

# Improving Functional Communication Skills in Adolescents and Young Adults with Severe Autism Using Gentle Teaching and Positive Approaches

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A therapeutic intervention program for young adults with severe autism at the Oasi Institute in Troina Sicily is examined. The program, which integrates gentle teaching, humanistic applied behavior analysis, and functional communication training, values human interactions and provides opportunities to acquire functional skills through errorless learning activities. Reported are the results of an 18-month study to determine whether significant improvements in functional communication skills and an accompanying reduction in maladaptive/stereotypic behaviors could be evidenced in the environment using gentle teaching and positive approaches. The guiding principles of the program, its design, and staff training components are described along with an analysis of program findings. Key words: *autism, functional communication, gentle teaching, humanistic applied behavior analysis, positive approaches, self-injury, stereotypy*

Adolescents and young adults with severe autism typically display significant impairments in social interaction and communication, and engage in high-frequency stereotypic behaviors that at times may also include self-injury. These individuals, depending upon their level of stress or frustration, may become aggressive and may direct those aggressive responses away from self and toward teachers, speech and language therapists, or other caretakers in the en-

vironment. To create an environment in which adolescents and young adults with severe autism can acquire functional communication skills and other important habilitation and social interaction skills requires an intervention approach that treats individuals holistically and one that is not predicated upon treating an array of separate and discrete behaviors. Such an approach differs significantly from many intervention programs that rely heavily on applied behavior analysis (ABA) and may be more consistent with programs that employ some behavioral technology as part of an overall treatment program.

In programs using a strict ABA approach, "behavior plans" are developed that either reward targeted behaviors or the absence of maladaptive behaviors with a range of reinforcers or employ time-out or restraint procedures to reduce self-injury, stereotypy, or aggression. These "behavior plans" may be limited in their utility because of three important factors: (1) they often assume a certain level of cognitive function that may not be present; (2) they often

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ignore comorbid psychiatric or neurologic conditions; and (3) they often employ data collection procedures that are far too demanding for staff to implement. In other words, the structure of the program itself and the goals established by the behavior plan may result in increased stress and frustration for both the adolescent or young adult and the staff members who work with this individual. An individual's failure to meet criteria may promote increased disapproval on the part of staff and heightened levels of frustration, which in turn may result in increased levels of aggression, self-aggression, and stereotypy for the adolescent or young adult.

To create an optimum therapeutic milieu so that self-care and functional communication skills can develop requires an emphasis on the relationship between therapist and client, one that provides intense nurturing and limits frustration and stress. This is necessary because acquisition of important skills can only take place when high-frequency competing behaviors including self-injury and stereotypy are minimized. Because communication skills and maladaptive behaviors in persons with severe disabilities are typically negatively correlated, providing opportunities to increase functional communication skills can foster decreases in maladaptive behaviors (Durand, 1992).

## INTERVENTION APPROACHES

One intervention approach that can create this kind of optimal relationship-based environment that can foster increases in functional communication and decreases in maladaptive behaviors is based on the Gentle Teaching (GT) work of McGee, Menolascino, Hobbs, and Menousek (1987) and McGee and Menolascino (1991), the Humanistic Applied Behaviorism (HAB) work of Hall (1992), and the Positive Approaches (PA) work of Warren and Evans (1991). From a theoretic perspective, the models cited emphasize the importance of therapeutic bonding. Although GT shares many similarities with ABA, the main difference is its belief in the importance of the quality of the relationship between therapist/teacher and the individual with disabilities. GT uses techniques that are clearly

associated with ABA, including extinction, reinforcement, shaping, fading, errorless learning, and physical management, but differs with ABA in valuing the importance of the "human reward" (Bailey, 1992; Sulzer-Azaroff & Mayer, 1991). Typical intervention patterns consistent with GT include Ignore-Redirect-Reward and Interrupt-Ignore-Redirect-Reward. Bonding with an individual regardless of the degree of impairment, employment of errorless learning, and emphasis on functional communication best illustrates why GT can be an effective intervention approach for adolescents and young adults with severe autism. As Warren and Evans (1991) suggest, positive approaches "should result in durable, generalized changes in the way an individual behaves, and these changes should affect the individual's access to community settings, to social contract, and to a greater array of preferred events" (p.4).

