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C. A. Thomas, Mississippi Behavior Clinic

OPINION EDITORIAL

MINIMUM PROGRESS VERSUS MAXIMIZING POTENTIAL: A PROBLEM IN EDUCATION TODAY?

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Interestingly enough the measure of whether or not a child needs specialized services is not used as a measure of progress for those same children. Today in education much is made of differences between children with developmental disabilities and typically developing peers unless of course we are speaking of program effectiveness and progress. This article explores that problem and poses a question of how to measure adequate progress in “special” education today.

THE MINIMUM PROGRESS ARGUMENT: A CADILLAC VERSUS A VOLKSWAGON

In an ever growing number of due process hearings across the country the term “minimum progress” is becoming a key factor in school districts prevailing in offering often second rate education services to children with developmental disabilities and calling them a “free and appropriate public education”. Many parents use the language in IDEA that refers to “maximizing potential” as a means of arguing that better programs are available for their children and their children do not receive them because of the financial restraints tied to offering these programs. Oftentimes these programs are behavioral interventions.

Many parents today who attend individualized education plan meetings (IEP’s) report that they are often told that FAPE does not guarantee them a “Cadillac” education for their child, especially if a functional “Volkswagen” is available. While at face value this may seem rational and logical; is it really? Perhaps a better analogy is if there is a “Moped” and a “Porsche” available, shouldn’t the child with a developmental disability already far behind in the educational race be entitled to the “Porsche”, the education system says “NO” and they state again and again that minimum progress is the reason they can say “NO”. This legal standard is derived from a Supreme Court decision in *Hendrick Hudson School District vs. Rowley*. In *Rowley*, the Supreme Court ruled that a child with average grades was not entitled to a sign language interpreter. Interestingly enough, the child is entitled to meaningful educational benefit in the third circuit.

This came out of a 3rd Circuit ruling, *Polk vs. Central Susquehanna Intermediate Unit*.

HOW IS A DEFICIT DETERMINED

In most cases a deficit is determined through standardized testing. These tests take normed results and compare the subject’s results against typically developing peers. In many cases the results provide a comparative developmental age or at least a deviation in terms of years and or months compared to typical development. When a child is classified as needing special services or supports it is most often typically developing peers that are used to measure this need, why then would that be the last time that typically developing peers are used in the process or held out as the benchmark. Why do we use typically developing peers as a means to identify a problem and not use them as a yardstick to measure its remediation? It seems reasonable to use the peers as a standard for the deficit and to measure progress by that same standard in the future.

MINIMUM PROGRESS THE ULTIMATE SLIGHT OF HAND

In order to accurately define minimum progress we must first tackle the larger issue of the purpose of “special education”. Is special education supposed to close the gaps that exist between children with developmental delays and typically developing children? Is special education supposed to stop further regression? Is special education supposed to manage and remove a child from the typical learning environment so as not to impede other children from

learning? This may in fact be the bigger portion of the argument; the exact purpose of special education in the first place seems less than well defined. Let's assume the middle of the road and say that special education is only to prevent further regression from occurring.

Of course at issue here is that special education is really trying to hit a moving target. That is they are constantly racing against a benchmark that is ever increasing as typically developing peers learn and grow. If a child 36 months old has expressive communication skills that measure at a 30 month level and at 72 months the same child has expressive communication skills at 36 months acquired equally over the three years that they have received special education. Currently it has been argued that they have made progress for the three years that they have received special education; but by virtue of the additional six month deficit that they have acquired have they not actually regressed further if measured against typically developing peers? When regression is defined typically the topic of discussion is losing some previously mastered skill; but is regression not also losing further ground in comparison to others?

The very purpose of teaching is to teach (assist children and adults to acquire new skills) so in the term "special education" there exists a mythology of special techniques and procedures designed to remediate these differences. If in our special teaching we cannot manage to maintain the gaps, but instead have the gaps widen, then how do we continue to claim special teaching? Certainly if the three year old mentioned previously had expressive communication at 64 months when age six the best we could claim is that they maintained their skills compared to typically developing children, because the deficits did not widen. However claiming that they had made progress of any type appears absurd if the deficit remains the same. If the measured deficit at the onset of treatment is the same as the deficit at the end of treatment it is a zero sum game. There is no claim of progress if a person commits 12 acts an hour of self injury at the beginning of treatment and 12 acts of self injury per hour at the end of treatment.

Assume for a moment that the very purpose of special education is to close the gaps between a child with a developmental delay and typically developing children. Then the typically developing child is used as the benchmark against which we will measure progress. So, progress should be considered

any closure in the gap that exists between the typically developing child and the child with developmental delays. A child with expressive language skills at 13 months who after nine months of treatment has expressive language skills at 24 months has made progress. They have aged nine months and made 11 months of progress thus they have made 2 months of developmental progress in closing the original gap between themselves and typically developing children. One could further argue that with continued treatment they will remediate those gaps completely compared to typically developing peers with continued progress over time. If they had a chronological age of 23 months at the onset of treatment with continued progress at this same rate they would close gaps after 90 months (6 ½ years) of treatment. This is measurable progress towards what appears to be the overall goal of "special education". Saying that after nine months in treatment a child has developed one month's in new skills is analogous to saying that they have increased the deficit by eight months in treatment. Certainly an additional eight month delay is not progress?

SUMMARY & CLOSING

If typically developing peers are used to determine a deficit then remediation of the deficit ought to be based on some formal comparison with typically developing peers. Remediation must take into account that the child is to have learned additional skills over the course of remediation as well as learning deficit skills that provide the basis for "special" remediation. It is a non-linear measure and the requirements of "special education" should not isolate the child further by removing them from the standards used to place them in "special education" to begin with in the first place. If it is a difference between a child and their peers that identifies a child for special services then that difference should become the focal point of measuring any stated progress, because in effect the amelioration of that *difference* becomes the goal by default.

REFERENCES

- Board of Education of the Hedrick Hudson Central School District v. Rowley, 458, U.S. 176, 102 S. Ct. 3034 (1982) EHLR 553:656.
 Polk vs. Central Susquehanna Intermediate Unit, 16, 853 F.2d 171 (3d Cir. 1988), EHLR 441:130 cert. denied.

TEACHING DERIVED RELATIONAL RESPONDING TO YOUNG CHILDREN

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Although it employs a relatively small array of behavioral concepts and processes, Relational Frame Theory provides an account of how some of the most complex verbal events can be understood behaviorally and may be established systematically. In the current paper, the findings from a research agenda that has clear and widespread implications for educational practice are summarized. This exciting research initiative consists of studies in which both simple and relatively complex forms of derived relational responding have been targeted for assessment and remediation using interventions driven by Relational Frame Theory. A key theme running throughout the diverse content covered in this research program is the role of a basic understanding of relational responding in the teaching of critical cognitive or verbal repertoires in children. The article argues that identifying the core relational units involved in these cognitive skills, and targeting their fluid and flexible development with appropriate training, will lead to significant improvements in the methods used in many educational settings.

INTRODUCTION OR STUDYING LANGUAGE AND COGNITION FROM A BEHAVIOURAL PERSPECTIVE

The study of language and cognition constitute core and interconnected areas in the history and literature of developmental psychology (Bee, 2000). This emphasis emerged not only from the critical role played by these skills in human development overall, but because of their pivotal place in mainstream and special educational contexts. The traditional behavioral account of language has been based almost entirely on Skinner’s Verbal Behavior (1957), and its application to programs of language intervention has been widespread (Sundberg & Michael, 2001).

In stark contrast, behavioral researchers have devoted little or no attention to issues of cognition as behavior per se, from either basic research or applied perspectives, and Skinner’s analysis of verbal behavior appeared to do little to stimulate behavioral interests in these phenomena. In recent years, however, behavioral researchers, particularly those working under the rubric of Relational Frame Theory (RFT), have adopted what has been referred to as a post-Skinnerian account of verbal behavior that addresses human language and cognition equally and similarly (Hayes, Barnes-Holmes, & Roche, 2001).

According to RFT, arbitrarily applicable relational responding is the core process involved in human language and cognitive abilities from the

simplest act of naming a toy to the understanding of the most complex and intricate trilogy. In the first half of the current paper, the core features of RFT are described, and these form the conceptual basis of the empirical work and evidence described in the latter part of the article. In Part 2, a research program containing a series of studies driven by RFT in which complex repertoires of arbitrarily applicable relational responses were established in populations including young normally developing and autistic children are reviewed. The paper overall argues that as well as offering a coherent behavioral and functional account of human verbal and cognitive processes, RFT offers the possibility of harnessing these processes in programs for teaching and remediating deficits in language and cognition (Barnes-Holmes, Barnes-Holmes, & Cullinan, 2001).

PART 1

RELATIONAL FRAME THEORY

Defining Arbitrarily Applicable Relational Responding

The process of relating may be simply defined as responding to one event in terms of another. For example, rhesus monkeys may be trained to respond relationally to, and thereby select, the taller of two stimuli (Harmon, Strong, & Pasnak, 1982; Reese, 1968). According to RFT, this type of relational response is controlled entirely by the nonarbitrary or formal properties of the stimuli (i.e., one stimulus is actually physically taller than the other), and as such it is not a verbal process. In contrast, RFT argues that arbitrarily applicable relational responding is a verbal process, because it is under the control of contextual features beyond the formal properties of the related stimuli or events. For illustrative purposes, consider the following example.

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If you are told that a one euro coin is worth more than a fifty cent coin, then as a verbally-sophisticated individual you would be able to derive that the fifty cent coin is worth less than the one euro coin.

However, if you actually examined both coins, you would see that the fifty cent coin is in fact larger than the one euro coin. In this case, therefore, the more-than and less-than relations as stated between the two coins are arbitrarily applied because they are not based on physical features of the related stimuli (indeed they are the opposite). In fact, RFT argues that arbitrarily applicable relational responses may be brought to bear on any stimuli presented in an appropriate context (Hayes, Fox, Gifford, Wilson, Barnes-Holmes & Healy, 2001). Consider another example of a children's game in which the participants are instructed to "Let's pretend that big is small and small is big." In this simple example, the relational functions of big and small are applied arbitrarily, and again they are the reverse of the actual physical properties of the stimuli to be related.

In learning to play games such as in the previous example, the relational performances of children even at a relatively early age must come under appropriate forms of contextual control. This type of control is necessary if they are to discriminate correctly between the features of the task relevant on a particular occasion (i.e., responding relationally to events in the presence of appropriate contextual cues), and those features that are irrelevant (e.g., responding to the physical properties of the stimuli). According to RFT, the relevant history that gives rise to this type of discrimination commences in the very earliest natural language training when bidirectional stimulus relations between words and objects are established.

In their on-going natural language interactions, young children encounter a multitude of exemplars of name-object and object-name relations. For example, when shown the object teddy, the caregiver will utter the word "teddy" (i.e., the object-name relation -- teddy → "teddy" -- is explicitly trained) and reinforcement will be provided when the child orients towards the teddy. Similarly, the primary caregiver may say "Juice" and reinforcement will be provided when the child orients towards the object containing juice (i.e., once again an object-name relation is explicitly trained). Similarly, a caregiver may explicitly train name-object relations. For example, the caregiver may ask the child

"Where's the teddy" and reinforcement will be provided for orienting towards the teddy. Given this history of explicit training with both name-object and object-name relations, it is likely that the child will begin to derive additional object-name and name-object relations without explicit training. For example, when shown the juice container and asked "What's this", the child may utter "juice" (i.e., the object-name relation emerges without explicit training). In other words, young children are explicitly trained in many object-name and name-object relations, and many more bidirectional relations emerge for free (i.e., they are derived). According to RFT, this type of naming history establishes that in certain contexts bidirectional relations such as name-object relations reliably predict the derivation of object-name relations and vice versa. In relational terms, therefore, the skill that emerges from this history is a type of generalized bidirectional responding that can be applied to almost any objects and names. For instance, if the child is now trained in a completely novel name-object relation (e.g., "snow" → actual snow) this will likely result in the derived object-name relation (e.g., in the presence of snow the child may be asked "What's this?" → and she/he will say "snow"). In the language of RFT, the training history in bidirectional stimulus relations is brought to bear on the novel stimulus (snow) by the presence of specific contextual cues (e.g., "What's this?") that control responding in accordance with the bidirectional relations between the current object and its name and vice versa. The arbitrariness of the bidirectional relations between words and their referents is particularly obvious because in most cases words or names do not bear any formal resemblance to the actual objects to which they refer (i.e., the word "snow" is nothing like actual snow).

The bidirectional relations between words and their referents are always based on an arbitrary relation of sameness (i.e., the word "means the same as" the object and the object "is" the word). However, unlike Sidman's concept of symmetry, RFT does not assume that all bidirectional stimulus relations must be symmetrical (Sidman, 1994). For example, if A is bigger than B, then B is smaller than, and not the same as, A. Relational Frame Theory employs the term mutual entailment to describe the arbitrary bidirectional relations between two stimuli or events, and, as described previously, mutually entailed relations come under contextual control. For example, if in a given context, A is related in a

characteristic way to B, then in the same context, B will be related in a characteristic way to A.

Relational Frame Theory also employs the term combinatorial entailment to describe the derived stimulus relation in which two or more relations mutually combine. For example, if you are instructed that A is less than B and B is less than C, then you will readily derive that A is less than C and that C is more than A. Because of the increasing number of relations involved, it seems likely that combinatorial entailed relations emerge after (and thus should be trained after) mutually entailed relations, and there is some limited empirical evidence in this regard (Barnes-Holmes, 2001 – see below).

According to RFT, mutual and combinatorial entailment are two defining features of arbitrarily applicable relational responding, and describe the arbitrary derived relations between two or more stimuli or events. From this perspective, however, a third feature must be specified in order to describe the changes that occur in the functions of a given stimulus as a result of its participation in derived relations with other stimuli. The concept employed by RFT for this purpose is referred to as the transfer or transformation of functions. Consider the following example. If a child is presented with two identical boxes and is told that box A is better than box B. Then the child is likely to be less excited at the prospect of receiving box B than box A by virtue of the better-worse relations between the two stimuli, even though the child has no direct experience of dealing with either of the boxes (Roche & Barnes, 1997; Roche, Barnes-Holmes, Smeets, Barnes-Holmes, & McGeady, 2000). According to RFT, the functions of B have been transformed by virtue of the worse-than relation with A, such that B will now elicit less approach functions than A.

Just as mutual and combinatorial entailment come under contextual control, so too does the transformation of stimulus functions. Consider, for example, the many perceptual functions of milk, including its creamy taste, its smooth texture, and its white color. If you are asked to “Think of a cold glass of milk”, then many of these perceptual features will become psychologically present. According to RFT, this psychological event occurs because the words “cold glass of milk” and an actual cold glass of milk participate in a relational frame of coordination (i.e., the word “is” the object). In addition, the words “think of” provide a context in which many of the

perceptual functions are elicited based on the relational frame. If, for example, you were asked to “imagine dropping a cold glass of milk”, then other functions (e.g., auditory functions) might be elicited. This example illustrates the fact that contextual cues not only control the type of relational frame involved, but also control the transformation of functions that are enabled by the frame in question.

Different Types of Relational Frames

Relational Frame Theory employs the generic term relational frame to describe particular patterns of arbitrarily applicable relational responding (Hayes & Hayes, 1989), and a number of relational frames have thus far been identified in the RFT literature (Hayes, Fox, Gifford, Wilson, Barnes-Holmes & Healy, 2001). These patterns include the relational frames of coordination, opposition, distinction, comparison, hierarchy, and perspective-taking. The relational frame of coordination, as in the example above, is perhaps the most commonly known pattern of relational responding and involves relations of identity or sameness. The bidirectional relations in naming are a clear example of the frame of coordination, and it is likely that this is one of the first relational frames to be established naturally in a child’s verbal repertoire, or should be the first to be established educationally.

The relational frame of opposition appears to be more complex and requires the abstraction of a particular dimension along which stimuli or events can be distinguished and ordered in equal ways from a reference point. With the frame of opposition, the relevant dimension is often implied. For example, if you are told that ‘cold is the opposite of hot’ then the dimension of temperature is clearly implied. According to RFT, it is likely that the frame of opposition will emerge, or should be taught later than the frame of coordination. This is because the combinatorially entailed relations within frames of opposition are frames of coordination. For instance, if cold is the opposite of hot, and cold is the opposite of warm, then hot and warm are the same (i.e., they are coordinated and not opposite). There currently exists some empirical evidence of this relationship between the frames of coordination and opposition in RFT research with young children (Barnes-Holmes, 2001, see below).

Relational frames of distinction involve responding to the differences among stimuli, also

along a particular dimension. However, in these frames, the relevant dimension is rarely implied. For example, if you are told only that “This student is not working too hard”, then you cannot determine whether the student is working hard or not at all. Furthermore, combinatorially entailed difference relations are unspecified. For instance, if you are told that A is different to B, and B is different to C, then you cannot determine the relations between A and C (i.e., A and C may be different or they may be the same).

Relational frames of comparison involve responding to events in terms of a quantitative or qualitative relation again along a specified dimension. Because there are many particular types of frames of comparison, then there are many dimensions along which the events can be compared. For example, if I say that ‘an elephant is bigger than a lion and a lion is bigger than a mouse’, then the stimuli can be compared along the dimension of size, and you can derive that ‘the elephant is bigger than the mouse and the mouse is smaller than the elephant.’ However, I could also tell you that ‘A lion is faster than an elephant and an elephant is faster than a mouse’, in which case the same stimuli can be compared along the dimension of speed, and you can derive that ‘the lion is faster than the mouse and the mouse is slower than the lion.’ Comparative relations can be made even more specific by quantifying the dimension of comparison. For instance, if I now told you that ‘An elephant is three times the size of a lion and a lion is three times the size of a mouse’, you could derive that the elephant is exactly six times bigger than the mouse and that the mouse is six times smaller than the elephant.

One other important family of relational frames that has been identified in the RFT literature is the perspective-taking or deictic frames (Barnes-Holmes, Hayes, & Dymond, 2001). The three deictic frames that appear to be critical to the development of perspective-taking are the frames of I and YOU, HERE and THERE, and NOW and THEN. In the language of RFT, taking the perspective of the self or another involves responding in accordance with deictic relations. For example, taking the perspective of the self involves responding from I located HERE and NOW with respect to events located THERE and THEN. According to RFT, perspective-taking involves a high level of relational complexity and may share significant overlap with the

skills of understanding false belief and deception (see below).

Only a brief summary of some of the core RFT concepts has been presented thus far, although these concepts could be elaborated further and additional concepts contained within the nomenclature of the theory could also be discussed. For example, RFT also describes the relating of relations and the relating of relational networks to relational networks. These complex relational skills are believed to be important to the development of, and instruction in, analogical reasoning, metaphorical talk, story telling, and humor (Stewart, Barnes-Holmes, Hayes, & Lipkens, 2001). However, all of these issues are beyond the scope of the current article and the reader is referred to Hayes, Barnes-Holmes, and Roche (2001) for a book-length account of the theory. The most important point to be emphasized at this time is that from the perspective of RFT, deriving relations underpins developmental and educational achievement and a small number of psychological processes are sufficient to yield the full gamut of cognitive skills.

PART 2

TEACHING DERIVED RELATIONAL RESPONDING

There are two core assumptions made by the RFT approach to the teaching of repertoires of derived relational responding, and to education more generally. First, verbal relational skills form the basis of a range of cognitive abilities that correlate with educational achievement (Barnes-Holmes, et al., 2001). Second, multiple-exemplar training is a critical feature for the establishment of these cognitive skills, and for the development of flexibility therein. In the following part of the current article, the findings from an on-going program of RFT research that provides clear evidence of the successful establishment of repertoires of derived relational responding are presented. This exciting research initiative consists of studies in which both simple and complex forms of derived relational responding were targeted for assessment and remediation using interventions indicated by RFT. A key theme running throughout the diverse content areas covered in this research program is the role of a basic understanding of relational responses in establishing critical cognitive skills in children. The current paper argues that identifying the core relational units involved in these cognitive skills, and targeting their fluid and

flexible development with appropriate training, will lead to significant improvements in the methods used in many educational settings.

Facilitating Derived Transformations of Function in Accordance with Symmetry

One of the first studies in the on-going program of RFT developmental/educational research that attempted to analyze the development of relational responding in young children involved a systematic analysis of the role of multiple-exemplar training in facilitating derived transformations of function in accordance with symmetry (Barnes-Holmes, Barnes-Holmes, Roche, & Smeets, 2001, b). Sixteen young normally developing children aged four to five years old participated across three experiments and were first trained in a conditional discrimination task involving the explicit training of action-object relations. That is, for example, when the experimenter waved, choosing a toy car was reinforced (i.e., the relation wave-car was explicitly trained), and when the experimenter clapped, choosing a doll was reinforced (i.e., the relation clap-doll was also trained). The children were then immediately tested (in the absence of feedback) for the derived symmetrical object-action relations. Specifically, when the experimenter presented the car, the child was required to wave (i.e., the target derived relation was car-wave), and when the experimenter presented the doll, the child was required to clap (i.e., the derived relation was doll-clap).

In spite of the simplicity of the task, eleven of the sixteen children failed to demonstrate the target derived performances on their first exposure to the symmetry test. In order to remediate these deficits, a multiple-baseline design was employed to introduce explicit training of the target symmetrical object-action relations for those children who failed the symmetry test. That is, after failing the first test, some children were reexposed to the original conditional discrimination training followed by the symmetry test trials, whereas other children received explicit training of the target object-action symmetry relations (i.e., feedback now consequated the symmetry test trials). Both sets of children were thereafter exposed to another session of training and testing involving a novel set of stimuli. In other words, the children who received explicit object-action training received one exemplar of training and were then tested on another. Within the multiple baseline design, some children were exposed to

several sessions of standard conditional discrimination training and testing with novel sets of stimuli prior to receiving the explicit symmetry training in order to determine whether these children would improve in the absence of explicit object-action training across exemplars.

The results of the three experiments overall indicated that for all eleven children who failed the first symmetry test, explicit symmetry training effectively established the derived transformations of function in accordance with symmetry. Furthermore, the majority of children required only one exemplar of training in order to demonstrate the derived performances on a novel set of stimuli. Interestingly, in a number of related studies the same researchers employed an alternative naming intervention (similar to that which is commonly used in educational settings), and found this to be much less effective than the multiple-exemplar training in establishing the derived symmetry test performances (Barnes-Holmes, Barnes-Holmes, Roche, & Smeets, 2001, a).

One important limitation of these studies, however, arose from the fact that only a limited number of exemplars was required for the participants to demonstrate the target derived performances. The researchers acknowledged that this outcome suggested that the exemplar training simply activated an already existing repertoire of symmetrical or relational responses, and indeed the age and levels of verbal ability of the children supported this conclusion. The following studies addressed this concern.

Teaching Derived Manding

In a more recent study Murphy, Barnes-Holmes, and Barnes-Holmes (2003) attempted to establish derived manding via relational frames in young normally-developing and autistic children. This study consisted of three experimental phases, namely, mand training; conditional discrimination training; and testing for a derived transfer of mand functions. During mand training, each child was trained to use two stimulus cards (A1 and A2 – each of which displayed a different abstract symbol) to mand for a pink token and a yellow token, respectively. In order to establish a ‘state of deprivation’, participants were exposed to a task that required them to mand for the appropriate number of either pink or yellow tokens. That is, the participant was presented with a token mat that contained a

number of pink and/or yellow tokens. On each trial, either pink or yellow tokens were missing. Thus, in order to complete a mand training trial, the participant had to mand for only those tokens (i.e., pink or yellow) that were required to complete the missing set. Thus, if a participant manded for a token that was not needed (i.e. that color set was complete on that trial), the trial was recorded as incorrect.

After successfully completing mand training, each participant was explicitly trained in two conditional discriminations in the context of a matching-to-sample task. During this training, the children were taught to relate the symbol on the A1 stimulus card to a second symbol (B1), and to relate B1 to a third symbol (C1). The participants were also trained to relate the A2 symbol to a B2 stimulus, and B2 to a C2 stimulus. In this way, two relational frames of coordination (or two equivalence classes) were established (A1-B1-C1 and A2-B2-C2). According to RFT, the critical test of derivation involved determining if the children would spontaneously use the two C stimuli to mand for the appropriate colored tokens. That is, would the yellow manding function of A1 transfer via the frame of coordination to C1, and would the pink manding function similarly transfer from A2 to C2?

The results of the Murphy et al. study indicated that the three normally developing children and two of the autistic children readily demonstrated the target derived transfer of mand functions on the first test. The remaining autistic child who failed the test was then exposed to explicit exemplar training on the derived transfer of mand functions. Specifically, after failing the test, the child was immediately exposed to the test trials but this time corrective feedback was provided. In total, the child required five exemplars of explicit derived mand training before successfully demonstrating a derived transfer of mand functions on a novel set of stimuli in the absence of corrective feedback. The data indicated that the improvement in derived manding was gradual across exemplars, and thus suggests that a genuinely novel relational repertoire was established ab initio in the behavior of this child.

This study provided a useful example of how RFT-based concepts and an emphasis on exemplar training, can influence more traditional behavioral approaches to the teaching of verbal behavior (for a more conceptual account of this issue see Barnes-Holmes, Barnes-Holmes, & Cullinan, 2000). The

data obtained with the autistic child who repeatedly failed to demonstrate the derived transfer of mand functions indicated that directly trained and derived manding may be functionally distinct verbal abilities, and that the latter may require extensive training in order to become firmly established in a child's repertoire.

Establishing the Relational Frames of More-Than, Less-Than, and Opposite

Across two recent studies, RFT researchers attempted to establish even more complex patterns of derived relational responding ab initio in the repertoires of a group of young normally developing children (Barnes-Holmes, 2001). In the first study, a basic problem-solving task was developed to test and train derived relations in accordance with the relational frames of more-than and less-than, and in the second study a similar problem-solving task was developed to test and train responding in accordance with the frame of opposition. The basic task employed across both studies involved presenting each child with a number of identically sized laminated paper circles. Throughout the studies, the circles were referred to as "coins" because the task involved choosing one or more of the circles on the basis of their relative stated value. On each trial, the Experimenter described specific more-than, less-than relations (Experiment 1) or opposite relations (Experiment 2) among the coins in terms of value. These relations, of course, were arbitrary, because the coins were actually identical in size and thus the scenario resembled training with real money. Based on the stated comparative relations, the child was then asked to pick the coin (s) that would buy as many sweets as possible (i.e., which would buy the most). In both studies, the target more-than, less-than, and opposite relations were first tested during a series of baseline tests, on which all children completely failed to demonstrate the target performances at levels greater than chance. The children were then trained explicitly (using corrective feedback) and the derived relations were subsequently tested on novel stimulus sets. Hence, numerous sets of coins were employed as multiple exemplars for training the more-than, less-than, and opposite relations and testing the appropriate derived relations.

During the more-less study, the child may have been presented with three coins (A, B, and C) and instructed as follows: "If this coin (Experimenter points to the first coin -- A) buys less sweets than this

coin (Experimenter points to coin B), and this coin (Experimenter points to B again) buys less sweets than this coin (Experimenter points to coin C): which would you choose to buy as many sweets as possible?" In this case, a correct response consisted of the child selecting coin C because it buys more than both coins A and B. Three normally developing children each required 30-40 experimental sessions before successfully demonstrating responding in accordance with the target arbitrary relations of more-than and less-than on a novel set of three coins. In the final test sessions, the children also showed highly flexible relational performances in that they could respond correctly: (1) when the Experimenter pointed to the coins in any direction (i.e., from left to right or vice versa, and from top to bottom and vice versa); (2) when presented with a novel set of three random objects instead of coins; and (3) when asked which coin(s) they would not choose in order to buy as many sweets as possible.

During the opposite study, the child may have been presented with four coins (A, B, C, and D) and asked: "If this coin (D) buys few sweets, and is opposite to this coin (C), and if this coin (C) is opposite to this coin (B), and if this coin (B) is opposite to this coin (A): which would you choose to buy as many sweets as possible?" A correct response on this trial involved selecting coins A and C, because coins D and B buy only few sweets, whereas coins A and C buy many, by virtue of their participation in frames of opposition with D and B. Another three normally developing children each required extensive exemplar training before demonstrating a complex and flexible repertoire of responding in accordance with the target arbitrary relations of opposite. In the final test phases, all three children demonstrated correct responding: (1) in the presence of a novel Experimenter; (2) when the Experimenter pointed to the coins in any direction from left to right or vice versa, from top to bottom or vice versa, or in a completely random sequence; (3) when presented with a set of novel objects instead of coins; (4) when asked which coin(s) they would not choose in order to buy as many sweets as possible; and (5) when presented with various numbers of coins or other items up to and including ten.

The more/less and opposite experiments were the first RFT studies to demonstrate the establishment of such complex and flexible repertoires of derived relational responding *ab initio* in young children, and provided further support for the efficacy of multiple

exemplar training. Although both studies employed the same basic problem-solving task and the same methodology of training across multiple exemplars, a number of features that were specific to the different types of relational frames were observed. Overall, responding in accordance with arbitrary more-than and less-than relations appeared to be easier to establish than responding in accordance with arbitrary relations of opposition. Specifically, many exemplars of training were needed to establish even mutually entailed opposite relations and training combinatorially entailed opposite relations was even more difficult. With regard to the more-less relations in particular, it was found that responding in accordance with nonarbitrary more-than and less-than relations helped establish the more complex arbitrary relations. For example, when simply providing corrective feedback for arbitrary responding failed to establish the target relations, different numbers of sweets were placed on top of the coins to create actual comparisons of more-than and less-than, and this procedure successfully facilitated the transition from nonarbitrary to arbitrary relational responding. With regard to the establishment of opposition relations, explicit instructions on the embedded sameness relations helped to facilitate combinatorially entailed opposite relations (i.e., subjects were instructed that if A is opposite to B, and B is opposite to C, then A and C are the same). Furthermore, the children needed many exemplars of training to derive the arbitrary opposite relations between two, three, four, and five coins, but required little or no exemplars of training when presented with six or more coins. This latter finding, in particular, suggests that increasing the number of explicitly trained relations helped to establish responding in accordance with relations of opposition as a generalized cognitive skill that could be applied arbitrarily to any number of stimuli.

The target performances identified and established in the studies described thus far constitute clear examples of what RFT researchers might predictably be concerned with (e.g., establishing derived comparative relations). However, RFT as an account of language and cognition in general, is also concerned with the types of cognitive skills that do not immediately appear to involve derived relational responding. Indeed, empirical evidence from several recent studies in the domain of perspective-taking, or what cognitive psychologists refer to as Theory of Mind (Howlin, Baron-Cohen, & Hadwin, 1999), suggests that there

may be some value in adopting a relational frame interpretation of these phenomena.

STUDYING PERSPECTIVE-TAKING AND RELATED PHENOMENA AS DERIVED RELATIONAL RESPONDING

Perspective-taking and the related cognitive phenomena of understanding false belief and deception have been traditionally studied by mainstream cognitive psychologists, and have attracted considerable attention by researchers working under the rubric of Theory of Mind (ToM -- Baron-Cohen, 1995). In the language of RFT, perspective-taking involves the deictic perspective-taking frames of I-YOU, HERE-THERE, and NOW-THEN. Deictic relations are believed to emerge in part through a history of responding to questions such as “What was I doing there?” and “What are you doing now?” Although the form of these questions may vary little across contexts, the physical environment referred to in the questions can vary greatly from instance to instance. Thus, the relationship between the individual and other events (i.e., one’s perspective) serves as the constant variable upon which the frames are based (i.e., I is the same perspective now as it was yesterday). That is, the relational properties of I versus YOU, HERE versus THERE, and NOW versus THEN remain constant, irrespective of the changing physical context. According to RFT, these constant relational properties are abstracted through many exemplars of learning to talk about one’s perspective in relation to the perspective of others (Hayes, 1984). For example, I is always from this perspective here, but not from the perspective of another person there. As with the establishment of the relational performances described previously, RFT would predict that the most effective means of establishing perspective-taking as derived relational responding would be to target the deictic frames directly. Several studies to date have attempted to do exactly that in a complex RFT research program on perspective-taking and related phenomena.

Perspective-taking. Several studies to date have investigated the RFT approach to perspective-taking. The relational tasks contained within the testing and training protocols employed within these studies are intricate and complex, and it is beyond the scope of the current article to attempt to describe the relevant details here. However, the methodological details of this work have been described elsewhere

(see Barnes-Holmes, 2001; McHugh, Barnes-Holmes, & Barnes-Holmes, in press; and McHugh, Barnes-Holmes, O’Hora, & Barnes-Holmes, in press).

In one of the earliest RFT studies on perspective-taking, McHugh, Barnes-Holmes, O’Hora, and Barnes-Holmes (in press) exposed thirty-two undergraduate participants to a test protocol that targeted explicitly the three perspective-taking frames of I-YOU, HERE-THERE, and NOW-THEN in conjunction with three levels of relational complexity, referred to as simple relations, reversed relations, and double reversed relations. The findings from several experiments overall indicated that adult participants performed differently on different types of deictic relations and on different levels of relational complexity. Specifically, they performed better on I-YOU relations than on HERE-THERE or NOW-THEN relations, and better on simple relations than on reversed or double reversed relations. Overall, the patterns of significant differences in performances for relation type and relational complexity suggested that even in adult populations, repertoires of relational perspective-taking may not be fully established or flexible, and may consist of functionally distinct relational components.

In a subsequent study, McHugh, Barnes-Holmes, and Barnes-Holmes (in press) employed the same test protocol in an attempt to generate a developmental profile of relational perspective-taking skills in forty individuals from different age groups (3-5 years: early childhood; 6-8 years: middle childhood; 9-11 years: late childhood; 12-14 years: adolescence; and 18-30 years: adulthood). The findings overall indicated a clear developmental trend in the abilities of participants from the different age groups to perform the perspective-taking tasks targeted by the relational protocol and supported the data from the previous study. Specifically, levels of accuracy increased as a function of age; highest levels of accuracy were observed on I-YOU relations and lowest levels of accuracy were recorded on NOW-THEN relations; and participants performed better on simple relations overall than on reversed relations.

In order to demonstrate the utility of this analysis and of the protocols established for educational and applied purposes, it is important that some evidence is obtained with regard to the extent to which this methodology can be used to establish or facilitate perspective-taking where relevant deficits have been identified. Two preliminary RFT training

studies have been conducted using the perspective-taking protocol to remediate deficits in relational perspective-taking in several normally developing young children (Barnes-Holmes, 2001; McHugh, Barnes-Holmes, & Barnes-Holmes, 2003 a). In the first study by Barnes-Holmes, two children were exposed to an extended version of the perspective-taking protocol with corrective feedback presented after specific trials. In order to complete training and testing on all three deictic frames, one seven-year-old female required explicit training on reversed and double reversed relations. A three-and-a-half year old male was exposed only to I-YOU and HERE-THERE trials, and required extensive training across exemplars, also on the reversed and double reversed relations (Barnes-Holmes, 2001) in order to complete these two levels of the protocol.

McHugh, Barnes-Holmes, and Barnes-Holmes (in press) argued that the data obtained across the various studies suggest that perspective-taking abilities may not even be fully established or flexible in many adults. The researchers also argued that the existing RFT data are consistent with the ToM literature, in showing the absence of perspective-taking in children under four years of age. The benefits of the RFT protocol for perspective-taking lie in its precision both conceptually and methodologically and there is some preliminary evidence of its use as an effective tool for facilitating or establishing the perspective-skills if they are found to be deficient or absent in populations of any age.

As a result of the work on perspective-taking described thus far, McHugh, Barnes-Holmes, and Barnes-Holmes (2003 a) investigated the relational skills that might be involved in understanding false belief as a more complex form of perspective-taking. In an attempt to address this issue, they developed a similar protocol that targeted explicitly the relational frames involved in false belief and attempted once again to generate a developmental profile of these relational skills. With comparisons of five groups of participants aged from early childhood to adulthood were compared, a clear developmental trend in the relational abilities involved in understanding false belief also emerged. That is, participants in the youngest age group (3-5 years) produced the least number of correct responses, while those in the oldest age group (18-30 years) produced the largest number of correct responses. Furthermore, the number of correct responses produced by participants between these two age groups increased as a function of age.

As an extension to the work on perspective-taking and false belief, McHugh, Barnes-Holmes, and Barnes-Holmes, (2003 b), developed a protocol for testing the relational skills that may underpin deception, and attempted once again to generate a developmental profile (with participants aged between 3 and 30 years old) of these relational skills. The results of the study once again showed a clear developmental trend in terms of the number of errors overall produced by participants across the five age groups with the number of errors produced by participants in the different age categories increasing as a function of age.

In a related study currently underway by the same researchers, the deception protocol has been used in an attempt to train deception performances in young children when the relational repertoires are found to be absent (McHugh, Barnes-Holmes, & Barnes-Holmes, in preparation). In the training conducted to date, a six-year old normally developing boy has been trained successfully to respond to all of the tasks contained within the deception protocol, and the child has subsequently preformed accurately on generalization tests involving the same trial-types but different stimulus sets. This preliminary work once again highlights the possible utility of the RFT-based deception protocol as both a testing and training tool for identifying and, where necessary, remediating deception skills.

Several studies to date have rigorously investigated the development of perspective-taking, understanding false belief, and deception as repertoires of derived relational responding using cross-sectional developmental methodologies. The results of the studies overall have been remarkably similar, and show clear developmental trends in the emergence of these relational repertoires. Although the existing data on the teaching of perspective-taking and deception are preliminary, the conceptual analysis and the protocols that have been developed promise new insights and methodologies for studying and teaching these poorly understood and complex cognitive skills.

SUMMARY AND CONCLUSIONS

Although it is based on a relatively small array of behavioral processes, the empirical evidence reported in the current paper suggests that RFT may offer a behavioral and functional approach to the understanding, study, and teaching of a range of

verbal and cognitive events, from simple symmetry to deception. In the current article, a range of findings from a research agenda in the experimental analysis of human behavior that has clear and widespread implications for education was discussed. This exciting research initiative consists of studies in which both simple and complex forms of derived relational responding were targeted for assessment and remediation using interventions indicated by RFT. According to RFT, identifying the core relational skills involved in these cognitive abilities, and targeting them directly with appropriate training, should lead to significant improvements in cognitive performances, and in the methods used to establish these skills in a range of educational settings. The current evidence suggests that this conclusion may well be true.

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CORRESPONDENCE TRAINING: A REVIEW OF THE LITERATURE

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Correspondence training involves modification of nonverbal behavior via changes in verbal behavior. The procedure has a long history of effectiveness with a wide range of learners, but its potential for use with young children with disabilities remains largely unrealized. In an effort to identify the most appropriate applications of correspondence training procedures for this population, the authors conducted a comprehensive review of the existing literature base. The purpose of this article is to provide an in-depth, critical analysis of empirical research on the effectiveness of correspondence training. Thirty-three data-based articles are included in the review, which is organized into 4 categories, including: (1) early correspondence training research; (2) the role of the verbalization/content condition in correspondence training; (3) issues related to reinforcement; and (4) procedures to promote generalization.

Over the course of the past 30 years, correspondence training procedures have been used to modify the behavior of individuals with and without disabilities. Researchers have evaluated the impact of correspondence training on children's use of specific play materials (e.g., Baer, Williams, Osnes, & Stokes, 1985; deFreitas Ribeiro, 1989; Israel & O'Leary, 1977; Risley & Hart, 1968), engagement (Bevill, Gast, Maguire, & Vail, 2001), appropriate social behaviors (e.g., Odom & Watts, 1991; Osnes, Guevremont, & Stokes, 1986; Rogers-Warren & Baer, 1976), domestic and work-related skills (e.g., Crouch, Rusch, & Karlan, 1984; Paniagua, 1985), academic behaviors (e.g., Weninger & Baer, 1990; Keogh, Burgo, Whitman, & Johnson, 1983), health and safety behaviors (Baer, Blount, Detrich, & Stokes, 1987; Olsen-Woods, Miltenberger, & Foreman, 1998), leisure/recreational skills (Wilson, Rusch, & Lee, 1992), and self-control (Karoly & Dirks, 1977). While the general format of correspondence training has remained the same over time, theory and practice related to the procedure have evolved and changed in response to research outcomes.

The purpose of this article is to provide a critical analysis of the empirical research on the effectiveness of correspondence training with learners with and without disabilities. This review expands on the work of Baer (1990) by providing in-depth analysis of critical investigations, as well as an overview of studies completed since publication of that review. Because the literature base on correspondence training is relatively large and varied, review of individual studies is organized into 4 categories, including: (1) early correspondence training research (2) the role of the verbalization/content condition in correspondence

training; (3) issues related to reinforcement; and (4) procedures to promote generalization.

METHOD

Research studies related to use of correspondence training procedures were identified through electronic and archival searches of refereed professional journals. The archival search was conducted by reviewing the abstracts of journals listed in Table 1 to identify studies related to the topic. The electronic search was conducted using ERIC and PsychInfo databases at the University of Georgia. Key words used in the electronic search were: Correspondence training, reinforcement of correspondence, verbal behavior, nonverbal behavior, rule-governed behavior, behavior regulation, generalized verbal control, mental retardation, intellectual disability, and developmental delay. Reference sections of articles found through the electronic and archival searches were reviewed to identify additional studies.

RESULTS

Thirty-three empirical studies, 2 literature reviews, and 5 articles addressing specific issues related to correspondence training were identified via electronic, archival, and reference searches. Summaries of research on use of correspondence training procedures with and without disabilities are provided in Table 2. The following sections of this paper examine the evolution of correspondence training research, and discuss directions for future research.

EARLY CORRESPONDENCE TRAINING RESEARCH

Four investigations conducted in the late 1960s and 70s set the stage for future research by

Table 1
Journals Reviewed for Research on Use of Correspondence Training
Procedures with Individuals with and without Disabilities

Journals reviewed	Years reviewed
Behavior Modification	1984-2003
Behavior Therapy	1984-2003
Child and Family Behavior Therapy	1984-2003
Child Development	1984-2003
Education and Training in Mental Retardation	1984-2003
Education and Treatment of Children	1984-2003
Exceptional Children	1984-2003
Journal of Applied Behavior Analysis	1984-2003
Journal of Early Intervention	1984-2003
Journal of the Experimental Analysis of Behavior	1984-2003
Research in Developmental Disabilities	1984-2003
Topics in Early Childhood Special Education	1984-2003

delineating the basic components and sequences involved in correspondence training. Table 3 provides an overview of procedural parameters.

