of intraverbal repertoires for some of the participants. In this sense, the use of various examples together with the definitions of categories (as if we had the items (examples) and the classes to which they belong (definition of category)) may increase the probability of the categorization being realized according to elaborated definitions. Furthermore, the same way the figures were presented in Experiment 1 by Partington and Bailey (1993) as cues for the emission of correct intraverbal responses when children were incapable of emitting new intraverbals, the use of examples together with the definitions of categories may function as clues to the categorization of new verbalizations belonging to the same category. Perhaps the abundant deployment of examples could have the same function of the pictures, which the children were already apt to to tact, therefore increasing the probability of the emission of correct intraverbal responses.

Oliveira-Silva and Tourinho (2006) suggest that the familiarity with the content of the sessions to be categorized is a relevant variable of control. Such familiarity can be reached through previous readings of the sessions, through the categorization of therapeutic sessions conducted the own therapist and through continuous exposition to the categorization activity, among other manners

Another variable cited in the literature that can contribute to the success in the training of the intraverbal behavior is the use of instructions of multiple examples. The deployment of such procedure (as shown by Greer et al. (2005)) seem to facilitate the emission of previous untaught responses. Thus, the categorization of new verbalizations can be made simpler by a training based on the instructions of multiple examples, in which the concept of each one of the categories belonging to the adopted system of categories can be learned through contact with various examples of one same category.

Moreover, the use of the multiple example instructions (in which the individual is exposed to a series of examples that allow the characterization of a certain category) allows him/her to respond discriminately to the context in which such category is inserted. Some studies made in the area of categorization of the content of the therapeutic process suggest that context comprehension (i.e. information on the case corresponding to the sessions to be categorized) seem to be one of the variable of control important to the success of such studies (Batista, 2006; Canaan, 2002; Chequer, 2002; Oliveira-Silva & Tourinho, 2006).

The study conducted by Chase et al. (1985) implies the division of the intraverbal operant in three subclasses: 'concept definition', 'concept exemplification' and 'identification of concept examples'. From these subclasses, only one has been effectively used and discussed throughout the studies of content categorization of the verbal process, i.e. the 'example identification concept'. This is due to the fact that categorizing exactly consists of requiring that the categorizer identifies which category (concept) should be attributed to a certain verbalization (example). However, the results presented by Chase et al. (1985) have shown that although the 'example identification tasks' lead to higher rates of correct responses (in the sense of the task being accomplished more quickly), it seems that the responses provided in such task are less precise if compared to the data obtained in the 'definition' and 'exemplification' tasks. The responses from the latter are deemed as being slow, but more accurate (in the sense that they are according to the concept's critical and defining characteristics). Considering that accurateness is a more important attribute in categorizing than the rate of correct responses, it may be perhaps more fruitful to start the categorization training with tasks of the 'definition' type, in which the participants would first have to discriminate the critical and defining features of each category (concept) so as to later on train with 'example identification' tasks (i.e. the categorization in itself). Still, as Chase et al. (1985) indicate, it is not enough to teach the participant to discriminate the critical and defining features

and expect this to suffice for the transferring of control to another type of task, as for the 'example identification' task, for instance. It is necessary that contingencies of reinforcement are arranged so as to promote such transferring. This suggestion has another aspect widely cited in the literature about the categorization of the verbal content of the therapeutic process: the need to refine and validate the deployed system of categories (which is also cited in the study of Chase et al. (1985) as being relevant to the standardization of the operants used and to the facilitation of the communication among researchers). In this sense, it appears to be necessary that the categorization studies regarding verbalizations have (as the first stage) researches on the identification of which critical and defining features are present in each one of the adopted category definitions, as well as the level of difficulty of each definition (in the same line of the 'pilot tests' carried out by Chase et al., 1985).