## THE INTENSIVE HABILITATION PROGRAM

A therapeutic intervention program at the Oasi Institute in Troina, Sicily, has been successful in integrating GT, HAB, and PA for individuals with severe autism and mental retardation. The Institute has named this program the Intensive Habilitation Program (IHP), which provides a broad range of functional training including preoccupational training, functional communication, occupational therapy, psychomotor training, recreation and relaxation training, and transition training for community living. Although the Oasi Program is residential, the model is readily applicable to day treatment programs because the GT techniques previously discussed are less complex than discrete behavior plans and do not require excessive record keeping.

What prompted the Oasi staff to design the IHP model was that, although the most impaired residents had been at the Institute on the average of 16 years, they had made only small gains in functional skills over this extended period using discrete behavior plans associated with an ABA approach. Moreover, the level of maladaptive behaviors remained high, even though many

residents were receiving neuroleptic medications for aggression, self-injury and stereotypy, or anxiolytic and mood-stabilizing medications for anxiety and emotional lability on a case-by-case basis. This target group of residents included 18 adolescent and young adult females who ranged in age from 16 to 38 years. They were educationally regarded as having profound retardation, with Wechsler Adult Intelligence Scores ranging from 12 to 25 months. More than half of this group, 11 individuals, had diagnoses of autism or related autistic features. Given the needs of the individuals in this target group, the Oasi staff began to question the extent the design of the program itself could contribute to the frequency and maintenance of maladaptive behaviors, which were viewed as residents' attempts to functionally communicate given the absence of communicative ability (Durand, 1992). Over time, the questioning by the staff resulted in the development of an environment that minimized stress and focused on therapeutic bonding between residents and therapists, teachers, and other caregivers by incorporating the major principles of GT, HAB, and PA.

Given this applied humanistic framework, the instructional program was redesigned so that it was highly individualized and targeted four main areas: preoccupational skills (emphasis on coming to attention, sustaining attention and complying with demands of the environment); occupational skills (folding and sorting skills for laundry, mail); psychomotor skills (gross motor activities); and functional communication skills. With an emphasis on augmentative communication, functional activities included training the individual to recognize and associate a specific symbol as a visual means of identifying one's belongings; use of real objects in the environment to indicate desires such as hunger, thirst, or toileting needs; use of Meyer-Johnson pictures as an extension of using real objects in the environment to represent desires; and making eye contact with caregiver when individual's name was called. Throughout these four areas of training, residents were able to bond with their therapists, teachers, and caregivers and acquire skills with minimum stress because of high levels of praise and approval, thereby limiting the need for excessive and competing behaviors.

## BACKWARD CHAINING

By creating an environment that teaches the reciprocity of human interactions, adolescents and young adults with severe autism could be "gently guided" to learn functional skills using errorless learning activities. Backward chaining in assembling materials for packaging and use of templates in the decoration of objects for sale in the local market were techniques that facilitated errorless learning and helped to reduce stress and frustration while increasing the productivity of residents. In using backward chaining, the various steps needed to complete a task have been principally done, with the last one or two steps left incomplete. The resident, with prompting, can then complete the last two steps and get

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*Adolescents and young adults with severe autism can be "gently guided" to learn functional skills using errorless learning activities.*

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the added reinforcement of seeing that project finished. For example, in tasks involving assembling of self-care packages, typical elements assembled included washcloths, towels, soap, hairbrushes, toothbrushes, shampoo, and toothpaste. A model of how the package should look fully assembled is shown first to the client, and then by verbal or physical prompting, the client can add the last two items to the package. Both the complete package and the verbal praise provided by the staff member serve to provide reinforcement to the resident. As residents become more proficient at completing the assembly, more items can be left out of the package, requiring the resident to do more and more assembly. Over time, the level and number of prompts can be faded as the resident becomes more proficient. This procedure can be applied to any series of materials that require packaging.