The first study to directly evaluate use of correspondence training procedures was conducted by Risley and Hart (1968). Drawing on early research by Lovaas (1961, 1964) and Sherman (1964) that attempted to change observable nonverbal behavior via changes in participants' verbalizations, Risley and Hart developed a set of procedures aimed at producing generalized correspondence between nonverbal and verbal behavior in preschool children. The effective procedures employed in this study came to be referred to as "do-say" correspondence training (Israel & O'Leary, 1973). In a do-say sequence, participants are given an opportunity to engage in a specific behavior (the "do" component) and reinforcement is delivered if they (a) engage in the target behavior; and (b) accurately report engaging in that behavior (the "say" component). Risley and Hart identified classroom materials that were rarely chosen by children during free play (e.g., blocks and paints) and used do-say correspondence training to increase participants' use of those specific materials. Following each day's free play period, children participated in Circle, during which time they were asked what they had played with. Initially, children were prompted to verbalize that they had played with

the target materials and then praised for the verbalizations, regardless of whether or not the verbalizations were accurate. This condition, which came to be known as Reinforcement of Content (Risley & Hart), was implemented in order to determine whether changes in verbal behavior would be associated with changes in nonverbal behavior during the next day's play period. When changes in nonverbal behavior were not observed during subsequent periods, the Reinforcement of Correspondence condition was implemented. In order to access reinforcers during this condition, children's verbal reports of play with target materials had to be consistent with actual play behavior (i.e., verbal-nonverbal correspondence was required). Results of this study indicated that the do-say correspondence training procedure was effective for increasing specific play behaviors, but the Reinforcement of Content condition alone did not produce verbal-nonverbal correspondence in the absence of a history of reinforcement of correspondence. Following repeated exposure to the Reinforcement of Correspondence condition with several different target materials, Reinforcement of Content was sufficient to produce changes in nonverbal behavior with novel materials. The authors concluded that such changes with nontrained materials demonstrated generalized verbal-nonverbal correspondence.

Israel and O'Leary (1973) conducted a group design study that compared the effectiveness of the do-say sequence employed by Risley and Hart (1968) with a "say-do" sequence. The say-do procedure consisted of asking children to verbalize plans to perform a behavior (the "say" component) and providing reinforcement if they engaged in the target behavior as verbalized (the "do" component). Like Risley and Hart, this study targeted use of rarely chosen materials during classroom free play periods. While results supported the findings of Risley and Hart (1968) that Reinforcement of Content was insufficient to produce changes in nonverbal behavior and Reinforcement of Correspondence did produce such changes, data indicated no demonstration of generalized verbal-nonverbal correspondence to novel materials.

Israel (1973) and Karoly and Dirks (1977) also conducted group design studies which they described as comparison of do-say and say-do sequences, but these researchers actually used a variation of the say-do sequence which Paniagua

Table 2
Chronological Listing of Research on Use of Correspondence Training Procedures (1968-2001)

Author(s)	Participant(s)	Purpose/ Question	Dependent Variable(s)	Independent Variable(s)	Experimental Analysis	Results	Generalization	
							Eval	Demo
Risley & Hart (1968)	n = 12 7M/5F; 4-5 yrs; low SES (2 groups)	Evaluated procedures to establish correspondence between v an nv behavior	% children saying; % children doing	CT1	3 experiments; (I) Multiple baseline across groups (II)(III) Multiple baseline across behaviors	(I) R+ content lead to increased reports, no change in tgt. behavior; R+ correspondence lead to increase in behavior; (II)(III) Repeated R+ of correspondence resulted in generalized correspondence.	B	Yes
Israel & O'Leary (1973)	n = 16 Head Start; 5M/11F; 4 yrs. (2 groups)	Compared effectiveness of do-say vs. say-do sequence	% children exhibiting correspondence	CT1;CT3	ANOVA	Say-do sequence more effective in producing v-mv correspondence	B	No
Israel (1973)	n = 6 Head Start	What effect does learning a do-say CT sequence have on performance of a say-do sequence?	% children exhibiting correspondence	CT1;CT3	t-test	R+ content lead to increased verbalization; no change in target behavior; Generalized corr. demonstrated following do-say CT; did not carry over when sequence switched to say-do	B	Yes*
Rogers-Warren & Baer (1976)	n = 32 univ. lab preschool; 4 yrs. (2 groups)	Examined impact of CT procedures on sharing and praising Evaluated role of content condition	% children saying; % children doing	CT1	Multiple baseline across behaviors	(I) R+ content lead to increase in reports but not behavior; R+ correspondence lead to increases in behavior (II) R+ correspondence effective in increasing sharing and general praise with or without R+ content (III) CT procedures effective in increasing specific praise statements	B	Yes
Israel & Brown (1977)	n = 16 x = 4-8 (2 groups)	What is the role of the verbalization (content) in establishing correspondence between v and nv behavior?	% children exhibiting correspondence	CT2	T-test	No ss difference between group with content phase and group without; both demonstrated target behavior only during R+ correspondence; both demonstrated generalized corr. with untrained toy	B	Yes
Karoly & Dirks (1977)	n = 12 church preschool; inner city (2 groups)	Is CT effective for teaching "tolerance" tasks to young children?	% children exhibiting correspondence	CT3	Nonparametric trend analysis for correlated data	R+ correspondence necessary for change in behavior; group using say-do sequence performed better than group using do-say	No	-
Jewett & Clark (1979)	n = 4 4-5 yrs.	What is impact of CT at school on children's mealtime conversation skills at home?	# appropriate comments made by child during meal	Modified CT1: verbal rehearsal; role play; feedback; practice	Multiple baseline across behaviors (topics)	Participants consistently introduced topics practiced at school during meal in home	B	Yes
Ballard & Jenner (1981)	n = 2 female; 6 & 7 yrs.	Evaluated effect of CT to increase social interactions of socially withdrawn child in free play setting	# social interactions; score on play scale	CT2	Multiple baseline across participants	# of social interactions increased when CT implemented; effects on play score inconclusive	T	Yes
Paniagua & Baer (1982)	n = 8 6M/2F; univ. lab preschoolers	Does it make a difference where in the chain R+ is programmed?	% intervals engaged in target behavior	CT1;CT3 CT4;CT5	Multiple baseline across participants	R+ set up contingent on promises or intermediate behavior consistently resulted in higher levels of target behavior than R+ of promises or reports alone	No	-
Whitman, Scibak, Butler, & Johnson (1982)	n = 8 5M/3F; Mi/MoID; 9-12 yrs.; Each participated in 1 of 3 experiments	Examined effectiveness of CT in changing behavior of students w/intellectual disabilities	(I) # times out of seat; (II) % intervals appropriate posture; (III) % intervals on-task	CT2	(I) ABAB (II & III) Multiple baseline across participants	All participants demonstrated criterion levels of tgt beh following CT participants in Exp (II) generalized tgt beh to an untrained setting; participants in Exp (II) & (III) completed more work during CT but no change in accuracy	B	Yes
Baer, Osnes, & Stokes (1983)	n = 1 male; 4 yrs. univ. preschool	Evaluated effectiveness of CT to program generalization of correspondence across settings, behaviors, & time	occurrence of tgt behaviors	CT2	Multiple baseline across behaviors	R+ of correspondence necessary to increase 1 st 2 target behaviors; R+ of content sufficient to change 3 rd behavior; behaviors maintained w/R+ of content but not w/return to baseline condition	B T	Yes Yes*
Keogh, Burgo, Whitman, & Johnson (1983)	n = 4; male; EMH class; 9-12 yrs.	Evaluated effect of CT on students' listening beh across settings	% intervals correspondence; % correct responses on listening task; % correct responses on multiple choice test	CT2	Multiple baseline across participants	CT resulted in increased listening beh for 2 participants across training & generalization settings; feedback on tgt beh resulted in criterion-level responding in all 4 participants; no consistent change in academic performance	S	Yes
Baer, Williams, Osnes, & Stokes (1984)	n = 4; 4-5 yrs.	Examined effect of delayed R+ on generalization & maintenance	occ/nonocc of play w/tgt toy during play session; % intervals child engaged w/tgt toy	CT2	Multiple baseline across behaviors	Immediate or delayed R+ of content did not result in changes in target behavior; R+ of corr. did; delayed R+ of content maintained behavior	B T	Yes* Yes*
Crouch, Rusch, & Karlan (1984)	n = 3 2M/1F;	Evaluated use of CT to produce change in work	# minutes to complete task;	CT2	Multiple baseline across participants	Two participants met criterion on both measures following R+ content	No	-

Author(s)	Participant(s)	Purpose/ Question	Dependent Variable(s)	Independent Variables(s)	Experimental Analysis	Results	Generalization	
							Eval	Demo
	MoID; 23-33 yrs.	behavior	# days began task on time			(no R+ content implemented); Third participant met criterion when increased by 5 minutes and content R+		
Baer, Williams, Osnes, & Stokes (1985)	n = 1 female; 4 yrs.	How long will verbal control of behavior maintain in the absence of R+? What impact will CT have on recovering verbal control of behavior?	occ/nonocc of tgt behavior; % intervals target behavior performed	CT2	Multiple baseline across behaviors	R+ of content initially increased target behavior & maintained for 12 days, then dropped to 0 levels; R+ of corr lead to immediate recovery of previous levels; R+ of content alone resulted in changes in 3 untrained behaviors	B	Yes
Paniagua (1985)	n = 6 male; 15-17 yrs.; group home residents due to "family problems" & "borderline juvenile delinquency"	Evaluated use of CT to increase home & personal care behavior in group home residents	% tgt behaviors completed	CT1	Multiple baseline across participants	R+ corr resulted in increases in tgt beh to 100% for all boys	T	Yes*
Guevremont, Osnes, & Stokes (1986)	n = 3 2M/1F; 4 yrs.	Analyzed use of CT to achieve verbal control of untrained behaviors across time & settings	occ/nonocc of tgt behavior (different for each child)	CT2	Multiple baseline across behaviors	R+ of content resulted in change in behavior only after R+ of corr; generalized to untrained behavior at school but not home	B S	Yes No
Guevremont, Osnes, & Stokes (1986)	n = 2 1M/1F; 4 yrs.	Evaluated impact of 2 strategies (indiscriminable contingencies & delayed R+ of content) on maintenance following CT	% intervals engaged in target behavior	CT2 paired w/1 of 2 maintenance strategies	Multiple baseline across participants	Use of indiscriminable contingencies resulted in longer periods of maintenance that R+ of content	T	Yes
Ralph & Birnbrauer (1986)	n = 3; male; Mi/MoID; 18-24 yrs; residential facility in Australia	Evaluated effectiveness of CT package that R+ both tgt beh and accurate reporting	# of target social skills performed	CT2	Multiple baseline across behaviors	CT resulted in increases in all tgt beh and accurate reports; Follow-up data indicate tgt beh maintained at high levels, accurate reporting did not	T	Yes*
Baer, Blount, Osnes, & Stokes (1987)	n = 3 2M/1F; 4-5 yrs.	Evaluated a maintenance program using intermittent R+ condition after successful CT	% nutritious snacks selected by child	CT2 paired w/intermittent R+	Multiple baseline across participants	R+ content resulted in all children promising to choose healthy foods, no change in behavior; R+ corr resulted in criterion responding; Intermittent R+/fading resulted in maintenance over 7 weeks w/no further CT	T	Yes
Osnes, Guevremont, & Stokes (1986)	n = 2; male; dvmtl delays; 2-3 yrs	Evaluated effectiveness of CT w/young children with dvmtl delays	% intervals peer-directed talk during free play; % intervals within 1 m of peer (2 yr old only)	CT2	Multiple baseline across participants	CT resulted in increases in tgt beh of both children (surpassed mean of peers); proximity to peers increased	No	-
Osnes, Guevremont, & Stokes (1987)	n = 1; female; unspecified dvmtl delays; 4 yrs.	Examined effectiveness of CT package that incorporated both positive & negative consequences	% intervals peer-directed talk; % intervals proximity to peers; # hand raises	CT2	Multitreatment (ABACA)	CT w/positive consequences did not result in increases in tgt beh from baseline levels; addition of negative consequence (3 min TO) resulted in increases in all tgt beh; maintained @ 1 month w/no intervention	No	-
Deacon & Konarski (1987)	n = 12 7M/5F; MoID; adults (2 groups)	Compared outcome of CT w/R+ of tgt behavior	# of times activated 1 of 7 response devices	CT1 R+ of tgt beh	Multitreatment (ABCBA)	4 of 6 participants demonstrated increases in tgt beh, regardless of procedure; increases maintained for both groups @ 2 mos.	T	Yes
Baer, Detrich, & Weninger (1988)	n = 6 4M/2F; preschoolers	What is the functional role of the child's verbalization & the teacher's prompt in CT?	% intervals toy play	CT2; R+ of tgt beh only	2 experiments; (I) Multiple baseline across behaviors (II) Multiple baseline across behaviors w/embedded ATD	R+ of tgt beh w/verbalization & R+ of corr superior to R+ of tgt beh w/o verbalization (teacher directive); Suggests antecedent verbalization critical, but source may be unimportant	No	-
deFreitas Ribeiro (1989)	n = 8 4M/4F 3-5 yrs.	What is the effect of group R+ of verbalization on accuracy of self-reports in CT program?	occ/nonocc correspondence	CT1 w/indiv and group R+ of content conditions	Multitreatment	All children exhibited accurate reports of play when free to choose any activity; R+ of content for teacher-chosen activities increased reports but not behavior; R+ of corr introduced, engagement in teacher-chosen activities increased	No	-
Weninger & Baer (1990)	n = 4 2M/2F; kindergarten	Compared R+ of corr and R+ of compliance w/time delay between verbalization & opportunity to engage in tgt beh (worksheets)	score on worksheets	CT2; R+ of compliance	Multiple baseline across behaviors (types of worksheets) w/embedded multielement	Worksheet completion rates high during both R+ of corr & R+ of compliance conditions; no significant differences in tgt beh between conditions	No	-
Ward & Stare (1990)	n = 12 8M/4F; 4-5 yrs. (2 groups)	Which procedure is more likely to result in generalized corr to untrained behaviors: R+ of corr or R+ of compliance?	% intervals toy play	CT2; R+ of compliance	Multiple baseline across behaviors w/reversals	Both groups engaged in tgt beh at similarly high rates in both R+ conditions; CT group generalized to an untrained behavior, R+ of compliance group did not	B	Yes*
Baer & Detrich (1990)	n = 4 2M/2F; 4 yrs.	Examined v/nv correspondence under 3 conditions: No contingencies (self-report/tact); R+ content (restricted choice); R+	% intervals correspondence	CT2 w/multiple conditions	Multiple baseline across participants w/reversals	Children accurately verbalized behavior when no contingencies or restrictions on choice; R+ of content w/restricted choice resulted in decrease in correspondence; R+ of corr w/restricted choice resulted in	No	-

Author(s)	Participant(s)	Purpose/ Question	Dependent Variable(s)	Independent Variables(s)	Experimental Analysis	Results	Generalization	
							Eval	Demo
		content (restricted choice) to evaluate tacting and manding functions in CT programs				increased corr but behavior change did not maintain w/o R+ of corr		
Wilson, Rusch, & Lee (1992)	n = 4; male; MoID & severe lang. delays; 13 yrs.	Can students w/MoID accurately report their own behavior? Will changes in say-do corr occur following do-say CT?	% correspondence	CT1;CT2	Multiple baseline across participants	When do-say CT implemented, corr b etween v&nv beh increased for all 4 boys; similar reports in say-do, though never trained.	B T	Yes Yes
Roca & Gross (1996)	n = 3 2M/1F; 9 yrs.	Evaluated effect of CT on students' praise prompting across settings	# praise prompts by student; # worksheet problems completed; % correct	CT2	Multiple baseline across participants	All dependent measures increased with CT; praise-prompting behavior generalized to untrained setting (different class); Behavior maintained thru end of school year (3.5 wks)	B T	Yes Yes
Olsen-Woods, Miltenberger, & Foreman (1998)	n = 31 Head Start; 4-5 yrs	Compared effects of CT and traditional methods to teach abduction prevention skills to young children	Score on 0-4 point scale rating child's response to lure	Traditional safety skills training; CT2 safety skills training	Pre/post test ANOVA	No statistically significant difference between pre and post test scores of 2 groups (role play and in situ)	S	No
Bevill, Gast, Maguire, & Vail (2001)	n = 4 4-5 yrs; significant developmental delays	Evaluated effects of CT and picture cues on engaged play behavior of young children	% of intervals engaged in planned play behaviors; # planned behaviors completed	CT2 with picture cues	Multiple probe across participants	2 participants met criterion without R+ of correspondence; 2 participants required R+ of correspondence	No	-

Note. CT key:
v = verbal
nv = nonverbal
CT1 = do-say sequence
CT2 = say-do sequence
CT3 = CT2 and R+ set-up upon report
CT4 = immediate R+ of intermediate behavior
CT5 = R+ set-up upon intermediate behavior

Generalization key::
B = generalization across behaviors
S = generalization across settings
T = generalization across time

* = limited demonstration

(1990) later labeled “reinforcement set-up upon report”. This correspondence training sequence was implemented in a similar fashion to the say-do sequence described previously, except that during the Reinforcement of Correspondence condition, a snack was placed in participants’ cups upon verbalization of a plan to engage in the target behavior. While consumption of the snack was contingent upon actual behavior during free play (i.e., verbal-nonverbal correspondence), the placement of the snack in the cup following the verbalization may have served as a cue for children to engage in the target behavior, making this a slightly different procedure from the say-do sequence previously described.

In summary, the 4 studies described above provided a foundation for later correspondence training research by describing the basic components (Reinforcement of Content, Reinforcement of Correspondence) and three difference sequences (do-say, say-do, reinforcement set up upon request) that would appear consistently throughout the literature in the years to come. All 4 studies included interventions designed to increase behaviors not

typically exhibited by children in a free play setting. None found the Reinforcement of Content condition effective for changing behavior in the absence of a history with the Reinforcement of Correspondence condition, and only Risley and Hart (1968) provided a demonstration of generalized correspondence to untrained behaviors.

INVESTIGATIONS ON THE ROLE OF THE VERBALIZATION

Eight studies were identified that specifically evaluated the role of the verbalization within correspondence training procedures.

Rogers-Warren and Baer (1976) conducted a series of 3 multiple baseline across behavior investigations that evaluated the effectiveness of do-say correspondence training to increase sharing and praising behaviors of 32 typically developing preschool children. Data from all 3 experiments, which were reported as group means, supported previous findings in that the Reinforcement of Correspondence condition corresponded with increased rates of target behaviors. The second of

these 3 experiments was unique, however, due to omission of the Reinforcement of Content condition. Participants in this study moved directly from the baseline condition, in which occurrences of sharing and praising were recorded in the absence of programmed antecedents or consequences, to Reinforcement of Correspondence. Results of this experiment were consistent with those of Experiments I and III: both target behaviors increased with Reinforcement of Correspondence, and sharing generalized to an untrained setting. This called into question the necessity of the Reinforcement of Content condition for successful correspondence training.

Table 3
Overview of Procedural Parameters
REINFORCEMENT OF CONTENT

Say-do Sequence	Do-Say Sequence	R+ Set-up Upon Report	R+ Set-up Upon Intern. Behavior
Participant prompted to emit verbalization related to target behavior (e.g., "I'll play with blocks.")	Opportunity to engage in target behavior is provided	Same as Say-Do	Same as Say-Do
Reinforcement is given contingent on verbalization	Participant prompted to verbalize he/she engaged in target behavior		
Opportunity to engage in target behavior is provided	R+ provided contingent on verbalization		
REINFORCEMENT OF CORRESPONDENCE			
Say-do Sequence	Do-Say Sequence	R+ Set-up Upon Report	R+ Set-up Upon Intern. Behavior
Participant prompted to emit verbalization related to target behavior (e.g., "I'll play with blocks.")	Opportunity to engage in target behavior is provided	Participant prompted to emit verbalization related to target behavior	Participant prompted to emit verbalization related to target behavior
Opportunity to engage in target behavior is provided	Participant prompted to verbalize he/she engaged in target behavior	R+ placed in view of participant following verbalization	Opportunity to engage in target behavior is provided; R+ given for all intermediate steps (e.g., walking on block area, getting block box off shelf)
R+ provided contingent on verbal-nonverbal correspondence	R+ provided contingent on correspondence*	Opportunity to engage in target behavior is provided	Exchangeable traded for individual R+ contingent on correspondence
		R+ provided contingent on correspondence	

*Completion of a Do-Say sequence is expected to impact behavior during the next opportunity to emit the target behavior. This sequence is therefore procedurally similar to a say-do sequence, but the next opportunity to engage in

the target behavior typically does not occur until the next day, rather than a short time later.

A study by Israel and Brown (1977) examined the relationship between the Reinforcement of Content and Reinforcement of Correspondence conditions with 16 Head Start students. Half of the participants experienced a training sequence that consisted of Baseline, Reinforcement of Content I, Reinforcement of Correspondence, and Reinforcement of Content II. The other group of participants did not experience the first Reinforcement of Content condition. Resulting data were similar for the two groups, indicating that the initial Reinforcement of Content condition was unnecessary to achieve verbal-nonverbal correspondence. The authors suggested that Reinforcement of Content might best be conceptualized as a control condition employed to establish the absence of verbal-nonverbal correspondence and not as a necessary precursor to correspondence training.

By the mid 1970s consensus across researchers appeared to be that the Reinforcement of Content condition was important as a control phase, but could not be expected to increase behavior in the absence of a history with reinforcement of correspondence. Additional issues existed, however, related to the role of the verbalization in correspondence training. One such issue involved use of correspondence training with learners who had intellectual disabilities and demonstrated low or no verbal skills. Whitman, Scibak, Butler, Richter, and Johnson (1982) conducted a series of 3 experiments to determine what impact a say-do correspondence training procedure would have on the classroom behaviors of elementary school students with mild and moderate intellectual disabilities. The first investigation utilized an A-B-A-B design, while the second and third employed a multiple baseline across participants design. Experiments I and II were conducted with students who had low verbal abilities. In these experiments, the researchers prompted participants to verbalize plans to engage in appropriate classroom behaviors (staying in seat; sitting appropriately in chair), then provided specific verbal feedback and demonstration during the Reinforcement of Correspondence condition in order to clarify expectations and sources of error. Experiment III was implemented with 2 nonverbal students and targeted on-task behavior. During this

study, the verbalization used in Experiments I and II was replaced with students' rehearsal/demonstration of the appropriate behaviors in which they planned to engage. Specific verbal feedback and modeling was employed as in the first two experiments during the Reinforcement of Correspondence phase. Data indicated that all participants demonstrated substantial increases in target behaviors upon introduction of the Reinforcement of Correspondence condition. This study was important for 2 reasons: It was the first to employ correspondence training procedures to modify the behaviors of participants with intellectual disabilities and the first to include participants who lacked the ability to emit verbalizations related to the target behavior.

While the studies discussed to this point were different in some respects, all were based on the idea that correspondence training facilitated development of verbal self-regulation. In fact, the assumption that correspondence training was a means for establishing a verbal mediator to control nonverbal behavior was explicitly identified as a rationale for much of the early correspondence training research. Stokes and Baer (1977) cited correspondence training as a means to mediate generalization and expressed concern that application of the procedure could be problematic with persons with intellectual disabilities and language delays. Clearly, the learner's verbal behavior was viewed as critical to achieving generalized verbal control over nonverbal behavior. Following the investigations by Rogers-Warren and Baer (1976) and Whitman, et al. (1982) that eliminated or modified the verbal component of correspondence training procedures, however, researchers began to re-evaluate the link between correspondence training and verbal mediation of behavior. Deacon and Konarski (1987) raised the possibility that changes in nonverbal behavior were a result of differential reinforcement only, rather than a demonstration of verbal self-regulation. They cited the failure of most previous research studies to demonstrate generalized verbal control over nonverbal behavior in the absence of reinforcement as further indication that verbal mediation was not the mechanism responsible for behavior change. In order to test their hypothesis, these researchers compared the effects of a say-do correspondence training procedure with a "do only" (p. 391) reinforcement procedure in which participants were reinforced for emitting target behaviors in the absence of any related verbal behavior. A multitreatment design (A-B-C-B-A) was used in order to carry out the investigation.

Six of the twelve adults with moderate intellectual disabilities who participated in this study received typical say-do correspondence training (Correspondence Training Group). The other 6 participants received no prompts and were required to make no verbalizations before the opportunity to engage in the target behavior, but were given specific verbal feedback after that opportunity explaining why they were or were not receiving a reinforcer (Reinforcement of Target Behavior Group). Results indicated that 4 of the 6 participants in each group demonstrated substantial increases in target behavior, regardless of treatment. Participants in both groups continued to emit the target behavior at high levels for 2 months. The authors interpreted these results to be further evidence that correspondence training was rule-governed behavior. Rule-governed behavior occurs when an individual is given (or generates) a description of the contingencies of reinforcement and is then reinforced for following the "rule". Success in teaching rule governed behavior, therefore, lies in helping learners to formulate the right rule. Because the components of the contingency could be found in either the Reinforcement of Content condition for participants in the Correspondence Training group or in the Verbal Feedback condition for the Reinforcement of Target Behavior group, the authors concluded that what had previously been considered verbal mediation was most likely rule-governed behavior.

Baer, Detrich, and Weninger (1988) followed up on the work of Deacon and Konarski (1987) by comparing the effects of 3 different reinforcement contingencies on toy play behavior with 3 typically developing preschool children within the context of a multiple baseline across behaviors design. Reinforcement of Target Behavior (with no prior verbalization), Reinforcement of Doing (following the experimenter's verbal directive to play with specific materials), and Reinforcement of Correspondence (following child's verbalization of a plan to play with target materials) were presented in random order. Results indicated that use of target materials increased substantially in the Reinforcement of Doing and Reinforcement of Correspondence conditions but not in the Reinforcement of Target Behavior condition. Based on these results, the authors concluded that some antecedent verbalization was necessary, although it was unclear whether the source of the verbalization mattered. A similar study conducted by Weninger and Baer (1990) compared reinforcement of correspondence with reinforcement of compliance

and found no difference between participants' performance on a worksheet completion task.

In yet another study aimed at evaluating the function of verbalizations, Ward and Stare (1990) employed a multiple baseline across behaviors design in order to evaluate the impact of the participant's verbalization on specific play behaviors of kindergarten children. Six of the twelve children participated in say-do correspondence training procedures in which they were prompted to verbalize plans to play with the target behaviors and reinforced for correspondence after the play period ended. The other 6 participants were told by the experimenter what toys to play with and reinforced after the play period if they complied with the verbal directive. Results indicated that the two groups engaged in target behaviors at similar rates, but that children in the correspondence group demonstrated generalized correspondence to an untrained play behavior while those in the compliance group did not. The authors suggested that, while reinforcement of correspondence and compliance may be equally effective for increasing behavior, the antecedent verbalization by the learner may play some role in generalization.

Findings of these studies appeared to support the findings of Deacon and Konarski (1987), yet they did not provide a definitive answer to the questions regarding verbal mediation. In a review of the correspondence training literature, Baer (1990) indicated that the aforementioned studies did not rule out the possibility of verbal mediation; they simply failed to "prove" (p. 388) its role in this procedure.

All research discussed to this point targeted instructor-chosen behavior, in which a child was prompted to verbally state that he/she would engage. The role of the participant's choice in the content of the verbalization remained unclear. Wilson, et al. (1992) took a unique approach by allowing participants to determine the content of their own verbalizations. Four 13 year-old boys with moderate intellectual disabilities and severe expressive language delays participated in a multiple baseline across participants study which: (a) used a do-say model to increase verbal-nonverbal correspondence between their boys' exercise activities in a community recreational facility and their subsequent reports of behavior; and (b) examined collateral changes in accuracy of their pre-workout plans. Participants were asked during a warm up and stretch session

which 4 machines they planned to use that day during their workout. Responses were recorded, as were the boys' behaviors during the workout session. No comment or reinforcement was provided regarding the accuracy of participants' pre-workout plans. During a cool-down session, participants were asked which 4 machines they had worked out with that day. Accurate responses were reinforced with specific verbal praise ("You said you worked out on the ___ and you really did! Great!) and, for some participants, tangible or exchangeable items. All participants demonstrated an increase in accurate reporting after their workout, although this behavior changed quickly for 2 participants and very gradually for the others. Accuracy of plans verbalized prior to the workout also increased, though these verbalizations were never reinforced or trained. The authors discussed the possibility that indiscriminate contingencies of reinforcement (Stokes & Baer, 1977) may have contributed to changes in both behaviors, since reinforcers were given at the end of the session and the boys may have mistakenly believed they were delivered based on accurate verbalizations both before and after the workout session.

Research Related to Reinforcement

Although reinforcement played a role in all of the studies included in this review, 5 studies specifically examined the role or placement of reinforcers in correspondence training. Paniagua and Baer (1982) conceptualized correspondence training as a chain of verbal and nonverbal behaviors and conducted 3 multiple baseline across participant experiments to determine how location of reinforcement along this chain impacted correspondence training outcomes. All 3 experiments included 5 conditions which were introduced in a different order in each experiment. In the Baseline condition, participants were allowed to play with a variety of toys, some of which were target materials. Following the play period, children were asked what they had played with and reinforcement was provided noncontingently after any verbalization. During Reinforcement of Reports, children were again asked what they had played with during the preceding period. Verbal praise was provided for any report, but a tangible reinforcer (toy) was provided for true reports of behavior. The Reinforcement Set-Up Upon Contingent on Promises condition involved asking children what toys they would play with during the upcoming period, praising them for verbalizing any plan, and placing a toy in their locker for verbalizing plans to play with target materials. Following the

play period, children were allowed to keep the toy that had been placed in their locker only if they had actually played with target materials. In the Reinforcement of Promises condition, children received the reinforcer for verbalizing a plan to play with the target materials, regardless of the accuracy of these promises. The fifth condition, Reinforcement Set-Up Contingent on Intermediate Behaviors, involved providing children with specific verbal praise and tokens for behaviors leading up to play with the materials. Tokens were exchanged for toys following the play session if the child engaged in the target behavior. Results of all 3 experiments indicated that Reinforcement Set-Up Contingent on Promises and Reinforcement Set-Up Contingent on Intermediate Behaviors conditions were more effective than Reinforcement of Reports or Promises alone. Reinforcement of Promises was found to be least effective in changing participants' play behaviors with target materials. The authors hypothesized that the differences between conditions were due to the fact that, in both Reinforcement Set-Up conditions, reinforcement was programmed at 2 points along the chain instead of just one. They suggested that the frequency of reinforcement may be a more important factor in the success of a correspondence training program than the sequence (do-say vs. say-do) employed.

Baer, Williams, Osnes, and Stokes (1984) also examined the effects of placement of the reinforcer in their study on the use of delayed reinforcement to promote maintenance and generalization in correspondence training procedures. The investigators used a multiple baseline across behaviors design to evaluate the effects of a say-do correspondence training procedure with typically developing preschool participants. Results of this training were consistent with earlier findings in that Reinforcement of Content did not change nonverbal behavior prior to Reinforcement of Correspondence. A third condition, Delayed Reinforcement of Content, was added after participants met criteria in the Reinforcement of Correspondence condition in an effort to promote generalization and maintenance. This condition involved delivery of the reinforcer after the play period (as in Reinforcement of Correspondence in a say-do sequence) contingent on the child's verbalized plan to play with target materials before the play period. This condition was implemented in an effort to render the contingencies of reinforcement indiscriminable to participants. Results indicated that, following experience with the

Reinforcement of Correspondence condition, Delayed Reinforcement of Content alone was sufficient to increase use of 3 untrained materials. While indiscriminable contingencies appeared to have been responsible for promoting generalized correspondence, maintenance was not observed when Baseline conditions were reintroduced.

While the two studies discussed above evaluated the impact of the location of the reinforcer, a study conducted by Osnes, Guevremont, and Stokes (1987) examined the effects of introducing both positive and negative consequences in correspondence training. These researchers implemented an A-B-A-BC-A design with a 4 year-old girl with unspecified developmental delays and a history of noncompliant behavior. When Reinforcement of Correspondence (the B condition) failed to substantially impact behavior, a Reinforcement of Correspondence with Positive and Negative Consequences condition (C) was introduced. Application of "minor sanctions" (p. 72) in the form of a 3 minute time out from positive reinforcement period corresponded with increased levels of the appropriate (target) behavior. This was the first and only correspondence training study to employ negative consequences in addition to reinforcement of correspondence.

A final area of inquiry related to reinforcement is the impact of reinforcement on children's self-reports of their behavior. deFreitas Ribeiro (1989) and Baer and Detrich (1990) studied the accuracy of children's self-reports of play behavior with and without experimenter-imposed reinforcement, and discussed their findings in terms of Skinner's (1957) concepts of tacting and manding. Both studies found that children tended to provide highly accurate reports of their own play behavior in the absence of experimenter-imposed reinforcement or restricted choice of play activities. These self-reports were conceptualized by the authors as tacts, or "verbalizations under the control of the properties or characteristics of objects or events" (Baer & Detrich, p. 24). In other words, children's verbal statements were generally accurate reflections of an event (play) in the absence of external reinforcement. Following this unrestricted verbalization condition, children were asked to plan their play activities from a restricted range of choices and were reinforced for verbalizing plans to engage in specific target behaviors. Participants in both studies increased verbalizations regarding target behavior, but actual

play behavior did not change. Both Baer and Detrich and deFreitas Ribeiro interpreted the children's verbal behaviors in this condition to be mands, or "verbalizations under the control of consequences" (Baer & Detrich, p. 24). The authors further theorized that verbalizations under these conditions were controlled by negative reinforcement, since the child was committing to a specific experimenter-chosen behavior in order to leave the situation with the experimenter and join others in free play. A Reinforcement of Correspondence condition was introduced in both studies, resulting in increased correspondence between verbal and nonverbal behavior. Children's accurate verbal reports of target behavior after the free play condition were conceptualized as tacts of past behavior which served as actually served as mands for the reinforcers given for correspondence. Results of this study indicated that correspondence between verbal and nonverbal behavior was most likely under 2 conditions: A No Contingency condition, in which children verbalized reports of any play behavior, and a Reinforcement of Correspondence condition, in which children were reinforced for verbal-nonverbal congruence.

RESEARCH ON PROMOTING GENERALIZATION

Correspondence training has been described as a means for establishing verbal control over nonverbal behaviors. The majority of researchers in this area have stated that the value of correspondence training lies in its potential to modify nonverbal behaviors in settings that are not easily accessible, by changing verbal behaviors in teaching settings. Those researchers who believe correspondence training to be a function of rule-governed behavior (e.g., Deacon & Konarski, 1987) have suggested that the same outcomes may be accomplished by teaching rules in accessible settings for use in other environments. Whether the result of verbal mediation or rule-governed behavior, verbal-nonverbal correspondence is viewed as valuable because, theoretically, it allows access to behavior across many settings and situations.

It would seem logical, given the fact that many researchers espouse the above rationale for conducting correspondence training studies, that this literature base would be replete with investigations related to generalization. After all, continued use of correspondence training with all target behaviors in all settings is no more efficient (and perhaps even less

so) than differential reinforcement of target behavior on a continuous schedule of reinforcement (CRF). Curiously, this is not the case. While a number of the previously described studies measured generalization in some manner, only a handful of research specifically addresses generalization. This section describes studies that targeted generalization of behavior to new settings, with different people, or across time.

Generalization across settings: School to home. Three studies were found that addressed generalization of target behaviors from school settings to home. All 3 investigations employed single-subject research methodology with a total of 7 participants. The first of these studies, conducted by Jewett and Clark (1979), utilized a multiple baseline across behaviors (topics of discussion) design to evaluate the impact of correspondence training on mealtime conversation skills of 4 preschoolers. This study was unique in that training of specific skills was provided through a simulated family meal during lunch in the preschool classroom. Participants were provided with models, prompts, and specific verbal feedback on their conversational initiations during the meal and asked to introduce similar topics at home that evening. Participants increased appropriate initiations on the target topics of work, school, or appreciation only when correspondence training procedures were implemented in the preschool classroom. All 3 topics taught in the school setting generalized to the home meal and maintained at a 3 week follow-up. Generalization across time may have occurred because parents, who were aware of the purpose and nature of the study throughout, were asked to respond to appropriate initiations by their children with enthusiasm and praise. Natural communities of reinforcement may therefore have maintained high rates of target behavior in the absence of school training and reinforcement.

Baer, Osnes, and Stokes (1983) also evaluated use of school-based correspondence training procedures to change behavior in the home. These researchers used a multiple baseline across behaviors design to evaluate the impact of school-based correspondence training on home behavior of one typically developing 4 year-old boy. Results indicated that while a Delayed Reinforcement of Content condition resulted in increased verbalizations regarding the target behaviors, Reinforcement of Correspondence was necessary for actual behavior change at home. Following Reinforcement of

Correspondence for picking up his pajamas after dressing in the morning and putting his clothes in the hamper after his bath, the participant consistently completed both tasks in the home setting. A Delayed Reinforcement of Content condition was then sufficient to change the third home behavior, choosing fruit for dessert. A final return to Baseline condition for the first two behaviors indicated that the behaviors did not maintain in the absence of school-based training and reinforcement.

Guevremont, Osnes, and Stokes (1986) attempted to facilitate generalization of target behavior across settings (different classrooms and home) by implementing say-do correspondence training procedures, then systematically increasing the interval between participants' verbal reports and the opportunity to engage in target behaviors. A multiple baseline across behaviors design was used to evaluate the effectiveness of correspondence training in changing social, toy play, and worksheet completion behaviors in 3 typically developing 4 year-olds. Results indicated that this procedure was effective in promoting target behaviors (playing with specific toys, hand raising during Circle time, straightening mats after Circle) in school settings throughout the day. Generalization to the home behavior (worksheet completion) was not observed, however, and none of the behaviors maintained during a final return to Baseline condition.

Generalization across settings: Training to classroom. Two studies were identified that examined generalization from a training setting to participants' classrooms. Keogh, et al. (1983) first used a behavioral shaping procedure to teach four 10-12 year-old boys with mild to moderate intellectual disabilities to verbalize rules for good listening, then implemented a say-do correspondence training procedure in an attempt to increase those behaviors in multiple classrooms. Target behaviors were demonstrated in generalized settings only after the researchers added specific feedback and error correction to the original correspondence training procedure. This Multiple baseline across participants study demonstrated that correspondence training procedures may be used to change behaviors across settings for persons with intellectual disabilities, but that modifications to traditional procedures may be necessary. No data on maintenance of the behavior in the absence of training and reinforcement procedures were provided.

Roca and Gross (1996) evaluated the effectiveness of correspondence training to increase 3 third grade students' use of prompts to recruit praise from their classroom teachers within the context of a multiple baseline across participants design. Correspondence training and reinforcement took place in a small room near participants' classroom. Praise prompting was monitored in two different classroom settings: math and language arts. Results indicated that students increased their use of praise prompting in the math class, which immediately followed the correspondence training session, and in the language arts class, which occurred later in the day. Following removal of all correspondence training and reinforcement procedures, all participants maintained their levels of praise prompting through the end of the school year (3.5 weeks).

Generalization across settings: Training to community. Ralph and Birnbrauer (1986) used a multiple baseline across behaviors design to evaluate the effects of a correspondence training procedure, in combination with a social skills training program, to improve the social behaviors of 3 men with mild or moderate intellectual disabilities. Training was conducted at the residential facility in which all 3 men resided. Participants practiced appropriate social behaviors for entering and exiting rooms in which people were gathered and verbalized plans regarding the behaviors they would use in such situations. Videotapes of each participant entering and exiting a break room was used to evaluate verbal-nonverbal correspondence and to provide feedback and error correction to participants. Data indicated that correspondence training procedures were effective in increasing appropriate social behavior in a generalized setting. Follow-up probes conducted 4 days after treatment ended indicated that participants continued to emit target behaviors at criterion levels, but this is clearly a very limited demonstration of maintenance.

Olsen-Woods, et al. (1998) evaluated the value of correspondence training procedures for teaching abduction prevention skills to typically developing preschool children. The 31 Head Start students who served as participants in this study were divided into 2 groups. One group participated in a typical Behavioral Skills Training (BST) package consisting of instruction, modeling, role play, error correction, and praise. A second group participated in BST and say-do correspondence training. Participants were scored on a 0-4 scale based on their

responses when presented with a lure from a stranger in a community setting. Analysis of variance procedures indicated that there was a statistically significant difference ($p < .001$) between the pre- and post-test scores for both groups, but that no statistically significant difference existed between scores of the BST group and those of the Correspondence Training group ($p > .05$). In addition to failing to prove the authors' hypothesis that correspondence training would result in greater improvement in the performance of young children with regard to abduction prevention than BST alone, results of this study indicated that the critical behavior of moving quickly away from the potential abductor did not generalize from the role play situation to community probes. Failure of young children to generalize safety skills to relevant settings has been widely reported in the literature (Bevill & Gast, 1998), and correspondence training has been recommended by a number of researchers as a possible means to promote generalization of critical safety behaviors to relevant settings. Unfortunately, the utility of correspondence training procedures for this purpose appears questionable based upon the outcomes of the Olsen-Woods, et al. study.

Generalization across people. One study was identified that included an evaluation of generalization across trainers. Ballard and Jenner (1981) taught 2 elementary school children to verbalize statements about appropriate social behaviors ("I go over to other children"; "I ask them what they are doing"; "I smile"), then implemented a say-do correspondence training procedure in an effort to increase rate of appropriate interactions during free time. Results indicated that both participants met criterion quickly upon introduction of correspondence training procedures and that their rates of interaction maintained 9 weeks after the last correspondence training session in the presence of a different teacher. No procedures were described that programmed maintenance or generalization to the new teacher.