In addition, the significant differences among concepts revealed in the study of Chase et al. (1985) also seem to be present in the literature of the field of categorization of the verbal content of the therapeutic process. Studies have shown that the category Investigation[7] is more evident or, as in words of Chase et al. (1985), a concept with a lower level of difficulty if compared to the others used. Such affirmation seems to be supported by the fact that this category has a higher rate of concordance among the categorizers (Batista, 2006; Brandão, 2002; Lima, 2005; Oliveira-Silva & Tourinho, 2006). Some of these studies suggest that the higher the number of occurrences in the Investigation category in a therapeutic session, the lower the complexity involved in it for categorizing. Therefore, such variable may affect the performance of the categorizer (Batista, 2006; Lima, 2005; Oliveira-Silva & Tourinho, 2006).

Final Remarks

As initially shown, and in a macro analysis, the categorizing activity of the content of the therapeutic process can be regarded as a type of intraverbal training, in which participants (categorizers) are requested to emit a verbal response (i.e to attribute a category to the transcript's excerpt read), given some verbal stimuli. This training involves a series of variables of control and the literature of the field of acquisition and maintenance of the intraverbal behavior allow one to identify some of them.

One of the identified variables was the availability (throughout the whole categorizing) of the definitions of the adopted categories, in a way that these may work as a kind of textual cue, thus facilitating the categorizing activity.

The use of examples can also be deemed as a relevant variable of control, since the examples act as cues to the categorization of new verbalizations, therefore making possible a probable increase in the emission of correct responses. In this sense, the exposing to a procedure of instructions of multiple examples seems to be a viable and fruitful option to facilitate the categorization of new verbalizations.

When one evaluates the intraverbal operant within the relations of instruction, it seems to be possible to subdivide it in three types of functionally distinct tasks, which are: 'concept definition' and 'exemplification and example identification'. In this context, one variable of control which can eventually interfere in the accurateness of the categorizing is the exposition to definition tasks before the beginning of example identification tasks (categorization in itself). This is due to the fact that the discrimination of the critical and defining concept features seem to have an effect on the identification of examples, as long

7 The categorization systems of the verbal content in the therapeutic process (i.e. of the verbalizations of therapists and clients occurred within the therapeutic *setting*) are composed by various categories. The system elaborated by Canaan (2002), for instance, is made of five categories: Information, Interpretation, Investigation, Advising and Consequentiation. In general terms, the Investigation category is defined as verbalizations in which the therapist seek information about events and relation between events which are possibly associated to the patient's complaints. Such verbalizations may or may not assume the interrogative form.

as contingencies for the transferring of control from one task to another are arranged. Therefore, another variable connected to this (which also seems to be relevant to the acquisition of the accurate intraverbal response within the instructional context) is the identification of the critical and defining features of concepts being worked with (the category definitions in themselves.

Overall, this paper identified which variables of control detected in researches involving the acquisition and maintenance of intraverbal behavior seem to be directly related to the variables identified in researches in the area of categorization of content of the therapeutic process. The analysis of the used procedures for the setting of intraverbal repertoires and the results achieved suggest the existence of a group of variables which have to be considered for the development of studies related to the issue of categorizing verbalizations of the therapeutic process.

Bibliographic References

Batista, J.R. (2006). *Avaliação de um procedimento de treino para categorização de verbalizações de terapeutas*. Trabalho de Conclusão de Curso. Universidade Federal do Pará. Belém, PA.

Brandão, G.G. (2002). *Análise de verbalizações de terapeuta e cliente em terapia analítico-comportamental: desenvolvimento de categorias de registro*. Trabalho de Conclusão de Curso. Universidade Federal do Pará. Belém, PA.

Canaan, S. (2002). *A interpretação na Terapia Comportamental: Um estudo exploratório com uma terapeuta em treinamento*. Tese de Doutorado. Programa de Pós-graduação em Psicologia. Universidade de Brasília. Brasília, DF.

Catania, A. C. (2006). *Aprendizagem: comportamento, linguagem e cognição*. Tadução organizada por Deisy das Graças de Souza – 4ª edição. Porto Alegre: Artes Médicas Sul (Publicado originalmente em 1998).