## ERRORLESS LEARNING

Backward chaining also played a role in conjunction with errorless learning in the

decoration of items for sale. For example, the resident might be shown a completed model of a decorated kitchen or hand towel with various fruits painted on it. The resident is then given a towel that already has some painted fruits on it and the remaining one or two fruits left to paint have been surrounded by a cardboard template, thereby keeping the remaining areas of the towel clean and providing a specific place for the client to apply paint. By using the template, no matter how poorly the paint may be applied because of fine motor difficulties, after the template is removed, the fruit paintings are correct and the towel is complete for sale. Through the use of templates or jigs, the technique of errorless learning is applied; the environment is carefully controlled so that client responses result in success. The materials are adapted so that residents cannot make mistakes when they decorate them. The painting activity provides occupational therapy for eye-hand coordination, and at the same time, provides residents with a useful task that results in a beautiful product for sale and an opportunity for them to garner additional reinforcement.

## THE IHP PROGRAM

To implement all the components of the IHP, staff members had to be comprehensively trained in GT, HAB, PA, errorless learning, and functional communication skills. Staff training took place during four 1-week periods scheduled across an entire year. In addition to the GT, HAB, PA, errorless learning, and functional communication training, staff were additionally trained in a technique called Strategies for Crisis Intervention and Prevention (New York State Office of Mental Retardation and Developmental Disabilities, 1988). This technique focuses on diffusing and preventing severe behavioral problems and how to respond to an individual when he or she is in behavioral crisis.

The parameters for how staff were to interact with clients were derived from GT, HAB and PA. These parameters included the following.

1. Speaking to clients in a quiet and calm way [no loud talking or shouting at clients]

2. Giving directions precisely, with an economy of words (removal of extraneous language that complicates the processing task)
3. Responding gently in their interactions with residents (speaking respectfully, stroking a resident's arm or hand)
4. Limiting their own tempers (control of frustration responses and angry outbursts)
5. Reinforcing positive behaviors (positive attention through hugs, pats on the back, smiles, and verbal praise)
6. Not reacting impulsively (behave consistent with theoretical framework)
7. Not behaving in punishing ways (focus on positive approaches)
8. Not reinforcing inadequate or inappropriate behavior (refrain from making approval errors)

The training incorporated formal presentations, videotaped segments of resident behaviors and teacher interactions with residents for critique and discussion, and selected readings. During the year of training, each training week was followed up by observations of staff in the classrooms and technical assistance provided to ensure that skills being taught to staff were then being implemented appropriately and at high rates. Weekly staff meetings were held to discuss difficulties staff had in implementing the IHP techniques.

The weekly goals and intervention plans for each client in a given treatment area were posted in classrooms so that staff were constantly being reminded of what they needed to accomplish with clients. If a client began to engage in self-stimulatory behavior, the teacher would simply redirect the resident to a task or activity, wait for him or her to engage, and then give verbal praise for appropriate behavior. Providing reprimands for off-task behavior or self-stimulatory behavior would not be consistent with the philosophy of the program. Similarly if a resident was engaging in food preparation for a meal and began to behave aggressively, throwing food, or screaming out of control, the teacher would begin talking to the resident about the meal that was being prepared. As soon as the resident stopped throwing food, the teacher would begin

to walk him or her away from the food preparation area. The entire "time out," which an observer would be hard-pressed to identify, would last less than 5 minutes if the resident was able to calm down. Once calm, the resident would be redirected to preparation of the meal. If the client did not calm down, the teacher (with the help of another staff member if necessary) would escort the resident to the relaxation room. This room was equipped with soft lighting, soothing music, and comfortable pillows to sit on. After a few minutes, when the resident was determined to be calm, he or she then could be escorted back to meal preparation. After the fact, it would be up to the teacher, however, to reflect on what event or stress in the environment contributed to the aggressive behavior, what communicative purpose or role the aggression played, and what recommendations could be made to the staff as a whole as to how to limit this event or stress in the program in order to enhance that resident's functioning.

Teaching staff not to react personally or in a hostile manner to resident behavior and trying to assess the environment to determine antecedents for some of the resident behaviors was a key part of the training program. After staff were trained, the next focus was on the physical environment itself. Classrooms were redesigned to be sound-proof spaces of approximately 10 feet by 12 feet, with individual study carrels and group activity tables. The classrooms were intentionally spartan to reduce distracting stimuli to lessen escape avoidance behavior. Up to five residents were assigned to each classroom space with a teacher and an aide. No extraneous materials were left out to distract residents; clutter was avoided. In this classroom design, staff typically worked from behind each resident, using hand-over-hand technique. Working from behind helps to keep individuals seated and provides an appropriate visual orientation for the task at hand. This is particularly helpful to students with autism because they respond better to visual cues and is best explained by the differences in function attributed to right brain versus left brain.