Generalization across time. Two studies were found that systematically programmed for maintenance of target behavior following correspondence training. Following a say-do correspondence training procedure that resulted in 2 preschool children reaching criterion levels of social and helping behaviors, Guevremont, et al. (1986) implemented a multiple baseline across participants design to evaluate two methods for facilitating maintenance of behavior: Reinforcement of

Verbalization and Indiscriminable Contingencies. In the Reinforcement of Verbalization condition, participants were reinforced immediately after verbalizing a plan to engage in target behaviors. During this condition, the target behavior maintained at high rates, but dropped sharply upon a return to Baseline condition. In the Indiscriminable Contingencies condition, 5 different reinforcement contingencies were implemented over a period of 5 days in an effort to make contingencies of reinforcement indiscriminable to participants. Target behaviors maintained in this condition and during a final return to Baseline condition, indicating that programming indiscriminable contingencies may be a more effective means for promoting generalization over time than reinforcement of verbalizations following successful correspondence training.

Baer, Blount, Detrich, and Stokes (1987) gradually thinned the schedule of reinforcement following a say-do correspondence training procedure that resulted in 3 typically-functioning preschoolers making more nutritious snack choices. A multiple baseline across participants design was used to evaluate the effectiveness of the intervention. Following criterion-level responding during the Reinforcement of Correspondence condition, the researchers thinned delivery of the reinforcer from 100% (CRF) to 67%. Once participants responded at criterion levels for 5 days under this schedule of reinforcement, it was further thinned to 33%. After 5 days of criterion-level responding under this schedule, reinforcement was eliminated completely and participants' responses maintained for up to 7 weeks.

While the number of studies that evaluated procedures to promote maintenance is limited, the two studies described above systematically programmed for maintenance. Additional replications of these studies are needed to further evaluate methods to promote maintenance of behavior in the absence of intervention. The need for research on strategies to promote generalization across both time and settings for persons with intellectual disabilities is especially strong, given the problems this population typically exhibits with generalization.

SUMMARY

The studies included in this review have contributed to the knowledge base on use of correspondence training procedures to modify the behavior of persons with and without disabilities.

While the theoretical perspectives that serve as a foundation for this procedure have been debated in recent years, researchers have agreed that, regardless of the mechanism responsible for behavior change, correspondence training is a potentially valuable tool for promoting appropriate behavior in settings where direct intervention is difficult or inappropriate. In order to realize the potential of correspondence training, however, additional research is needed in several areas. First, replications of existing studies are needed. Much of the research conducted to this point used single subject research methodology or group research designs with a small *n*, both of which have limited external validity. Second, research that evaluates specific procedures for promoting generalization across settings, behaviors, and time is needed in order for correspondence training to be truly useful in applied settings. The existing literature base provides evidence that correspondence training procedures can be an appropriate means to change behavior in the training setting; future research must go a step further, with studies that systematically program for maintenance. Third, additional information is needed on the efficacy of correspondence training for individuals with developmental disabilities and delays. A number of studies included in this review demonstrated that correspondence training may be effective with this population, but further research is needed to evaluate the effectiveness of this procedure in promoting generalized behavior change. While the majority of the research on correspondence training with persons without disabilities has been conducted with preschool children, most of the existing research with individuals with special needs was conducted with school-aged and adult participants. Additional investigations on the use of correspondence training with young children with developmental delays and disabilities would contribute to the literature in this area. Studies comparing correspondence training to other instructional strategies may be especially informative. A number of investigations that included participants with special needs introduced additional training or reinforcement packages to promote behavior change. Use of such supplemental strategies should also be evaluated in future studies. Finally, the use of correspondence training procedures to increase rates of experimenter-dictated behavior has been well documented in the literature. Little attention has been given to the effectiveness of correspondence training when participants are given the opportunity to make choices about their behavior in a future setting.

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EVIDENCE BASED PRACTICE IN THE HOME AND SCHOOL TO HELP EDUCATE THE SOCIALLY MALADJUSTED CHILD

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Educators often exclude socially maladjusted children (SMA) from a proper education due to serious disruptive behavior. Never the less, these children are entitled to services under section 504 and the Americans with Disabilities Act. While SMA children are indeed difficult to educate, review of the associated literature suggests that methods to remediate and manage behavior patterns exists. This paper will explore effective education for SMA children and effective ways to manage their behavior in the classroom. In addition, this paper will explore the research suggesting that SMA children are harmed by educating them with other children who are SMA. We conclude that meeting the educational needs of children with social maladjustment involves the combination of home and school programming in an inclusive setting.

INTRODUCTION

Entering the new century, school districts and behavioral health programs around the country are reportedly striving to use "best practices" and evidence-based practices when working with special education students. This important goal emerged from the President's Task Force on Mental Health (New Freedom Commission on Mental Health, 2003). One specific population of children, those diagnosed as socially maladjusted (SMA), are unfortunately not currently experiencing the benefits of this progress and reside in programs which fail to meet the best practice guidelines for treatment. This failure is particularly striking since organizations like the International Association for Behavior Analysis (Task Force on the Right to Effective Behavioral Treatment, 1988; Task Force on the Right to Effective Education, 1990), have published practice guidelines demanding that students have a right to effective education and the president has signed the No Child Left Behind Act (2001). In addition, the costs to society of not intervening with children of this group are great, including a greater demand on other systems such as the criminal justice system.

School psychologists classify children with SMA when they are diagnosed with conduct disorder, oppositional defiant disorder, and disruptive disorder, not otherwise specified. SMA children are at great risk for dropout, with as many as 62% not completing high school (Walker & Reid, 1995). General academic failure combined with a pattern of delinquency ensures over 70% of SMA children are arrested at least once after leaving school (Walker, Colvin, & Ramsey, 1995; Walker, 1997). SMA children cost society over one billion dollars a year in

the juvenile justice system and a half billion dollars in vandalism alone (Patterson, DeBaryshe, & Ramsey, 1989). Finally, about half of all children who are SMA become adolescent delinquents and three quarters of these children become adult offenders (Patterson, et al, 1989). Clearly, educating or not educating SMA children severely affects our society.

After an examination of the costs, it is logical to wonder why schools have not used published best practices in regards to SMA children. Two reasons that children who are SMA might not receive treatment are: (1) schools are not entitled to compensation for such students under Individuals with disability education act 97 (IDEA 97) (2) the political fallout for children who may represent a serious threat to other students (Maag & Howell, 1992). Given the aggression problems of SMA children and that youth violence is one of the most serious problems facing schools systems today (Eberly, 1996) and rising at alarming rates (e.g., Sheley & Brewer, 1995), many find little incentive to argue for the civil liberties of this group.

Maag and Howell (1992) suggest SMA students are victims of culture's need to show little tolerance for violence, which emerges from the school districts' need to retain popular support. Thus, it is not surprising that when youth violence has resulted in many calls for the removal of students who engage in serious behavioral problems, SMA students remain an unprotected group.

However, practices do exist to socialize these children and will lessen the threat to society. Treatment research on areas related to disruption in general and SMA in particular using delinquency, conduct disorder, and opposition defiant disorder show that effective practices exist (Health and Human Services, 1999; Walker, Colvin & Ramsey, 1995;

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Patterson, Dishion, & Reid, 1992). In addition effective practices prevent conduct problems also have demonstrated efficacy (Conduct Disorders Prevention Research Group, 1999a, 1999b) as well as practices to lessen the overall level of antisocial behavior in school (Burke, Ayries, & Hagan-Burke, 2003; Carr, Dunlap, Horner, Keogel, Tunbull, Sailor, Anderson, Albin, Keogel, & Fox, 2002; Tobin, Lewis-Palmer & Sugai, 2001). These practices can create healthier school climates for SMA students and their classmates (Tobin et al., 2001).

Since SMA students are diagnosable under the Diagnostic and Statistical Manual IV, they are entitled to protection under section 504 and the Americans with Disabilities Act (Cohen, 1994). These acts are more inclusive and thus are not restricted to particular conditions, as IDEA97. Conduct disorder is a chronic condition and can affect the overall progress of the child within the school system. SMA children, diagnosed as conduct disorder, in general have poor social skills, repeated failures to respond to treatment, and poorer prognosis for adult living than any other disorder with the exception of autism (Quay, 1986). Children with SMA who receive adequate intervention can show substantial improvement in functioning and in classroom performance. However, interventions must be begin early (most cases prior to the age of 8), intensive, and often need to occur for longer than a year (Walker, Colvin, and Ramsey, 1995).

Contrary to the benefits that can come from scientifically demonstrated treatments (e.g., Brestan & Eyeberg, 1998; Conduct Problem Prevention Group, 1992, 1999a, 1999b), which benefits the student and society, the debate over the inclusion of these children in the school system continues (Zabel, 1986; Hoagwood, 1991). Even the courts, who have championed the rights of the individual, have consistently ruled that students who have serious behavior problems are not entitled to services under IDEA (see *A. E. v. Independent School District no. 25*). This has led many school psychologists to misclassify a child who is SMA as “seriously emotionally disturbed” after a major offense (Murray & Myers, 1998). However, some educators as inappropriate view placing these children into classrooms for children with serious emotional disturbance (SED). Some educators even see putting such children into SED classes as damaging to the child because programming needs for the two types of students differ (Murray & Myers, 1998; Clarizio,

1992). Specifically, the behavior of SMA children logically exacerbates the problems of SED children.

Since the number of students classifiable as SMA is five to six times that of those who are qualified as seriously emotionally disturbed (Walker, Colvin, & Ramsey, 1995), the school system may be placing both types of children at risk by improper placement. These two types of student react very differently to the world in which they live. While children who are SED may have a hypersensitive reaction to negative expressed emotionality, SMA children may have a hyposensitive reaction or even a counter reaction. Obviously, this is a very problematic combination of special needs children.

The origins of social maladjustment are multifactor; however, a strong environmental influence is noted. While most psychological traits load in the range from 25% to 75% from genetic factors (Lykken, 1998), SMA children have a considerably higher environmental loading. For example, latent class analysis of data from the Virginia Twin Study of Adolescent Behavioral Development found that with the children labeled “pure conduct disorder”, 97% of the variance is associated with shared family environment (Silberg, Meyer, Pickles, Simonoff, Eaves, Hewitt, Maes, & Rutter, 1996). This work is augmented by studies indicating that the course of SMA pathological development can often be traced to parental mismanagement of children with difficult temperaments (Loeber & Dishion, 1983; Lykken, 1995, 1998).

School psychologists may be helpful to teachers in differentially diagnosing SMA from SED children. In addition, there appears to be a developmental relationship with the disruptive disorders category, with ODD seen as a forerunner to conduct disorder (Kamphaus & Frick, 1996). This gradual hardening of children needs to be taken into account when deciding if outcomes should be designed to remediate or to accommodate (see Walker, Colvin, & Ramsey, 1995) and the school psychologist may play a major role in differentiating the children who are at the cusp points. A final role for the school psychologist in relation to SMA children concerns their academic and behavioral programming. It is clear that SMA children need specific behavioral and academic intervention to experience success and it is imperative that school

psychologists be well versed in the current related best practices.

EFFECTIVE TEACHING OF THE SOCIALLY MALADJUSTED CHILD

Given that numerous studies have demonstrated a strong relationship between antisocial behavior and academic performance (Farnworth, Schweinhart, & Berrueta-Clement, 1985; Feldman & Wentzel, 1990; Parker & Asher, 1987; Patterson, Bank, & Stoolmiller, 1990; Tremblay, Masse, Perron, LeBlanc, Schwartzman & Ledingham, 1992; Wentzel, 1993, 1994; Werry, Reeves, & Ekind, 1987) and that this relationship is one in which antisocial behavior is the causal agent (Dishion, 1990; Olweus, 1983), teachers must take a more active role in the inclusion of SMA children. Just as the American Psychological Association has created practice standards that support empirically validated treatments for clinical issues (Task Force on Promotion and Dissemination of Psychological Procedures, 1995), the National Education Association should create and support empirically validated instructional strategies. Ways to improve educational outcomes for SMA students have appeared in the literature since the mid-sixties (e.g., Tannenbaum, 1966). Students, who are socially maladjusted, need programs that emphasize education of skills while working to modify the student's behavior (Derr, 1977; Walker, Colvin, & Ramsey, 1995).

Teaching gains with SMA children were reported back as early as the 1970's. In one program, Bergeth (1972) reported that good progress on standardized indicators for children who were SMA. The program focused on providing students with basic skills while simultaneously remediating inappropriate behavior. In addition, Spivack and Koasky (1972) reported on a six-week summer program for New York City children, which showed strong progress in remediating deficits in reading and mathematics. In addition, these students made considerable progress in the areas of social skills and social behavior.

Classroom Disruption

Antisocial behavior has a purpose or function. Early on Patterson (2002) noticed that in about 80% of the interaction in which a child with oppositional or conduct problems engaged in this behavior in the playground, it was to "get" something from a peer.

Conducting a functional behavioral assessment of disruptive behavior in the classroom is critical to the overall management of children with disruptive behavior (Cautilli, Harrington, Vila Gillam, Denning, Helwig, Ettingoff, Valdes, & Angert, 2003; DuPaul & Ervin, 1996; Ervin, DuPaul, Kern, & Friman, 1998; IDEA, 97; Walker, Colvin, & Ramsey, 1995). When conducting a functional behavioral assessment one interview teachers and performs direct observation of the setting events, antecedents, the behavior and its consequences (Carr et al., 2002). Once the function is identified a competing behaviors model can be developed and an alternative behavior can be made more efficient in achieving the same function (Burke, et. al, 2003; Cautilli, Riley-Timman, & Thomas, 2001). In addition, once antecedents are identified, interventions can manipulate those antecedents to lessen disruption and build self-control (Axelrod, 2001).

Research exists to support the practical use of functional behavioral assessment. Functional assessment leads to greater teacher satisfaction with programs (Ervin, DuPaul, Kern, & Friman, 1998; Twernbold-Schill, Kratchowill, & Elliot, 1998), can increase the flexibility and range of the types of interventions used, and can be helpful in determining what to do if a particular strategy fails (Barnett, Bell, & Carey, 1999). While most of the current research has organized behavioral excesses into functional categories, it has only been recently that the vast body of behavioral research on deficits was organized into functional categories (Daly, Witt, Martens, & Dool, 1997).

One factor that often leads to classroom disruption from a deficit perspective is a poor match between the child's curriculum and the child's current skill level (Daly, Witt, Martens, & Dool, 1997; Shinn, 1998). One method to ensure correct curriculum matching is the use of curriculum based assessment procedures combined with an error analysis of the child's performance. Finding the child's level of fluency can be critical to reducing disruption in the classroom (Skinner, 2002). Coupling this with successful teaching strategies is the beginning to a partial solution to school violence (Kaufman, 1994).

Introduction to classroom management systems: Preventing Disruption

In general, children with SMA respond better in well managed and well designed classrooms

(Health and Human Services, 1999). It is also true that well managed classrooms, particularly those that used contingency management systems, function to prevent classroom disruption (Conduct Disorders Prevention Research Group, 1999a,b; Filcheck & McNeil, 2003). Teachers should design classroom management procedures to allow SMA children to engage in tasks including schoolwork, following rules, and increasing the child's opportunity to respond around instructional material (Barkley, 1990; DuPaul & Stoner, 1994; Walker, 1997). Indeed, one of the most powerful ways of combating student misbehavior is to build a positive instructional flow between student and teacher, while creating many opportunities for the child to respond (Task Force on the Right to Effective Education, 1990). However, if this is not enough, and in many classrooms, it is often not enough, the teacher can employ a host of strategies.

Strategies for managing an SMA student's low-level misbehavior can help to lessen classroom tension and increase classroom safety (Rathvon, 1999). These strategies often involve changes in setting events or establishing operations and thus can prevent more severe forms of antisocial behavior. In addition, teachers can use Rathvon's (1999) strategies as neutralizing routines when they are indicated in a comprehensive functional behavioral assessment for more serious misbehavior. In other words, using effective classroom management techniques to minimize the occurrence or impact of maladaptive behaviors can head off potentially problematic classroom situations. In addition, teachers prefer classroom management techniques such as group contingencies to individual intervention. For example, a teacher reminding the class of the classroom rules as opposed to an individual child. This is for two reasons (1) when a teacher focuses on individual children, she/he may not be monitoring the entire room at that point (2) the teacher may be allowing the child to become a model of behavior that achieves teacher attention. Of course, serious behavior would always need individual level intervention. Also, more research needs to be done in the area of when to intervene and not to intervene with a particular child. As to how to intervene, researchers have identified many techniques since the early 1970s (e.g., Long & Newman, 1971). The following strategies, most suited for responding to minor misbehaviors, can help teachers deal with problem behaviors as soon as they occur (Long & Newman, 1971; Rathvon, 1999).

Planned ignoring. Ignoring is one of the most difficult techniques to teach. If a SMA student's behavior is not likely to harm or spread to others, a teacher might decide to simply ignore the behavior. Ignoring a maladaptive behavior blocks continued momentum for the student. In addition, it stops the student from modeling inappropriate ways to get attention from other students. Planned ignoring is especially pertinent if the behavior signals another problem. For example, a student who repeatedly sighs loudly could be signaling a loss of interest. Instead of responding to the sigh, a teacher should recognize that student's need to change activities soon. For a second example consider the student who drops a pencil. Calling attention to the action might create social reinforcement from other students. Knowing when to ignore and when not to ignore is a very important aspect of teaching SMA students. A modified version of planned ignoring is when a teacher trains the class in the beginning of the school year to ignore an acting out child when she gives a particular cue (McNeil, 1999). The teacher would train the class early in the school year through practice and positive feedback to ignore the responses. In general, the context and parameters of ignoring would be an excellent area of on going research.

Nonverbal signals. Another management factor that is important in dealing with SMA students is the use of nonverbal signals. Communicating with students about behavior through the use of nonverbal signals such as eye contact or gestures (for example, finger to lip to request silence) can have a powerful effect on lessening SMA student's disruption by conveying that they are being monitored and that consequences may be rendered. One significant benefit of using nonverbal signals is that their use does not interrupt other students.

Proximal control techniques. The third strategy that teachers can employ in their treatment of SMA children is the use of proximal control techniques. Sometimes, simply moving closer to a misbehaving student resolves the problem. Proximal control techniques work because they are signals to the child that the teacher is monitoring the child's behavior and that consequences may follow for inappropriate behavior. Students with SMA are thought to be more sensitive to nonverbal indicators of consequences than verbal ones because of it is typical for individuals to fail to follow through with verbal statements.

Increasing interest. Another technique that might help SMA children is incorporating activities that build their interest. If a student appears to be losing interest in a task or activity, a teacher can refocus attention by asking a specific question about the student's progress or by otherwise paying specific attention to the student's work. An early study of SMA children focused on the use of poetry to increase the student's learning (Rich & Nedboy, 1977). This study found that SMA children would readily complete poetry assignments and that these assignments were rated highly by the class. A more relevant and exciting curriculum could have a major impact on SMA students (Kauffman, 1994). Oftentimes, one could only wonder what the effect would be if American education devoted more time to teaching crafts and trades, especially with SMA children.

Humor. Sometimes tense moments between the teacher and the SMA student can be reduced through humor. Humor can change the entire context in which a behavior occurs (Skinner, 1957). It is important to note that humor should be used very judiciously so that it does not allow the student to interpret the teacher as weak. Furthermore, humor should never be at the child's expense.

Instructional hierarchy. It is important to address the instructional hierarchy with SMA students and ensure that expected work is at the instructional level. Teachers should be aware of the instructional level of SMA students to minimize the chance of frustrating a student by making unreasonable academic demands. Furthermore, academic behavior may be highly aversive to these children (Gunter, Denny, Jack, Shores, & Nelson, 1993; Shores, Gunter, & Jack, 1993). For some SMA students, beginning an assignment can be overwhelming. As a result, SMA students may refuse to start working or engage in adaptive misbehavior to facilitate an escape behavior. A teacher can assist SMA students and avoid a behavior issue by providing an example, asking questions to facilitate their thinking, or prompting them to follow steps.

Maximizing classroom structure. Creating more structure in the classroom can avert discipline problems. For example, having a child begin each day by hanging up her coat, going to her seat, and coloring the picture you have placed on her desk might help her avoid being disruptive. In addition, programming specific rewards during the day may

help in reducing conflict and conduct problems. For example, Tucci (1984) used a class movie at the end of the day as a reward for good behavior for children who were SMA and co-diagnosed with deafness.

Clear commands and rules. The types of commands that a teacher gives can have great impact on student behavior. Students are more likely to follow brief, simple clear commands compared to vague multitask commands (Walker, 1997; Richman & Wacker, 2001). Commands should highlight the reinforcer by focusing on starting a new activity, rather than just stopping an old activity (Walker, 1997). In addition, teachers should take into account the effects of momentum when switching an activity (i.e. if the child has placed much effort into the task often he will persist) and when building compliance for commands (by starting with commands that a child is likely to do and be praised for doing, then moving to other commands)(Strand, 2001). It is important that the teacher consider the child's comprehension level in creating directives and giving rules.

Antecedent control strategies. Antecedent control strategies can be extremely helpful in the prevention of SMA students' disruptive behavior. One such strategy is removing seductive objects. When a student brings Pokemon cards, radios, toys, or other distracting items to school, teachers should usually hold them for "safe-keeping." Other objects in the classroom environment can also become a focus for misbehavior, so the teacher should hide them. Another antecedent strategy would be to seat children in traditional seating rows instead of circles or groups. This lessens the amount of stimulation on a child. Another technique would be to seat disruptive children closer to the teacher and distractible children away from windows. Finally, sitting a disruptive student next to a mature and popular student who is cooperative, can lead to behavioral gains.

MORE ELABORATE CLASSROOM MANAGEMENT SYSTEMS: CONTINGENCY MANAGEMENT BASICS

In many instances, students' behavior problems may need a more long-term and systematic intervention (Walker, Colivin, & Ramsey, 1995) with booster trainings later (Conduct Disorder Prevention Research Group, 1999a). For example, the Conduct Disorder Research Prevention Group (1999b) conducted intensive intervention to build skills and

prevent conduct problems in the first and second grade as well as in the fifth and sixth grade. Technology, like classroom token systems (a form of contingency management system), has shown benefit since the early 1970's (Axlerod, 1971). Contingency management programs are well established in the treatment and prevention of conduct problems in both the home and the classroom (Health and Human Services, 1999), we will review the basic terminology and methods for potential users. Contingency management interventions should focus on increasing desirable behavior a student displays in addition to decreasing the undesirable behavior (Carr, et al. 2002).

A single conversation with the student or sporadic attention to the problem is typically not enough to address conduct problems in children. This is especially true if a student's behavioral excess is an out growth of a particular deficit of the child, which is well pronounced. For example, if using a teacher Vineland Scale of Adaptive Behavior, the behavior analyst finds that a child is two or more years behind in that particular skill area. If this is the case then attempting to remediate the deficit through instruction and reinforcement of that alternative behavior to fill the deficit could take time. Although the principles for responding to student behavior are the same whether the teacher is using simple or more systematic interventions (i.e., based on the behavior analyst's 3-term contingency diagram), the latter responses are usually carried out across time in a consistent manner as part of a formalized behavioral intervention plan. The former, simple interventions, teachers use informally and occasionally.

All students, even the most challenging, have some appropriate behaviors for a teacher to increase (Filcheck & McNeil, 2003). The primary strategy for doing this is a catch them being good strategy and rewarding the good behavior. If they do not display particular behaviors, the teacher is interested in, formal instruction or shaping (reinforcement of successive approximations to the target goal) can be used.

In a contingency management system, the primary strategy for increasing appropriate behavior is reinforcement. Reinforcement, particularly positive reinforcement, has become the hallmark of many applied behavioral analysis interventions. Reinforcement is any consequence, including a response from another child or teacher, that increases

the future probability of a behavior. This principle is the basis of token economies in the classroom (Birnbrauer & Lawler, 1964). It is important to realize that reinforcement is a definition of a basic principle of behavior from which a token system is but one procedure. Another procedure may come in an interaction between the teacher and the student. Reinforcement can increase negative as well as positive behaviors. For example, when a teacher puts a sticker on a student chart because the student completed his assignment without calling out for unneeded help, the student is more likely in the future to continue to work independently. However, when a teacher says to a student who is wandering around the classroom, "Sit down!" the attention may reinforce the student's behavior and thus the student is more likely to wander again in the future. In both instances, the teacher used positive reinforcement. In the first case, it rewarded a desirable behavior; in the second, it rewarded an undesirable behavior.

A teacher can deliver a more precise use of reinforcement using the attention training system (DuPaul, Guevremont, & Barkley, 1992). This system is a machine placed on the child's desk. The teacher presses a button and the machine registers the child's gain or loss of a point. This method provides immediate feedback for children as to their performance.

Another way that a teacher can use reinforcement is through group contingencies (Axelrod, 1983). Group contingencies are utilized when the entire class receives a consequence for particular behaviors. Group contingencies are very effective in decreasing classroom disruption and in seat behavior for children. Some literature exists to show that group contingencies can be as effective as a functional analysis and individual contingencies in the treatment of aberrant behavior (e.g., Twernbold-Schill, Kratchowill, & Elliot, 1998). In addition, teachers may perceive group contingencies as more fair and thus have the added benefit for all in the class who are treated the same.

Positive and negative reinforcement.

When a teacher responds to a SMA child's behavior, and the target behavior becomes more likely to occur again, the teacher is using positive reinforcement. For example, a teacher tells a student that after she completes five social studies questions, then she may use the computer. If she completes all of

the problems, the teacher is reinforcing social studies completion through the computer reward. It is important to remember that reinforcement is not just an artificial intervention created by behaviorist but that reinforcement is a naturally occurring process, harnessed and tailored by behaviorists (Alberto & Troutman, 1995).

Negative reinforcement, or escape, differs from positive reinforcement in that the behavior allows the person to terminate an aversive stimuli in the environment. For example, suppose a teacher sets up a system with a freshman foreign language students whereby they must complete and turn into class assignment each day in order to option out of a nightly homework assignment. Because students typically see homework as an undesirable consequence, they will increase the rate of completing the class assignment. Any increase in behavior to avoid a consequence is the result of negative reinforcement. Both positive and negative reinforcement increase the future probability of a behavior occurring (Alberto & Troutman, 1995). Although negative reinforcement can be effective, positive reinforcement should be favored since it is preferable to have students working toward a positive outcome rather than under the threat or perception of a negative consequence.

Reinforcement Controversy

Some individuals, including psychologists and teachers, object to using positive reinforcement with any students. They fear it teaches students that they are entitled to a payoff for appropriate behavior or that frequent use of reinforcement will sidetrack the child to think of the reward instead of the behavior (Kohn, 1996). They contend that students should complete their schoolwork and behave appropriately because these are the right things to do. These moralists desire the child to make changes because of an awareness of social norms and expectations. This discussion is often addressed as one of external versus internal motivation. This fear has proven largely to be a myth (Eisenberg & Careron, 1997; Pierce & Cameron, 2002). Across educational settings, meta-analytic reviews have found that decreases in motivation are usually attributable to poorly designed programs rather than rewards (Cameron & Peirce, 1996; Eisenberg & Cameron, 1997). In addition, although it certainly would be preferable for all students to have a history that makes learning important and a reinforcer, itself, or to behave

appropriately because it “feels good”, for the most part this is not the case. Usually students who respond out of “internal motivation” are the students who have an extreme interest in the topic, or have a history of repeated successes in the subject over time. While for these students the use of external reinforcers is not important, SMA children typically fall outside this category. Thus, the use of reinforcement is a reality in today’s schools, particularly in the case of SMA children.

Types of reinforcers that teachers can manipulate

Often teachers are unaware of the types of reinforcers that they hold in their classroom. Some teachers confuse student rights with student privileges. Privileges are things earned; rights are basic entitlements. Once teachers recognize the distinction between rights and privileges, they will automatically have more control over their classroom because they will understand just how many reinforcers of the student’s they control. These reinforcers can help in managing the misbehavior of many students, as long as the reinforcers are given contingent on performance. Some typical reinforcers are:

Social reinforcers. Social reinforcers are various types of positive interactions that a teacher, parent, or peer can give students for appropriate behavior that increase the target behavior. These reinforcers might include a positive phone call home to parents, a pat on the back or a hug, verbal praise, or selection as citizen of the month. Teachers should try social reinforcers, especially clear and specific verbal praise, before other positive reinforcers since they are the most natural reward in a school environment. If it is necessary to employ other types of rewards, teacher should use them in conjunction with social reinforcers since a teacher’s long-term goal should always be to have students respond to rewards that occur naturally in their classroom environment. With SMA children, social rewards are relatively ineffective (Roberts, 1999).

Activity reinforcers. Activity reinforcers involve events such as playing games, having extra recess, helping a teacher in another class, and participating in other coveted individual or group pastimes. Generally, activities that directly relate to a student’s educational goals are preferable to those that are solely recreational. However, some literature exists showing the effectiveness of free time as a

reinforcer for following classroom rules (Axelrod, 1983).

Tangible reinforcers. Tangible reinforcers are prizes or other objects students can earn as symbols of achievement. A student who is earning baseball cards or a certificate for completing assignments is receiving a tangible reinforcer. Sticker on paper is another example of this type of reinforcer. Tangible rewards can often be naturally integrated into classroom activities and have been shown to be effective in motivating student's to perform. For the skilled teacher that uses a token system, the pokeman card given at the end of the school day for good work is a wonderful boon.

Primary reinforcers. Primary reinforcers are items related to human needs for survival such as food. Keep in mind several things when using primary reinforcers. First, the potential negative impact of food on student health is a concern. Second, food is not a natural part of the learning process. Finally some people are allergic to certain foods. This being said, an occasional pizza party as a group contingency for the completion of work assignments can be immensely helpful.

Achievement as a reinforcer. Some students will be motivated by success in a particular activity. This is certainly the case when a student competes with other students or to beat their own personnel best (Axelrod, 1983). While the other reinforcers are not natural to situations, achievement is often a natural part of life (for the distinction between natural vs. contrived reinforcers see Skinner, 1982).

Effective use of positive reinforcers

Teacher can do several things to enhance the effect of positive reinforcers. First, to make sure that the positive reinforcers are clear and specific and those students understand the relationship between their behavior and rewards. Second, teachers can vary how much and how often they reward students. Intermittent reinforcement is more resistant to the effects of extinction (Alberto & Troutman, 1995). Finally, teachers should make sure that the rewards are desired. Teachers are often amazed with how simple systems applied consistently can over time make a major difference in a child's behavior.

Effective use of punishment procedures

Consensus in the field of education is that SMA children cannot be completely remediated with an all positive system (Walker, Colvin, & Ramsey, 1995). In such cases teachers may need to use mild but effective punishment procedures such as overcorrection (Foxx & Azrin, 1972). Restititional and positive practice overcorrection has shown some success in dealing with many behavior problems including disruption (see Axelrod, Bratner, & Meddock, 1978 for review and parameters for effectiveness). Another technique used is that of Time-Out. Time out has demonstrated effectiveness in reducing disruptive behavior (see Crespi, 1988; Harris, 1985 for parameters). It is important to note that students can use time out as a form of task escape and thus the importance of combining time-out with a good functional analysis is critical to success. Finally, response cost procedures are effective in decreasing inappropriate behavior (Walker, 1983; Zirpoli & Melloy, 1997). Response cost and other punishment procedures should be combined with some form of token system designed to build appropriate behavior (Zirpoli & Melloy, 1997).

SOCIAL SKILLS TRAINING, PROBLEM SOLVING TRAINING, AND ANGER MANAGEMENT TRAINING

Some research exists demonstrating the effectiveness of training alternative social responses (Alberg, Perry, & Eller, 1994; Knapczyk, 1988; Graham & Cline, 1989; Koch, 1988; McGinnis & Goldstein, 1984). In such programs, children are taught to negotiate conflict between them and another or to use a mediator to help settle disputes (Rathvon, 1999). In general, these types of programs have small (Fornes et al., 1997) to moderate success (Zaragoza, Vaughn, & McIntosh, 1991). While these programs address skill deficits that impede change, they frequently miss the motivational deficits. Motivational deficits may be due to histories of violence and aggression and may explain why these children see nonhostile situations as hostile (Bierman, Miller, & Stabb, 1987). In these cases, it might be prudent to embed a social skills training program within a contingency management system as with the RECESS program.

The above appears to be true to some extent for problem solving training. In problem solving training, children learn to identify the problem, generate solutions, and enact solutions (Kazdin, 1996,

1997). Twenty sessions of problem solving skill training by itself has outcomes superior to relation-based psychotherapy (Kazdin, Esveldt-Dawson, French, & Unis, 1987; Kazdin & Wassell, 2000). However, it was not until the problem solving group's parents received training in behavioral parent training (a procedure which utilizes contingency management as stated below), did the child return to the normal range of functioning (Kazdin, 2000).

PULLING IT ALL TOGETHER (THE RECESS PROGRAM)

Walker, Hops and Geenwood (1993) developed a comprehensive program for intervening with children who are SMA. The program is titled the Reprogramming Environmental Contingencies for Effective Social Skills (RECESS). This program uses a combination of script training for social skills, with praise and other forms of positive reinforcement, as well as a response cost program for rule infraction. Some of the social skills that are taught in the RECESS program are peer entry skills and conflict resolution skills. The RECESS program has proven to be powerful for young SMA children in grades K-4. Specifically, the program has been shown to decrease aggression, lessen peer rejection and build pro-social peer behavior.

De-escalation Procedures

Walker, Colvin and Ramsey (1995) hold that all SMA students should have a clearly written de-escalation procedure that is both understandable by the child and is feasible. They outline a seven-step de-escalation procedure that views the escalation cycle as a series of steps in a behavioral chain and the matching law for alternative responses (see Shukla-Mehta & Albin, 2002). By learning the specific steps and tying those steps directly into intervention, one may prevent the child from continuing in the escalation cycle. In addition, the de-escalation procedure should be designed in a way to teach the child pro-social and self control skills. They arbitrarily label these seven stages as: calm, trigger, agitation, acceleration, peak, de-escalation, and recovery. General strategies are identified for each stage. Also when strategies can be harmful are identified.

Developing Moral Behavior

Much is written on the development of conduct disorder. From a behavioral perspective

conduct disorder can be seen as a deficiency in rule governed behavior (Skinner, 1966). Skinner (1966) posited that two different types of behavior occur: those learned from words (rule governed) and those learned by experience (contingency shaped). Failure to understand, acquire, respond to, or generate verbal rules can cause "moral" problems (Kurtines, 1984, 1987). Hayes, Gifford, & Hayes (1998) outlined a detailed account of how such behavior develops based on a child's learning history. Briefly stated, a child first learns to comply to rules of others, then the child learns a general awareness of the rules, and finally the child learns to listen and modify rules to the current situation.

Barkley (1997) has taken this model and applied it to attention deficit disorder and his modification of stages can be applied to conduct disorder children. According to Barkley (1997), children begin with compliance and then start a process of active rehearsing speech. This speech becomes directed into an active problem solving of events. After the child has mastered this level, the speech gradually becomes subvocal. Thus, interventions can be based on where the child is stuck in the process to aid in building self-control.

Compliance training

Noncompliance is simply not doing what is requested (Patterson, Reid, Jones, & Conger, 1975; Herbert, 1978). Compliance can be seen from a developmental perspective (see Reigler & Baer, 1989). In this model, compliance develops in children from frequent interactions with parents early in childhood. Frequent following of parental rules is reinforced by parents. After many pleasant results from complying, children may begin to develop general compliant behavior. In the final stage, children begin to generalize their own rules (Reigler & Bear, 1989).

Noncompliance is considered a central diagnostic feature for young children with oppositional behavior (Herbert, 1978). While compliance rates in normal children vary between 60% and 80%, for children with conduct problems, compliance is about 40% (Forehand, 1977). Several factors might contribute to this problem. First, in families systems that produce CD and ODD, coercion is often very high and a functional value exist for hostility (Patterson, 1976; Walker, Colvin, & Ramsey, 1995). Second, coercive families may inadvertently

produce communication deficits (Blager & Martin, 1976).

Children from coercive families are at risk to develop deficits in language comprehension (Blager & Martin, 1976; Fox, Long, & Langlois, 1988). Indeed, the correlation between CD and language difficulty is high (Loney, Frick, Long and Langlois, 1988). Blager and Martin (1976) suggested that children in abusive homes learn not to speak and hence do not practice language skills. The practice of language skills has been shown to increase the ability to use language (Hart & Risley, 1996; Moerk, 1996). In addition, this relationship may be a reciprocal one, that is children with speech and language problems may be more likely to set off a coercive family pattern for their failure to comply with request due to misunderstanding or misinterpreting (McCauley & Swisher, 1987).

Children who suffer from comprehension deficits, and exhibit poor compliance, can be taught comprehension monitoring techniques (see Dollaghan & Kaston, 1986). In such a program the child may be taught to identify, label, and demonstrate three behaviors associated with listening (looking at speaker, saying to themselves what the speaker is saying, sitting still). In the second phase, children are asked to detect factors that might lead to statement inadequacies such as insufficient loudness, message to quick, presence of competing messages, ambiguous messages, or highly complex messages. Next, children are encouraged to ask questions to elicit information that they did not understand. Finally, children engage in role-playing of the skills that they were trained and given feedback as to their performance. Positive reinforcement is provided contingent on successful paraphrasing of messages and follow through with content.

Programs that specifically work on child compliance may have generalized effects to other areas of aggressive functioning (Russo, Cataldo, & Cushing, 1981). These programs highlight basic antecedents to compliance such as using the child's name, being within 3 feet of the child when making a request, making eye contact, using a firm clear voice, and using a statement rather than a question format (McMahon, 1999). In addition, it is important to allow the child the opportunity to respond (Forehand & McMahon, 1981; Walker & Walker, 1991). With young children a teacher should avoid reason giving, vague directions, or question directions (Forehand &

Long, 1996). These programs also highlight the importance of using rewards for compliance and mild punishers such as time out for noncompliance.

Incorporating the concept of behavioral momentum and reinforcement matching may enhance compliance programs (Strand, 2001; Walher & Herring, 1999; Strand, Wahler, & Herring, 1999). One way that momentum is currently being explored is by reinforcing child social approach. Children might be more likely to comply with requests after their social approach has been rewarded with attention (Walher & Herring, 1999). For example, Johnny approaches his parent with a problem that he is having at school. If the parent takes a few moments and listens to the problem and then asks John to hand him a book, John will be more likely to comply then if he was just asked to hand him a book.

Correspondence training

While research on traditional cognitive therapy techniques for SMA children have not found support (Stein, 1999), some literature shows that correspondence training holds promise for effectiveness. Correspondence training refers to programs that attempt to build a child's skill at following rules by targeting what are commonly called truthfulness and follow through (Paniagua, 1989). In the original study on the subject, Risely and Hart (1968) demonstrated changes in nonverbal behavior indirectly by programming reinforcement contingently on a relation between verbalization of a specific pinpointed target behavior and the behavior itself. This phenomena has received much attention in basic research (see Isreal & Brown, 1977; Matthews, Shimoff, & Catania, 1987; Paniagua & Baer, 1982, 1985, 1988; Paniagua, 1992; Paniagua, Stella, Holt, Baer, & Etzel, 1982; Ribeiro, 1989; Rogers-Warren & Baer, 1976; Williams & Stokes, 1982) and in work with various clinical populations (Baer, Osnes, & Stokes, 1983; Jewett & Clark, 1979, Keogh, Burgio, Whitman, & Johnson, 1983; Paniagua, 1985, 1989, 1990, 1992). As the name suggests, correspondence between saying and doing or doing and saying is the critical factor to provide reinforcement value. The "do say" program is often set up in the following way, the child does something and then is asked to report on what he did. If correspondence occurs, then condition one is met to gain the reinforcer. The second condition involves the particular behavior that the child has been questioned about. If what the child did was bad, they

are thanked for truthfulness, while if what the child did was the targeted behavior, then they gain a reinforcer. It is important to note that the child's behavior is reinforced in either condition. While correspondence training may be useful, it needs to be combined with a functional behavioral assessment because environments can exist which will make lying more adaptive and neutralize such programs (Cautilli & Hantula, 2000).

Empathy and perspective taking

While the correlation between empathy and the development of prosocial behavior exists (Eisenberg & Miller, 1987), it is a small and inconsistent (Holmgren, Eisenberg, & Fabes, 1998). Holmgren and colleagues (1998) found that teacher empathy ratings were predictive of pro-social behavior, while family and peer ratings were not. While this debate continues, several research programs have developed to train children and adult antisocial in empathy (e.g., Cautela, 1996) and perspective taking. It remains to be seen if such programs have treatment utility.

Interventions to remediate speech deficits

Children with conduct disorders often have severe deficits in language and verbal skills (Loney, Frick, Ellis, & McCoy 1998). Interventions to increase the SMA child's ability to use words to settle situations instead of physical aggression may depend on the child's level of fluency with speech. This has been the approach adopted by functional communication training programs (Carr & Durand, 1985). Such programs recognize that mass trial and highly structured formats may not be needed for SMA children who are usually higher functioning and have developed models that use less cueing (Halle, Baer, & Spradlin, 1981). Some research does exist on individual differences and language training formats (e.g., Yoder, Kaiser, & Alpert, 1991) but much more data in this area is needed. In addition, the influx of theory (i.e., Skinner, 1957) has led to increased numbers of training procedures and the integration of desperate procedures (Sundberg, 1999). This return to theory is particularly important since Hart and Risely's (1999) work showing that language can be studied using the techniques and is subject to the same law as motor and other forms of behavior.

Research exists to show that disruptive behavior (not necessarily in SMA student's) can be

decreased by communication training (Jayne, Schloss, Alper, & Menscher, 1994). Jayne and colleagues (1994) showed that student disruptions can be decreased by teaching them to ask for help. Models such as this show an area of integration between social skills training programs and language training programs.

Looking at effective teaching technology

While initial enthusiasm around the education of social maladjusted children led to an experimental program being run in New York City, the initial results of this program showed that minimal educational progress was made by students (see Joiner, 1971). This review cast a damper on the ability to educate children who were diagnosed with SMA. Still individual programs did exist that were effective in educating this group (e.g., Bergath, 1972). Bergath reported a program involving fifty children diagnosed with SMA that resulted in significant improvement on reading and arithmetic. The approach attributed its success to modifying the behavior of students, while working on the basic skills reading and math skills, as measured by standardized tests.