Chase, P.N., Johnson, K.R., & Sulzer-Azaroff, B. (1985). Verbal relations with instruction: Are there subclasses of the intraverbal? *Journal of the Experimental Analysis of Behavior, 43,* 301-313.

Chequer, M.A.A. (2002). *Estudo metodológico da medida de fidedignidade entre juízes na categorização de respostas verbais-vocais de terapeuta e cliente em duas condições de trabalho*. Dissertação de Mestrado. Programa de Pós Graduados em Psicologia Experimental: Análise do Comportamento, Pontifícia Universidade Católica de São Paulo. São Paulo, SP.

Cihon, T.M. (2007). A review of training intraverbal repertoires: Can precision teaching help? *The Analysis of Verbal Behavior, 23,* 123-133.

Finkel, A.S., & Williams, R.L. (2001). A comparison of textual and echoic prompts on the acquisition of intraverbal behavior in a six-year-old boy with autism. *The Analysis of Verbal Behavior, 18,* 61-70.

Greer, R.D., Yuan, L., & Gautreaux, G. (2005). Novel dictation and intraverbal responses as a function of a multiple exemplar instructional history. *The Analysis of Verbal Behavior, 21,* 99-116.

Kovac, R. (2001). *Uma comparação entre duas propostas metodológicas para a análise de registro de uma interação verbal em uma situação aplicada: o setting terapêutico*. Dissertação de Mestrado. Programa de Pós Graduados em Psicologia Experimental: Análise do Comportamento, Pontifícia Universidade Católica de São Paulo. São Paulo, SP.

Lima, J.B. (2005). *Avaliação de um sistema para categorização de verbalizações de terapeutas*. Trabalho de Conclusão de Curso. Universidade Federal do Pará. Belém, PA.

Matos, M.A. (1991). *As categorias formais do comportamento verbal em Skinner*. Instituto Terapia por Contingências, publicação on-line disponível em <www.terapiaporcontingencias.com.br>, acessado em 30.06.2007 (Texto publicado originalmente nos Anais da Reunião Anual da Sociedade de Psicologia de Riberão Preto– 1991, pp. 333-341).

Miguel, C.F., Petursdottir, A.I., & Carr, J.E. (2005). The effects of multiple-tact and receptive-discrimination training on the acquisition of intraverbal behavior. *The Analysis of Verbal Behavior, 21,* 27-41.

Oliveira-Silva, M.C., & Tourinho, E.Z. (2006). Avaliação de duas condições de treino de categorizadores de verbalizações de terapeutas. *Revista Brasileira de Terapia Comportamental e Cognitiva, 8*, 39-57.

Partington, J.W., & Bailey, J.S. (1993). Teaching intraverbal behavior to preschool children. *The Analysis of Verbal Behavior, 11,* 9-18.

Passos, M.L. (2004). *Bloomfield e Skinner: língua e comportamento verbal*. Rio de Janeiro: NAU Editora.

Peterson, N. (1978). *An introduction to verbal behavior*. N. W.: Behavior Associates, Inc.

Ribeiro, A.F. (2004). O que é o comportamento verbal. Em C.E. Costa, J.C. Luzia & H. H.N. Sant'Anna (Orgs.), *Primeiros passos em análise do comportamento e cognição*, Vol. 2 (p. 67-76). Santo André, SP: Esetec.

Skinner, B.F. (1992). *Verbal Behavior*. Acton, MA: Copley Publishing Group. (Publicado originalmente em 1957).

Tourinho, E.Z., Carvalho Neto, M.B., & Neno, S. (2004). A psicologia como campo de conhecimento e como profissão de ajuda. *Estudos de Psicologia (Natal), 9,* 17-24.

Tourinho, E.Z., Garcia, M.G., & Souza, L.M. (2003). *Avaliação ampliada de categorias de análise de verbalizações de terapeutas*. Projeto de Pesquisa. Belém: Universidade Federal do Pará, Departamento de Psicologia Experimental.

Received in: 10/31/2007
First Editorial decision in: 11/08/2007
Final version in: 07/02/2008
Accepted for publication in: 06/18/2008