Training for staff also focused on using staff as data observers to determine each resident's percentage of compliance with the task demands of each training area. Staff were trained to provide

a detailed narrative of client responses to task/setting demands. An outside rater was trained to score these narratives using a 5-point Likert scale. A score of 0 indicated no task compliance at the beginning, middle, or end of session, with each numerical value up to 5 indicating more and more compliance with task demands at varied times throughout the session, and a score of 5 indicating compliance throughout the session. Before the program was fully implemented, staff and the outside rater practiced narratives and rating scores using videotaped behavioral samples of training sessions and were able to achieve 80% reliability on multiple sessions.

With staff trained and classrooms redesigned, the Institute implemented the IHP Program.

## RESULTS

Institute researchers hypothesized that if the quality of the relationship between teacher/therapist/caregiver and resident could be maximized across all instructional and recreational areas of the program, then an increase in functional communication and a decrease in maladaptive behaviors would occur. The results of an 18-month study testing this hypothesis were reported by Mazzelli et al. (2000), which analyzed pretest-posttest data for each resident on adaptive and maladaptive behaviors as measured by the Vineland Adaptive Behavior Scale (VABS) (Sparrow, Balla, & Cicchetti, 1984), percentages of task compliance across the four program areas, and medication types and doses prescribed.

The VABS measures adaptive behavior across several broad domains: communication (expressive language skills and receptive language skills), daily living skills (personal self-care skills, domestic skills, and community independence skills), socialization (interpersonal skills, recreation and leisure skills, and coping skills), and motor skills (gross motor skills and fine motor skills). Maladaptive behaviors, both minor (thumb or finger sucking, nail biting, stubbornness) and more serious (inappropriate sexual behavior, stereotypic behavior, aggression) are also assessed. A licensed psychologist administered the VABS to all subjects at the onset of the

study and at the 18-month conclusion. Procedures to ensure reliability of the psychologist's VABS ratings were conducted before the onset of the study.

A  $1 \times 2$  analysis of variance comparing the scores for each domain of the VABS from the baseline to the posttest was conducted. Scores are reported in Table 1. Significant pretest-posttest increases were noted for all adaptive behaviors subtests of the VABS at  $p < .001$  with the exception of two domains: community living and coping skills. Although increases were noted for both of these domains, the improvements were not statistically significant. Reductions in maladaptive behaviors were also found to be statistically significant at  $p < .001$ .

Baseline posttest means for each of the VABS domains were compared to assess the magnitude of change over the 18-month period (see Table 1). Although statistically significant, the magnitude of the mean pretest-posttest changes in VABS scores was small. Overall, the largest magnitude of change was noted in the reduction of maladaptive behavior and in increases of receptive language, personal and domestic skills, and fine motor skills. Considering the degree of cognitive impairment of this population, it is

not surprising that the magnitude of change was small in an absolute sense.

The VABS data demonstrated that gentle teaching and positive approaches were able to promote increases in functional communication and habilitation and conversely promote decreases in maladaptive behaviors. The task compliance data are consistent with these findings as well. The grand mean task compliance data across the four training areas during baseline were 63.7%, ranging from a low of 59.2% to a high of 67.2%, whereas during treatment, the grand mean task compliance was 88.8%, ranging from a low of 84.0% to a high of 90.7% at the end of the study. Grand mean percentages of task compliance for all subjects across all four training areas reported in 6-month intervals can be found in Table 2.