One approach that is extremely effective in education (Forness, Kavale, Blum, & Llyod, 1997) and emphasizes the development of basic skills is the direction instruction program (Hyman, 1997). Hyman (1997) goes on to describe direct instruction as superior to all other approaches in project follow through with the respect to students acquisition of basic skills. Students who are at risk for school performance have generally found considerable help from direct instruction (Englemann, 1968; Forness, Kavale, Blum, & Llyod, 1997; Gersten, Carnine, & White, 1984). Direct instruction combines the basics of operant technology with the concept of learning rules (Englemann, 1968). Direct instruction programs are related to positive gains in both reading and math (Biloine, 1968; Meyer, Gersten, & Gutkin, 1983; Aukerman, 1984). In one study, 34% of the children who received one year of direct instruction went to college, while only 17% of the children in the control school went to college. Campbell and Ramey (1989 cited in ERIC) stated that children who received direct instruction in the early intervention program in the Carolina Abecedarian Project suffered much less school failure and less social maladjustment. Direct instruction, which trains children in auditory comprehension, may be of dual benefit for SMA

children. In this case the curriculum will not only effect the child’s academic skills but also, where compliance may be low due to lack of comprehension, remediate the comprehension deficit.

Early suggestions in the education of SMA children suggested that programmed instruction was a possible way to combat student “anti-learning” experiences (Cohen, 1966). This area still remains fertile ground. The role of computer assisted instruction and programmed instruction to combat negative learning experiences and move student’s along at their pace remains an interesting hypothesis.

The Task Force on the Right to Education (1990) list the following factors as being important in all student education: assessment of current performance, correspondence between current performance and placement, instructional methods that allow for the student to master the skills, clear feedback as to the correctness of answer, training teachers in performance based techniques, and reports that objectively measure progress. Each of these factors has considerable research data to support its identification as effective. Yet unfortunately for SMA children many educators will deny the existence of such techniques (Axelrod, 1993).

Looking at parenting education

While many factors are involved in the development of SMA children, the factor that research consistently highlights is the moment-to-moment interaction between parent and child (Dadds, 1987; Snyder & Patterson, 1995). Observational studies of parent and child interactions show that SMA children come from families with strong parental deficits in use of positive rewards for the child and increased reliance on coercive means of control (Snyder & Patterson, 1995; Cerezo, 1997; Wahler & Dumas, 1987). The increase in coercive tactics by a parent is often considered maltreatment of the child (Cerezo, 1997; Wahler & Dumas, 1987). An alternative path that may or may not run in tandem with this is the parental inconsistency model (Walher & Dumas, 1987; Walher, Williams, & Cerezo, 1990). In this model, parental inconsistency is considered aversive for the child and as a result, they engage in antisocial behavior to gain parental consistency and attention (Patterson, 1976; Synder, 1977; Wahler & Dumas, 1989; Wahler, Williams, & Cerezo, 1990). Often these two processes lead adults to view the antisocial child as aversive and thus avoid monitoring

the child. Lack of parental monitoring has held as a predictor of deviant behavior across culture (Forehand, Miller, Dutra, & Watts-Chance, 1997; Lamborn, Dornbusch, & Steinberg, 1996).

Table 1- Parenting Programs

Program	Age Range	Evidence for generalization	References to generalization
Helping the Noncompliant Child (Forhand & McMahon, 1981)	3-8	1. Setting generalization 2. Temporal generalization/maintenance (1 to 4.5 years) 3. Sibling 4. Behavioral	1-2 Forhand & Long (1988) (1-4.5 years) 3. Humphreys, Forhand, McMahon, & Roberts, (1978) 4. Wells, Forehand, & Greist, (1980)
Oregon Social Learning Program (Patterson, 1975)	3-12	1. Setting 2. Temporal/maintenance (1 to 2 years) 3. Sibling 4. Behavioral	1-4 McMahon & Wells (1998); Brestan & Eyeberg (1998).
Defiant Child (Barkely, 1997)	2-12	1. Setting 2. Behavioral	1-2 Barkley (1997)
Oregon Social Learning Program (Forgatch & Patterson, 1989)	12-18	1. Setting 2. Temporal (1-3 years)	1-2 McMahon & Wells, 1998
Functional Family Therapy	12-18	1. Temporal (1-2.5 years) 2. Sibling	1-2 McMahon & Wells (1998)
Multisystemic Therapy	12-18	1. Temporal (1 to 4 years) 2. Behavioral	1. Henggler, Smith, Schoenwald, & Hanley (1993) 2. Henggler, Melton, & Smith (1992)

One current treatment of choice for children who are SMA is behavioral parent training (Brestan & Eyeberg, 1998; Miller & Printz, 1990; Task Force on Promotion and Dissemination of Psychological Procedure, 1995) and family therapy programs that draw heavily on behavioral parent training (i.e., Henggler, Schoenwald, Borduin, Rowland, & Cunningham, 1998; Alexander & Parsons, 1982; see Kazdin, 1987 for review). Behavioral parent training programs are successful for both children and adolescences (See Table 1). Meta-analysis of procedures demonstrates that behavioral parent training exhibits large differences in effect size over other less structured forms of treatment (Lipsey, 1992; Weisz & Weiss, 1993). In addition, these results seem to be more based on treatment model then on individual differences (Weisz & Weiss, 1993).

Behavioral parent training teaches parents to use basic principles such as the importance of clear rules, consistency, monitoring, reinforcing

appropriate behavior, and punishment to reduce child's aggressive and antisocial behavior. Conservative estimates for behavioral parent training have stated that anywhere between of 50-66% of children with disruptive behavior patterns function in the normal range at the termination of treatment (Dishion & Patterson, 1992; Ruma, Burke, & Thompson, 1996)

Since parents control a great deal of the child's home environment, it is critical to try to incorporate them into the program. Forehand, Sturgis, McMahon, Aguar, Green, Wells, & Breiner, (1979) showed that training the parents to compliance train children in the home readily generalized back to the school setting. However, as Walker and colleagues (1995) point out, these parents often have no interest in being involved in such programs. Early studies found that parent's were willing to give opinions on ways to better student's performance in the school and that giving these opinions often led to the parents having an improved outlook on the child's education (Williams, 1969). Thus, parental involvement might be a good way to at least ensure that parent's are not detrimental to treatment. One way to increase parent interest in behavioral parent training programs may be to increase the cultural relevance of such programs (Shaffer, Kotcheck, Dorsey, & Forehand, 2001). Still more data would be needed before this is conclusive.

One technique for involving parent's is the daily report card (Kelly, 1990; Shapiro & Cole, 1994). Daily report cards have shown effectiveness in reducing childhood aggressive behavior (Gresham, 1983). In such procedures the child can bring home a report and the parent records the child's progress and charts on behavior changes applying appropriate home contingencies. Given the clear superiority of behavioral aren't training and other family interventions, schools and charters should emphasize such programs for children with SMA.

REVIEW OF LITERATURE ON HARMFUL INTERVENTIONS

While once educating the SMA child in a group with other SMA children was considered a beneficial service delivery option (e.g., Spivack, 1961), recent research shows this practice to be problematic and led to clients becoming more antisocial (McCord, 1992; Feldman, 1992; Dishion, McCord, & Poulin, 1999). One striking study was conducted by McCord (1978, 1992) in which a 30

year follow up showed that children who engaged in the Cambridge-Somerville summer youth program were more likely to engage in criminal activity than matched peers. This matter has received careful investigation and support from other "prevention programs"

O'Donnell (1992) reported similar problems when he began his program of behavior modification. He found that children in the program who had more than a year of prior delinquency actually regressed though-out the program. He began to employ the concept of activity setting into his program. In the activity setting model factors such as space, seating arrangements, and access to group activities were highlighted. He highlighted the role of monitoring or what he termed "manning" issues in the development of antisocial behavior (O'Donnell, 1980). In addition, he looked at the proximity to other SMA peers. He found that SMA children build social networks in which antisocial interaction is favored.

The impact for teacher's and educators is clear, programs for delinquent children that group SMA children, can run the risk of making the child worse. In addition, given the large amount of literature to this effect, to ignore this may constitute malpractice. One current practice that should logically be reassessed are pullout programs for delinquent youth.

SUMMARY AND CONCLUSIONS

While children who suffer from social maladjustment are not entitled to benefits under IDEA 97, they are entitled to protect from the Americans with Disabilities Act. They are entitled to this protection because they have a clear psychiatric condition of either oppositional defiant disorder or conduct disorder. As is the case in business (Hantula & Reily, 1996), disabled children are entitled to receive effective supervision and support to maintain them with their peers. It would be tempting for this problem to be left to the legal system to correct (Axelrod, 1992) and we believe that indeed much of it will need this level of intervention. However, it is important to realize that the legal system has in the past failed to protect this population.

Teachers need to recognize SMA children as having great potential. They can either be a drain on the system or they can become active and productive members of society. To become active members, their

education needs to focus on both the training of skills and the remediation of aberrant and aggressive behavior. Two types of programming are of particular importance (1) powerful performance based instructional strategies to build positive teacher/student instructional flow and (2) contingency management programs, which have proven extremely successful.

As services continue to grow, many ideas need further exploration. For example, the role of the school in educating the family on parenting and long term care for unskilled children is an area ripe for future work. One area of intervention in this line is the teaching family model (Wolf, Braukmann & Ramp, 1987). In this model seriously delinquent adolescents are carefully matched to a teaching home. The goal is to provide the youth with the habilitative skills needed to survive in a warm and supportive environment. An area that this could be extended to is taking the youth's whole family into a mentorship type of program that provides support and guidance on monitoring the delinquent youth and specific instruction on parenting skills.

Another area that warrants further exploration is the use of group entry skills and general social skills to help children with conduct problems enter into nonviolent peer groups (Williams, Walker, Holmes, Todis, & Fabre, 1989). Such skills may benefit the child by giving alternative responses for situations. However, these programs often fail to offer a motivation for change due to a lack of support by the natural contingencies of the environment.

A final area that needs to be developed is transitioning from the classroom into the work world. As SMA student's transition, it is imperative that they have the necessary skills, both academic and social, to obtain a job and hold the position.

As a nation, we have reached a critical point in history. We can continue to lead the world in building prisons or we can attempt to make changes to socialize the most difficult part of our population, early. This population remains our "undiscovered country." The untapped potential is enormous. With intervention they can be our store keepers, molecular biologists, lawyers, mechanics, or information technologists of the future. Without it they will be our drug addicts, burglars, rapists, and murders. In short, the life you save by intervention may be your own.

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ANGER MANAGEMENT INTERVENTIONS

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Two anger management interventions for aggressive children, Anger Coping and Coping Power, are described in this review article, including conceptual underpinnings, session format and content, and outcome research findings. Important issues and considerations in the implementation of such interventions are also presented. Overall, Anger Coping and Coping Power have emerged as effective interventions for angry, aggressive children and represent useful resources for clinicians' work with this population.

CONTEXTUAL SOCIAL-COGNITIVE MODEL OF ANGRY AGGRESSION

The social-cognitive model serving as the conceptual framework for the Anger Coping Program and the Coping Power Program began as a model of anger arousal (Lochman, Nelson, & Sims, 1981). In this conceptualization of anger arousal, which stressed sequential cognitive processing, the child responded to problems such as interpersonal conflicts or frustrations with environmental obstacles (e.g., difficult schoolwork). However, it was not the stimulus event itself that provoked the child's anger and response, but rather the child's cognitive processing of and about that event. This first stage of cognitive processing (appraisal) consisted of labeling, attributions, and perceptions of the problem event, and of the child's subsequent anger. The second stage of processing (problem solution) consisted of the child's cognitive plan for his or her response to the perceived threat or provocation. This early anger arousal model indicated that the child's cognitive and emotional processing of the problem event and of his or her planned response led to the child's actual behavioral response and to the positive or negative consequences that the child experienced as a result. Our current Contextual Social-Cognitive model (Lochman & Wells, 2002a) includes a more comprehensive understanding of social-cognitive processes, maintains an emphasis on anger arousal, and includes recognition of the contextual factors which contribute to children's aggression.

Social cognition.

The current social-cognitive model of children's aggression (Lochman, Whidby, & Fitzgerald, 2000) underlying the child component of the Coping Power program evolved in large part because of research on aggressive children's social information-processing (Crick & Dodge, 1994). At the appraisal stage of processing, aggressive children

have been found to recall fewer relevant cues about events (Lochman & Dodge, 1994), and to selectively attend to hostile rather than neutral cues (Gouze, 1987; Milich & Dodge, 1984). Aggressive children have been shown to have a hostile attributional bias, as they tend to excessively infer that others are acting toward them in a provocative and hostile manner (Katsurada & Sugawara, 1998; Lochman & Dodge, 1994, 1998).

At the problem solution stage of social-cognitive processing, aggressive children offer fewer competent verbal problem solutions (Dunn, Lochman, & Colder, 1997), including verbal assertion and compromise solutions (Joffe, Dobson, Fine, Marriage, & Haley, 1990; Lochman & Dodge, 1994; Lochman & Lampron, 1986), and more aggressive and direct action solutions (Lochman & Lampron, 1986; Pepler, Craig, & Roberts, 1998; Waas & French, 1989) to hypothetical vignettes describing interpersonal conflicts. Aggressive children cognitively generate more aggressive strategies in part because they expect that aggressive behavior will lead to desired outcomes (Lochman & Dodge, 1994; Zelli, Dodge, Lochman, Laird, & The Conduct Problems Prevention Research Group, 1999).

Anger arousal.

Anger is defined as an emotional response to situations that are perceived as threatening or offensive to oneself or others close to them (Lazarus, 1991). Anger can prove adaptive in that it is a motivator for action and tends to focus one's

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resources toward the threatening or offensive event (Goleman, 1995). Anger is a key element in the natural “fight or flight response” and provides mobilizing arousal to “attack” the source of the threat. However, people have difficulty controlling the emotion of anger, and intense and uncontrolled anger is related to aggression and conduct problems including Conduct Disorder (Lochman, Dunn, & Wagner, 1987).

Because anger is a key component of the “flight or fight” response, physiological correlates of anger are expected. The literature indicates clear physiological response to emotional arousal, and more specifically to anger. The physiological response research suggests that anger is indeed a response to perceived threatening stimuli, and response varies with the individual’s appraisal of the situation. Heart rate and blood pressure are two typically measured physiological responses in the study of anger arousal. Angry, aggressive children tend to have lower resting heart rates and higher heart rate reactivity to anger-provoking stimuli (Raine, Reynolds, Venables, & Mednick, 1997; Scarpa & Raine, 1997). Elevated resting blood pressure levels and high reactivity to stress have been paralleled to an angry, hostile, “Type A” temperament in adults as well as children (Pine et al., 1996).

Contextual influences. A variety of contexts affect children’s behavior and social competence, including the family environment, the peer context, and the neighborhood context. Of these, parenting practices have particularly robust effects on children’s behavior. Parental physical aggression, such as spanking and more punitive discipline styles, relate to later oppositional and aggressive behavior in both boys and girls (Stormshak, Bierman, McMahon, Lengua, and The Conduct Problems Prevention Research Group, 2000). Low parental warmth and involvement also significantly predicts physically aggressive punishment practices (Stormshak et al., 2000). Weiss, Dodge, Bates, and Petit (1992) found that ratings of the severity of parental discipline were positively correlated with teacher ratings of aggression and behavior problems. In addition to higher aggression ratings, children experiencing harsh discipline practices exhibited poorer social information processing even when controlling for the possible effects of socioeconomic status, marital discord, and child temperament.

These results suggest that uninvolved and cold parents tend to be more aggressive in their punishment practices resulting in more aggressive and/or oppositional children with poorer information processing skills. It is important to note that although such parenting factors are associated with childhood aggression, it is possible that child temperament and behavior may also have some effect on parenting behavior. Such evidence indicates the probable bi-directional relation between child and parent behavior.

Poor parental supervision behaviors have also been associated with child aggression. Haapasalo and Tremblay (1994) found that boys who fought more often with their peers reported having less supervision and more punishment than boys who did not fight. Interestingly, the boys who fought reported having more rules than the boys who did not fight, suggesting the possibility that parents of aggressive boys may have numerous strict rules that are difficult to follow.

THE ANGER COPING AND COPING POWER PROGRAMS

Based on this contextual social-cognitive model, we have developed two anger management programs: the Anger Coping Program and the more recent Coping Power Program. In this section we will provide a brief overview for each program, and will briefly review the empirical support for these programs.

Anger Coping

Format and target population. Anger Coping is a cognitive-behavioral group intervention designed to reduce aggressive and disruptive behaviors by enhancing children’s abilities to cope adaptively with difficult situations and feelings (Larson & Lochman, 2002; Lochman, FitzGerald, & Whidby, 1999). The program was developed for implementation in the school setting with fourth- to sixth-graders, though it can be adapted for a younger or older group. Groups typically consist of four to six children identified by school personnel as demonstrating problems with aggression, anger control, or other disruptive behaviors. To benefit from the program, children should demonstrate awareness of the problematic nature of their behavior and a desire to make changes. Children who are more rejected by their peers, demonstrate extremely poor problem-solving skills, and have lower levels of perceived hostility demonstrate the most improvement after participation

in Anger Coping (Lochman, Lampron, Burch, & Curry, 1985). Other positive prognostic indicators include an internalized attributional style, anxiety symptoms, and somatic complaints.

The sessions are led by two co-leaders, one of whom is typically based at the school (e.g., a school counselor or psychologist) while the other may be employed by a mental health center or clinic. Credentials of group leaders are typically an advanced degree in social work, counseling, or clinical psychology. Other qualifications include experience working with children in groups and specific experience with aggressive and disruptive children.

Program content.

The complete Anger Coping Program consists of 18 sessions, approximately one hour in length, that incorporate didactic explanations, group discussions, and in-session activities such as role-plays and games. Multiple opportunities for rehearsal and refinement of skills are incorporated into the sessions. In addition, a daily goal sheet is used for monitoring target behaviors between sessions and to help the children generalize skills learned in group to other settings (e.g., home and the classroom).

Outcome research.

Evaluation of the Anger Coping Program has included pre-post assessments, longer-term follow up effects, and comparison of program participants and comparison groups. Overall, the results support the efficacy of the program, demonstrating that program participants display reductions in disruptive and aggressive behavior and improvements in self-esteem and social-cognitive skills. Preventative effects on adolescent substance use have also been demonstrated.

Pre-post effects.

In an early study of the Anger Coping Program, aggressive boys were randomly assigned to one of four groups: a 12-week Anger Coping intervention, goal setting, Anger Coping plus goal setting, or untreated control (Lochman, Burch, Curry, & Lampron, 1984). In post-treatment evaluation, study participants who received the Anger Coping Program displayed less parent-reported aggression, lower rates of disruptive classroom behavior, and tended to have higher levels of self-esteem. A

subsequent study compared the 12-session version of Anger Coping with an augmented 18-session program which included more emphasis on perspective taking, role playing, and problem solving (Lochman, 1985). The extended program was found to produce greater improvements in on-task behavior as well as greater reductions in off-task behavior, demonstrating the benefit of a longer intervention period for aggressive children.

Two additional controlled studies of the 18-session Anger Coping Program have replicated the above findings, demonstrating reductions in aggressive behavior, reductions in off-task classroom behavior, and improvements in self-perceived social competence and self-esteem (Lochman & Curry, 1986; Lochman, Lampron, Gemmer, Harris, & Wyckoff, 1989). However, neither the addition of a five-session teacher consultation component nor a self-instruction training component focusing on academic tasks enhanced the program effects.

Longer-term effects.

Three studies have examined the longer-term effects of Anger Coping. Seven months after completion of the 12-session Anger Coping Program, boys who participated in the intervention continued to display improvements in on-task classroom behaviors and reductions in off-task behaviors, compared to untreated peers (Lochman & Lampron, 1988). After one year, children who were both aggressive and rejected by their peers prior to participating in Anger Coping demonstrated sustained reductions in both peer-rated and teacher-rated aggressive behaviors (Lochman, Coie, Underwood, & Terry, 1993). In a study of the longer-term and preventative effects of Anger Coping, participants were contacted three years after completing the program, when they were an average age of 15 years old (Lochman, 1992). These boys had maintained gains in self-esteem and problem-solving skills, and demonstrated lower levels of alcohol, marijuana, and other drug use in comparison to boys in an untreated control condition. In terms of social-cognitive functioning and adolescent substance use, the Anger Coping participants were in the range of a nonaggressive comparison group. However, significant reductions in delinquent behavior were not found at follow-up, and post-treatment reductions in off-task behavior and parent-reported aggression were maintained only for a subset of boys who had received a six-session booster

intervention in the school year following their participation in Anger Coping.

Results of outcome research on Anger Coping, as well as new developments in the understanding and treatment of childhood aggression, have led to the development of a more intensive, multicomponent intervention for aggressive children, Coping Power, which is described in the following section.

COPING POWER

Format and target population. The Coping Power Program is an extension of Anger Coping, lengthening the program to 34 group sessions and incorporating periodic individual contacts and a 16-session parent group component (Lochman, Lenhart, & Wells, 1996). The program targets children who demonstrate aggressive or other disruptive behaviors, which place them at risk for later adolescent substance abuse, delinquent behavior, and poor school adjustment. The program typically spans two grades, ideally beginning in the latter half of fifth grade and continuing through the end of sixth grade, providing intervention during the critical transition period to middle school. Groups of four to six children are held in the school setting, led by two co-leaders with advanced training and experience administering behavioral interventions to children.

Coping Power is an indicated prevention intervention, designed to interrupt developmental trajectories toward antisocial outcomes for children who are at-risk based on an empirically derived set of risk factors. These risk factors include: (1) a lack of social competence and inability to get along with other children, (2) deficits in self-regulation, self-control, and impulse control, (3) weak social bond with the school and academic failure, and (4) problems in the parent-child relationship including inconsistent discipline and a lack of parental warmth and involvement. The Coping Power child and parent interventions are directed toward improving each of these areas.

Program content.

The Coping Power child component consists of structured cognitive-behavioral group sessions that target characteristic social-cognitive difficulties demonstrated by aggressive children. These include increased attention to hostile cues, a tendency to interpret others' intentions as hostile, an orientation

toward dominance in social goals, over reliance on action-oriented problem-solving strategies and a relative deficit in the use of verbal assertion or negotiation, and a belief that aggressive behavior will result in personal gratification. Using a variety of instructional strategies and activities, the Coping Power child component is designed to specifically address these problems and to help children develop more adaptive skills. Topics addressed include goal setting, organizational and study skills, awareness of arousal and anger, self-regulation of anger and arousal, and social problem solving. Contextual risk factors in relationships with deviant peers and problems within the neighborhood are also addressed. Individual contacts are made on a monthly basis to increase generalization of the program content to the child's actual experiences and to develop and maintain a positive working relationship between the child and group leaders.

The Coping Power parent component aims to improve the parent-child relationship and facilitate effective parenting practices. The content, derived from social learning theory-based parent training programs, includes rewarding appropriate child behaviors, the use of effective instructions and rules, applying effective consequences for inappropriate child behaviors, constructive family communication practices, and parental stress management. In addition, parents are introduced to the skills their children are learning so that they can identify, coach, and reinforce their children's use of the skills. A subsequent section of this paper will outline the Coping Power parent and child components in greater detail.

Outcome research.

Evaluation of the Coping Power program includes studies currently in progress, as well as several completed studies. Available outcome results provide support for the program's efficacy in reducing child behavioral problems and preventing future substance use. In the first of these studies, aggressive boys were assigned to one of three conditions: Coping Power child component only, Coping Power child and parent components, or an untreated control group (Lochman & Wells, in press-a). At one-year follow-up, boys who had participated in the full Coping Power Program had lower rates of covert (theft, property damage) delinquent behavior though there were no differences between either Coping Power condition and control on overt (e.g.,

assault, robbery) delinquent behavior. In regard to substance use, boys in both Coping Power conditions had lower parent-reported rates, though the effects were stronger when both child and parent components had been delivered. Similarly, boys in both Coping Power conditions demonstrated greater teacher-reported behavioral improvement compared to controls, with boys who received the full program showing the most positive change. Further evaluation of outcome data indicates that the Coping Power intervention leads to changes in targeted social-cognitive processes which in turn lead to reductions in antisocial behavior (Lochman & Wells, 2002a).

A second study of the Coping Power program examined whether the addition of a universal preventive intervention, consisting of teacher in-services and parent meetings, would enhance program outcome effects (Lochman & Wells, 2002b). Post intervention analyses demonstrated that Coping Power alone resulted in significant reductions in proactive aggressive behavior and improvements in teacher-reported behavior and social competence, and tended to increase parental warmth and supportiveness in interactions with children. Coping Power, combined with the universal intervention, produced more pronounced improvements in perceived social competence and teacher-rated problem-solving abilities and anger coping skills. At one-year follow-up, children who had participated in Coping Power reported significantly lower rates of substance use and delinquent behavior, compared to the untreated control group (Lochman & Wells, in press-b). In addition, children who had received both Coping Power and the universal intervention had significantly lower levels of teacher-reported aggressive behavior at one-year follow-up.

Two other grant-funded projects are in progress. One is evaluating a 24-session version of the program that incorporates a follow-up booster intervention, along with a 10-session parent component, and teacher consultation and training. The description of the Coping Power Program in the following sections is based on this version of the program. The other current project is a dissemination project in which the program is implemented entirely by school personnel who have received training by program staff.

COPING POWER PROGRAM: CHILD COMPONENT

Each Coping Power child session follows the same general format, and there are common activities across all sessions. After Session 1, each session begins with a review of the main points from the previous session and of the children's progress toward a behavioral goal, which is individually selected for each child with input from the teacher. Reviewing the goal sheets during group gives the children an opportunity to discuss any problems they may have had with accomplishing their goals and the leaders can help them brainstorm solutions. At the end of each session, leaders assign any homework and each child identifies one positive thing about himself or herself and one positive thing about another group member. Afterwards, the children must answer a question pertaining to self-control before being able to select from the prize box. If time permits, the children have free time, which provides an opportunity to practice problem-solving strategies if any conflicts arise.

Session 1. The goal of this session is to establish the structure of the group through explaining the purpose of the group and setting rules for the group. The children engage in a group activity to enable them to become acquainted with one another. During this session, the co-leaders also explain the point system, prizes, and the idea of behavioral goal setting to the children.

Session 2. During this session, the leaders revisit the idea of goal setting and illustrate the difference between long-term and short-term goals. Each child identifies a long-term goal and related short-term goals to work on while the program is in effect. The short-term goals will serve as the children's weekly goals. Leaders work with the children to define their goal in clear behavioral terms to minimize the level of subjectivity.

Session 3. This session focuses on teaching the children to become aware of feelings of anger and arousal. This is accomplished through using a thermometer to assist the children in understanding varying levels of anger. The children also identify their personal triggers for angry feelings.

Session 4-6. During these sessions, the leaders introduce the children to methods for anger coping and self-control. Specifically, the leaders

discuss coping with the feelings experienced as a result of being teased. The children are taught to use distraction and coping self-statements to deal with their anger. These sessions include a variety of activities to allow the children to practice the coping strategies.

Session 7-8. During these sessions, the leaders teach the children breathing exercises as a method of self-control and have the children list some ways that they can calm themselves down. The children also discuss obstacles to using coping statements and ways to overcome them. The leaders discuss perspective taking and the difficulty of deciphering others' intentions by observing their behavior.

Session 9-12. These sessions include discussions and activities centered on applying a problem-solving model, the Problem Identification, Choices, and Consequences (PICC) model, to effectively handle problematic social encounters. Children also learn that solutions generated when one thinks before responding are better than those generated automatically. Problem-solving etiquette, which includes appropriate times to approach others to solve problems, is also discussed.

Session 13-15. In these sessions, children create a video using the PICC model, which serves to reinforce the social problem-solving process. The children create a script with alternate solutions to the problem and the consequences of those solutions. If the children agree, the leaders have the option of showing this video during the parent groups.

Session 16-21. These sessions focus on applying social problem-solving to teacher conflict, making friends and group entry, negotiation with peers, and neighborhood problems. In addition, leaders define peer pressure and conduct role-plays to demonstrate refusal skills. They also address children's involvement with deviant peer groups. The children create a poster to encourage them to resist peer pressure and join positive peer groups.

Session 22. During this session, the children list their strengths and positive qualities and the leaders illustrate how this will assist in joining positive peer groups.

Session 23. During this session, the leaders review the Coping Power information with the

children and reemphasize the idea of the children being positive influences on other children. Leaders also inform the children that they may be contacted for booster sessions the following year.

Session 24. This is the termination session and the end of the year party.

COPING POWER PROGRAM: PARENT COMPONENT

The Coping Power parent intervention consists of ten parent group sessions, paralleling the same seven-month intervention period as the child component. The parent intervention is typically administered in groups of five to ten single parents and/or couples, and groups usually meet at the child participants' schools. Groups are led by the same two Coping Power staff persons that lead the child component. Assertive attempts are made to promote parent attendance (Lochman & Wells, 1996), including reminder phone calls and flyers taken home by the children.

Orientation to parent training.

In the first parent group session, an orientation to parent training is provided. This includes explaining why the transition to middle school may be stressful and how this program can help. Often school-parent relationships are strained due to the fact that the most frequent contacts with school personnel are related to their child's negative behavior. Thus, the importance of setting up a regular parent-teacher conference is stressed, and parents are given handouts that include sample questions they could ask their child's teacher to better understand their classroom rules and teaching style. Parents are also provided with sample goal sheets that their child is using at school, to become acquainted with the intervention's emphasis on daily teacher monitoring of a target goal. Finally, parents receive several handouts about establishing a good homework routine for their child. These handouts aid in describing why teachers give homework, give steps to establishing a homework routine, provide a sample homework contract between a parent and a child, and offer a sample homework tracking form for the teacher to sign.

Stress management.

Sessions 2 and 3 help to establish rapport with parents by focusing on their stress and by

offering methods to help alleviate it. While a general definition of stress is given, there is particular focus on the stress involved in parenting and how it can impact their ability to parent effectively. The importance of parents setting aside time to “take care of themselves” is introduced and parents are asked about their own ideas about how to operationalize that concept. Then, active relaxation training is introduced and the group leaders guide the parents through an active muscle relaxation exercise. In addition, the idea that cognitions about one’s child can contribute to parenting stress and irritable overreactions is introduced and parents give examples of dysfunctional cognitions associated with parenting. Homework focuses on practicing relaxation, implementing procedures for “taking care of oneself,” and catching and modifying dysfunctional cognitions when they occur.

Social Learning Theory.

Session 4 focuses on presenting social learning theory principles in lay language including the concepts of positive and negative consequences for child behavior. An A-B-C (Antecedents-Behavior-Consequences) chart is explained and parents are asked to provide typical examples of what usually happens immediately before and after their child exhibits a problem behavior. The use of the A-B-C chart is designed to facilitate maintenance over time as well as to promote generalization of parenting skills learned in session to the home environment. If parents can learn the principles underlying the use of behavioral strategies, it is more likely that such generalization and maintenance will occur (McMahon & Forehand, in press). In addition, group leaders discuss the specific skills of labeled and unlabeled praise in this session, and parents receive a chart identifying a list of negative behaviors and accompanying positive behaviors. This facilitates parental recognition of the positive prosocial behaviors that they can practice labeling with praise. Strengthening the child-parent bond is also discussed in the context of allowing special time for the child. The group ends with a homework assignment to practice using praise for prosocial child behaviors at home through the use of a behavior tracking chart, and to chart special time spent together with their child.

Ignoring and giving good instructions.

In Session 5, parents first learn how to ignore minor negative behaviors when they occur. There is a great deal of discussion of minor behaviors that can be ignored versus more serious misbehaviors that should not be ignored. Group leaders model ignoring through role-plays, and parents are invited to participate in similar role-plays with each other as well. In particular, the role-plays are used to demonstrate how easily parents can get “pulled into” an argument with an escalation in tone and volume. Parents are provided with handouts related to ignoring and are asked to identify at least three behaviors that they would be willing to ignore and note each behavior’s positive behavior opposite, which can be praised.

Next, the focus shifts to the antecedents to child compliance: giving good instructions and setting up age-appropriate rules and expectations. Leaders present examples of “good” instructions (i.e., those that elicit compliance) and “bad” instructions (i.e., those that elicit noncompliance). Humorous examples are given and parents are invited to identify which types of instructions they typically use. Examples of “bad” instructions are repeating instructions over and over again and giving instructions in the form of a question rather than in the form of a declaration. Examples of “good” instructions are giving no more than one or two instructions at a time and following instructions with a period of silence so that the child has a chance to comply. The importance of establishing clear, age-appropriate rules and expectations is also discussed and parents are invited to share examples of rules and how to communicate them effectively to children.

Discipline and punishment.

Sessions 6 and 7 are devoted to the topics of discipline and punishment. The session first focuses on the development and implementation of household rules and strategies by which these rules can be enforced. The devaluation of physical punishment is then carefully presented because this can be a delicate topic for some parents. Alternatives to physical punishment are presented including time-out, response-cost procedures (e.g., privilege removal), and the use of contingent work chores as punishment. At the end of the session, parents are asked to select one punishment procedure that they will try on a consistent basis for one to two weeks and then report back to the group.

Family cohesion, PICC model, and planning for the future.

In Session 8, the importance of family cohesion is presented. Suggestions such as initiating a parent night and giving parents a guide of fun things to do in the community are all discussed. Parents are then introduced to the PICC model, which the children have been practicing in their intervention groups for a few weeks. Parents are encouraged to remind their children to utilize this problem solving technique at home as well as at school. Finally, in Sessions 9 and 10 the group focuses on planning for middle school and the future. This includes the utilization of “summer guides” which give a list of summer programs that may be of interest to parents, and detailing what to expect in the middle school their child will be attending. In addition, many of the previous session topics are reviewed with the emphasis on how these same techniques can be applied to future adolescent topics such as going out with friends on the weekend. At the end of the session, parents discuss which aspects of the program they enjoyed and found the most useful.

IMPORTANT ISSUES IN ANGER MANAGEMENT TRAINING

In this paper, we have presented the conceptual model which serves as the basis for our anger management training programs, have described the format of the child and parent components, and have presented an overview of the research findings. Our experience to date indicates that programs like Anger Coping and Coping Power are effective, useful, and can have a meaningful place in a clinician’s “toolbox” of procedures for working with angry, aggressive children. To conclude this discussion of the programs, there are three key points that should be emphasized. First, interventions for angry, aggressive children should address children’s arousal regulation as well as their cognitive and behavioral skills. Second, when anger management programs are delivered in a group context, intervention staff must be highly alert to the possibility of deviancy training occurring. Third, although it is clearly valuable to have explicit evidence-based procedures and manuals to guide implementation of programs such as these, it is also important to attend to individual differences in children and to consider how these differences might impact what is emphasized in the program for a given child. This section will now cover these three points in greater detail.

Focus on arousal, emotion, cognition, and behavior.

Research has indicated that, in response to provocations, aggressive children can have increases in their heart rate and concurrently can have increasingly hostile attributions about the intentions of others (Williams, Lochman, Phillips, & Barry, 2003). These increases in arousal and in hostile attributions are significantly correlated, and it is reasonable to assume that physiological changes can contribute to distortions in cognitions, and that distortions in cognitions influence physiological changes. Anger, and the physiological arousal associated with it, can flood a child’s ability to logically and accurately think through the social difficulty they are encountering and the way they could respond to that problem. As a result, anger management interventions should focus on two key areas: anger and arousal self-regulation, and social-cognitive skills.

In our intervention framework, children first learn skills to control the surges of arousal that they experience as they become angrier. They learn how to recognize their own signs of anger more accurately, and especially to recognize low to moderate levels of anger. Once aware of their increasing anger in a situation, they can use some of the anger management skills they learn, including self-statements, relaxation, and distraction. Once children have acquired these basic anger management skills, they can better modulate their initial anger response, which will then permit them to use problem-solving skills more successfully. Thus, the second major area of skill development in our anger management programs involves facilitating children’s development of more competent problem-solving and perspective-taking skills. As children become more adept problem-solvers, they can become better at anticipating problem situations before they escalate. When anger-aroused, children are more likely to resort to automatic information processing, and to be less likely to carefully consider the arena of problem solutions available to them (e.g., Rabiner, Lenhart, & Lochman, 1990). A major goal of problem-solving training during intervention is to have children explore the more competent problem solutions they have stored in their memory. Through role-playing and discussion these more competent solutions become more salient, and rise to the top of the “memory bin.” The more competent, verbally assertive solutions are thus more likely to be accessed the next time the child is in a situation where he or

she is beginning to become anger-aroused, and is using automatic processing.

Avoidance of deviancy training.

Recent research has clearly indicated that adolescents who receive group interventions can actually have even more problem behaviors, such as substance abuse, after the intervention than do equally problematic adolescents who did not receive a group intervention (Dishion & Andrews, 1995). Within certain groups that are comprised of highly aggressive and antisocial adolescents, the adolescents subtly reinforce each others' deviant attitudes and behavior, producing a form of deviancy training. These potential iatrogenic effects are a serious concern for clinicians. Although we have not found overall iatrogenic effects for the Anger Coping and Coping Power Programs, it has been evident that certain individuals do engage in deviancy training with each other. To counteract deviancy training, it is imperative that group leaders carefully monitor children's behavior throughout group sessions, and enforce group rules as needed, redirecting children who try to discuss "war stories" of their exploits. By using individual sessions to enhance the group leaders' positive relationship with each child, by using the goal setting procedures to reinforce positive behavior development outside of the group session, and by breaking groups into subgroups or into individual sessions as needed, clinicians can take active steps to circumvent a deviancy training effect and instead to create a constructive, positive peer group environment. In addition to carefully monitoring and structuring the group environment, clinicians can assist children in responding to deviant peers in their neighborhood and school environments through planned group activities. The programs' focus on social skills training to assist children to become more successfully engaged with nondeviant peers, and on refusal skills and peer pressure training, can assist children in more successfully navigating the deviant peer contexts in their natural environments.

Adapting the intervention to individual children.

It has become evident that different types of aggressive children have different patterns of social-cognitive deficiencies. In contrast to moderately aggressive children and adolescents, highly violent children and adolescents have a more complete set of social-cognitive deficiencies, including encoding errors, attributional biases, problem-solving deficits,

and expectations that aggressive behavior will work (Lochman & Dodge, 1994). In comparison to proactively aggressive children, reactively aggressive children are more likely to have distorted encoding and attribution processes (Dodge, Lochman, Harnish, Bates, & Pettit, 1997). In comparison to children with Oppositional Defiant Disorder, children with Conduct Disorder are more likely to have problem-solving deficits in many social contexts in their lives, with teachers and parents as well as with peers (Dunn et al., 1997). Thus, to be optimally effective, clinicians should assess which children in their groups have certain types of social-cognitive and self-regulation deficiencies, and then spend more time on those elements of the Anger Coping or Coping Power Program that have particular relevance for certain children. A major task inherent in the dissemination of evidence-based interventions involves this issue of adapting effective interventions to address individual children's distortions and deficiencies, rather than maintaining rigid adherence to a manual in the same way for all children.

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**ADVANCES IN THE BEHAVIOR ANALYTIC TREATMENT OF
TRICHOTILLOMANIA
AND TOURETTE’S SYNDROME**

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Tourette’s Syndrome (TS) and Trichotillomania (TTM) are both subsumed under a larger category of repetitive behavior disorders. The purpose of this paper is to provide an overview of the most recent behavioral research on TS and TTM. A description of both disorders is provided along with the most recent research on their etiology and maintenance. Behavioral treatments are then discussed with an emphasis on habit reversal - a multi-component procedure shown to be effective for treating repetitive behavior disorders. In addition, research analyzing the relative efficacy and importance of each habit reversal component is discussed. The review then concludes with treatment considerations

**ADVANCES IN THE BEHAVIOR ANALYTIC
TREATMENT OF TRICHOTILLOMANIA AND
TOURETTE’S SYNDROME**

Over the past 30 years, behavior analysts have been at the forefront in developing nonpharmacological treatment options for persons with repetitive behavior problems such as tic disorders, chronic hair pulling, and chronic skin picking. The current paper briefly describes these repetitive behavior disorders, presents recent behavioral research on their etiology and maintenance, and describes habit reversal – an effective behavioral treatment for these problems. After this review, the most recent research on the efficacy of habit reversal and its components is discussed.

Describing Tourette’s Syndrome and Trichotillomania

All tic disorders involve the presence of one or more motor and/or vocal tics (i.e., sudden, rapid, recurrent, nonrhythmic motor movements or sounds). Perhaps the most representative of the tic disorders is Tourette’s Syndrome (TS) which is characterized by multiple motor tics and one or more vocal tic(s) that have been present for at least one year. Other tic disorder diagnoses include chronic tic disorder and transient tic disorder (American Psychiatric Association, 1994). Tics can vary in location, topography and frequency (i.e., waxing and waning) and can be either simple or complex. Examples of simple tics include facial grimacing, head and shoulder jerking, arm and hand movements, leg kicking, stomach tensing, noises, grunting, coughing, and throat clearing. Examples of complex tics include touching objects or other people, difficulty starting actions, hurting oneself, hopping, picking at objects (e.g., clothing), tapping or straightening objects, obscene gestures (copropraxia),

spontaneously saying words or parts of words, echolalia and palalalia, and shouting insults or obscenities.

According to the American Psychiatric Association (APA, 1994), TS is diagnosed in four to five of every 10,000 individuals. Other reports have found TS to be as prevalent as 3% in certain populations. TS has been reported across a variety of cultures and ethnicities and is more common in males than females (APA, 1994; Kadesjo & Gillberg, 2000). The average age of onset of TS is approximately 7 years and it has been reported in children as young as two years of age (APA, 1994).

Trichotillomania (TTM) is listed as an impulse control disorder in the Diagnostic and Statistic Manual of Mental Disorders (DSM-IV). The essential feature of TTM is the recurrent pulling of one’s hair resulting in noticeable hair loss. To receive a diagnosis of TTM, the individual must report an increased sense of tension prior to pulling out his/her hair and pleasure/gratification after pulling. Common sites of pulling include the scalp, eyebrows, eyelashes, and pubic regions, but hair may be pulled from other locations as well (Christenson, Mackenzie, & Mitchell, 1991). A related behavior problem, chronic skin picking, has a substantially smaller body of research than TTM, but is generally considered a similar problem (Woods, 2002).

Prevalence estimates of TTM in adults range from 3.2% to 22.4% (Hansen, Tishelman, Hawkins, & Doepke, 1990; Woods, Miltenberger, & Flach, 1996a), however most prevalence studies have not strictly adhered to DSM-IV diagnostic criteria (e.g., criteria B & C, an increase in tension prior to pulling and sense of relief after pulling, have sometimes been omitted). The disorder is believed to be more common in females than males by a ratio of

approximately 2.5:1 (Swedo & Leonard, 1992). The prevalence of pediatric TTM is unclear, although some believe TTM is more prevalent in children than adults (Mehregan, 1970) and that the female to male ratio may be lower in children (Cohen et al., 1995).

methodology suggest that persons with TTM experience heightened levels of somatic, affective, and/or ideational symptoms prior to pulling that are relieved during or after a pulling episode (Christenson, et al. 1991; Christenson, Ristvedt, & Mackenzie, 1993).

Recent Behavioral Research on the Etiology and Maintenance of TS and TTM

It is well understood that TS and the other tic disorders are neurobiologically based (Findley, 2001). As a result, recent behavioral research has not focused on understanding the etiology of tics, but rather understanding the accelerative and decelerative effects of environmental events on their occurrence. In a recent study, O'Connor, Brisebois, Brault, Robillard, Loisel (2003) asked participants with either a tic disorder or a habit disorder to keep a daily diary in which the participant recorded tic/habit frequency in various situations and during various activities. The lowest tic/habit behavior rates were reported during physical exercises and the highest rates reported during passive attendance activities (e.g., studying, sedentary activities). In addition, they found that specific "high-risk" activities differed between tic disorders and habit disorders showing that specific contexts and activities may differentially affect the rate of tic and habit behavior expression.

Given the aforementioned negative reinforcement paradigm, most current behavioral research has begun to examine the antecedent variables that may occasion pulling. For example, Christenson et al. (1993) identified several emotive states and activities that respondents felt would elicit or exacerbate immediate hair-pulling. The most influential environmental factors identified were negative affective states and sedentary activities (e.g., reading, watching television).

In addition to describing antecedent events, recent behavioral research has also begun to view TTM as a problem involving the choice between an immediate but small reinforcer (e.g., reduction of an unpleasant private event) and a delayed but larger reinforcer (e.g., hair regrowth, valued living). Using the delay discounting conceptualization of impulsive behavior (Mazur, 1987), it is believed that individuals with TTM more readily discount the value of delayed rewards as the length of delay increases.

Other studies have experimentally manipulated variables thought to influence tic expression. For example, Woods, Watson, Wolfe, Twohig, and Friman (2001) experimentally evaluated the influence of tic-related conversation on the rate of tics and found that tics occurred at a higher rate when conversing about tics than when engaged in non-tic related conversation. Likewise, Woods and Himle (in press) found that tics did not decrease substantially when children with tics were simply asked to suppress tics. However, when token reinforcers were delivered contingent upon the absence of tics, substantial reductions in tic rates were found, suggesting that socially mediated consequences can influence tic expression.

Most commonly, delay discounting is measured using the Monetary Choice Questionnaire in which participants choose between two monetary alternatives presented in 27 dyads (e.g., "Would you rather have \$43 immediately or \$58 in 20 days"; Kirby & Marakovic, 1996). The items in each dyad differ in reward magnitude and delay to reward acquisition. The participant's level of impulsivity (discounting-rate parameter, or k value) is calculated by determining the magnitude and delay at which he/she chooses the smaller, more immediate reward over the larger, delayed reward. After an individual's level of impulsivity has been established, comparisons across individuals and/or groups can be made. Earlier research on delay discounting has shown that individuals with heroin addiction, nicotine addiction, and those who abuse alcohol have substantially higher k values (i.e., greater impulsivity) than control subjects (Bickel, Odum, & Madden, 1999; Kirby, Petry, & Bickel, 1999; Madden, Petry, Badger, & Bickel, 1997; Petry, 2001).

Although the etiology of TTM is unknown, recent behavioral theory suggests that the behavior is often maintained by negative reinforcement via the immediate, but temporary reduction in the intensity of unpleasant private events contingent on pulling. Although this phenomenon has never been experimentally verified using direct observation procedures, a variety of studies relying on self-report

To evaluate the applicability of the delay discounting conceptualization to TTM, our lab

recently administered the Monetary Choice Questionnaire to 11 individuals with TTM. Our preliminary unpublished results show that individuals with TTM discount delayed reinforcers at a rate ($k=.026$) similar to that found by Kirby et al. (1999) for samples of heroin addicts ($k=.025$) and at a rate higher than previously reported non-impulsive controls ($k=.013$).

Combined, the behavioral research on the environmental variables maintaining TS and TTM may eventually lead to exciting treatment developments. However, currently available behavioral treatments for these problems have developed largely independent of a complete understanding of the controlling behavioral variables. In the next section, we discuss the advances in the behavioral treatment of TS, TTM, and other repetitive behavior problems.

HABIT REVERSAL FOR TREATING TS AND TTM

A variety of different behavioral interventions have been used to treat TS and TTM (e.g., Deaver, Miltenberger, & Stricker, 2001; Elliott & Fuqua, 2001; Miltenberger Fuqua, & Woods, 1998; Rapp, Miltenberger, Long, Elliott, & Lumley, 1998; Watson, Howell, & Smith, 2001), but the most efficacious and acceptable non-pharmacological treatment is habit reversal (Azrin & Nunn, 1973; Elliott & Fuqua, 2001; Watson, Howell, & Smith, 2001)

Habit Reversal

Habit reversal is a multi-component treatment procedure developed by Azrin and Nunn (1973) to treat nervous habits and tics. Although the original procedure was more comprehensive, an abbreviated procedure (i.e., simplified habit reversal) has been shown to be equally as effective and easier to administer (Miltenberger, Fuqua, & McKinley, 1985). Simplified habit reversal typically consists of three components: awareness training, competing response training, and social support (Miltenberger, 2001; Woods, 2001; Woods & Miltenberger, 1995).

During awareness training, the client is required to describe the target behavior and to detect instances of the behavior (i.e., either simulated or actual behavior). The client then practices detecting early warning signs associated with the target behavior (e.g., tension, muscle tension, motor movements, etc.). In addition, the therapist helps the

client become aware of situations in which the target behavior is most likely to occur. Competing response training involves teaching the client to engage in a competing behavior contingent on the target behavior or early warning signs. As originally developed, the competing response was required to be (a) physically incompatible with the target behavior (i.e., produces isometric tensing of the muscles involved in the habit movement), (b) socially inconspicuous, and (c) held for 3 min contingent on the target behavior or early warning sign. The social support component consists of having friends and/or family members praise the client when they do not engage in the target behavior or when they notice the client engaging in the competing response. In addition, the social support person reminds the client to use the competing response when he/she fails to detect an occurrence of the target behavior.

In addition to the aforementioned procedures, generalization training is sometimes implemented. Generalization training involves symbolic rehearsal, in which the client imagines situations that may elicit the target behavior and then performs the appropriate competing response. Such training is believed to promote the use of the competing response in high-risk situations and improve the effectiveness of habit reversal.

Efficacy of Habit Reversal With TS and TTM

A wealth of literature supports the efficacy of habit reversal in treating TS and TTM. In one of the first studies, Azrin and Nunn (1973) used habit reversal to treat clients who engaged in hair-pulling, nail-biting, and thumb sucking, as well as individuals suffering from tics. The researchers found the treatment to be effective in eliminating habits and tics in 10 of the 12 clients, and the remaining two clients showed drastic reductions in the occurrence of their tics and habits. Research has also shown the simplified version of habit reversal to be effective in the treatment of both TS and TTM (Azrin & Peterson, 1990; Rapp et al., 1998; Rosenbaum, 1982; Tarnowski, Rosen, McGrath, & Drabman, 1987). For example, Azrin and Peterson (1990) randomly assigned 10 individuals with TS to either a habit reversal condition or wait-list condition followed by habit reversal and found reductions in tics for all 10 cases after receiving habit reversal. Improvements in symptoms were shown to generalize across settings (clinic and home) and were maintained at 1-year follow-up. Woods, Miltenberger, and Lumley

(1996b) used a multiple baseline across participants design to sequentially administer the various components of HRT to individuals with motor tics and found the procedure to be effective for each of the four participants who participated in the study. In another study, Wilhelm et al. (2003) compared habit reversal to supportive psychotherapy for individuals with TS. Results showed that habit reversal produced significantly greater improvement than supportive psychotherapy, suggesting that treatment-specific factors implemented in HRT are likely responsible for the change.

In a recent review, Carr & Chong (in press) reviewed 20 studies that collectively treated over 100 individuals with tics using habit reversal and found the procedure to be generally effective. Although methodological shortcomings limited conclusions from this analysis, the authors acknowledged habit reversal as “Probably Efficacious” according to guidelines outlined by the Task Force on Promotion and Dissemination of Psychological Procedures (1995).

Habit reversal has also been shown to be an efficacious treatment for TTM. van Minnen, Hoogduin, Keijsers, Hellenbrand, and Hendriks (2003) compared habit reversal to Fluoxetine and a wait-list control for individuals diagnosed with TTM and found significantly greater reductions in hair-pulling for individuals treated with habit reversal compared to individuals treated with Fluoxetine or individuals placed on a wait list. In another study, Mouton and Stanley (1996) examined the effectiveness of group delivered habit reversal training with 5 adult hair pullers. They found that habit reversal was effective in reducing the severity of hair pulling at post-treatment and that treatment gains were maintained at one-month for three of the participants and at six months for two of the participants. Finally, Twohig, Woods, Marcks, and Teng (2003) compared the effectiveness of habit reversal to a placebo control for repetitive behaviors in adults and found habit reversal to be significantly more effective than the placebo in reducing these behaviors.

In their review of treatments for TTM, Elliott and Fuqua (2000) concluded that habit reversal was the most effective behavioral treatment for TTM, although they acknowledged the need for further well controlled outcome studies. In a unique look at the social validity of habit reversal as a treatment for

TTM, Elliott and Fuqua (2002) examined the acceptability of treatment for the problem and discovered that habit reversal was found to be a more acceptable form of treatment than hypnosis, medication, or punishment. Although an analogue study that used only college students, the results also support habit reversal’s status as an acceptable treatment.

Contributions of the Different Components

The success of habit reversal has led researchers to isolate the different components of the procedure and to determine their relative effects. In the next section, research analyzing the necessity of, and implementation strategies for each of the major components will be reviewed.

Awareness Training. Although awareness training is typically considered the initial part of HR, some researchers have found that increasing a person’s awareness of their tics or hair pulling has at least a temporary decelerative effect on the target behavior (e.g., Wright & Miltenberger, 1987). Unfortunately, each of these studies was confounded by the fact that participants were also asked to engage in self-monitoring, which could have actually functioned as a competing response in persons with tics or hair pulling problems. To separate the effects of “awareness” from the overt act of self-monitoring in children with tics, Woods et al. (1996b) examined the individual components of SHR to decide which components were essential for treatment of motor tics in children. Four conditions were set up to systematically analyze the necessary components of habit reversal treatment for motor tics. These conditions were as follows: (1) Awareness training (AT), (2) AT + self-monitoring (SM), (3) AT + SM + social support (SS), and (4) AT + SS + competing response (CR). Awareness training was defined as making a verbal response contingent on the tic, whereas self-monitoring was defined as activating a golf-stroke counter contingent on the tic. One child required only AT to reduce tics to near zero levels, and another child required AT + SM to reduce levels of the target behavior to near zero. However, the two remaining children required all three components (AT + SS + CR) to effectively reduce tics to near zero levels. Such results suggest that awareness training alone may be sufficient to reduce tics, but Woods et al. pointed out that the one child who exhibited the decrease in tic frequency during the awareness phase reported developing and implementing his own

competing response. Thus, although awareness training alone may be effective for some children, it appears that the additional components of habit reversal may be necessary for reliable tic reduction.

Competing Response Training. A large body of research has focused on the necessity and proper implementation of the competing response. Miltenberger and Fuqua (1985) established the necessity of the competing response by conducting a component analysis of habit reversal. The researchers compared behavior-contingent competing responses to non-contingent competing responses and found that the contingent implementation of the competing response is largely responsible for treatment effects.

Research has also examined the proper implementation of the competing response (Sharenow, Fuqua & Miltenberger, 1989; Woods et al., 1999). Sharenow et al. (1989) compared the efficacy of a competing responses for which the topography was similar or dissimilar to the topography of the tic. They found that both similar (i.e. pressing chin to chest for a head jerking tic) and dissimilar (i.e., tightening left calf for a head jerking tic) competing responses were effective in reducing tics to near zero levels in two of three children, as long as they were contingent upon the expression of a tic. The generalizability of these findings is limited, however, because the study employed only three participants in a design that was not suited for group comparison. Woods et al. (1999) improved on this study by directly comparing the effectiveness of similar and dissimilar competing responses in the habit reversal procedure for treating children with repetitive behavior problems (i.e., nail biting and thumb sucking). Like Sharenow et al., they found that the topography of the competing response did not significantly influence the outcome of treatment. The similar competing response was as effective as the dissimilar competing response.

In a separate investigation, Twohig and Woods (2001) evaluated the requirement that the competing response occur for 3 min contingent on the target behavior or warning sign. To do so, 12 individuals who engaged in nail-biting were assigned to one of three groups. All participants received habit reversal. Across groups, however, individuals were instructed to engage in the competing response for differing durations. One group engaged in the competing response for 3 min, one group engaged in the competing response for 1 min, and the other group

engaged in the competing response for 5 s. Results showed that the individuals who engaged in the 3- and 1 min competing response displayed robust treatment gains and that these gains were maintained at 3-month follow-up. Individuals who engaged in the 5-s competing response, however, displayed only short-term improvement. Because treatment with the 1 min competing response duration was viewed as more acceptable, Twohig and Woods (2001) suggested that individuals receiving habit reversal be instructed to engage in the competing response for 1 min to maximize treatment gains and maintenance.

Social Support. To date, only one study has examined the necessity of the social support component of simplified habit reversal (SHR). Flessner et al. (submitted) evaluated the effectiveness of the social support component of SHR for the treatment of nail biting in college students. Participants were randomly assigned to one of two treatment groups. One group received the three primary components of SHR used in previous research (AT + CR +SS), and the subsequent group received only the first two components of SHR (AT +CR). Results indicated that both conditions produced significant decreases in nail biting and increases in nail length from baseline to post-treatment and from post-treatment to follow-up, but no significant differences were found between the conditions. These results suggest that for adults, social support may be an unnecessary component of habit reversal, but future research is needed to determine whether the same outcomes are true for different repetitive behavior problems (e.g., TTM or TS) and populations (e.g., younger children, developmentally disabled).

Predictors of Poor Response to Habit Reversal

The growing body of research evaluating the efficacy and utility of various habit reversal components suggest that the procedure is a quite robust treatment. However, recent research suggests that some individuals with TS and TTM may respond poorly to habit reversal, or may require alternative and more intensive intervention. Individuals with developmental disabilities (e.g., Rapp et al., 1998; Woods, Fuqua, & Waltz, 1997) and very young children (i.e., under the age of 6; Long, Miltenberger, & Rapp, 1999; Woods et al., 1999) typically do not derive substantial benefit from the habit reversal procedure unless steps are taken to improve awareness of the target behavior or to increase the

reinforcing value of improvement through specific reinforcement programs.

INDIVIDUALS REQUIRING ALTERNATIVE OR MORE INTENSIVE INTERVENTIONS.

Individuals with TS and TTM are frequently diagnosed with a variety of other behavior problems. Psychiatric diagnoses such as depression, anxiety, and mood disorders are not uncommon in persons with TS and TTM. A study by Carter et al. (2000) found that children with TS had significantly higher scores on depression inventories than children without TS and Christenson et al. (1991) found 65% of their sample of adults with TTM had a history of a mood disorder. Anxiety problems are also reported to co-occur with both TS and TTM (Carter et al. 2000; Coffey et al. 2000; Pierre, Nolan, Gadow, Sverd, & Sprafkin, 1999; Christenson et al. 1991). Of these, OCD is the most prevalent, occurring in 40-50% of individuals with TS and 10% of individuals with TTM (Kadesjo & Gillberg, 2000; Pitman, Green, Jenike, & Mesulam, 1987; Christenson et al. 1991). Externalizing problems including attention-deficit hyperactivity disorder, oppositional defiant disorder, conduct disorder, and explosive outbursts are also common in children with TS.

Understanding the comorbid issues that complicate TS and TTM has significant treatment implications. Although a variety of pharmacological and behavioral treatments have been used to treat TS and TTM, these treatments often do little to manage comorbid problems that frequently co-occur. Because co-occurring difficulties are often more disruptive than the tics themselves, such difficulties warrant special consideration and problem-specific treatment.

It is evident from the current discussion that TTM and TS are receiving increasing attention from behavioral researchers. Although the disorders are not yet well understood, investigators are beginning to turn to behavioral accounts to help explain their pathogenesis and have met with early success in doing so. In addition, the treatment literature is accelerating at an encouraging rate. Behavioral treatments for TS and TTM-especially habit reversal-are becoming increasingly more accepted as efficacious methods for treating these often debilitating disorders.

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PREVENTING SCHOOL-BASED ANTISOCIAL BEHAVIORS WITH SCHOOL-WIDE POSITIVE BEHAVIORAL SUPPORT

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In an effort to increase schools' capacity to adequately address anti-social behaviors, school districts around the country are implementing zero tolerance policies and strengthening sanctions for rule violations. Although often well intentioned, these reactive responses are largely ineffective and ultimately displace the problem. The purpose of this paper is to provide an overview of an alternative approach to more traditional disciplinary practices focusing on School-Wide Positive Behavioral Support.

Antisocial behaviors among school-aged children and youth are a leading concern among both educators and the general public (Dwyer, Osher, & Warger, 1998). In an effort to increase schools' capacity to adequately address anti-social behaviors, school districts around the country are implementing zero tolerance policies and strengthening sanctions for rule violations. Although often well intentioned, these reactive responses are largely ineffective and ultimately displace the problem. In this article we outline some of the theory concerning the development of antisocial behaviors and then offer a broad description of an approach for the prevention of antisocial behaviors through School-Wide Positive Behavioral Support. School-Wide Positive Behavioral Support is a systems change model for delivering effective behavior support for all students. This systemic approach allows schools to collect and monitor formative data to determine the most relevant, efficient, and effective means for intervention and support.

A FOCUS ON PREVENTION

The field of education has been called to reduce the prevalence and incidence of antisocial behaviors by integrating research into practice (Biglan, Mrazek, Carnine, & Flay, 2003; Koop & Lundberg, 1992; Mayer, 1995; Satcher, 2000). However, schools continue to face the formidable challenge to prevent antisocial behaviors from occurring and intervene with those students who have- or are beginning to display the "soft signs" of antisocial behaviors (Patterson, 1982; Walker, Colvin, & Ramsey, 1995). There is little consensus among social scientists at large regarding the causes of antisocial behavior, delinquency, and crime. From our

perspective, as well as many others, "People are not born with pre-formed repertoires of aggressive behavior; they must learn them" (Bandura, 1978, p. 14). Social environments have a communicative function. People are able to learn and gain information through observing the behaviors modeled by and interacting with others. Beliefs, cognitive processes, values, and behaviors are largely shaped through on-going interactions with the social environment. The forms of social interaction that "teach" children antisocial behaviors are numerous--adult modeling, television, association with antisocial peer groups, dysfunctional parent-child interactions, coercive school environments, to name a few. While acknowledging the broad range of individual differences in intelligence, personality, and innate ability, we believe a science of prevention should primarily focus on the aspects of human behavior that are *learned*, and therefore are malleable to the teaching and educational process. While there are child, family, community, school, and cultural risk factors that increase the likelihood that children and youth will develop antisocial behaviors, there are also protective factors that are associated with decreasing the likelihood that antisocial behaviors will develop (Satcher, 2001; Walker & Shinn, 2003). Education is one of society's most powerful tools for preventing displays of antisocial behavior and intervening with at-risk children and youth. Schools can provide a buffer against many of the maladaptive influences created by society by fostering instructional environments in which children and youth learn socially important values and skills. Children and youth who enter school without the prerequisite social and academic behaviors in their repertoire that would facilitate academic and behavioral success are will require a continuum of effective behavioral support. Therefore, an important focus for schools is to engage in an approach that will prevent antisocial behaviors from occurring and intervene with those children and youth who current display behaviors that violate the social norm (Mayer, 2001).

Author Note

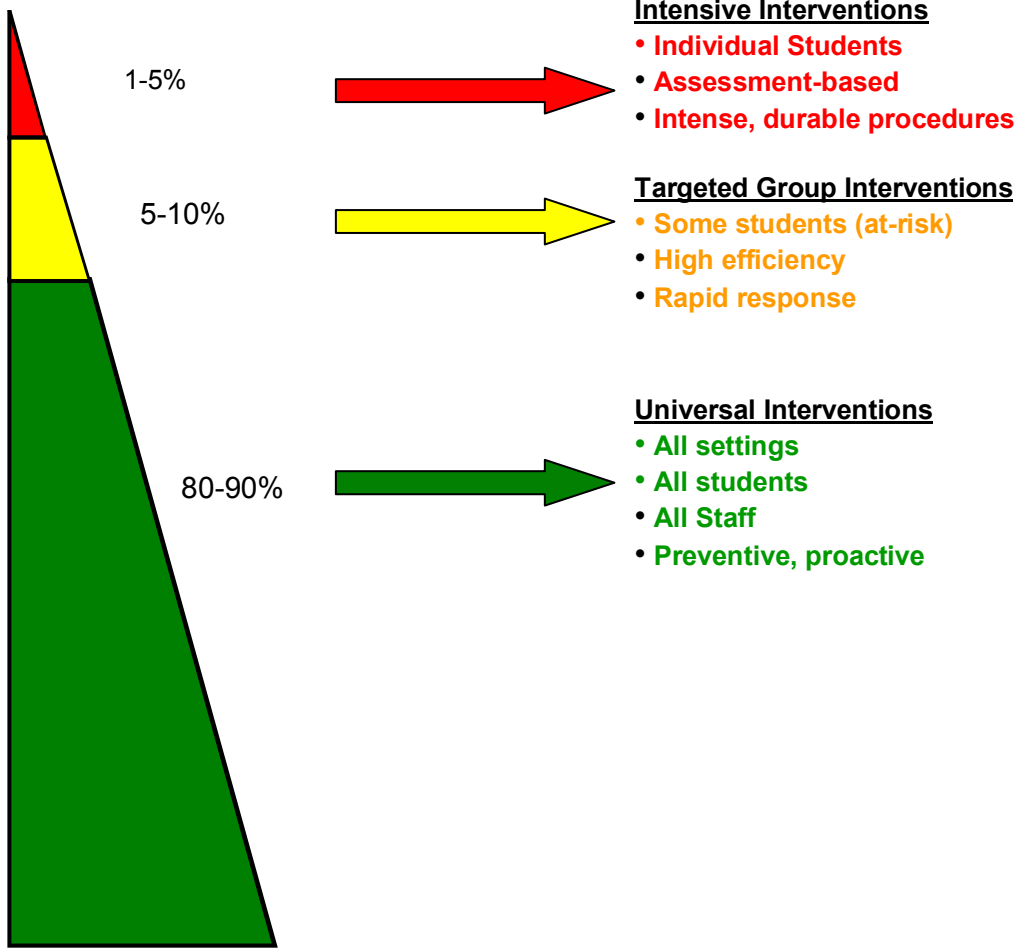
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Universal prevention focused on primary, school-wide intervention is typically beneficial for approximately 80-90% of students within a school (Mayer, 1999; Mayer, 2001; Taylor-Greene et al., 1997; Walker, et. al, 1996). However, approximately 5-10% of a school's student population is often considered "at-risk" requiring specialized group interventions. A relatively small in number of students (approximately 1-7% of a school's population) will require highly specialized, multi-faceted, and individualized supports across home and school environments. Figure 1 depicts the levels of prevention and intervention used to conceptualize a school-wide approach for providing positive behavior

focus on structuring a school climate and culture that provides multiple opportunities to display and receive positive reinforcement for prosocial behavior, (c) provide a continuum of behavioral strategies and interventions, and (d) restrict their practices to those that are empirically proven programs or promising programs that have evidence of effectiveness (Sugai & Horner, 1999).

SCHOOL- WIDE POSITIVE BEHAVIORAL SUPPORT

Positive Behavioral Support is an extension of applied behavior analysis and has received much attention recently due to the



ALL STUDENTS

Figure 1. School-based Prevention and Intervention

support. To prevent antisocial behaviors from occurring and respond to the behavioral needs of those students who are already exhibiting chronic problems behaviors, schools should (a) engage in early primary prevention and intervention efforts, (b)

incorporation of language referencing it the Individuals with Disabilities Education Act of 1997 [IDEA] (Carr et al., 2002). However, many educators overlook the application of positive behavioral support as a school-based model of prevention and

intervention. The extension of positive behavioral support as a school-wide model of behavioral support is an emerging initiative and represents a process-oriented approach designed to foster productive learning and working environments by proactively establishing a setting to minimize problem behavior while teaching and supporting alternative prosocial behaviors (Horner & Sugai, 2000; Lewis & Sugai 1999). School-wide Positive Behavioral Support (SW-PBS) is not a curriculum focused on a single model or intervention, nor does SW-PBS focus solely on individual students who exhibit antisocial behavior. SW-PBS entails a team-based approach that emphasizes data-based decision-making and the establishment of a continuum of behavioral interventions to promote a positive school climate.

SW-PBS focuses on four overlapping and interrelated systems (Sugai & Horner, 1999; Todd, Horner, Sugai & Sprague 1999): (a) school-wide, (b) non-classroom, (c) classroom, and (d) individual student (see Figure 2) that are designed to promote prosocial behavior. The purpose of establishing a school-wide system is to address the behavioral needs of the majority of students in a school across settings. These students are likely to have learning histories for which correcting problem behaviors and explicitly teaching rules and procedures for prosocial behaviors will be effective. The non-classroom system focuses on providing behavioral support in non-instructional areas (e.g. cafeteria, bus loading zones, playgrounds, hallways) where problem behaviors frequently occur. Classroom systems of SW-PBS incorporate instruction of behavior expectations and routines, as well as continuums of procedures for encouraging expected behaviors and discouraging rule violations. The individual student system for positive behavioral support focuses on the very small portion of students (1-7% of a school's population) who require individualized interventions and supports.

Positive Behavioral Support System for School-Wide Discipline

The application of positive behavioral support school-wide (which is the emphasis of this article) focuses on universal interventions that target all students, all staff, and all school settings and serves as the foundation for non-classroom, classroom, and individual student systems of positive behavioral support. The adoption of SW-PBS requires (a) a team-based approach to problem solving; (b) active administrator support & participation; (c) a proactive,

academic, and instructional approach to managing behaviors; (d) local instructional and behavioral expertise; (e) formative data-based decision making; (f) high priority; and (g) long-term commitment (Colvin & Fernandez, 2000; Colvin, Kame'enui, & Sugai, 1993). The formation of a leadership team to develop a school-wide plan is vital and should include grade-level representation from regular and special education, at least one building administrator (e.g., principal or vice principal in charge of discipline), and representatives from classified staff and parents (Colvin & Sprick, 1999). This diverse membership promotes school-wide collaboration and increases the breadth of perspective on school climate and discipline issues.

Once established, the team first concentrates their efforts on building a school-wide discipline plan centered around (a) a common approach to discipline, (b) a clear set of positively stated behavior expectations (e.g., school rules), (c) procedures for teaching expected behavior, (d) a continuum of procedures for encouraging expected behavior, (e) a continuum of procedures for discouraging inappropriate behavior, (f) procedures for on-going monitoring & evaluation (Colvin, & Fernandez, 2000; Metzler, Biglan, Rusby, & Sprague, 2001; Sugai & Horner, 1999). Coordinating positive behavioral support efforts at a school-wide level requires logistical considerations such as: How often should the group meet? Does the entire group need to be present at every meeting? What role will different partners take (e.g., teachers, administrators, parents)? Guidelines for answering these questions can be elusive because, to a large extent, the planning process is individualized to the situation of the school (Safran & Oswald, 2003). To help sustain change within a school, Colvin et al. (1993) recommended that the SW-PBS team meet frequently enough (i.e., weekly or biweekly) to maintain momentum. In general, beginning to plan for comprehensive SW-PBS will require team members to dedicate more time in the initial stages as they outline the procedures for their school and solicit feedback from the groups they represent. Consider also that the planning process relies on assessment (analysis of office referrals, examination of problem locations in the school) and, as the team begins to identify these issues, additional time will be required to effectively link intervention plans to specific needs. In addition, because the implementation of SW-PBS requires formative data-based decisions, teams will need to meet frequently

enough to evaluate their data and adjust plans accordingly.

Positive Behavioral Support System for Non-Classroom Settings

Non-Classroom systems of behavior support emphasize the design of interventions for non-instructional areas (e.g. lunchroom, playground, certain hallways, buses) (Lewis, Colvin, & Sugai, 2000). Many schools will have high number of

events that are occasioning the inappropriate behaviors (e.g. multiple grades changing classes in a small hallway at the same time), (c) plan strategies for teaching appropriate behavior expectations and (d) develop a continuum of reinforcers to encourage appropriate behaviors among the students in the target setting, and (e) ensure that effective strategies for decreasing problem behaviors are applied for persistent rule violations (Lewis & Garrison-Harrell, 1999). For example, Nelson, Martel & Garland (1998) considered various routines that could be established

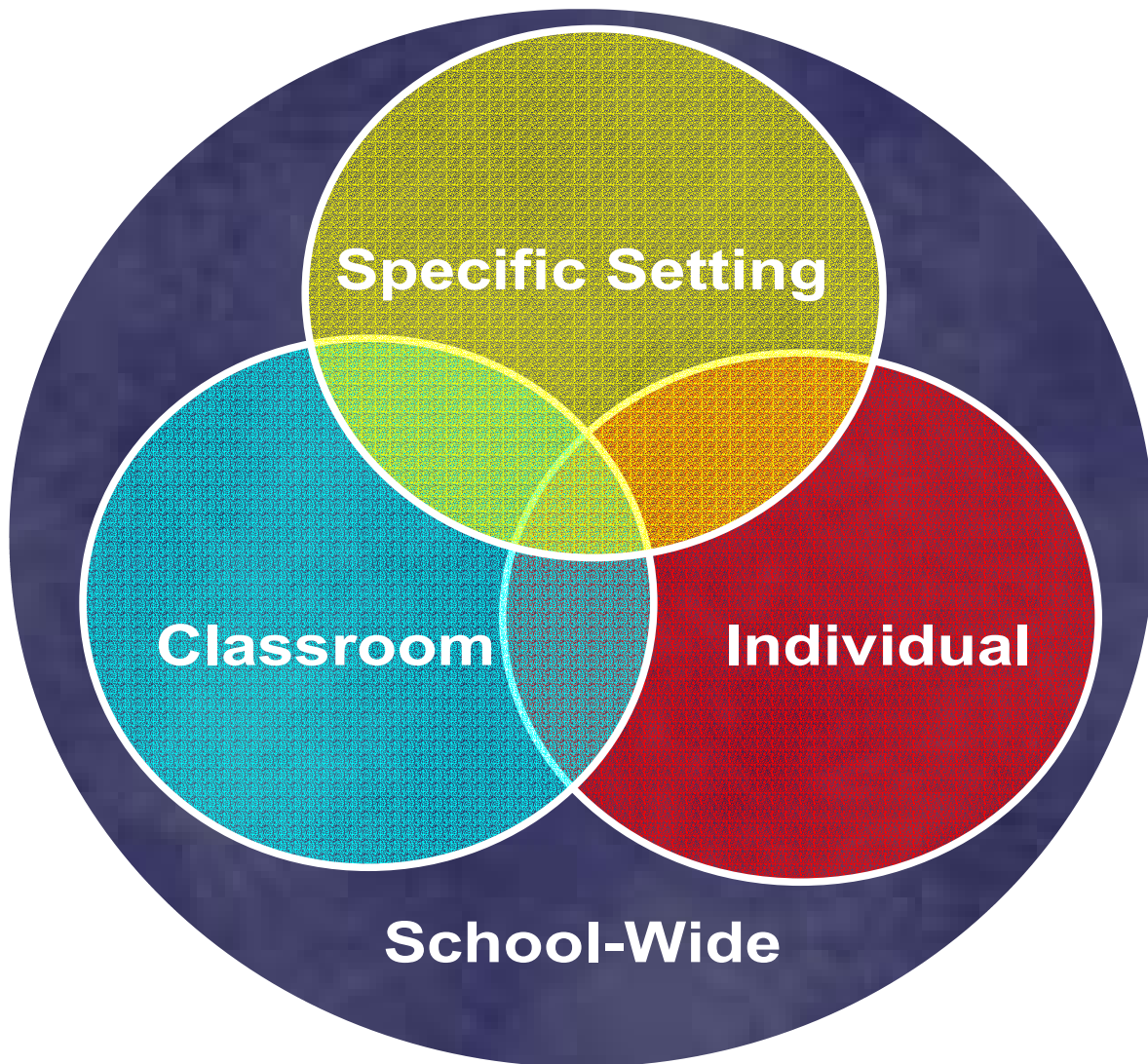


Figure 2. School-wide systems of behavioral support

problem behaviors predictably occurring in the non-classroom areas and will need to develop interventions and supports specific to these environments. Once a particular non-classroom area is identified, a school should (a) specifically identify the problem behaviors occurring in that location/setting; (b) assess the antecedents and setting

in particular non-classroom settings (e.g. going through the lunch line involves standing in line, picking up trays, self-serving food, paying the cashier) and incorporated task analyses in the explication of appropriate behaviors and the instruction of those behaviors or routines for students. This task analytic approach can be applied to define

and teach routines. In a case study of a school experiencing high rates of extremely disruptive hallway behaviors, Kartub, Taylor-Green, March, and Horner (2000) explicitly taught students how and when to be quiet and then made slight alterations in existing antecedents and consequences to effectively reduce hallway noise. Similarly, Todd, Haugen, Anderson, & Spriggs (2002) addressed a setting-specific problem in a school with a large number of discipline referrals during recess. The school had a school-wide program in place utilizing explicitly stated rules and a token economy. Through an analysis of discipline referrals, staff identified the playground as a setting where high rates of problem behavior frequently occurred. Teachers explicitly taught expected playground behaviors, taking each class to the playground to role-play and practicing pro-social behaviors. In addition, they modified their procedures for monitoring students during recess by training the monitors to actively seek and interact with students exhibiting appropriate behaviors and verbally reinforced their prosocial behaviors. The school reported an 80% reduction in office referrals for inappropriate behavior on the playground in the over a one year time period (Todd et al., 2002)..

Positive Behavioral Support System for Classrooms

Today's classrooms contain students who exhibit a broad range of social and academic characteristics. In order to meet the needs of ever-increasing heterogeneous classes, teachers must be able to differentially respond to expected behaviors and problem behaviors. The classroom system of positive behavioral support focuses on explicitly teaching classroom-specific rules, procedures, and routines. The classroom-specific rules should be an extension of the school-wide behavior expectations and, just like the school-wide behavioral expectations, can and must be explicitly taught. Within the classroom, teachers typically have a set of rules to convey their expectations for student behavior. For example, a teacher may have the rule, "Be prepared." Being prepared may include handing in homework before the bell rings, sharpening pencils, sitting quietly, and opening textbooks to a specified page number written on the board. It is imperative that the teacher adopts an instructional approach and demonstrates what the expectation of being prepared "looks like" across the different conditions that the expectation applies. Just as important, the teacher must follow-up with procedures for acknowledging students who meet classroom behavioral expectations

and correcting persistent rule violators. Many teachers apply a range of strategies for encouraging expected behaviors. In response to appropriate behavior, they may award praise, stickers, happy notes home, special privileges. In other words, a teacher should implement procedures to differentially reinforce expected behaviors. It is just as important, however, to carefully prepare a continuum of options for responding to problem behaviors. Without a range of planned responses to select from, a teacher may frequently opt to administer an office discipline referral- thereby removing the aversive stimulus (i.e., student/student's behavior) and negating the task of determining a further punishment. Unfortunately, however, this reactive response can backfire, particularly if it is used too often for offenses that may be effectively decreased without removing the student. A referral to the office can quickly lose its desired effect for repeat offenders, particularly those students who do not find the classroom reinforcing. In fact, for some children, administering a referral that results in their immediate removal from the classroom setting may reinforce their problem behaviors. To prevent office discipline referrals from losing their punishing effect, and to prevent some learners from ultimately discovering that problem behaviors are a vehicle for escaping classroom demands via receiving a discipline referral, it is vital that teachers have a continuum responses to inappropriate behaviors at their disposal. Some examples are: (a) delayed access to a preferred activity, (b) temporary change of the student's assigned seat, (c) planned withdrawal of reinforcers (i.e. response cost), (d) temporary removal from a reinforcing activity (i.e., time out from positive reinforcement), and (e) restitution. Of course, the nature and severity of a penalty depends on the actual offense. And the most important thing to remember is that techniques for decreasing problem behaviors are only one aspect of supporting student behavior. A reinforcing environment should be created in which there is a much larger number of interactions in which the student finds positively reinforcing than punishing. Punishment procedures alone will not sustain gains in desired behaviors in the long run, and is most effective when used in conjunction with explicit instruction of expected behaviors and procedures for communicating to students (e.g., acknowledgements, reinforcement) when they meet those behavioral expectations.

Positive Behavioral Support for Individual Students

For some students, school-wide and classroom level supports may be insufficient to meet their behavioral needs. Students with severe and chronic behavior problems often require more intense, focused systems of intervention. The foundation (both educationally and legally) for establishing an individual system of support a functional behavioral assessment (FBA) of the student's problem behavior and the contexts in which it occurs (Sugai, Lewis-Palmer, & Hagan, 1998). Amendments to IDEA specified that behavior support plans for students with behavior problems must be based on information gathered from an FBA. FBA is a process for (a) clearly specifying the problem behavior of concern, (b) gathering data regarding the student and the nature of his/her targeted behaviors, (c) forming an hypothesis regarding the functions of the student's behavior, and (d) confirming the hypothesis. This process assumes that the student's problem behavior serves a purpose (e.g. escaping academic demands/getting social attention from others) and is affected by environmental stimuli. Relying on these assumptions, student behaviors and the environments in which occur are carefully analyzed in order to confirm the hypothesis and proceed with the development of an individualized, function-based intervention plan (Horner, Sugai, Todd, & Lewis-Palmer, 1999-2000; Sugai, Lewis-Palmer, & Hagan-Burke, 1999-2000).

USING POSITIVE BEHAVIORAL SUPPORTS TO DEVELOP A SCHOOL-WIDE DISCIPLINE PLAN

A comprehensive school-wide discipline plan provides the foundation for SW-PBS and each of the classroom, non-classroom, and individual student systems of behavioral support. A comprehensive school-wide discipline plan includes (a) a common approach to discipline, (b) a clear set of expected behaviors, (c) procedures for teaching expected behavior, (d) a continuum of procedures for encouraging expected behavior, (e) a continuum of procedures for discouraging inappropriate behavior, (f) procedures for on-going monitoring & evaluation (Sugai & Horner, 1999).

Common approach to discipline

A common approach to discipline is needed for the consistent implementation of a school-wide discipline plan. Rarely do all staff in a school adopt similar rules, expectations, and routines.

Programming for generalization of learned behaviors is not an automatic process and is fundamental in changing behavior (Baer, Wolf, & Risley, 1968; Stokes & Baer, 1977). Coming to agreement regarding the adoption of an instructional approach to discipline is an important initial step to implementing a school-wide discipline plan and promoting generalization of expected behaviors.

A clear set of expected positive behaviors

A critical assumption in the SW-PBS is that social behaviors and skills can be taught much like academic skills. An important feature of school-wide discipline planning is the identification of a small set (3-5) of expected positively stated behavior expectations that are then used as "anchors" for instruction. The set of behaviors should be simple and easy for both staff and students to remember. For example, Taylor-Greene and Kartub (2000) described five behavior expectations developed by the positive behavioral support leadership team of a middle school: (a) Be Respectful, (b) Be Responsible, (c) Follow Directions, (d) Keep Hands and Feet to Self, and (e) Be there-- Be Ready. These expectations provided a common language for both staff and students and served as the basis for teaching specific behaviors associated with them across a range of school settings.

Procedures for teaching expected behaviors

Once the school-wide behavior expectations are established, the next step is to identify procedures for teaching those behavior expectations. Typically, schools have student handbooks filled with rules and regulations that are often sent home for a parent signature at the beginning of the school year. While regulations that govern student behavior are important, it is unlikely that so many rules and corresponding negative consequences contained in such a handbook will be sufficient to communicate behavioral expectations for students. The rules conveyed are typically stated in the negative (i.e., what *not* to do) and do not clearly specify what students must do to successfully meet all of the social behavioral expectations at school.

As soon as school-wide behavioral expectations are established, the leadership team must carefully plan how the staff will explicitly teach those expectations to the general student body. This can be done in a number of ways and should overlap with

efforts in the classroom. For example, Lewis, Sugai, and Colvin (1998) described a school that taught the five school-wide expectations over the course of five weeks. One expectation was taught per week in daily 30-minute instructional blocks. Students were provided with a range of positive and negative examples of the expectation, students role played scenarios involving the rule, and curricular links were made to the rules (e.g. a creative writing assignment in language arts that involves telling a story including the rule of the week).

A continuum of procedures for encouraging expected behaviors

A continuum of procedures to positively reinforce and acknowledge displays of expected student behaviors is a fundamental element of a comprehensive school-wide discipline plan. Reinforcement procedures should be linked to the school-wide expectations and serve to communicate to students when they meet behavioral expectations. Further, they should be implemented school-wide--meaning by all staff with all students. For example, Shady Spring Elementary School in Baltimore County Public Schools, Maryland used paper cutouts of hands to acknowledge students following their school-wide behavioral expectations (Herndon, 2003). The hands were given to students with their names written on them when they were observed meeting school-wide behavior expectations. The "hands" were then posted along the school's hallways (approximately 92,000 so far) as a visual reminder of the number of appropriate behaviors occurring within the school.