In all training areas, the final 6-month interval showed that significant gains in task compliance over the initial training period had been achieved and that higher levels of compliance were evident in the medial interval as well. Functional communication was the task compliance area that showed the greatest magnitude of change, increasing 31.2% across the study. At the onset of the study, the subjects had dem-

**Table 1.** Vineland adaptive behavior scores: analysis of variance and pretest-posttest comparisons

Vineland Adaptive Behavior Scale subtests	F ratio	Pretest means	Posttest means	Mean change
Communication domain				
Receptive language	22.33 ( $p < .001$ )	10.83	14.28	+3.45
Expressive language	15.78 ( $p < .001$ )	4.39	6.94	+2.55
Daily living skills domain				
Personal	37.68 ( $p < .001$ )	28.11	33.83	+5.72
Domestic	14.42 ( $p < .001$ )	.56	3.28	+2.72
Community	4.55 (NS)	1.39	1.72	+0.33
Socialization				
Interpersonal relationship	40.00 ( $p < .001$ )	12.11	15.33	+3.22
Coping skills	3.1 (NS)	.06	.56	+0.50
Motor skills				
Gross motor skills	15.33 ( $p < .001$ )	22.17	23.39	+1.22
Fine motor skills	30.11 ( $p < .001$ )	10.44	14.50	+4.06
Maladaptive behaviors	28.34 ( $p < .001$ )	19.89	13.61	-6.28

**Table 2.** Mean percentages and ranges of task cooperation

<b>Training area</b>	<b>Initial 6-month training period</b>	<b>Medial 6-month training period</b>	<b>Final 6-month training period</b>
Preoccupational	76.9 (66.7-82.8)	91.1 (85.0-94.2)	88.1 (82.8-90.6)
Psychomotor	72.7 (61.6-82.2)	87.2 (82.2-91.0)	89.4 (86.2-90.7)
Functional communication	72.4 (59.2-86.0)	84.8 (78.7-88.2)	87.2 (83.3-90.4)
Occupational	81.2 (67.2-89.2)	90.3 (81.3-94.6)	89.5 (84.0-94.9)

onstrated their lowest levels of task cooperation (59%) in functional communication, but by the end of the study they had achieved the second highest level of task cooperation (90%) in that area. This finding is especially important in light of the degree of language impairment of the autistic subjects.

Consistent with the improvement in the VABS data and the task compliance data already reported for individuals in the cohort group is the absence of a significant increase in the use of neuroleptic medications, which are generally prescribed at high dosage levels for individuals with severe autism who are engaging in high frequency self-injury, self-stimulation or aggression. In fact, the use of neuroleptic medications remained fairly constant or diminished to some degree for the majority of subjects in the cohort group. A Pearson Product Moment Correlation Matrix that compared the differences in drug classes (neuroleptics, anxiolytics, or mood stabilizers) and dosages at the onset of the study and at the completion of the study showed no correlation between medication classes or dosage levels and VABS differences.

## CONCLUSION

The findings described in this study provide support for the work of Durand (1992). Although some maladaptive behavior may be a frustrational response to an inability to communicate, other maladaptive behaviors compete with the ability to communicate. Although the relationship between maladaptive behaviors and functional communication behaviors in this study seem to be inversely related, it is not clear whether that relationship is causal. What is clear, however, is that the functional communication

and adaptive behavior gains and the concurrent decrease in maladaptive behaviors as evidenced by the VABS, task compliance, and the medication data in this study indicate the overall effectiveness of gentle teaching, humanistic applied behavior analysis and positive approaches. Because the IHP comprises these treatment elements, an important follow-up study would be to try to determine the contribution of each of these elements individually, and in combination, to the total treatment gains. Clearly the emphasis on therapeutic bonding and reciprocity of interaction has significant implications for transition to vocational and independent living opportunities for individuals with severe autism and other developmental disabilities, given the nature and quality of the relationships between these individuals and their job or independent living coaches. Because nurturing and bonding are portable, they can be extended to a variety of settings and may very well be the factor that facilitates generalization of collateral skills across settings (Polirstok & Greer, 1986).

The IHP at the Oasi Institute is not a program that would be easily exported to typical public schools in the United States. However, the humanistic applied behaviorism that is central to this work has broad clinical applications for both day treatment and home-based treatment programs. Professionals working in clinical programs, parents, or group home parents can acquire the training necessary to implement many of the gentle teaching strategies discussed in this research study. When gentle teaching and applied humanism are implemented across school and home settings, the stage is set for individuals with severe autism to acquire more functional communication skills and more normalized behaviors that would facilitate greater community integration.

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