A continuum of procedures for discouraging problem behaviors

A continuum of procedures for consistently discouraging problem behaviors is another fundamental element of school-wide discipline. Unfortunately, the procedures schools use to discourage problem behaviors may be ineffective. While most schools have a range of sanctions for problem behavior, they often fail to consistently apply them. For example, a student in one classroom may verbally harass another student and the teacher may decide to ignore it, while in another classroom, a student who does not bring class materials to class may be sent to the office with a discipline referral. Another potential problem that will render intended punishers ineffective is when disciplinary procedures inadvertently reinforce problem behavior. For

example, it is common for schools to have an in-school suspension room or time-out area. However, such areas are often not used in a manner that would discourage future occurrences of problem behavior. Consider the assignment of in-school detention for a student who frequently causes classroom disruptions. Once the student "learns" that disruptive behavior results in being removed from the classroom, he may engage in that behavior more frequently if he desires to escape/avoid classroom demands. On the other hand, a in-school detention may be an effective deterrent if the problem behaviors are maintained due to teacher or peer attention or if there is a mechanism to ensure the student must complete or make up work if the function of his/her behavior is escape/avoidance maintained. Making sure that there are consistent, clear, and fair disciplinary consequences that have the functional effect of discouraging future occurrences of problem behavior is an important feature of school-wide discipline (Kame'enui & Darch, 1995).

Procedures for on-going monitoring & evaluation

Procedures for on-going monitoring and evaluation of school-wide efforts should be planned for and implemented. Office disciplinary referrals (ODRs) have been identified as an effective method of monitoring the implementation of a school-wide discipline plan (Sugai, Sprague, Horner, & Walker, 2000). ODRs represent an interaction that has taken place between a teacher, student, and an administrator that can be used for problem-solving and action planning for school-wide discipline. ODRs should be reviewed by the school's leadership team on a bi-monthly basis. Typically, ODRs should be organized by (a) number of referrals per day per month, (b) type of problem behavior, (c) location, (d) time of occurrence, and (e) student. Two main methods are available to schools for organizing their data. The first is using Microsoft Excel or a similar computer program that can generate a spreadsheet. The second is through an on-line program called the School-Wide Information System (SWIS) housed at the University of Oregon (see <http://support.swis.org/> for a demonstration of the on-line system). SWIS will warehouse the data for a school and generate the previously mentioned graphs an using user-friendly interface that is ideal for teachers and administrators who may not be as well versed in managing data-sets.

CONCLUSION

This article was written to provide a brief overview of SW-PBS. The purpose was to

communicate the basic features of a school-wide approach to positive behavioral support. Further information on SW-PBS can be accessed at the following website hosted by the *Office of Special Education Program's Technical Assistance Center on Positive Behavioral Interventions and Supports*: <http://www.pbis.org>. By focusing on both prevention and intervention, SW-PBS can foster a school environment that reduces the occurrence of antisocial behavior. When students are provided opportunities to learn and practice prosocial behaviors, teachers will ultimately be able to focus more time on academic instruction and less time on traditional reactive discipline. By engaging in this approach, schools establish themselves as a community force affecting change in the dynamics of the development of antisocial behaviors.

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DO CHILDREN WITH MULTIPLE PATTERNS OF PROBLEM BEHAVIOR IMPROVE? THE EFFECTIVENESS OF AN INTENSIVE BIO-BEHAVIORALLY ORIENTED SCHOOL-BASED BEHAVIORAL HEALTH PROGRAM

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Over the last thirty years, children's behavioral health services in the school have witnessed drastic progress. Over this time, medications for mental health problems have improved. In addition, empirically validated treatments, most of which have come from behavioral psychology, have made their way into Best Practice guidelines for the treatment of children with emotional and behavioral disorders. In 1999, the U.S. Surgeon General reported on many of these practices and suggested their use to enhance treatment outcomes for children. The President's New Freedom Commission on Mental Health (2003) suggested the need for evidence-based practices to become a regular part of behavioral health care practice and suggested setting up and evaluating the effectiveness of such practices in demonstration projects. In addition, in the 2003-year school year, Children Crisis Treatment Center participated in a new school based program, which focused on the treatment of children with emotional and behavioral disorders in the school. Twenty-four children entered into the program over the course of the first year. Each child received a functional behavioral assessment and an individualized behavioral intervention plan. The treatments in these plans represented evidence based, best practices such as contingency management procedures like token systems with response cost, behavioral skills training, and problem solving training. The system functioned as a revolving entry program providing behavioral consultation to teachers, behavior therapy to children and direct care support to implement non-technical behavioral interventions. Of the eleven staff in the program, three had a masters' degree in counseling or a related field, who served as both behavior therapists and behavioral consultants to the teachers. Seven staff had bachelors degree in psychology related fields and one-year experience. Bachelor level staff provided direct care to the children on a rotating basis across the children's school day. The program never had more than twenty-two children at any one time. The pre-post scores represent the scores at the child's entrance and exits from the program, or entrance to the end of the school year. The average length of time represented in these scores for a child in the program was approximately 6 months. Of the original group, 18 received pre-post scores on the Achenbach: Teacher Report Form. One child's pre-post scoring pattern was in the normal range for both instruments, so we excluded his scores from the analysis. This paper represents an outcome analysis of the effectiveness of this program. Using the Jacobson and Truax's (1997) reliable change index score, we rated large behavioral response classes (or what some would refer to as psychiatric symptoms) to determine if clinically significant improvement resulted from the program. Using these measures, enhanced functioning occurred for twelve out of seventeen scores or 70% of the children. In addition, five out of the 17 or approximately 30% showed enough improvement to score as partially recovered.

INTRODUCTION

The last thirty years have witnessed incredible gains for children with emotional and behavioral disorders in both medical and psychosocial interventions (Department of Health and Human Services, 1999). Science has led the change in revolutionizing intervention practices. This work officially culminated with the release of the Surgeon General's report in 1999 (U.S. Department of Health and Human Services, 1999). This document reviewed state of the science advances in the understanding and treatment of a host of behavioral health issues and had an implied offer of an age in which new treatments would revolutionize clinical practice. It drew on the work began by the clinical psychology division of the American Psychological Association (Chamberless,

Baker, Baucom, Beutler, Calhoun, Crits-Christoph, et al., 1998). Unfortunately, many children with behavioral health problems still wait for the day for these interventions to arrive (Chamberless & Ollendick, 2001; Wang, Demler, & Kessler, 2002).

In 2003, the President's New Freedom Commission on Mental Health issued a report. One of its five major goal areas is to increase the movement of evidence-based practices into mental health practices. Thus, the call for a movement from efficacy studies to effectiveness studies. Efficacy studies evaluate interventions in controlled research and effectiveness studies where researcher and practioners design the intervention to the practice settings and evaluate the programs effects on particular children (Kratochwill & Stiober, 2002). The New Freedom Commission suggests using demonstration projects to

¹Special thanks is offered to Community Behavioral Health, for without their dedication this program would not have be created. In particular Judith Dogan, their chief psychiatrist at the time, played a critical role in inspiring the program.

help facilitate this course of action. Unfortunately, field studies often cannot adhere to most methodological standards, which serve as the core of clinical efficacy research (Peterson & Bell-Dolan, 1995).

At the same time the report emerged, we were completing our first year of a demonstration project in children's behavioral health. The program was developed at the request of Community Behavioral Health, the county managed care agency and in collaboration with the local school system. The program was designed for children with emotional and behavioral disorders and its focus was to help reduce behavioral problems in these children. The program was an intensive behavioral intervention program, which utilized functional behavioral assessment information (DuPaul & Ervin, 1996; Reitman & Hupp, 2003; Skinner, 1953; Wacker, Berg, Cooper, Derby, Steege, Northup, & Sasso, 1994; Individual's with Disability Education Act, 1997) to guide the use of empirically based practices for children with behavioral disorders (Walker, 1997, Walker, Colvin, & Ramsey, 1995).

We had previously decided that all children in the program would be assessed using the Teacher Report Form of the Achenbach (Achenbach & Rescorla, 2001). Such behavioral rating scale information is often very helpful in conducting a thorough functional behavioral assessment because it tracks the movement of large response classes of behavior (Alberto & Troutman, 1996; Merrell, 2000). The author decided to look at the data to determine the overall program effectiveness and wanted to determine the importance of the intervention to each individual client (Kendall, 1999). The basic question to be answered for the author in nonprofessional terms "Do children with multiple psychiatric problems in a real world setting improve?"

While direct assessment is preferred for most behavioral interventions, especially due to the situational specificity of behavior (Kazdin, 1979), indirect measures such as rating scales can be useful in tracking large response classes. Rating scales allowed us to track overall response classes to determine if more than one area of the child's patterns of behavior was improving. This coupled with the improved validity and reliability of rating scales has made rating scales one of the most popular methods of assessing children with emotional and behavioral disorders (Wilson & Reschly, 1996). While rating

scales certainly do not represent "objective" measures of a child's behavior problems (McConaughy & Ritter, 1997), Kratochwill, Elliot, and Rotto (1997) suggested rating scales as a best practice way to determine the effects of consultation practice.

Once we had the scores, the issue became how to determine if progress indicated meaningful improvement in the client's life. The answer to that was provided by Neil Jacobson and colleagues (Jacobson & Truax, 1991; Jacobson, Follette & Revenstorf, 1984) and had been used previously to assess the effectiveness of behavioral parent training programs (see Ruma, Burke, & Thompson, 1996). Accordingly, what Jacobson and colleagues termed clinical significance, or what behavior analyst's would refer to as enhanced functioning (Alberto & Troutman, 1996), could be determined by taking the pre standard score on the Teacher Report Form and subtracting the posttest standard score. Next, divide the scores by the standard error for the measure. Jacobson and his colleagues call this statistic the reliable change index (Christensen & Mendoza, 1986; Jacobson, Roberts, Berns, & McGlinchey, 1999). Next, the research compares number to the standard cut-off of 1.97, which represents greater than 95% confidence that the score is not by chance. If it is greater than the number, then clinically significant change has occurred (Jacobson, Roberts, Berns, & McGlinchey, 1999).

Jacobson and colleagues (1999) suggested that five outcomes are possible. These outcomes are defined as:

- (1) Recovered- the reliable change score passes the 1.97 cut-off and the overall score drops below clinical range;
- (2) Improved- the reliable change score is greater than the 1.97, but the overall score did not pass out of the clinical range;
- (3) Unchanged- the code if neither criterion is met;
- (4) Regressed- when the reliable change score is passed in the opposite direction; and
- (5) Unchanged- the client passes the cut off but does not show reliable change.

The reliable change index measures meaningful change. This change is more than would be expected under normal passage of time or life experiences (Jacobson, et al. 1991). In addition, this change is directly attributable to the interventions (Kratowill, Elliot, & Rotto, 1997). However, research on reliable change scores tends to be scarce. Blackstead, Hatch, Lambert, Eggert, Goates, and Vermeersch, (2003) demonstrated that the construct of clinical significance has merit and does have predictive validity. McGlinchey, Atkins, & Jacobson (2002) found that those in the recovered category were less likely to relapse into depression two years after the treatment. Still, more research needs to be done to demonstrate the empirical validity of these categories. We used the category of reliable change as improved in our study and as suggested by the Achenbach scoring manual applied to not just the externalizing and internalizing scale but to all the empirically derived subscales. We believe that this gives a more complete picture of the child's overall behavioral functioning, especially when they have several core psychiatric problems.

METHODS

Staff:

The staff consisted of three master-level personnel and seven bachelor-level personnel. Of the three master-level-personnel, one had a degree in counseling, the second in social work and the last in family therapy. All were involved in a certification program to sit for the certification exam in behavior analysis offered through a criminal justice department at a local University. At the time of the study, the first two master level personnel had completed two of the four courses needed to sit for the exam and the last had completed one course. By the end of the study, the first two had completed all four courses and the last had completed three of the four courses. All master-level personnel had at least three years working with children and two of the years were post-masters. All the bachelor staff had at least one year working with children and a psychology related degree. All staff had a thirty-hour agency orientation, which had at least four to six hours focused on behavior management principles such as setting up token systems and social skills training. In addition, staff had eight hours of training focused on crisis prevention and intervention.

Subjects:

Of the initial twenty-four subjects, only eighteen had both pre and post assessments on the TRF. Thus, we excluded the results of six for no pre-post assessment. Of the eighteen, one subject scored in the normal range for both the pre-post assessment. Thus, we decided to exclude his scores also. A licensed psychologist assessed and diagnosed all children entering into the program. On average children in the school-based program received 2-4 hours/week of master level contact and 7-9 hours/week of bachelor level contact. This left a total of 17 subjects described below:

SUBJECT 1 is a 9-years-old male. Subject 1 is African American with normal cognitive functioning. The difference in scoring of the TFR represents 2 months. Diagnosis on admission to the program was Attention Deficit Hyperactivity Disorder, Oppositional Defiant Disorder, History of Sexual Abuse, as well as a history of high lead levels. In the previous year of school, the district suspended Subject 1 over a dozen times and he missed between 40-50 days of the school year. Child was in outpatient therapy for three years prior to this intervention and continued in outpatient therapy through the time in the school-based program. At entry into the program, he was physically aggressive to peers between four-six times/day and verbally aggressive 12-15x/day.

SUBJECT 2 is an 8-year-old African American female. Subject 2 is an A & B student. The difference in scoring on the TRF represents a span of 8 months. She was diagnosed with Oppositional Defiant Disorder, Intermittent Explosive Anger Disorder, and a rule out for Bipolar Disorder. In addition, she suffered from asthma. Five weeks prior to the entry into the school-based program, child was placed on Tenex, which was increased during the course of the program to 1 mg and Risperidol .5 mg for the first time. Risperidol was increased to .5 mg b.i.d. during a hospitalization in February. At entry into the program child was on average disruptive in class 3-5 times/day in which she would knock over books, walk around the room, and break things. The duration of her outbursts were considerable long on observation from 30 minutes to 90 minutes per episode.

SUBJECT 3 is an African 12-year-old male. The difference in scoring on the TRF represents a span of 5 months. Subject 3 in the previous year was involved in a hospitalization and partial

hospitalization program. In addition, in the previous school year he was suspended on three separate occasions. His diagnosis at entry into the program was Depressive Disorder, NOS and Oppositional Defiant Disorder. In addition, the evaluation stated that psychotic features characterized his depression in the past. At entry, he was taking Paxil and Risperidol, which parent discontinued shortly after his discharge from the hospital and entry into the program. He was having 6-8 bouts of physical aggression on average/day, which lasted for three to five minutes or until broken up by others. It was noted that the child rarely completed any school assignments and that he would often walk off from school activities and wander the halls.

SUBJECT 4 is a 10-year-old African American male. Overall scoring on the TRF represents 6 months. Prior to the entry into the program, he was placed on Ritalin 5 mg 3x/day and for four years received mobile therapy, behavioral consultation in the school and a direct bachelor level staff person of more than 35 hours/week to work with him. On entry into the program, the child was having three physical fights/week at school, which was rated as moderate in intensity. He was actively stealing at home at least 2x/month. He was caught frequently lying and throwing temper tantrums 2-4x/week. He engaged the teacher in bickering and cursing from 4-6x/school day. He was diagnosed as having Attention Deficit Hyperactivity Disorder and Oppositional Defiant Disorder.

SUBJECT 5 is a 7-year-old African American male. Prior to entering into the program, his father was incarcerated. His difficulties prior to entering the program were disruptive behavior, fighting, and threatening other students in kindergarten and first grade. In addition, he had difficulty with comprehending teacher instruction. He was diagnosed as having Disruptive Disorder, NOS, Severe Attention Deficit Hyperactivity Disorder, and a rule out for an early mood disorder. When he entered the program, he was repeating first grade. Prior to entering the program, he was on Ritalin but while in the program, he was switched to Adderall 5 mg t.i.d. Baseline data collected on entry into the program showed an average of 16 acts of physical aggression/day, which included shoving, pushing, spitting, hitting, kicking, and biting. Verbally aggressive behavior included taunting and teasing other children as well as verbal threats occurred at a rate of 5-10x/day. This behavior if left unchecked could continue for 15-20 minutes.

Calling out and general classroom disruptive behavior occurred from 11-33x/day with an average rate of 22x/day. Overall scoring on the TRF represents 4 months.

SUBJECT 6 is an 11-year-old African American male. He was diagnosed with Oppositional Defiant Disorder with a rule out for Conduct Disorder and Attention Deficit Hyperactivity Disorder combined type. He began having behavioral problems in kindergarten, which he was retained in due to behavioral difficulties. SUBJECT 6 had previously attacked his brother with a weapon and considered himself, a "bully." The year prior to entering the school based program, he was suspended twice for fighting and "disrespectful behavior to teachers." Subject 6 was not on medication at any point prior to or after entering the program. Overall scoring on the TRF represents 6 months.

SUBJECT 7 is a 10-year-old African American male. Overall scoring on the TRF represents 8 months. SUBJECT 7 is diagnosed with Depression, NOS, Attention Deficit Hyperactivity Disorder, and Post Traumatic Stress Disorder with a rule out for psychotic thought disorder. Subject 7 had a long history of migraine headaches. Subject 7 was on Ritalin 10 mg b.i.d, when entering in the program, starting five months prior, and remained on through the program. During the previous school year, Subject 7 was suspended several times for fighting, being disrespectful, and throwing chairs. He was placed in the school accommodation room during the previous year at least 2x/week. He was frequently caught bullying other children in the previous year. At entry, he was physically aggressive 4-6x/week toward other children.

SUBJECT 8 is a 9-year-old African American male, whose father during the time he was in program was incarcerated. Overall scoring on the TRF represents 5 months. Full scale IQ measured by Weschler Abbreviated Scale of Intelligence was 109 (Average range). His diagnoses on entry were: Attention Deficit Hyperactivity Disorder combined type, Oppositional Defiant Disorder, and a rule out for Conduct Disorder. In addition, child suffers from severe asthma. SUBJECT 8 was a frequent fire starter. Prior to entry into the program child had frequent hospitalizations (3) and partial hospitalization (2). He had out patient therapy for two

years, family therapy for one year, and received a behavior specialist consultant (master level person to design a treatment plan) and therapeutic support staff person (to execute the treatment plan) for one year prior to entering into the school-based program. Just prior to starting in the program, the school suspended the child for his fourth time that school year. In the previous year, the school suspended him over ten times. When he started the program, he was on 30 mgs of Adderall XR. The psychiatrist continued the medication through his time in the school-based program. His aggressive behavior was occurring at a rate of 3 episodes of physical aggression per day (slapping, hitting) and 6 episodes of verbal aggression/day. He also engaged in 5-7 episodes of classroom disruption/day.

SUBJECT 9 is an 11-year-old African American male. On entering the program, he was diagnosed with an Adjustment Disorder with mixed disturbance of emotions and conduct, Oppositional Defiant Disorder, rule out for Depressive Disorder, NOS and a rule out for a Learning Disorder, NOS. Overall scoring on the TRF represents 7 months. SUBJECT 9 a long history of behavioral problems dating back to the first grade in the school and during the previous year was suspended on five different occasions and made frequent trips to the schools accommodation room. Just prior to entering the program, Subject 9 was suspended twice. Initial data collection indicated that Subject 9 talked back to his teacher 7-10x/day, rarely followed directions prior to being told 4-5x, and threw tantrums in school 2x/month. SUBJECT 9 was not on medication before or during the study.

SUBJECT 10 is a 6-year-old African American female. He was diagnosed as having an Adjustment Disorder with Mixed Disturbance of Emotions and Conduct and Parent-Child Relation Problems. In addition to the school based behavioral health program, this child received three hours/week of mobile therapy in the home. Child was not on any medication before or during the program. At the time of admission, baseline data was defiant to teacher's directions 18-20 times per day. SUBJECT 10 had approximately 1-2 tantrums/day, which were recorded as lasting from fifteen minutes to one hour. When in conversation or playing games, SUBJECT 10 did not wait her turn and did not allow others to take their turn 4-6times/day. Overall scoring on the TRF represents 2 months.

SUBJECT 11 is a 12-year-old African American male. He was diagnosed with Oppositional Defiant Disorder, Post Traumatic Stress Disorder, Learning Disorder, NOS, Attention Deficit Hyperactivity Disorder, and Childhood Antisocial Behavior. SUBJECT 11 had a history of being placed on Ritalin but adoptive parent "weaned" him off. SUBJECT 11 was not on any medication at the start of the program, nor was he placed on medication any time during the course of the program. SUBJECT 11 was an adopted child who had a history of his foster parent dying under mysterious circumstances. Prior to entry into the program, he had received multiple suspensions including carrying weapons to school. SUBJECT 11 was hospitalized several times prior to entry to the program; the most recent was for aggression in 1997. SUBJECT 11 had a history of probation for fire setting but did not engage in such behavior while in the program. At time of entry into program, SUBJECT 11 was recorded as having 1-2 acts of fighting/day, 3-5 acts of pushing and shoving other children/day, 6-8 episodes of disruptive behavior/hour, mostly calling out in class, getting out of seat, or teasing other children. Bullying was occurring at the rate of 5-6 times/day. Overall scoring on the TRF represents 6 months.

SUBJECT 12 is a 6-year-old African American male. His full Scale IQ as measured by the WISC III was measured at 94. The verbal I.Q. was measured at 100 and the Performance IQ was measured at 89. Child was diagnosed with Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder and Learning Disorder, NOS. He also received a rule out for Depressive Disorder. SUBJECT 12 received both outpatient psychotherapy and intensive case management both prior to entry in the school based program and throughout the school based program. Prior to entering program child was receiving a behavior specialist consultant to consult both at home to parent on child management and at school to consult to teacher. In addition, he received individualized home and school behavioral support in the form of a bachelor level support staff person for fifty hours/week. In addition, he received an in home family therapist for three hours/week who was discontinued when he entered the school based program. Parent attended a psychiatric evaluation for medication but declined placing child on medicine for depression. Overall scoring on the TRF represents 8 months.

SUBJECT 13 is a 7-year-old African American male. Prior to entry into the program, the child was involved with a partial hospitalization program for two years for disruptive behavior. Just prior to entry into the program, SUBJECT 13 was receiving services in the form of behavior specialist consultation at two hours/week and mobile therapy at a rate of three hours/week. SUBJECT 13 was receiving Concerta 18 mg in the morning both prior to and during the course of the school-based program. On entry into the program, he was diagnosed with Attention Deficit Hyperactivity Disorder, combined type, Oppositional Defiant Disorder, and Mixed Receptive-Expressive Language Disorder with a rule out for Mild Mental Retardation. Baseline rates of behavior were 3-4 acts of aggressive behavior/day, usually this took the form of pushing peers, which tended to last from 2-5 minutes. Another behavior of interest was his disruptive behavior, which lasted 1-2 minutes and occurred about 10-15 times/day. The final behavior of interest was verbal aggressive behavior, which occurred 40-50 times/day. Overall scoring on the TRF represents 4 months.

SUBJECT 14 - is a 10-year-old African American male. SUBJECT 14 had behavioral problems dating back to his time in head start and continuing through first and second grade. In the previous year, teachers reported him as being very disrespectful to teachers and often talking back to them. He engaged in many oppositional and disruptive behaviors in the classroom. On entry into the program he was diagnosed as having Attention Deficit Hyperactivity Disorder and Oppositional Defiant Disorder. Baseline data at entry indicated that SUBJECT 14 was defiant of teacher requests 5-6x/day and out of his classroom 3-4 times/day. Overall scoring on the TRF represents 8 months

SUBJECT 15 is a 9-year-old African American male. SUBJECT 15 was diagnosed with Oppositional Defiant Disorder with a rule out for Mixed Receptive and Expressive Language Disorder and a rule out for Learning Disorder, NOS. At nine, SUBJECT 15 was still only in the second grade and struggling. Child entered school late and then repeated the first grade. He had no previous behavioral health treatment. In the previous year, he was suspended several times for fighting and was in the principal's office almost every day in the beginning of the school year. Initial baseline data at entry indicated SUBJECT 15 was exhibiting 3 to 4 acts of aggression/day, which varied in form but

included mostly hitting and pushing, some biting and kicking were also noted. Aggressive behavior was usually brief only lasting less than 1 minute. SUBJECT 15 exhibited 10-12 acts of disruption/day, which could last as brief as 1-2 minute but occasionally, would erupt to bouts that would be 30 minutes or longer. SUBJECT 15 also engaged in bullying of other children. On baseline, the bullying occurred at least 3x/day but was difficult to track because it would occur when staff was not around. Episodes that were noted lasted two to five minutes. Overall scoring on the TRF represents 6 months.

SUBJECT 16 is an 8-year-old African American male. SUBJECT 16 had over ten suspensions in the previous school year. In addition, he was seen for psychiatric problems on twelve separate occasions at Einstein Crisis Center. SUBJECT 16 just prior to entry in the program was tried on a Ritalin 10 mg in morning and 5 mg at noon. A few days after starting the medicine, SUBJECT 16 wound up back at the crisis center after an attempt to choke his mother. SUBJECT 16 His Ritalin was increased to 10 mg in morning and 5 mg at noon and 5 mg at 4 p.m. Prior to entry into the program, he received behavior specialist consulting services to the school and a direct full time one on one staff support person to execute interventions designed by the behavior specialist. At entry, he was diagnosed with Disruptive Disorder, NOS and Attention Deficit Hyperactivity Disorder. Baseline data at entry showed SUBJECT 16 as having 4-6 acts of physical aggression per day. Most of these acts were brief punching and hitting episodes of other children. Another targeted behavior at entry was blaming others for his mistakes, which varied widely but on average occurred 8 times / school day. The final behavior judged at baseline was cursing which occurred approximately 2-4x/day. Overall scoring on the TRF represents 6 months.

SUBJECT 17 is an 8-year-old Latino male. Prior to entry in school based SUBJECT 17 was involved in several outpatient and partial hospitalization programs for disruptive behavior. He was prescribed Adderall and Dexidrine prior to entering the program but was taken off the medication shortly before his admission to the program. Reason for removal of the medication was not stated. On entry he was diagnosed with Oppositional Defiant Disorder and Attention Deficit Hyperactivity Disorder. Overall scoring on the TRF represents 5 months.

Descriptive statistics: 14 out of 17 male = 82% male, 18% female. The average length of time in program was 5.9 months. Average age of children of child was 9 years old. Sixteen, of seventeen (94%), of the subjects in this study were African American and one child was Latino.

INTERVENTIONS BY SUBJECT

All children received a functional behavioral assessment, which was developed by interview of the primary teacher using the problem identification and analysis format from Bergan and Kratochwill's behavioral consultation model (1990) and direct observation of the child to determine setting, antecedents and consequences for misbehavior. Goals for intervention were set in collaboration with the teacher and parent. All goals met best practice guideline of having a person, target behavior, condition, criterion, and target date (see Alberto & Troutman, 1996; Bergan & Kratochwill, 1990). In addition, goals all listed the behavior to reduce and an alternative competing behavior to increase. All bachelor-level personnel and master-level personnel received daily peer supervision in a team format on each case. De-escalation procedures were created based on an individualized analysis of the child's behavior chains, which result in escalation as outlined in Walker, Colvin, and Ramsey (1995). Many subjects were on some form of medication, which was continued through the program. All children on medication received regular psychiatric evaluations and medication management. Detailed descriptions of the subject's interventions are listed below:

SUBJECT 1 was begun on medication in early October. He was receiving Adderall 5 mg 2x/day then he was increased two weeks later to 10 mg in morning, 5 mg at noon and 2.5 mg in the evening. He was assessed for the school-based program on the TRF on Oct 23rd. At that point, it was reported that medication was yielding a slight but not significant improvement but often children with history of high lead levels are slow to improve on stimulants. Functional behavioral assessment identified unstructured environments such as the lunchroom as triggering much of his out of seat and off task behavior and transitions from classroom to classroom triggered much of his fighting. The assessment also revealed that out-of-seat behavior, sexual gestures, and off-task behavior was maintained by peer attention, while fighting and cursing were maintained by escape from transitioning with peers.

Interventions included an individualized de-escalation procedure based on a task analysis of Subject 1's escalation cycle, change in seating to reduce access to peer attention for inappropriate behavior, social skills training group and a contingency management procedure, which combined praise and tangible rewards for appropriate discussion with peers with a response cost for sexual statements and physical aggression. Response cost mainly took the form of "Owed Time" in which H.H lost five minutes of valued time such as recess. Teacher received ongoing behavioral consultation from the master level staff on praising child for cooperation and task completion, sticking with the owed time and token program, and discussion on ways prompt child to use social skills. Behavioral consultation also led to the development of a "daily report" being sent home and the use of the teacher giving the child greater amounts of positive attention.

SUBJECT 2 was briefly hospitalized for one week while in program in early February. After which she attended a partial hospitalization program for three and one half weeks. During hospitalization, the dosage of Risperidol was increased. Functional behavioral assessment determined that one trigger for SUBJECT 2's behavior was when her teacher was absent from school. Another trigger for aggressive behavior occurred when peers did not ask SUBJECT 2 to play with her friends in the schoolyard. Both of these often triggered aggressive behavior, hitting, and biting. Another trigger when the teacher gave her a command or request. This often triggered both aggression and noncompliance. Settings that were most likely to cause problems were gym class and the lunchroom. Function of behavior was determined to escape from tasks that produced frustration and from adult commands. Disruption in the classroom often served the function of engaging the teacher and getting teacher attention. Interventions included an individualized de-escalation procedure for SUBJECT 2. Master level person began weekly behavioral consultation to the teacher to help her problem solve using information from the functional behavioral assessment to create strategies to lessen SUBJECT 2's aggressive behavior and increase her social skills. Master level person engaged in weekly home phone calls to parent of SUBJECT 2. In addition, bachelor level personnel directly trained SUBJECT 2, through coaching and feedback, to ask other children if she can play and other social skills to initiate interaction with other children. The bachelor level person helped child to create a list of the positive behaviors that she

did that day to report to others, so that she could get attention for speaking positively about herself to teacher and staff. The bachelor level person trained her in behavioral coping skills (such as relaxation and distracting herself) and to reward her for skill use when she occurred, through a token reward system. The bachelor level person gave particular assistance in the lunchroom with praise for appropriate behavior, 0-4 point system with the loss of two points for misbehavior but the opportunity to earn one point back quickly if she accepted the consequences "well." Bachelor level person constructed a daily log to send home every day. Teacher used a group reward in the classroom and verbal praise for improvements in SUBJECT 2's behavior. Teacher also set up the opportunity for SUBJECT 2 to engage in more interaction with her peers that was appropriate such as playgroups and set work groups. SUBJECT 2's teacher also used a response cost of loss of recess for physically or verbally aggressive behavior, which was tailored during consultation. All staff executed an individualized de-escalation procedure based on a behavior chain analysis of the SUBJECT 2's escalation cycle.

SUBJECT 3 prescribed but not taking Paxil and Risperidol prior to program entry into the program. His compliance with this medication was poor after his hospital stay. The psychiatrist changed his medication, while he was in the program to Cylert 10 mg 1x/day. Subject 3's functional behavioral assessment results indicated that he was more likely to occur during recess and during transitional times for aggressive behavior. Off task behavior occurred during more difficult instructional times for him such as math and reading classes as well as during independent seatwork time. This would often lead to child leaving the classroom and wandering the hallways. The function of aggression appeared to be to get an intimidation reaction from peers immediately and after to get peer compliance and tangibles. The function of being off task and wandering the halls started as escape behavior but then when he entered the halls, the behavior achieved sensory reinforcement. The team tried multiple interventions including behavioral consultation with the teacher on methods to manage and modify child behavior in the classroom based on functional assessment results. In addition, master level personnel conducted individual sessions 1x/week, which focused on problem solving and emotional support. The bachelor level personnel engaged in prompting assignment completion. In addition, the bachelor level

personnel made frequent interactions with the subject to increase stimulation. A response cost program was instituted which focused on after school detention for failure to complete assignments. Subject 3 also attended a social skills group 1x/week with the bachelor level staff. Both teacher and bachelor level staff were to help child to participate in small groups and gradually increased the group size until Subject 3 was back involved with the whole class. Teacher assessed the child against the curriculum and arranged for the child to receive additional assistance in class (peer tutoring). Teacher also had a class-wide token system in place and did not want an individual token system running concurrently. However, during the course of the program, she agreed to try this point system and Subject 3 began to receive computer time as a reward meeting the point requirement. In addition, the team developed and executed an individualized de-escalation procedure for Subject 3 based on a behavior chain analysis of Subject 3's escalation cycle to prevent events such as destroying school property and assaults on peers. Parents inconsistently gave the medication at home.

SUBJECT 4 was receiving Ritalin prior to entering the program and continued through the program on Ritalin at the same dose. He was also receiving for 4 years a behavior specialist consultant, individual support and mobile therapy. These services were reduced upon entry into the program to only render interventions in the non-school environment. Information obtained from the functional behavioral assessment revealed that SUBJECT 4 occurred when given task assignments, or when the teacher requested that he start to work, which lead to noncompliance, bickering, and classroom disruption. In addition, he would become disruptive mostly in the form of pushing and arguing during transitions to other activities. The function in the classroom for disruption, bickering, and noncompliance was escape, while the function during transitions was mainly to get and maintain peer attention. The team conducted interventions for these problems at multiple levels. At the master level, the clinician consulted with the classroom teacher using a behavioral consultation model which designed interventions based on functional assessment material. In addition, master level personnel helped mother to set up home rules for child and expectations in the home. Finally, master level personnel conducted 1 individual behavior therapy session/week focused on problem solving skills. Bachelor level personnel at the beginning of the school day rehearsed with SUBJECT

4 the classroom rules, prompted him to stop and count to ten and set up reward system to reward child for ignoring others. Bachelor level personnel also had child participate in weekly skills training group focused on role-play with modeling and feedback on appropriate social skills such as methods for resolving conflict. Teacher delivered the tangible rewards to the child. Teacher prompted child to use indoor voice if he became loud and rewarded him for practicing self-control. Teacher also used an in class time-out procedure for disruptive behavior. Finally, the staff created and executed an individualized de-escalation procedure, based on an individualized behavioral chain model of SUBJECT 4's escalation cycle.

SUBJECT 5's psychiatrist changed his medication from Ritalin while in the program. The psychiatrist started him on and continued him on Adderall through out the program. Subject 5's functional behavioral assessment revealed that aggressive behavior occurred mostly when external stimuli such as outside noise and peers fighting distracted him. In addition, he occurred when he transitioned or when peers engaged in "horseplay" such as pushing, which would quickly turn into serious fighting. His aggressive behavior appeared to serve several functions including escape from sensory stimulation, access to peer attention and teacher attention, and his lack of communicative behavior to express being upset. Disruptive behavior and calling out occurred when by teacher lessons, in which he had little interest, low structured classroom activities or at shifts of classroom activities or times where noise level in classroom was high. The function of the calling out seemed to be to get teacher attention or make peers laugh. The function was also to escape stimulation of classroom noise. Verbally aggressive behavior seemed to occur through the day, mostly when the teacher was not monitoring and another student, who he did not like, was present. The function of the verbal aggression was to gain peer compliance and to get emotional reactions from peers. Master level personnel conducted weekly consultation sessions with the teacher. Bachelor level staff conducted weekly social skills training groups. Bachelor level personnel set up daily morning debriefing of the child when he arrived at school at the end of which a daily goal were set and a behavioral contract for reward contingent on meeting goals. Response cost in the form of "owed time" which included loss of free time for minor misbehaviors and in-school detention for more serious misbehavior such as fighting. In addition, the team

removed SUBJECT 5 from lunch due to his difficulty handling unstructured environment. Bachelor level staff rendered praise contingent on cooperation and high rates of attention delivered non-contingently. Bachelor level staff accompanied child during transition to restrooms and other destinations. Bachelor level staff allowed child to move to back of classroom if he became overstimulated and Subject 5 requested to move. Master level staff coached the Bachelor level staff on using "broken record technique," which staff would continuously restate consequences and what the child should be doing. The Bachelor level staff trained Subject 5 on relaxation exercises and rehearsed (1) counting to ten, then counting backwards to one (2) taking a deep breath (3) positive self-statements (4) requesting and going to away time (5) using deep muscle relaxation (6) techniques such as stop, think, and plan. Bachelor level created and executed a reward system to reward the use of such techniques in the natural environment and a daily report to send home to parents. Finally, bachelor level personnel provided redirection in the form of verbal prompting. Teacher would use proximal control techniques, prompt child to apologize when he says offensive statements to other children, and gave child ongoing feedback for his behavior. All staff executed an individualized de-escalation procedure based on a behavior chain analysis of the escalation SUBJECT 5's cycle.

SUBJECT 6's functional behavioral assessment data revealed the following triggers (1) not getting his way or something that he wanted which triggered disruptive behavior (2) when he was teased by others, which triggered aggression and (3) when adults gave him a directive, which triggered noncompliance. Disruption appeared to serve the function of gaining access or a tangible. Both noncompliance and aggressive behavior appeared allow Subject 6 to escape. He received the following intervention from the master level personnel (1) behavioral consultation to his teacher to establish strategies to manage his behavior (2) individual support sessions to help him to adjust to classroom stress and support his learning and using of social skills. The bachelor level interventions included redirection, participating in social skills group. The bachelor level personnel used praise for compliance. In addition the bachelor level person helped to create an activity schedule of enjoyable activities that the client could intersperse through his day to help make it more "enjoyable" and lessen stress. Bachelor level person also created and sent home a daily report.

Parent gave rewards based on daily report. All staff executed an individualized de-escalation procedure based on a behavioral chain analysis of his acting escalation cycle. Teacher avoided placing Subject 6 into competitions because SUBJECT 6 discouraged quickly. Teacher praised Subject 6 for his involvement in activities.

SUBJECT 7's functional assessment stated that his bullying and aggressive behavior occurred when by transitions and being unmonitored for extended periods of time. SUBJECT 7's noncompliance and oppositional behavior occurred when by teacher commands. Function of bullying behavior was to get items from peers and get peers to submit (give up). Oppositional and noncompliant behaviors appeared to function to escape teacher commands. Finally, making strange comments functioned to get teacher and peer attention. Interventions included individual social skills sessions 1x/week by master level personnel, who engaged in role-plays with coaching and feedback. Bachelor level interventions included prompting child to use social skills and setting up token system to reward skill use. Bachelor level created a daily chart to send home to parent. Teacher would interact with child frequently through out the day, this gave more attention and increased monitoring of SUBJECT 7. Teacher made commands within 3 feet of SUBJECT 7. Teacher made eye contact with Subject 7 when giving a command. She gave more start commands and less stop commands. In addition, she began to give more alpha commands and less beta commands. Teacher also implemented antecedent control strategies such as moving Subject 7 to front of classroom, clearing away distractions from SUBJECT 7. The teacher scheduled frequent breaks in routine for Subject 7. Bachelor level person used a daily behavioral contract, which took the points from token system to reward compliance and response cost procedure for noncompliance and placed them for a prearranged choice of rewards. Bachelor level also engaged client in direct behavioral skills training such as study skills, which focused on clearing distractions from work.

SUBJECT 8's functional behavioral assessment revealed that the SUBJECT 8 was having considerable difficulty in both the schoolyard and in the classroom. One trigger for aggressive behavior and vulgar expression was when the teacher was not present monitoring the child or the child was out of the teachers hearing range. The function of the

behavior appeared to get peers to show behaviors characteristic of fear. Subject 8 attacked smaller peers when others are not present. The function of the behavior appeared to gain control over peers. Interventions consisted of weekly behavioral consultation sessions with the teacher from the master level clinician to use behavioral principles to modify child's behavior problems in the classroom. Bachelor level staff used contingency management procedures such as daily behavioral contract, daily point system, and daily reward for a host of behaviors including non-aggressive conflict resolution. In addition, the staff placed child on "owed time" response cost system, where misbehavior lead to the loss of time with peers. The bachelor level personnel also engaged the child in social skills and social problem solving training to teach child alternative ways to get peer attention and to find alternative solutions to problems. Staff directly trained the behavior using instruction, feedback and coaching, and then the team placed the behavior on the child's daily point system. The teacher used a classroom token system, which led to a daily report was sent home. Teacher increased monitoring of the child's behavior. Teacher praised child when he displayed no aggressive behavior in the schoolyard and put a token system in the classroom in place, which she reviewed, in behavioral consultation with the master level clinician. All staff executed an individualized de-escalation procedure based on a behavior chain analysis of Subject 8's escalation cycle.

SUBJECT 9 functional behavioral assessment data revealed that the settings most likely to cause problems were the school playground and hallways for physical aggression. In addition, noncompliance and classroom disruption were most likely to occur when Subject 9's assignments were changed. Finally, daydreaming/off task behaviors were most likely to occur in the morning when teacher was giving assignments. The function of the aggression was to escape teasing and to get "his way". The function of arguing with teacher, off tasks, daydreaming, noncompliance and classroom disruption was to avoid tasks. Interventions included the master level personnel providing weekly teacher consultation and individual support sessions for the child 1x/week. The later sessions focused on support and social skills enhancement. The bachelor level interventions consisted of listening to SUBJECT 9, when his concerns were genuine and ignoring him when the concerns were not. SUBJECT 9 attended weekly social skills group with the bachelor level staff.

Bachelor level staff sent home daily behavioral report. SUBJECT 9 received points on token system for being on task in morning classes and rewards in morning if he was on task for the majority of the ten-minute intervals. Staff executed individualized crisis de-escalation procedure based on a behavior chain analysis of SUBJECT 9's escalation cycle. Teacher established clear classroom rules and praised SUBJECT 9 for completing assignments. When child could not complete assignments, teacher praised child for raising his hand and asking for help. Parent agreed to rendered daily rewards for good behavior and punished child for misbehavior in the home but the team was skeptical as to whether the parent followed through with delivering the rewards.

SUBJECT 10 received mobile psychotherapy prior to and during the receiving of the school-based program. The mobile therapy occurred by a non-school based person, who was a master level therapist, for three hours per week in the home and focused on the parent child relationship. SUBJECT 10's functional behavioral assessment showed that noncompliance occurred in morning hours and when given a directive by teacher. The function of this behavior appeared to be securing longer amounts of teacher's attention. Tantrums were most likely to occur in her main classroom and the function was to escape tasks. The trigger for skipping turns of others appeared to be during games when loosing or the game slowed and during group interactions especially on the playground. The function appeared to be to secure more time or get an extra turn or to secure adult attention. Master level intervention was on going consultation to the classroom teacher. Bachelor level personnel interacted with SUBJECT 10 to ensure that she understood directions, rehearse rules of games, and reward compliance. Staff was to intervene early when SUBJECT 10 experienced problems rendering "hurdle help" to prevent problem from escalating. The bachelor level person also instituted a time-out for non-compliance and failing to turn take. Teacher was careful to provide clear directions. Teacher would use peers to demonstrate and model how to behave or get teacher attention. Teacher provided a predetermined signal to help child to focus before giving directions. All staff executed an individualized de-escalation procedure based on a behavior chain analysis of the SUBJECT 10's escalation cycle

SUBJECT 11's functional behavioral assessment results indicated aggression largely

occurred in unstructured setting such as when the teacher was helping another child or during transitions such as lunch or in the hallways. Subject 11 largely directed aggressive behavior toward female peers. Aggression appeared to be multifunctional: to get a reaction from female peers; sensory in that SUBJECT 11 liked hitting other children; gain access to older peer groups; and it got peer attention. Disruptive behavior occurred by lessons, which were either "slow" or above his level. Another trigger for his disruptive behavior was his peer group becoming disruptive. The function of disruptive behavior appeared to be escape from tasks or the learning environment. Interventions from the master level personnel involved bi-weekly consultation with the teacher, monthly family meetings, and bi-weekly individual sessions to build problem solving and perspective taking skills. Bachelor level personnel engaged in weekly social skills training groups with the child; however, given SUBJECT 11's level of disruption in the group, the team later discontinued this intervention. Bachelor level personnel implemented a response cost program "Owed Time," which deducted minutes from recess for disruptive behavior. Master level staff trained Bachelor level personnel to be assertive with child and not back down from giving consequences. If child argued with staff, they would restate consequences. Bachelor level staff placed SUBJECT 11 on a token system, which awarded points on appropriate behavior and verbal praise for staying on task and not acting aggressively. The staff felt that the child's difficulty with transitioning should lead to his removal from transition times with others. He would transition with the bachelor level personnel. Since this was restrictive, he would earn his way back to transitioning with others, through his token system. Bachelor level personnel sent home daily report to adoptive family. All staff executed an individualized de-escalation procedure based on a behavior chain analysis of SUBJECT 11's escalation cycle. Teacher gave child on going feedback about his behavior in class and engaged in a program of contingent praise for appropriate behavior. Teacher engaged in a modified token system with a response cost. She also engaged in cuing SUBJECT 11 when he engaged in inappropriate behavior. Parent reviewed daily report and discussed the "advantages" and "disadvantages" of his behavior in school.

SUBJECT 12's functional behavioral assessment revealed that trigger for noncompliance was that the teacher made a request. The function of

the noncompliance was to get teacher attention. The trigger for off task and disruptive behavior was the teacher giving independent work assignments. The function of the off task and disruptive behavior appeared to be task avoidance and a sense of power that he was able to “defeat” teacher and sensory of seeing teacher’s reaction. Several factors maintained poor social skills; SUBJECT 12’s parent did not allow him to interact with other children after school from his neighborhood because he lived in a rough neighborhood. Thus, Subject 12 did not have much experience outside of the school with building peer groups. SUBJECT 12’s mother and grandmother had difficulty following through with daily consequences. At several points in the therapy, mother and grandmother seemed to present rewards non-contingent on the child’s behavior. Master level interventions included monthly consultation with the teacher regarding the execution of the treatment plan. Bachelor level and teacher strategies included working on precision requests, which involved giving specific commands that were not vague, using the child’s name, and being within three feet of the child. In addition, teacher gave more “do” than “don’t” commands. Child earned red tickets for compliance and bachelor level person prepared and sent home a daily report. Parent was to deliver home reward based on daily report and offer coaching and support for improving performance at school. Child attended weekly social skills training group with the bachelor level personnel. All staff used an individualized de-escalation procedure based on a behavior chain analysis of SUBJECT 12’s escalation cycle.

SUBJECT 13 was receiving a behavioral consultant and mobile therapist prior to entering the program. He continued to receive these services while in the program. SUBJECT 13’s functional behavioral assessment revealed that aggressive behavior occurred mostly in unsupervised and unstructured setting such as lunch, transition from class to class and recess. In addition, he was also more likely to fight if in “play fighting” episodes, where other children began playing around with taunting and fighting but would quickly escalate into physical fights. Fighting appeared to function to get attentions and if the child was hurt during play episodes (response to pain). In addition, disruptive behavior seemed to occur when the lesson was one that he did not find interesting or if other peers were engaged in disruptive behaviors. The function of the behavior appeared to be escape or sensory stimulation. Master level interventions included consultation with the

classroom teacher and occasional contact and meetings with the parent. Bachelor level person instituted a token system with a response cost mechanism and the child attended a weekly social skills group with the bachelor level person. Bachelor level staff would not allow the child to get involved with “play fighting” and rendered a response cost program if the child walked toward such games. Bachelor level person conducted a task analysis of transitioning and spent time training child in steps to transition after school. If SUBJECT 13 forgot a step or part of the process, staff held him after school for refresher training. Teacher engaged in greater monitoring of the child. She instituted an in school detention for misbehavior and increased the amount of general praise that she gave the child during the course of the day. Teacher created and sent home a daily report every day of SUBJECT 13’s behavior. All staff practiced an individualized de-escalation procedure based on a behavior chain analysis of Subject 13’s escalation cycle.

SUBJECT 14 functional behavioral assessment data revealed that a trigger for disruptive behavior was SUBJECT 14 having completed an assignment. In addition, the stage was set for this as a trigger if he previously displayed a lot of off task behavior when he was working on the assignment. Disruptive behavior appeared to function to get teacher and peer attention. Master level interventions included behavioral consultation to teacher in an on going basis and the development of a teacher monitoring system for compliance. Bachelor level interventions included a social skills group and a group to identify stressors and triggers that would set him off during the day. Bachelor level person also used praise for following directions and tangible rewards for compliance with tasks. Teacher monitored child’s noncompliance and sent home a daily report to parents. Teacher developed a system for increasing the precisions in her commands. She began to give more stat commands and less stop commands. She increased the amount of alpha as opposed to beta commands. Teacher also reduced the amount of attention that she gave the child for engaging in defiance or other classroom disruption. All staff practiced an individualized de-escalation procedure based on a behavior chain analysis of SUBJECT 14’s escalation cycle.

SUBJECT 15’s functional behavioral assessment revealed that unstructured activities and transition times were most likely to produce instances

of aggressive behavior. Subject 16's aggressive behavior functioned to get attention from peers. In addition, it may have been the only behavior that the child had witnessed for handling conflicts and lacked conflict resolution skills. Disruptive behavior was likely to occur if the lesson was difficult for SUBJECT 15 or he became bored during the lesson and another student was near by him. Another trigger for disruptive behavior is if he spent greater than five minutes in line during a transition without moving. SUBJECT 15 was most likely to engage in bullying when he did not get something that he wanted from another child. Master level interventions involved on going consultation with the teacher and other school staff. Bachelor level staff executed multiple interventions. These interventions included: executing a token system with response cost rewarding positive and appropriate behavior and loss of points for inappropriate behaviors; creating a daily report to send home; removal from groups if he engaged in inappropriate behavior during transitions and having to earn his way back to work with the group; and both social skills and social problem solving training in conflict resolution skills in a weekly group. If SUBJECT 15 broke rules, bachelor level person would restate the rule and the consequences for breaking the rules. Aggressive behavior led to in-house detention. Teacher interventions included using a star system to allow SUBJECT 15 to earn points, which he could exchange for rewards and execution of a response cost program where the child lost free time for disruptive behavior and received detention for aggressive behavior. Teacher responded to all disruptive and aggressive behavior consistently and praised the child frequently for handling situations without disruptive behavior. All staff practiced an individualized de-escalation procedure based on a behavior chain analysis of SUBJECT 15's escalation cycle.

SUBJECT 16 continued on medication through the program but often medication was delivered inconsistently and in March a period of time passed where he had no medication. Results from SUBJECT 16's functional behavioral assessment indicated that aggressive behavior occurred in most environments and several multiple functions including escape from class, to get peers to comply and to get teacher attention. Aggressive behavior towards adults functioned to escape from class. The triggers for blaming others for his mistakes mostly occurred in the halls, when it was difficult to ascertain the person responsible and the function of this

behavior appeared to be to escape any negative consequences for his behavior. The triggers for disruptive behavior and calling out in class appeared to be when he had the answer to a question and was not called on for greater than 5 seconds. Subject 16's behavior occurred in the hallway, where things are louder and more disorganized. The function was always to gain peer or teacher attention. Interventions for the master level personnel were to conduct weekly consultation with the teacher. In addition, SUBJECT 16 received 2-3 individual sessions/week from the master level profession, which reviewed rules and expectations, focused on building problem solving skills, building perspective-taking skills, and challenging thinking about different situation. Bachelor level personnel conducted a weekly social skills group for the child, initiated a verbal correction procedure for misbehavior, created and executed an individualized token economy procedure in which tokens were paired with praise, and initiated a time out procedure if child was disruptive in hallway to get peer attention. Bachelor level personnel also initiated an anger management program for the child, which the child learned to stop, count to ten or say the alphabet when he was in the hallway. Bachelor level personnel provided support and encouragement as needed and created a daily behavioral chart for the child to take home. Teacher responded consistently to disruption with a response cost program, in which the child lost free time. She increased supervision of the child by moving him closer to her and gave him additional responsibilities in the classroom such as chores and running errands. All staff practiced an individualized de-escalation procedure based on a behavior chain analysis of SUBJECT 16's escalation cycle.

SUBJECT 17's functional behavioral assessment results highlighted that off task behavior was more likely to occur in the afternoon. In addition, SUBJECT 17's endurance in most areas was problem. He would frequently start and not finish things. This behavior appeared to function for escape but the therapist also noted that a true assessment was difficult due to the child coming off his medication. Another behavior of interest was throwing papers and calling other students names. These behaviors were also more often likely to occur in afternoon and seemed to occur when he was not engaged in a task such as when teacher gave him was independent work. A final behavior of interest was SUBJECT 17's not following directions. This behavior appeared to function to both escape work and to get the

attention of peers. Master level interventions included teacher consultation and a once/week individual session, which offered support and problem-solving training. Bachelor level intervention included weekly social skills training group, a token system to reward appropriate behavior and a response cost program for misbehavior. Teacher worked to shorten tasks and limit the amount of extraneous stimuli in the classroom. All staff practiced an individualized de-

escalation procedure based on a behavior chain analysis of SUBJECT 17's escalation cycle.

Treatment integrity checks

To check treatment integrity, 60 notes were drawn and reviewed at random, all the notes mentioned the treatment goal, which the note form prompted, and 52 out of the sixty, made reference to at least one of the interventions mentioned in the treatment plan.

Table 1 Results

Name (age)	TRF dates	T- Scale scores Improved	T-Scale Scores stayed same	T-Scale scores gotten worse	Standard Error of measure	Clinically significant change? (Reliable change Index Score >1.97)	How counted
1. Subject 19 year old male	10/23/02 to 4/22/03 6 mo.	Thought Problems (68-B, 64-N) Attention Problems (66-B, 62-N) Rule Breaking (65-B, 50 N) Aggressive (78-C, 65-B) Total Problems (67-C, 62-B) Externalizing Problems (73-C, 62-B)			Thought Problems 1.5 Attention Problems 2.6 Rule Breaking 1.3 Aggressive Behavior 3.5 Total Problems 7.2 Externalizing Problems 4.1	Thought Problems Y Attention Problems N Rule Breaking Y Aggressive behavior Y Total Problems Y Externalizing Y	Clinically significant outcome for effectiveness
Subject 2. 8 year old female	10/10/02 & 6/17/03 8 mo.	Thought Problems (70-C, 63-N) Attention Problems (75-C, 64-N) Rule-Breaking (76-C, 71-C) Aggression (96-C, 77-C) Total Problems (78-C, 71-C) Externalizing (88-C, 76-C)	Social Problems (67-B)	Anxious/Depressed (59-N, 69-B) Internalizing Problems (60-B, 68, C)	Thought Problem 1.2 Attention Problems 2.7 Rule Breaking 1.1 Aggressive Behavior 3.1 Total Problems 4.3 Externalizing Problems 3.6	Thought Problems Y Attention Problems Y Rule Breaking Y Aggressive Behavior Y Total Problems Y Externalizing Problems Y	Clinically significant outcome for effectiveness
Subject 3. 12 year old male	11/2/02 & 4/12/03 5 mo.	Aggressive Behavior (85-C, 73-C) Externalizing (78-C, 74-C)	Attention Problems (81-C, 79-C)	Withdrawn (63-N, 81-C) Social Problems (68-B, 72-C) Thought Problems (57-N, 77-C) Rule Breaking (70-C, 74-C) Total Problems (77-C, 80-C) Internalizing (59-N, 70-C)			Over all got worse
Subject	10/31/02 to	Attention Problems (81-	Aggressive	Social Problems	Attention Problem 2.6	Attention Problem	Clinically

Name (age)	TRF dates	T- Scale scores Improved	T-Scale Scores stayed same	T-Scale scores gotten worse	Standard Error of measure	Clinically significant change? (Reliable change Index Score >1.97)	How counted
4. 10 year old male	4/28/03 6 mo.	C, 69-B) Rule Breaking (70-C, 67-B) Externalizing Problems (73-C, 70-C) Total Problems (72-C, 69-C)	Behavior (70-C, 70-C)	(59-N, 67-B)	Rule-Breaking 1.3 Externalizing Problems 4.1 Total Problems 7.2	Y Rule Breaking Y Externalizing Problems N Total Problems N	significant outcome for effectiveness
Subject 5. 7 year old male	2/14/03 & 6/17/03 4 mo.	Anxious/Depressed (66-b, 61-N) Withdrawn (66-B, 64-N) Thought Problems (81-C, 68-B) Total Problems (80-C, 78-C) Internalizing (67-C, 64-C)	Social Problems (74-C, 74-C) Attention Problems (67-B, 68-B) Rule Breaking (76-C, 76-C)	Aggressive Behavior (90-C, 95-C)	Anxious/Dep. 1.8 Withdrawn 2.0 Thought Problems 1.5 Total Problems 7.2 Internalizing Problems 3.1	Anxious/Dep Y Withdrawn N Thought Problems Y Total Problems N Internalizing Problems N	Clinically significant outcome for effectiveness
Subject 6 11 year old male	10/23/02 & 4/28/03 6 mo.	Thought Problems (81-C, 50-N)		Withdrawn/Depressed (53-N, 66-B) Social Problems (62-N, 74-C) Rule-Breaking (634-N, 82-C) Aggressive Behavior (65-B, 68-C)			Client got worse
Subject 7 10 year old male	10/23/02 & 6/17/03 8 mo.	Attention Problems (68-B, 60-N) Aggression (80-C, 76-C) Externalizing (74-C, 70-C) Total problems (72-C, 68-C)	Withdrawn 68-B. 68-B) Internalizing (65-C, 65-C)	Somatic Complaints (62-N, 65-B)	Attention Problems 2.6 Aggressive Behavior 3.5 Externalizing Problems 4.1 Total Problems 7.2	Attention Problems Y Aggressive Behavior N Externalizing Problems N Total Problems N	Clinically significant outcome for effectiveness
Subject 8. 9 year old male	11/01/02 & 4/24/03 5 mo.	Anxious/Depressed (66-B, 55-N) Withdrawn/Depressed (74-C, 66-B) Social Problems (72-C, 65-B) Thought Problems (77-C, 66-B) Attention Problems (94-C, 66-B) Rule-Breaking (82-C, 72-C) Aggressive behavior (100-C, 78-C) Internalizing Problems (70-C, 65-C) Externalizing Problems			Anxious/Dep. 1.8 Withdrawn/Dep. 2.0 Social Problem 0.90 Thought Problems 1.5 Attention Problems 2.6 Rule Breaking 1.3 Internalizing Behavior Problems 3.1 Externalizing Behavior Problems 4.1	Anxious/Dep 2.78- Y Withdrawn/Dep. Y Social Problems Y Thought Problems Y Attention Problems Y Rule Breaking Y Internalizing Behavior Problems N Externalizing Behavior Problems Y	Clinically significant outcome for effectiveness

Name (age)	TRF dates	T- Scale scores Improved	T-Scale Scores stayed same	T-Scale scores gotten worse	Standard Error of measure	Clinically significant change? (Reliable change Index Score >1.97)	How counted
		(89-C, 76-C) Total problems (86-C, 72-C)			Total Problems 7.2	Total Problems N	
Subject 9. 11 year old male	10/23/02 & 6/4/03 7 mo.	Thought Problems (71-C, 63-N) Attention Problems (75-C, 62-N) Rule Breaking (71-C, 62-N) Aggressive Behavior (97-C, 58-N) Externalizing Problems (80-C, 63-N) Total Problems (75-C, 63-C)	Withdrawn/ Depressed (68-B, 66-B)	Somatic Complaints (54-N, 74-C) Internalizing (63-B, 68-C)	Thought Problems 1.5 Attention Problems 2.6 Rule breaking 1.3 Aggressive Behavior 3.5 Externalizing Problems 4.1 Total Problems 7.2	Thought Problems Y Attention Problems Y Rule Breaking Y Aggressive Behavior Y Externalizing Problems Y Total Problems N	Clinically significant outcome for effectiveness
Subject 10. 6 year old female	2/24/03 & 4/28/03 2 mo.	Social Problems (80-C, 71-C) Attention Problems (65-B, 61-N) Aggressive behavior (86-C, 67-B) Externalizing Problems (81-C, 69-C) Total Problems (73-C, 68-C)	Rule Breaking (71-C, 71-C)	Anxious/Depressed (61-N, 68-B) Thought Problems (72-C, 78-C) Internalizing Problems (62-C, 67-C)	Social Problems .9 Attention Problems 2.6 Aggressive Behavior 3.1 Externalizing Problems 3.6 Total Problems 7.0	Social Problems Y Attention Problems Y Aggressive Behavior Y Externalizing Problems Y Total Problems N	Clinically significant outcome for effectiveness
Subject 11. 12 year old male	12/16/02 & 6/17/03 6 mo.	Social Problems (65-B, 59-N) Rule Breaking (66-B, 62-N) Total Problems (65-C, 61-B)	Aggressive Behavior (71-C, 70-C) Externalizing (70-C, 69-C)		Social Problems .8 Rule Breaking 1.8 Total Problems 7.4	Social Problems Y Rule Breaking Y Total Problems N	Clinically significant outcome for effectiveness
Subject 12- 6 year old male	10/2/02 & 6/17/03 8 mo.			Thought Problems (50-N, 66-B) Rule Breaking (56-N, 66-B) Total Problems (53-N, 60-B) Externalizing Problems (54-N, 64-C)			Client got worse
Subject 13- 7 year old male	12/10/02 & 4/24/03 4 mo.	Aggressive Behavior (77-C, 66-B)	Rule Breaking (C-72, C-&0) Attention Problems (64-N, 66-B)	Anxious / depressed (51-N, 66-B) Social Problems (67-B, 72-C) Thought Problems (57-N, 66-B) Externalizing Problems (72-C, 75-C)			Client got worse

Name (age)	TRF dates	T- Scale scores Improved	T-Scale Scores stayed same	T-Scale scores gotten worse	Standard Error of measure	Clinically significant change? (Reliable change Index Score >1.97)	How counted
				Total Problems (65-C, 72-C)			
Subject 14- 10 year old male	10/7/002 To 6/17/03 8 mo.	Withdrawn/Depressed (73-C, 66-B) Thought Problems (65-B, 50-N) Attention Problems (69-B, 61-N) Internalizing Problems (65-C, 62-B) Total Problems (69-C, 64-C)	Rule Breaking (66-B, 66-B) Aggressive Behavior-(68-B, 67-B) Externalizing Problems (69-C, 68-C)		Withdrawn/Dep. 2.0 Thought Problems 1.5 Attention Problems 2.6 Internalizing Problems 3.1 Total Problems 7.2	Withdrawn/ Depressed Y Thought Problems Y Attention Problems Y Internalizing Problems N Total Problems N	Clinically significant outcome for effectiveness
Subject 15- 9 year old female	10/2/02 & 4/23/03 6 mo.	Social Problems (70-C, 64-N) Rule Breaking (70-C, 60-B) Aggressive behavior (74-C, 68-B) Externalizing Problems (74-C, 68-B)	Total Problems (68-C, 68-C)	Anxious/Depressed (55-N, 66-B) Thought Problems (66-B, 72-C) Internalizing Problems (55-N, 62-B)	Social Problems .9 Rule Breaking 1.3 Aggressive Behavior 3.5 Externalizing Problems 4.1	Social Problems Y Rule-Breaking Y Aggressive Behavior N Externalizing Problems N	Clinically significant outcome for effectiveness
Subject 16- 8 year old male	10/2/02 to 4/11/03 6 mo.	Anxious/Depressed (66-B, 59-N) Withdrawn/Depressed (69-B, 57-N) Social Problems (67-B, 64-N) Thought Problems (68-B, 50-N) Attention Problems (68-B, 61-N) Aggressive Behavior (98-C, 78-C) Internalizing Problems (68-C, 58-N) Externalizing Problems (85-C, 75-C) Total Problems (79-C, 67-C)	Rule-Breaking (72-C, 69-B)		Anxious Depressed 1.3 Withdrawn/Depressed 2.0 Social Problems .9 Thought Problems 1.5 Attention Problems 2.6 Rule Breaking 1.3 Aggressive Behavior 3.5 Internalizing Problems 3.1 Externalizing Problems 4.1 Total Problems 7.2	Anxious/Dep Y Withdrawn/Depressed Y Social Problems Y Thought Problems Y Attention Problems-Y Rule Breaking Y Aggressive Behavior Y Internalizing Problems Y Externalizing Problems Y Total Problems N	Clinically significant outcome for effectiveness
Subject 17.-8 year old male	11/19/02 to 4/30/03 5 mo.	Total Problems (60-B, 57-N)	Rule Breaking (66-B, 64-N) Externalizing Problems (62-B, 62-B)		Total Problems 7.2	Total Problems N	Not a clinically significant outcome for effectiveness

Children Making Good Progress: 1. Children had more scales improve then got worse 2. At least one scale score set needed to reach reliable change
Children no improvement: 1. No scale scores making reliable change and 2. No scale scores getting significantly worse
Children getting worse: 1. More scale scores getting worse then improving Number of children making good progress: 12 out of 17 or 70%

RESULTS

Discussion

Staff delivered all interventions in the program to children in a regular public school within a large urban school district. Most but not all of the children involved in this program had received multiple mental health treatments prior to entry. Some had been in the mental health system for years. The majority of children were on at least one type of medication for mental health problems. All children on entry had at least one diagnosis, with the majority having two or more. Most children were on some form of medication and continued on that medication throughout the program.

Researchers evaluate behavior analytic procedures in the natural environment with different populations; however, researchers have evaluated most of these procedures using single subject designs, which while excellent for determining if change occurred, make it difficult to track the overall comparison to non-referred or normal peers of the subject. On the other hand, behavior analytic procedures evaluated in group-designs, fail to estimate the practical consequences of treatment for the individual consumer (Kendall, 1999; Saunders, Howard, & Newman, 1988). We believe that this study overcomes some of the questions for overall effectiveness. We believe that it would be good for future studies, which incorporate single subject designs to give reference group measures such as using standardized behavioral assessment instruments or in education criterion referenced tests such as achievement tests.

The major contribution of this study is that it takes treatments, which have withstood empirical scrutiny in both single subject and group subject designs, and looked at the effects those treatments had to determine their overall effectiveness with a heterogeneous population in reducing the large response classes of problem behavior to make them more like their peers. Even though this was the first year of the program, the results were impressive. Overall, 70% of the children in the program made

clinically significant (i.e., meaningful change), as rated by the primary person who interact with the children through out the school day: their classroom teacher. We believe that these are very strong results but still some factors buffer drawing optimistic conclusions. For example, the staff hospitalized of child during the course of her treatment in the program. After that she was moved to a partial hospital program for three weeks. While her results showed significant improvement, the effects of the hospitalization remain important and unaccounted for in the analysis. In addition, no child received results consistent with a complete recovery but five received good enough results (approximately 30%) to be titled a partial recovery (clinical significant results with no subscales significantly increasing and at least two subscales recovering).

Our effectiveness results appear in line with the overall effectiveness of behavioral interventions. For example, behavioral parent training has not only received empirical validation, but has received support as the treatment of choice for children with Disruptive Disorder (e.g., Brestan & Eyberg, 1998). Conservative estimates for behavioral parent training have stated that anywhere between of 50-66% of children with disruptive behavior patterns function in the normal range at the termination of treatment (Dishion & Patterson, 1992; Taylor, Schmidt, Pepler, & Hodgins, 1998). While school based interventions in this study does not appear as efficient as behavioral parent training (see Ruma, Burke, & Thompson, 1996), the severity of problem behaviors may be a factor in requiring the extended need for treatment. Indeed, severity of problem behaviors was one factor identified by Ruma and colleagues (1996) that mediated treatment effects.

In addition, the school rather than home focus may be the reason for a lower effectiveness. While behavioral interventions in schools for disruptive behavior do constitute best practices in management and remediation (e.g., Walker, 1997; Walker, Colvin, & Ramsey, 1995) and do incorporate a home component (as ours did with a daily home report for most children), Walker and colleagues (1995) have acknowledged that these programs often take longer than one year to achieve their results and some have questioned their relative efficiency compared to parent training programs (see Patterson & Yoeger, 2002). In this light, our program seems well on its way to echoing the length of time and the results that

these more structured interventions have determined are important.

While the results are generally consistent with behavioral interventions for children, the unique contribution of this study is that it suggests that severe behavioral problems can be addressed through behavioral and bio-behavioral treatments in the natural setting. Of course, this as with all studies has limitations. The first is that we had no control group to isolate behavior that changed because of treatment in comparison to their effects such as the intensity of the service or other miscellaneous factors. We do note that for years many of the children receive a host of other treatments, which failed to produce meaningful change. Another problem was that since this was the first year of the program, no follow up data are available, so it is impossible to speak to long term factors such as did the changes maintain. While use of a single measure is typical for this design (see Ruma et al., 1996), we acknowledge that it is a limitation of a study to use of a single measure of outcome and its subscales: the TRF.

Use of the TRF, can be open to problems due to the bias of the rater (Zeanah, Smyke, & Dumitrescu, 2002). Often three forms of bias are discussed, overrating or creating a more negative look of the child, underrating which creates a more positive bias of the child and a shifting pattern of rating from either overrating to under rating or underrating to overrating. Neither overrating nor underrating in it would be a problem for the study. If the teacher consistently overrates or consistently underrates, this would not be a problem, because it is the observed change measured (Martin, Hooper, & Snow, 1986). On the other hand if the bias shifts, then the scale is of limited utility (Smyke, Dumitrescu, & Zeanah, 2002). We found little evidence in this study of a shifting bias.

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THE USE OF TOKEN ECONOMIES IN PRESCHOOL CLASSROOMS: PRACTICAL AND PHILOSOPHICAL CONCERNS

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Behavior problems are increasing in frequency among preschool children. Thus, preschool teachers must be prepared to manage the increasing disruptive behaviors exhibited in their classrooms. Because positive behavioral management strategies are accepted by teachers and have been proven effective, token economies may be promising interventions to manage disruptive behavior in the classroom. However, little research has been conducted in this area. In addition, there are developmental, practical, and philosophical issues that should be considered before token economies are recommended for preschool classrooms. This paper reviews the relevant research in this area and addresses each of these concerns.

THE USE OF TOKEN ECONOMIES IN PRESCHOOL CLASSROOMS: PRACTICAL AND PHILOSOPHICAL CONCERNS

The prevalence of behavior problems among preschool children (age 2-5) has been increasing in frequency, and current estimates range from 2% (attention-deficit hyperactivity disorder; ADHD) to 17% (oppositional defiant disorder) (Campbell, 1990; Lavigne et al., 1998). In addition, the author stated that ADHD usually was comorbid with another disruptive behavior disorder. Consequently, it appears that teachers will have increasingly more children with behavior problems in their classrooms. Despite this possibility, 72% of teachers reported feeling insufficiently prepared to manage behavior problems in the classroom (Merrett & Wheldall, 1993). Thus, providing preschool teachers with skills and strategies to manage disruptive behavior effectively in the classroom is essential. Behavioral management strategies (e.g., positive reinforcement, time out, response cost) have proven effective in accomplishing this task (Martin & Pear, 1996; Miltenberger, 2000).

Despite their effectiveness, ease of implementation and teacher acceptability of behavioral techniques must be considered when deciding which strategies to recommend. For example, several studies have found that time out is an effective way to manage problem behaviors in preschool children (e.g., Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993; Greene, Kamps, Wyble, & Ellis, 1999; Roberts, Hatzenbuehler, & Bean, 1981). However, extensive training in the use of time out is required to use the procedure effectively with aggressive and defiant children (Barkley, 1997; Hembree-Kigin & McNeil, 1995; Greene et al.), and it may not be feasible for teachers to obtain such training.

A particular problem for preschool teachers is that children with behavior problems often refuse to stay in time out (McNeil, Clemens-Mowrer, Gurwitsch, & Funderburk, 1994; Taylor & Miller, 1997). In addition to causing a major distraction, time out refusal also represents a safety risk for both children and teachers. Thus, a less confrontive, easier, and more positive means of managing disruptive behavior in the classroom, such as a token economy, should be considered for preschool teachers. A token economy (e.g., star chart) is a program in which individuals earn tokens (e.g., poker chips, stickers) for exhibiting targeted behaviors (e.g., compliance), and can exchange these tokens for rewards (e.g., activity, snack) (Martin & Pear, 1996; Miltenberger, 2000). Often, a response cost procedure is used in addition to a token economy. A response cost is characterized by the removal of a certain amount of tokens when an undesirable behavior is exhibited (Martin & Pear). For the purpose of this paper, token economies will be discussed without the addition of the response cost procedure, unless otherwise specified.

Because preschool teachers have to manage children's behavior as well as teach academic readiness and social skills, a classroom behavioral management system should be simple to implement and use in order to allow the teacher to conduct his or her class without major disruptions. Miltenberger (2000) discussed the fact that token economies can require various degrees of effort depending upon their complexity. For example, implementing a token economy requires such considerations as defining the target behaviors, deciding what the tokens will be, and establishing a token exchange rate (Miltenberger). A study was conducted by Storey, Danko, Ashworth, and Strain (1994) in which a simple token economy (i.e., praise and stickers given

for social interactions) was implemented by teachers' aides to increase social interactions during free play. The teachers' aides reported that the token economy was easy to implement and use (Storey et al.). These results suggest that simple token economies entail little effort from the teacher, which would disrupt the class activities less often than a complex token economy.

Teacher acceptability also is a consideration when determining which interventions would be most effective at managing behavior problems in preschool classrooms. According to Witt, Elliott, and Martens (1984), and Elliott, Witt, Galvin, and Peterson (1984), teachers rated positive interventions (i.e., token economies, praise, and home-based reinforcement programs) as more acceptable than negative interventions (i.e., time out, response cost, and ignoring). Similar results have been found concerning mothers (Jones, Eyberg, Adams, & Boggs, 1998). These results are important to consider because parent acceptability of intervention strategies may affect teacher implementation of the strategies. For example, parents of preschool children may remove their children from the preschool if the teacher uses a behavior management strategy with which the parents do not agree.

Surprisingly, little research has been conducted using token economies to manage behavior problems in preschool classrooms (Baker, Stanish, & Fraser, 1972; Filcheck, 2003; Filcheck, McNeil, Greco, & Bernard, in press; McGoey & DuPaul, 2000; Wolfe, Boyd, & Wolfe, 1983). Positive results have been obtained when using token economies to manage disruptive behavior in preschool-aged children in non-classroom settings (e.g., home, mock classroom) (e.g., Budd, Leibowitz, Riner, Mindell, & Goldfarb, 1981; Jones, Downing, Latkowski, Ferree, & McMahon, 1992). In addition, the use of token economies to manage behavior problems in elementary classrooms has been effective (e.g., Anhalt, McNeil, & Bahl, 1998; Bahl, McNeil, Cleavenger, Blanc, & Bennett, 2000; DeMartini-Scully, Bray, & Kehle, 2000). Therefore, implementing a token economy in preschool classrooms has the potential to be an effective means to manage behavior problems.

Developmental Issues and Cognitive Readiness

One possible obstacle to using token economies for preschool children with disruptive

behavior is whether young children have the ability to understand a token economy. More specifically, at this age, children may not comprehend why they receive tokens, or how many tokens they must acquire to receive a reward. According to Piaget, however, children between ages 2 and 7 are in the preoperational stage of cognitive development, which is characterized by increased symbolic-representational ability (Bornstein & Lamb, 1999). In other words, children are able "to use a symbol, object, or word to stand for something" (Bukatko & Daehler, 1995, p. 291). Although it is possible that preschool children could understand token economies, it is important to consider that the complexity of token economies varies greatly. An effective token economy for preschool children must be developmentally sensitive.

Several authors (Jones et al., 1992; Swiezy, Matson, & Box, 1992; Titus et al., 1990) have discussed the importance of creating token economies that meet children's developmental needs. Specifically, these authors stated that in order to appeal to children, token economies should be characterized by structure, predictability, simplicity, brightly-colored tokens, and playfulness. A token economy also should be designed to make accommodations for individual differences (Titus et al.). For example, an active child may be required to sit quietly for shorter periods than a less-active child in order to earn tokens. Structure and predictability in a token economy appear to facilitate understanding among preschool children (Jones et al.; Kysela, 1972-1973; Titus et al.). Thus, clear and specific criteria for which behaviors and when tokens are distributed are qualities of developmentally sensitive token economies. Also, the token economy must be simple enough for preschool-aged children to comprehend. For example, exchange rates should require minimal mathematic skills (e.g., three stickers for a reward).

Because token economies must appeal to preschool children to be more effective (Titus et al., 1990), the actual materials of the system also should be developmentally appropriate. For example, Swiezy et al. (1992) used a bear puppet, "Buddy Bear," to explain the requirements of the token economy to the children. Additionally, the tokens were brightly colored felt shapes that were age appropriate (i.e., dinosaurs, smiley faces) (Swiezy et al.). Furthermore, McGoey and DuPaul (2000) suggested that tokens be visible to the children at all times to serve as visual

reminders of the rules and consequences of the token economy.

to other research (e.g., Musgrove, 1981), these results did not generalize to the regular classroom.

Token economies in non-classroom settings with disruptive preschool-aged children.

Results of research with disruptive preschool-aged children in non-classroom settings have suggested that these children have the developmental capacity to understand token economies (e.g., Barkley, 1987; Budd et al., 1981; Herman & Tramontana, 1971; Musgrove, 1981; Swiezy et al., 1992). For example, in a study by Budd et al., a home-based reinforcement procedure was found to be effective when children earned tokens for the absence of disruptive behavior (i.e., off-area, aggression, negative statements) in a summer treatment program.

Musgrove (1981) implemented a token economy in a facility for individuals with mental retardation. Three preschool-aged children diagnosed with emotional problems were found to have increased compliance and decreased out-of-seat behavior with the token economy. However, these gains were not maintained when the children were transferred to public school (Musgrove). Rowbury, Baer, and Baer (1976) implemented a token economy with 7 children in a mock preschool classroom with a teacher for experimental sessions. Results suggested that when teacher guidance (i.e., praise, prompts, instructions) was combined with the token economy, the children's task completion behavior increased significantly. Because this study was conducted in a mock classroom, results may not generalize to a typical classroom. Additionally, the effectiveness of each type of teacher guidance (e.g., praise) was not examined. In another study, the Good Behavior Game (a token economy in which a puppet, "Buddy Bear," gives children commands and they earn stickers for compliance) was implemented with 4 children with behavior problems (Swiezy et al., 1992). Results indicated that cooperation and compliance increased significantly, and generalization occurred across therapists but not settings.

Herman and Tramontana (1971) conducted a study in which group and individual token economies were used with disruptive preschool children in an experimental room for appropriate rest-time behavior. Additionally, they attempted to generalize behavioral gains to a Head Start classroom. When instructions concerning the token economy were explained to the children, more appropriate rest-time behavior was evident regardless of the reinforcement type. Similar

Summary of developmental issues

In sum, the literature concerning token economies with disruptive preschool-aged children suggests that token economies are effective in producing behavior change in settings other than the classroom. This literature suggests that preschool children are developmentally capable of comprehending token economies. However, research specifically focusing on generalization, disturbing effects (i.e., decreased intrinsic motivation), and whole-classroom token economies is lacking.

PRACTICAL ISSUES WITH THE USE OF TOKEN ECONOMIES IN PRESCHOOL CLASSROOMS

Before establishing a token economy in a preschool classroom to manage disruptive behavior, there are several practical issues to consider. For example, depending on the complexity of the token system, organizing and implementing a token economy can be time consuming (Miltenberger, 2000; Skinner, Cashwell, & Dunn, 1996; Turnbull, 1988), and teachers may decide that their time is better spent elsewhere (e.g., creating activities, using pre-established management systems). Furthermore, because of the increased prevalence of behavior problems among preschool children (Campbell, 1990; Lavigne et al., 1998), teachers often have several children in a classroom with disruptive behavior. A practical issue is whether a teacher can monitor multiple token economies, possibly with different behavioral expectations and different rates of token exchange. Teachers also may be resistant to using a token economy because the rewards or backup reinforcers can be expensive (Corrigan, 1995; Miltenberger, 2000), and because it seems unfair to provide rewards to some children and not others.

Another practical consideration involves maintenance and generalization. In the literature, behavioral gains produced by token economies have not been shown to maintain or generalize reliably (e.g., Corrigan, 1995; Herman & Tramontana, 1971; Musgrove, 1981). A few studies, however, suggested some generalization effects. For example, although behavioral gains did not generalize across settings in a study by Swiezy et al. (1992), they generalized across therapists. In addition, Miller, McCullough, and Ulman (1981) found that behavior change generalized to a non-intervention condition.

Possible solutions to practical concerns

The use of a whole-classroom token economy may address several of these practical considerations (e.g., time, effort, financial constraints, fairness). A whole-classroom token economy is characterized by one token economy in which all of the children in the class (disruptive and typical) participate (Anhalt et al., 1998; Bahl et al., 2000; Filcheck, 2003; Filcheck et al., in press). In addition, all of the children receive the same reward when the reinforcers are distributed, and most of the rewards are activity-based (Anhalt et al.; Bahl et al.; Filcheck; Filcheck et al.) which significantly reduces the cost of backup reinforcers (Kysela, 1972-1973; Miltenberger, 2000).

The use of a whole-classroom token economy has been effective in decreasing disruptive behavior in elementary-aged children (Anhalt et al., 1998; Bahl et al., 2000). For example, Anhalt et al. and Bahl et al.'s whole-classroom system consisted of labeled praise and happy faces for appropriate behavior and a warning and mild aversive consequences (i.e., sad faces) for inappropriate behavior. Additionally, the children were placed randomly into groups of four to five children, and rewards were given to groups with more happy faces than sad faces. Results of both studies indicated that the children's level of appropriate behavior increased with the implementation of the token economy as compared to the regular classroom discipline program. In addition, this system resulted in high rates of teacher and student satisfaction.

The use of a level chart as a whole-classroom token economy may further reduce the time and effort expended by the teacher in managing the system. The use of a class-wide level chart would require that each child's name be placed on the chart, and be moved up a level for appropriate behavior and down a level for inappropriate behavior. The children's names would need to be placed at a specified level in order to receive the reward. Thus, the teacher would not have to dispense tokens to each child for appropriate behavior, which could be time consuming. Additionally, the use of a level chart would not require that children be able to count tokens; they only would have to recognize the level at which they would receive a reinforcer. A level chart, the Level System (McNeil & Filcheck, in press), was used in research conducted by Filcheck (2003) and Filcheck et al. (in press) with positive results described below.

Concerning the practical issues of maintenance and generalization, research suggests that using a fading procedure may aid in the maintenance of behavioral gains after a token economy is withdrawn (e.g., Miltenberger, 2000; O'Leary, Poulos, & Devine, 1972; Storey et al., 1994). Additionally, Stokes and Baer (1977) and Stokes and Osnes (1989) recommend strategies to use to program generalization because it cannot be expected to occur naturally. For example, these authors suggest exploiting current functional contingencies (e.g., reinforcing occurrences of generalization), training diversely (e.g., using sufficient stimulus exemplars), and incorporating functional mediators (e.g., incorporating common salient physical stimuli) as strategies of generalization programming. Because results concerning the maintenance and generalization of token economies have not been promising in the past, it may be necessary, if programming generalization is not pursued actively, to foster realistic expectations in teachers by educating them concerning this issue. For example, Corringan (1995) suggests that "no one expects that positive effects of psychopharmacological agents administered for a short time can be maintained over time and across settings after the agents are withdrawn" (p. 1260). Thus, it may be unrealistic to expect lasting results from a brief token economy intervention after it is removed, and generalization has not been programmed..

TOKEN ECONOMIES IN PRESCHOOL CLASSROOMS WITH DISRUPTIVE CHILDREN

Although little research exists (e.g., Baker et al., 1972; Filcheck, 2003; Filcheck et al., in press; McGoey & DuPaul, 2000; Wolfe et al., 1983) concerning the use of token economies in preschool classrooms with children who exhibit disruptive behavior, available findings support the use of token economies for improving behavior problems in preschool classrooms. For example, Baker et al. conducted a study examining the effectiveness of using a token economy in addition to a time-out procedure to decrease the disruptive behavior exhibited in the classroom by 9 preschool children with mental retardation. The study included a control group of children in different classrooms who were matched for age and IQ. An ABAB design was implemented, and during the treatment the children received poker chips accompanied by social reinforcement (i.e., praise) for appropriate behavior. Chips could be exchanged for a treat (i.e., candy). In

addition, a 5-minute time-out procedure was used in which the children were taken to a time-out booth for severe inappropriate behavior such as temper tantrums and aggression. Results indicated that the experimental group exhibited significantly more disruptive behavior than the control group at baseline. During the treatment phases, the experimental group exhibited less disruptive behavior than the control group. Thus, the token economy was effective.

There are a few concerns with Baker et al.'s (1972) study. First, volunteer workers were trained to implement the token economy, and no treatment integrity observations were conducted to determine if they were implementing the procedures correctly; only daily record logs were kept by the volunteers themselves. In addition, the authors did not report how many time outs were conducted throughout the study. Also, the authors did not assess the relative influences of time out and the token economy on treatment outcome. Finally, the withdrawal and reinstatement phases were only 1 week each; thus, the effects produced may not be representative of the behavior that would have occurred if these phases were longer.

Wolfe et al. (1983) examined the effects of a token economy on cooperative play of children with behavior problems in the preschool classroom. A multiple-baseline design was used across 3 children and 2 settings (i.e., morning and afternoon classrooms). During treatment sessions the target children wore "happy face charts," and stickers were placed on the chart when these children exhibited cooperative play for an entire minute. The children could exchange stickers for outside time. Results suggested that the children's level of cooperative play increased by 50% during the treatment phase, and the number of time outs decreased for 2 of the children. Furthermore, generalization occurred between settings, which contradicts concerns that token economies decrease intrinsic motivation.

McGoey and DuPaul (2000) investigated the effects of a token economy plus a response cost in decreasing the disruptive behavior of 4 preschool children with Attention-Deficit Hyperactivity Disorder (ADHD) using a single-subject reversal design in two classrooms (i.e., ABACABAC and ACABABAC). The token economy phase consisted of buttons which the children could earn for following the classroom rules (e.g., stay in area). Buttons were exchanged for rewards at the end of the day. During

the response cost phase, all of the buttons were displayed on the chart and when a classroom rule was broken, a button was removed. In addition, a typically-behaved control child was observed as a peer comparison in each classroom. According to direct observation and teacher rating scales, both phases were associated with decreased disruptive behavior. Furthermore, teachers rated the response cost procedure as more acceptable than the token economy because the teachers believed that it was easier to implement.

A few limitations concerning McGoey and DuPaul's (2000) study are worthy of mention. For example, the peer comparison was observed less often than the target children, which may have reduced the validity of obtained results. Additionally, the developmental requirements of the token exchange procedure may have been too complex for the children's level of cognitive development. Also, the children did not receive their reward until the end of the school day, which may have resulted in weaker results in the response cost phase. Specifically, if the children lost all of their buttons at the beginning of the day, then the incentive for following rules would be removed for the rest of the day.

Filcheck et al. (in press) conducted a study in which a whole-class token economy, the Level System (described previously), was compared to Parent-Child Interaction Therapy (PCIT; see Hembree-Kigin & McNeil, 1995) skills to determine the efficacy of each in decreasing disruptive classroom behavior. Specifically, an ABACD treatment comparison design with a 4.5-month follow up was used in a preschool classroom referred for being "out of control." Seventeen preschool children and one teacher participated in the study. The teacher was trained in the use PCIT skills, as well as the Level System. Results suggested that the frequency of inappropriate behavior exhibited by the children decreased throughout the study while the number of time outs given by the teacher increased throughout the study. This investigation was limited by the lack of reversal of inappropriate behavior during the withdrawal phase, and the low level of teacher treatment integrity with the Level System. However, it provides preliminary support that the Level System may be a viable option for the management of disruptive behavior in preschool classrooms.

Additionally, the Level System was used in research study with an ABAB design with 4 male

children (2 disruptive and 2 typical) and 5 teachers in a preschool classroom (Filcheck, 2003). Results indicated, through behavioral observation, that the participants exhibited less disruptive behavior when the Level System was used in the classroom. However, teacher-report of child behavior did not indicate a stable decrease in disruptive behavior. The number of time outs given by the teachers steadily decreased throughout the study, except for the 1-month follow up. Limitations of this study include: ceiling effects for the behavior of the typical children, carryover effects for all participants' behavior, and data instability throughout conditions.

In sum, these few studies (Baker et al., 1972; Filcheck, 2003; Filcheck et al., in press; McGoey & DuPaul, 2000; Wolfe et al., 1983) demonstrate that token economies can be effective in decreasing disruptive behavior and increasing compliance and cooperation among preschool children with behavior problems. Thus, they provide preliminary support for the use of token economies with this population.

PHILOSOPHICAL CONCERNS WITH USING TOKEN ECONOMIES IN PRESCHOOL CLASSROOMS

The information presented thus far suggests that token economies may be the logical next step to manage disruptive behavior in preschool classrooms. However, there are several philosophical concerns regarding teachers, children, and parents that may serve as obstacles that interfere with or even prevent the use of token economies in preschool classrooms.

Teachers. Token economies can be time consuming and require much effort from the teacher, which may lead to less academic time in the classroom (Miltenberger, 2000; O'Leary et al., 1972; Skinner et al., 1996; Turnbull, 1988). For example, the teacher may spend more time observing the children's interactions and distributing tokens than teaching academics. Teachers, parents, and administrators are unlikely to approve of a behavioral management system that decreases the amount of time spent on teaching.

Children. One extensively researched philosophical concern with the use of token economies with preschool children is the possible decrease in intrinsic motivation that may result (e.g., Davidson & Bucher, 1978; Ford & Foster, 1976; Levine & Fasnacht, 1976; Kohn, 1993, 2000; Molloy,

1979; O'Leary et al., 1972). This concern has emerged from attribution theory, which states that future behavior results from the manner in which people perceive the causes of their past behavior (Bem, 1972; Kelley, 1973). In other words, "if people perceive salient external rewards as sufficient to account for a particular behavior then they are likely to regard that behavior as being controlled by external rewards" (Molloy, p. 32). It follows that receiving a reward for engaging in intrinsically interesting behavior will lead to a decrease in that behavior when the rewards are removed because that behavior is controlled by external rewards (Molloy). This theoretical idea has been labeled the "overjustification hypothesis" (Molloy).

Kohn (1993) described the negative effects associated with reward systems (e.g., token economies) as they relate to the overjustification hypothesis. Specifically, Kohn and other authors (e.g., Davidson & Bucher, 1978) cite examples of the manner in which rewards decrease intrinsic motivation. In one such example, Lepper, Greene, and Nisbett (1973) found that when preschool children were rewarded for using specific markers to draw, they were less likely to use the markers after the rewards were withdrawn. Kohn stated that reward systems are so powerful that being rewarded only once for exhibiting a certain behavior can "kill your interest in it for weeks" (p. 74). Similarly, Levine and Fasnacht (1974) argued that token economies "should be avoided unless there is a real danger to the person or there is no alternative" because of the potential decrease in intrinsic motivation (p. 820).

Moreover, Kohn (1993, 2000) stated that reward systems, such as token economies, create controlling environments that decrease children's self-esteem. According to the overjustification hypothesis, children begin to believe that they only are behaving (e.g., drawing with specific markers) for the external reward, and not because they like what they are doing (Kohn, 1993). Kohn (1993) contended that this process results in a decrease in self-esteem concerning the specific behavior.

Using token economies in preschool classrooms also may promote competition among students. For example, students may compete against each other to receive the most tokens. This type of environment may decrease the likelihood that children will learn the concepts of teamwork and helping others because they are focused on winning rather

than learning (Kohn, 1993). Thus, using a token economy actually may teach children that competing, rather than helping, is more effective at receiving rewards. In addition, Kohn stated that competition generates anxiety which can impair performance. In other words, the children may become anxious concerning whether or not they will receive a reward which, in turn, may interfere with their engaging in the positive behavior required to receive the reward.

Dependence on token economies is a philosophical concern that not only affects teachers, but can affect children as well. Kohn (1993) asserted that "the more we are rewarded, the more we come to depend on rewards" (p. 83). In other words, children's behavior will continually be associated with external rewards, and they will become so dependent on these rewards that they may not be able to exhibit the targeted behavior without expecting to receive a reward. According to Kohn, dependence on reward systems is expressed by children when the targeted behavior decreases after the withdrawal of the system.

Another potential philosophical concern with the use of token economies to increase appropriate classroom behavior (e.g., sharing, staying on mat) is that the children with behavior problems do not exhibit these behaviors frequently enough to receive the reward (Kohn, 1993; Skinner et al., 1996). These children even may terminate any attempts at receiving rewards because they believe that their efforts are hopeless (Kohn). Finally, the risk exists that the token economy rewards may be more rewarding than the regular class activities, especially if the rewards are activity-based, causing children to perceive the regular class routine as less rewarding once the token economy is implemented. This could lead to the children only participating in the regular class activities enough to obtain the reward (Turnbull, 1988).

Parents. Parental concerns should be considered because it is important for the children's parents to feel comfortable with the school's discipline policy. One parental concern may be that other parents could have access to information regarding their child's behavior. For example, parents may have access to all children's behavioral information (i.e., how many tokens each child received) if the teacher has not removed the tokens obtained for the day when parents enter the classroom to pick up their children. According to Kohn (2000), behavioral charts (e.g., star charts) that are displayed

in the classroom provide evidence that students are being ranked and compared against each other. Kohn suggests that this educational environment is detrimental to children and recommends that parents remove their children from these classrooms.

Parents also may become upset or embarrassed if their child does not receive the rewards obtained by other children. Parents may feel that their child is being singled out or humiliated if he or she regularly obtains fewer tokens and rewards than other children (Corrigan, 1995).

Another aspect of the token economy with which parents may be concerned is the addition of a response cost. A response cost is used in most token economy systems if there are undesirable behaviors (e.g., spitting, fighting) that potentially may compete with the desired behaviors (e.g., sharing, playing gently with toys) (Miltenberger, 2000). Using a response cost is a philosophical concern with parents because such an approach utilizes punishment and parents typically are less approving of punishment approaches (Kohn, 1993).

Research addressing philosophical concerns

Although these philosophical concerns are discussed widely in professional and popular press venues, there is a body of research that contradicts many of these popular beliefs (e.g., Corrigan, 1995; Davidson & Bucher, 1978; McGoey & DuPaul, 2000; Molloy, 1979; Okovita & Bucher, 1976; Reitman, 1998; Reynolds & Kelley, 1997). For example, concerning the frequently cited concern that token economies decrease intrinsic motivation in children, some authors (e.g., Ford & Foster, 1976) suggested that support for this result only has been found when token economies were used with behaviors that were exhibited at a high frequency (e.g., drawing with colorful markers) rather than behaviors that occurred at a low frequency (e.g., keeping hands and feet to self for a disruptive child). Furthermore, these authors stated that token economies typically are advised for behaviors that have low intrinsic interest (e.g., sitting quietly), and thus, implementing a reward system actually increases the probability that children will develop interest in these behaviors (Molloy).

In addition, Molloy (1979) and Davidson and Bucher (1978) conducted studies in which the effects of token economies on preschool children's intrinsic motivation were examined, and results suggested that

no effects on intrinsic interest were evident. Specifically, Molloy assigned 30 children to one of three conditions: token economy, expected reward (received reward without earning tokens), or unexpected reward. The children received tokens or rewards (depending on condition) for drawing with colorful markers. The tokens were exchanged for plastic animals. No significant differences in drawing behavior were found between pre- and post-observations for any condition. Davidson and Bucher's study consisted of an ABAB design in which 4 children received tokens for playing with a certain activity (i.e., house or clown). The authors found that children did not choose to engage in the reinforced activity less when the reinforcement was withdrawn.

Additionally, Eisenberger and Cameron (1996) conducted a meta-analysis that indicated that only expected, tangible rewards that were performance-independent had a detrimental effect on performance when measured by time spent on an activity. This effect was not found with verbal, unexpected, or quality- or completion- dependent rewards. Furthermore, Cameron and Pierce's (1994) meta-analysis of 96 experiments indicated that verbal praise increased intrinsic motivation, providing rewards did not produce a decrease in intrinsic motivation, and tangible rewards affected intrinsic motivation negatively only when the rewards were expected and provided noncontingently.

Recently, Cameron, Banko, and Pierce (2001) conducted a meta-analysis using research over the past 30 years to determine the overall effects of rewards on intrinsic motivation. They found that rewards produce no harmful effects during task performance. Specifically, results indicated that rewards produced positive effects on intrinsic motivation during low-interest tasks, and during high-interest tasks when they were explicitly tied to behavior and success. Negative effects on intrinsic motivation only were found when the rewards were expected, tangible, and not tied to the behavior. Thus, the authors concluded that rewards have no pervasive negative effects on intrinsic motivation.

Another philosophical issue addressed by researchers is that the disruptive children may not receive the rewards of the token economy. Even though research has shown that there have been no disturbing effects on the children who do not receive the rewards (Okovita & Bucher, 1976), one way to improve the possibility that these children will, in

fact, have the opportunity to receive the rewards is to individualize the expectations of each child's targeted behavior (Corrigan, 1995; Skinner et al., 1996). In other words, the teacher may have different behavioral expectations for each child, and thus, the children with behavior problems may receive tokens for exhibiting appropriate behavior at a lower frequency (or lesser degree of "appropriateness") than the children with typical behavior. Therefore, these children would have a similar opportunity to receive rewards as the typically-behaved children (Skinner et al.). However, this possible solution poses another philosophical concern, that individualizing expectations is unfair to the children held to more stringent criteria (Skinner et al.).

Concerning the philosophical issue of the addition of a response cost procedure to a token economy, research conducted by Reynolds and Kelley (1997) suggested that teachers as well as parents considered a response cost procedure to be a highly acceptable technique to use to manage disruptive behavior in preschool classrooms. Furthermore, McGoey and DuPaul (2000) reported that preschool teachers rated a response cost procedure as more acceptable than a token economy procedure because it was fairer and more time-efficient.

In response to Kohn's (1993) claims that reward systems create over-controlling environments and encourage competition, Reitman (1998) argued that psychologists using these techniques often include the teachers, parents, and children in the development of the intervention so that the reward system will be acceptable to everyone involved. Reitman also suggested that Kohn's arguments concerning reward systems (i.e., controlling environments, competition, loss of intrinsic motivation) lacked data. Specifically, Kohn ignored evidence from research that contradicted his viewpoints (e.g., Dickinson, 1989; Vasta & Stirpe, 1979).

Clinical issues addressing philosophical concerns

Amelioration of some of these philosophical concerns may be achieved clinically. For example, taking the background of the teachers and parents into account may be one possible clinical remedy to preventing philosophical concerns (Skinner et al., 1996; Turnbull, 1988). Skinner et al. stated that teachers may not have been trained in the use of contingency management procedures and therefore

may have misconceptions concerning the detrimental effects of such procedures. Also, developing token economies collaboratively with teachers, parents, and children may aid in alleviating many of these concerns (Reitman; Turnbull). For example, psychologists can organize group meetings with relevant individuals to develop the specific procedures and solve any problems that emerge.

Being educated about philosophical issues and taking them into account when developing token economies may help prevent negative perceptions. Examples of ways to be sensitive to philosophical concerns include: withholding tokens for competitive behavior to discourage competition among children, and removing the behavioral charts from view before parents arrive to pick up their children.

Recommendations for Future Directions

Despite the fact that token economies seem to be a promising intervention for managing disruptive behaviors in the preschool classroom, more empirical research needs to be conducted concerning their effectiveness as well as their developmental, practical, and philosophical sensitivity. Specifically, the literature regarding the use of individual token economies in preschool classrooms needs to be expanded. More research is needed that includes developmentally sensitive token economies and exchange rates.

Furthermore, research in this area should be expanded from the use of individual token economies within a classroom to whole-classroom token economies. Thus far, however, no studies have been found that have examined the effectiveness of a whole-classroom token economy in managing behavior problems in preschool classrooms. As mentioned above, the use of whole-classroom token economies may address some philosophical and practical concerns (e.g., less time consuming, children are not "singled out").

Significantly more research concerning parent and teacher satisfaction is needed, as well as preliminary research concerning child satisfaction. Satisfaction should be examined regarding both individual and whole-classroom token economies. The data collected from these studies would provide information concerning the utilization and dissemination of token economies.

Because response cost procedures have been found to be highly acceptable to teachers and parents (McGoey & DuPaul, 2000; Reynolds & Kelley, 1997), further research should examine the use of a response cost in addition to a token economy. The information obtained would provide psychologists with data concerning effectiveness, acceptability, and philosophical concerns (e.g., dependency). In addition, future research could address the concern of other parents having access to the children's behavioral information. While it might be assumed that visibility would increase effectiveness by providing greater feedback to children regarding their behavioral expectations, there currently is a lack of research in this area.

Another area in which future research may be helpful is determining the possible detrimental effects of using token economies with preschool children. For example, some of the issues raised in this paper (e.g., intrinsic motivation) have received attention; whereas, other issues (e.g., dependency, competition) have received little attention with this population. In addition to determining if short-term negative effects exist, the possibility of long-term detrimental consequences should be assessed through studies that include follow-up assessment.

Because previous research with token economies in this area has not resulted in demonstrating effective maintenance and generalization, future research should address this by programming the generalization of the token economy. For example, a phase could be added to a research study in which children's and teacher's generalization behavior is reinforced. Additionally, a stimulus exemplar could be added in that other preschool teachers could use the token economy with the class, or the token economy could be used in other settings (e.g., outside) rather than just the classroom. The effects of these training conditions on generalization of the behavioral gains obtained with the use of the token economy is worthy of future research.

In conclusion, token economies seem to be a promising intervention to assist teachers in managing the increasing levels of disruptive behavior being exhibited in their preschool classrooms (Campbell, 1990; Lavigne et al., 1998). Research suggests that preschool children can, in fact, comprehend and participate in token economies (e.g., Barkley, 1987; Budd et al., 1981; Musgrove, 1981). Yet, several

practical and philosophical concerns may hinder the development and implementation of token economies to manage preschool children's behavior problems. Therefore, the possible negative effects of token economies as well as the overall effectiveness of this approach with preschool populations needs to be evaluated with well-controlled empirical research before any wide-scale dissemination efforts are undertaken.

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SEPARATE BUT INTERLOCKING ACCOUNTS OF THE BEHAVIOR OF BOTH SPEAKER AND LISTENER: WHEN THE LISTENER SPEAKS IS THERE MORE TO LISTENING THEN JUST LISTENING?

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The very fact that behavior analysts have so carefully analyzed the speaker in terms of maintaining variables, but disregard the listener's behavior as broadly "receptive" unless the listener vocalizes (then applying the operants of the speaker until the listener, stops vocalizing) seems to be missing the point of Skinner's original analysis in the first place. This paper seeks to point out the need for greater research and development in the area of listener responding, including when the listener vocalizes and take the current analysis of verbal behavior beyond the broad category of "receptive" behavior to a place where we can scientifically separate the many non-vocative and vocative responses of the listener allowing behavior analysts to have a greater ability to accurately analyze the total verbal discourse.

INTRODUCTION

"Our interest in the listener is not; however, merely an interest in what happens to the verbal stimuli created by the speaker. In a complete account of a verbal episode we need to show that the behavior of the listener does in fact provide the conditions we have assumed in explaining the behavior of the speaker. We need separate but interlocking accounts of the behaviors of both speaker and listener if our explanation of verbal behavior is to be complete. In explaining the behavior of the speaker we assume a listener who will reinforce his behavior in certain ways. In accounting for the behavior of the listener we assume a speaker whose behavior bears a certain relation to environmental conditions. The interchanges between them must explain all the conditions thus assumed. The account of the whole episode is then complete. (Skinner, p.34, 1957)"

Skinner (1957) notes that we must examine both the speaker and listener for two separate yet interlocking accounts of the behavior produced in the exchanges between them. In his treatment of verbal behavior he asserts that one cannot properly elucidate the functions for the responding of speaker without taking into account the responding of the listener and the ecological contingencies in which the behavior is emitted. In Skinner's text he further attempts to delineate verbal behavior in such a way as to remove the need for mentalistic terms such as intention and meaning to explain the "cause" of verbal behavior. What he left us with is a framework upon which behavior analysts can begin to discover more about the various operants at work in verbal behavior without explaining "why" it occurs, but instead how it comes about.

"A child acquires verbal behavior when relatively unpatterned vocalizations, selectively reinforced, gradually assume forms which produce appropriate consequences in a given verbal community. In formulating this process we do not need to mention stimuli occurring prior to the behavior to be reinforced. It is difficult, if not impossible, to discover stimuli which evoke specific vocal responses in the young child. There is no stimulus which makes a child say B or A or E, as one may make him salivate by placing a lemon drop in his mouth.... (Skinner, p.31, 1957)"

Practitioners, who are involved in curriculum development for children of specialty populations, are increasingly becoming aware that training curriculums need to foster a child's growth and development past basic commenting and requesting. This article explores the area of complex verbal operant such as the building of autoclitic frames, self-generation of rules, self-editing and the corresponding development of listener behavior. It is hoped that the curriculums suggested by these comprehensive theoretical components begin to undergo field testing, efficacy, and effectiveness research, and finally find their way into curriculums for children with speech and language delays, developmental disabilities, children with attention difficulty, and oppositional behavior.

BEHAVIOR ANALYSIS AND THE SPEAKER

Skinner (1957) laid out a functional model of speaker behavior. This model consisted of tacts- a verbal example of stimulus control, mands- a verbal example where the primary motivation for the speaker was what Skinner termed third variables and Michael

(1982) has redefined as establishing operations, intraverbals- a conversation unit and usually associated with semantics, and several types of autoclitics, which function for syntax, relational, qualifying, and structure units. Skinner actively focused on the role of the speaker and implied a developmental sequence for the development of speaker responses (Savage-Rumbaugh, 1984). In Savage-Rumbaugh's interpretation mands precede tacts in development with intraverbals and autoclitics representing progressively higher levels of development.

IF THE LISTENER VOCALIZES DOES THAT MAKE THE LISTENER THE SPEAKER?

Can a speaker actually be responding as a listener even though the response may be a vocalization? In the example of tacting, the spontaneous utterance "The block is in the box" (when seeing a block in the box) we can ascertain per Skinner's definitions that this would be a pure tact. Upon the occasion of someone asking the question "Where is the block" and the response "The block is in the box" we can see the problems with the definition. It does not quite seem to fit the scientific definition of tact (Stafford, Sundberg & Braam, 1988), because it is a response under the stimulus control of a speaker's words. Currently many are considering these "words" as intraverbal prompts and have deployed them to train pure tacts (see Sundberg, Endicott, & Eigenheer *The Analysis of Verbal Behavior*, 2001 for an excellent treatment of these methods). In analyzing the deployment of the "intraverbal prompt" one observes a set of words meeting the scientific definition of a mand (Skinner, 1957, Michael 1982; 1988, Stafford, Sundberg & Braam, 1988); a mand for information; specifically who, what, where, when, why, and how. Our response to another speaker's words is called an intraverbal, but in this instance, the listener is also tacting as part of the response (they are observing the condition of a block in a box). Currently the response "The block is in the box" when asked "Where is the block" would be called by most a tact, but clearly because it is a response to a speaker's words it does not seem to fit the scientific definition.

Further complicating the use of these terms is any situation where the listener "tacts" the location of an object that is not observable and most behavior analysts would define these behaviors as intraverbal. Additionally complicating the analysis and

application of that analysis are responses to a speaker's tact. Presently, when a listener responds to a speaker's tact vocally the response is described as an intraverbal and when the response is a motor movement the response is simply called "receptive". This terminology does not seem to fit the actual ecological events when all parameters are taken into account. The speaker is "tacting" an observable event, the listener's vocal response is not only a response to the "words" but to the observable environmental event. Intraverbal behavior is a response under the stimulus control of "words" and these observable conditions complicate defining them as intraverbals. Many would argue that these responses are multiply maintained or have "multiple causation". "... The response fire may be a mand or a tact. It may also be an echoic, textual, or intraverbal response. The formal overlap need not be complete. (Skinner, p.227, 1957)" Obviously the authors are not tacting these responses as multiply maintained, but instead separate responses with their own maintaining variables.

Consider the occasion where the listener responds with a motor movement, but the listener is not responding to a direct mand for action, and instead is responding based on some "inferred" or "known" information that is not directly contained in the "words" and based in some part on the observable conditions previously tacted by the speaker; obviously conditioned responding of the listener. While the term "receptive" does not do harm to our ability to analyze these behaviors on a whole, it does not allow behavior analysts to separately analyze these behaviors from other responding that we might call receptive. It also does not separate these behaviors for analysis from the other responding described above which is currently tacted "receptive". For further information on these behaviors the reader is directed to Sundberg & Partington, *Teaching Language to children with Autism or Other Disabilities and the companion texts The Assessment of Basic Language and Learning Skills*, 1998. Hall and Sundberg (1987)

PROPOSED SOLUTIONS TO THE DILEMMA: SOME NEW DEFINITIONS OF "RECEPTIVE BEHAVIOR"

Zettle and Hayes (1982) have proposed two classes of rule governed behavior, pliance and tracking. Zettle and Young (1987) define pliance as "rule governed behavior under the control of socially

mediated consequences for correspondence between the rule and relevant behavior. The rule itself is termed ply. For pliance to be reinforced members of a verbal-social community must have access to the relevant ply and be capable of monitoring the corresponding behavior and controlling reinforcing consequences. Reinforcement for pliance is arbitrary insofar as it is controlled by socially mediated reinforcement for a correspondence between the ply and behavior. For this reason, pliance as a class of rule following may occur even when natural (i.e., nonarbitrary) contingencies surrounding the behavior are aversive or punishing. Indeed pliance may show the type of insensitivity to natural contingencies which have been regarded by some as a defining property of instructional control (Shimoff, Catania, & Matthews, 1981).” An additional type of rule following is tracking “under the control of apparent correspondence between the rule and the way the world is arranged” (Zettle & Hayes, 1982, p.81). “The rule itself is termed a track. While reinforcement for pliance is socially mediated and arbitrary, reinforcement for tracking results from natural contingencies surrounding relevant behavior. Unlike pliance, tracking is not dependent upon the members of a verbal-social community to discriminate the presentation of a rule as well as monitor and reinforce behavior in correspondence with the rule. For this reason tracking may occur in a completely private context as when individuals consult manuals or written instructions in guiding their behavior” (Zettle & Young, 1987).

Hayes and Hayes (1994) defined these terms further by introducing the developmental/ training history to produce the behavior and by function accordingly: (1) pliance is behavior due to a history of socially-mediated consequences for a correspondence between antecedent verbal stimuli and the relevant behavior (2) tracking behavior is due to a history of correspondence between antecedent verbal stimuli and the contingencies contacted by the formal and situational properties of the relevant behavior and (3) augmenting behavior is to antecedent verbal stimuli that produce a change in the capacity of events to function as reinforcers or punishers.

As we shall discuss later the formation of rule-governance has much to offer in training children to regulate their own behavior, and delay gratification. In addition, organic correlates could impair these skills from adequately developing or lead to slower development (Hayes, Gifford, & Ruckstuhl,

1996). For example Hayes, Gifford, and Ruckstuhl (1996) have suggested that impaired pliance on an organic level could lead to rules not being followed even those which have been previously socially rewarded. Or these same authors have suggested that defective tracking can leave an individual being less able to follow rules that have a history of being positively reinforced. Finally, diminished augmenting may lead to delays in moral reasoning and present the individual with less ability to shift from immediate rewards to long term rewards.

The authors have completed a parallel analysis of listener behavior to Skinner’s analysis of speaker behavior. In their analysis pliance is the listener’s response to a mand; tracking is the listener’s response to the tact, augmenting the response to the intraverbal. The authors have further refined the definition of pliance and tracking to include instances where the listener vocalizes, or vocative pliance and tracking, as opposed to responses that are purely motor oriented or non-vocative pliance and tracking. Furthermore; taking into account unconditioned establishing operations, conditioned establishing operations, and specific motor movements on the speaker’s part the authors have further defined the occurrence of non-vocative mands, which may evoke vocative pliance responses previously considered tacts or intraverbals (discussed in detail later in the paper) or non-vocative pliance previously not considered verbal behavior. Using these definitions

Mand	Pliance	Socially mediated consequences
“Put the keys on the table.”	The listener responds by putting the keys on the table.	“Thanks!”
“Where are the keys?”	The listener responds by saying “The keys are on the table”.	“Oh, great that is where I left them.”

Figure 1: Non-Vocative and Vocative Pliance Example

the authors have been able to design treatments that have been effective in training behaviors previously tacted to be acquired as a result of generalization, or considered un-teachable in the general community (discussed in future papers).

VOCATIVE AND NON-VOCATIVE PLIANCE

Pliance is a listener behavior characterized in both non-vocative and vocative responses maintained

by socially mediated consequences. It is most typically a response to a speaker’s mand or a

As we can all clearly agree the mand is controlled by establishing operations and in most

1. Vocative Mand	Pliance	Socially Mediated Consequences
“The guy who publishes on functional analysis in JABA?”	“Brian Iwata”	Yes. That’s right, that’s him!”
Intraverbal	Vocative Tracking	Socially Mediated Consequences
“His name is often on papers in that publication”	“His name is on all the publications in that Journal”	“Laughter, uh huh!”
2. Vocative Mand	Pliance	Socially Mediated Consequences
“Something that you use to eat with is a?”	“Spoon”	Yes, you do eat with a spoon.
3. Vocative Mand	Pliance	Socially Mediated Consequences
“A spoon is something you use to?”	“Eat with”	“Absolutely!”

Figure 2: Vocative Mand Versus Intraverbal

speaker’s non-vocative mand. An example is shown in figure 1 of a non-vocative and vocative pliance response.

It is important to note that pliance is evoked by discriminative stimuli; in the examples that follow that discriminative stimuli is a speaker’s vocalization and or other relevant stimuli in the environment. An important part of understanding the pliance response is coming to terms with defining the vocalization of the speaker as a mand and not some other operant. It also requires a further refinement of mands in order to fully represent conditions in which the listener response has been previously characterized as tact but which may actually represent vocative pliance responses (discussed in detail later).

MAND VERSUS INTRAVERBAL: WHICH WILL IT BE?

"No response can be said to be a mand from its form alone. As a general rule, in order to identify any type of verbal operant we need to know the kind of variables of which the response is a function. (Skinner, p.36, 1957)" "... We may say that some responses, simply because of formal properties, are very probably mands. (Skinner, p36. 1957)" "Skinner’s work from time to time has various dichotomies which necessarily must be rectified to have a complete analysis of verbal behavior. Skinner himself notes that his work should be the impetus of discovery not the point to which all conclusions about verbal behavior is drawn.

cases the mand is identified because it specifies its own reinforcement “in words”. However as many have noted the mand is not always a vocalization but may include motor responses or be purely motor responses (discussed later in the paper). For the purposes of our argument we must look at the vocalization previously defined as an intraverbal or intraverbal prompt as a vocative mand. Figure 2 below shows examples of the vocative mand versus an intraverbal response and the responses of the listener in respect to the speaker’s operant. In exchange one (1.) we consider this a vocative mand because the operant specifies its reinforcer. That is, the response requirement to reinforce this mand is the vocative production of the name of the “guy” who publishes about functional analysis in JABA and because the response topography complies with the specific reinforcement. In the second part of this exchange we would tact the operant an intraverbal as opposed to tact because neither JABA nor the “guy”, Brian Iwata, is present at the time the operant is emitted (arguably evoked if silence serves as CEO for more speech production in which case it is not an intraverbal but instead some form of mand, a subject for future research).

In example two (2) and three (3) the authors point out that this would be considered a vocative mand whether the object or a formal representation of the object were available at the time or not, due to the operants topography it is conditioned to evoke a vocalization that finishes the statement with an exemplar of something you use to eat.

Michael (1985) points out the differences of topography based and selection based responding and notes that the differences are likely to be overlooked

^T CEO	Non-Vocative Mand	Vocative Pliance	Socially Mediated Consequences
Both Speaker and Listener are leaving on a trip.	Searching the room looking for something.	The listener responds by saying "The last time I saw your keys they were on the table".	"Thanks!" and then speaker and listener are free to leave.
^T CEO	Non-Vocative Mand	Non-Vocative Pliance	Socially Mediated Consequences
Both Speaker and Listener are leaving on a trip.	Searching the room looking for something.	The listener responds by getting the keys from the table and handing them to the speaker.	"Thanks!" and then speaker and listener are free to leave.

Figure 4: Non-vocative Mand

by those interested in listener responding. Michael (1983, 1985) and Sundberg (1985) go on to refine our understanding of the topography of motor responses as being verbal operants and use experiments involving teaching pigeons mand and tact repertoires to provide exemplars (the reader is directed to these text for a thorough treatment). For the purposes of our discussion we want to elucidate the topography of specific motor movements as non-vocative mands (as being verbal behavior). The authors would note at this point that much of the pliance behavior that is evoked by a non-vocative mand would depend on the assumption that over time the listener has developed a repertoire of conditioned responses to these mands.

A MAND SPECIFIES ITS REINFORCEMENT?

It is not clear to the author at this time whether in all of these instances the effect of conditioned establishing operation spreads to both the speaker and the listener or whether the conditioned establishing operation is only in effect for the speaker. This is obviously an area for further refinement and further research. Assuming that the CEO is in effect for only the speaker then the maintaining variable will be the socially mediated consequences, but assuming that the maintaining variable is a natural consequence we might say that this is not a pliance response at all.

Obviously for our argument we are tacting these listener responses as a pliance skill and that these are conditioned responses to specific motor movements that function as mands. We do not rule out however, that there may be more than the pliance operant in control of similar "receptive" situations in fact we assume that to be the case. The author previously considered the response to a Non-Vocative Mand as a tracking skill as opposed to a pliance skill based on the need to condition the response over time and the lack of formal correspondence between the motor movement and the listener's response. The author admit that this definition has its deficiencies and that perhaps there is a listener response that has yet, to be identified or equally important a speaker operant that does not fit the current definition of mand yet evokes a vocative or non-vocative response in the listener. Tracking was considered due to the work of Michael, Whitley & Hesse (1983) The Pigeon Parlance Project, Michael (1985) Two Kinds of Verbal Behavior Plus a Possible Third, and Sundberg (1985) Teaching Verbal Behavior to Pigeons, on topography and selection based tacting and manding with non-human subjects where the verbal stimuli was motor movements of pigeons.

Tact	^R CEO	Non Vocative Tracking	Natural Consequence
"Oh, it's raining"	Listener is about to leave and has had relevant contact with rain in the past.	The listener responds by getting an umbrella before leaving.	The listener stays dry.
Tact	^R CEO	Vocative Tracking	Natural Consequence
"Oh, it's raining"	Listener is about to leave and has had relevant contact with rain in the past.	The listener responds by saying, "I will get an umbrella"	The listener stays dry.

Figure 3: Vocative and Non Vocative Tracking Responses to Tacts

Tact	^R CEO	Vocative Tracking	Natural Consequence
“Oh, it’s raining”	Listener is about to leave and has had relevant contact with rain in the past.	The listener responds by saying, “Do you have an umbrella?”	The listener stays dry.
RCEO	Mand	Vocative Pliance	Specific Reinforcement
Speaker is about to leave and has had relevant contact with rain in the past.	The speaker responds by saying, “Do you have an umbrella?”	The listener responds by saying, “Yes I do have an umbrella, let me get it?”	Speaker receives an umbrella

Figure 5: Mand Topography - Vocative Tracking

VOCATIVE AND NON-VOCATIVE TRACKING RESPONSES

Tracking is a listener behavior characterized in both non-vocative and vocative responses maintained by natural consequences and socially mediated consequences, when those reinforcers are a natural consequence of the operation. It is typically a response to a speaker’s tact, and sometimes augments a speaker’s intraverbal. The author would note at this point that much of the tracking behavior that is evoked would depend on the assumption that over time the listener has developed a repertoire of conditioned establishing operations.

second stimulus and that second stimulus cannot be obtained without the emission of behavior. The Surrogate Conditioned Establishing Operation (^SCEO) where stimulus correlated with stimulus evokes behavior as a CEO rather than an S^D increasing the value of terminating the former stimulus as opposed to the availability of termination. Michael defines the Reflexive Conditioned Establishing Operation (^RCEO) as “any stimulus condition whose presence or absence has been positively correlated with the presence or absence of any form of worsening will function as a CEO in establishing its own termination as effective reinforcement and in evoking any behavior that has been so reinforced” (p. 203).

Michael (1988) identifies the importance of using CEO’s to establish the mand. Michael (1981)

Intraverbal	^T CEO	Vocative Tracking	Socially Mediated Consequences / Natural Consequence
“You couldn’t be more wrong about your theory”	Listener has had relevant contact with winning – loosing based on evidence	The listener says: “In my chart I can show you the increases in responding”	“Well then you have made quite a discovery, I would like very much to see your chart”
Intraverbal	^T CEO	Non-Vocative Tracking	Socially Mediated Consequences / Natural Consequence
“You couldn’t be more wrong about your theory”	Listener has had relevant contact with winning – loosing based on evidence	The listener gets the chart out of the drawer and places it on the table.	“Oh, I am mistaken and you are right”

Figure 6: Tracking Responses to Intraverbal Behavior

identifies three CEO’s, transitive, reflexive, and surrogate which may have a relevant bearing on our current argument. Transitive conditioned Establishing Operations (^TCEO’s) as Sundberg notes (1993) are brought about by the occurrence of one stimulus in the environment that alters the reinforcing value of a

Presently there are some sound propositions for using these types of CEO’s in training as well as analysis of verbal behavior (Michael 1981; 1988, Sundberg, 1993, Thomas, 2001) It is essential that we consider the effects of conditioned establishing operations when we analyze tracking responses, as it

appears that many of these responses are evoked by conditioned establishing operations involving either the speaker’s words in conjunction with other stimuli and perhaps motor movements.

Perhaps most important in understanding the distinction of the tracking response is its relationship is established through rules, reinforced or punished

positively correlated with verbal stimulus. Using this account of separate listener behaviors allows us to further examine the various responses that in the past might be called tacts or an intraverbal, as shown in figure six (6) above, and those instances in which the listener’s response is a motor action and not comprised of vocative stimuli. This assists us as analysts to account for the entire verbal operation as

S ^D	Student Pliance	Socially mediated consequences		
A cookie is presented	“I want cookie”	Instructor delivers a cookie		
Instructor Mand	Student Pliance	Socially mediated consequences		
“Point to a cookie”	Points to a cookie	“Great that is a cookie!”		
Instructor Mand	Student Pliance	Socially mediated consequences		
Points to a cookie	“Cookie”	“Great that is a cookie!”		
Instructor Mand	Student Pliance	Socially mediated consequences		
“Say Truck”	“Truck”	“Excellent”		
Instructor Mand	Student Pliance	Socially mediated consequences		
“What do you want?”	“A cookie”	Instructor delivers a cookie		
Instructor Mand	Student Pliance	Socially mediated consequences		
“What is this?”	“It’s a truck”	“Excellent it is a truck!”		
Instructor Mand	Student Counterpliance	Instructor Mand	Student Pliance	Socially mediated consequences
“What is this”	“It’s a ball”	“Say, it’s a truck”	“It’s a truck”	“Excellent it is a truck!”
Instructor Mand	Student counterpliance	Instructor Mand	Student Pliance	Socially mediated consequences
“What do you want?”	“I want to play”	“Say, I want a cookie”	“I want a cookie”	Instructor delivers a cookie

Figure 7: Pliance training with visual and verbal stimulus serving as an S^D

through natural consequences and the conditioned establishing operation consists of the “words” of others and not just other environmental stimuli. A mand is a speaker’s operant, but a track is a listener operant, even though in different situations the same individual could use the same topography in responding as either mand or track with the same CEO in effect; this difference is elucidated in figure five (5).

Finally, it appears that tracking responses may be specifically evoked by intraverbal behavior. Again the author assert that these behaviors evoked by a conditioned establishing operation that is

verbal behavior without the need to make exceptions with regards to the operants. The argument over the fact that a chart is or is not present in our example is unimportant and whether this operant is tact, intraverbal, or other operant is spurious since we are analyzing the listener as a listener and not as a speaker.

WHAT USES HAVE WE FOR RECOGNIZING THESE OPERANTS

Guess (1969), Frisch & Schumaker (1974) Lee (1978) McGee, Krantz, Mason & McClannahan (1983) and Stafford, Sundberg and Braam (1988) all

appear in their studies to be training vocative and non-vocative pliance responses. Even in the case of training “echoics” and “mands” it appears again and again that most work has focused on training pliance as opposed to training pure tacts and mands, see figure seven (7). Perhaps our preoccupation with defining the listener as a speaker because the listener vocalizes is one the problems plaguing our accurate analysis and treatment of the issues at hand. This author is not criticizing the work that has been accomplished within these studies; quite the opposite, and furthermore the author of these works point out that the tacts and mands are not “pure” in the sense that Skinner (1957) defined. In regards to “receptive” training in the studies previously noted the authors all exclusively trained non-vocative pliance in fact regarding vocative pliance responses as “production” or “expressive” (speaker) behaviors. There is very little empirical literature that can be considered to address the issues of track training in children with developmental disabilities. Hall and Sundberg (1987) and Brady, Saunders, and Spradlin (1994) note that arguably even with the best teaching techniques and manipulating EO’s to conduct mand training that many times the mand was still partly tact. The author argue that the operant was not mand and partly tact and or mand or tact, but instead pliance. Figure seven (7) shows the basis of this argument with the visual stimuli (a cookie) and verbal stimuli (instructor mands) serving as an S^D rather than an EO.

CONCLUSION

A better understanding of the listener operants can help us to design ways to limit the “multiple causation” over tacts and mands and may allow us to effectively train pure mands and tacts. Hall and Sundberg (1987) and Brady, Saunders, and Spradlin (1994) noted the difficulties in teaching pure mands, commenting on the likelihood that there would be multiple causation found in almost any teaching situation. Refinement in the study of verbal operants will lead to a greater ability to properly analyze and develop protocols to treat these behavioral deficits. Additionally, there is much that we can do to limit aberrant behavior as well as correct defective verbal behavior with the acceptance of pliance and tracking as listener operants. Verbal behavior, like all behavior is defined by its function in the environment and necessarily this treatment of listener responding points out a number of separate behaviors as defined by their function. Furthermore, the focus on these behaviors as being separate forms

of responding note that sometimes the listener speaks, but does not cease responding as the listener making developing approaches to training language acquisition a clearly easier “concept” for both practitioners who design curriculum and those who strive to use it in practice. No longer is there a need to call something tact, when it seems as though it is both a mand and a tact or to just simply call it “receptive” and ignore the complete realm of responding to be developed in a fluent member of the verbal community.

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