Combining CBT and Behavior-Analytic Approaches to Target Severe Emotion Dysregulation in Verbal Youth With ASD and ID

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**ABSTRACT**

This article presents an individual intervention combining cognitive-behavioral and behavior-analytic approaches to target severe emotion dysregulation in verbal youth with autism spectrum disorder (ASD) concurrent with intellectual disability (ID). The article focuses on two specific individuals who received the treatment within a therapeutic school setting. Single-subject methodology utilizing a nonconcurrent multiple-baseline design across behaviors and participants was used to evaluate the intervention. The two participants presented with severe behavioral challenges, including physical aggression and verbal threats to harm others. Results suggest positive outcomes, including a reduction in the frequency and intensity of severe aggressive behavior and an increase in the use of coping skills, self-advocacy, and social participation. The planning and implementation of specific skills-generalization strategies was one innovative element of the intervention that proved to be pivotal to its successful application. Assessment and treatment techniques for different intervention phases are detailed along with two case examples. Intervention challenges, treatment outcomes, and future directions for clinical research are discussed.

**KEYWORDS**

ABA; adolescents; aggressive behavior; ASD; CBT; emotion dysregulation; generalization; ID; intervention; mental health; youth

According to recent prevalence numbers (Center for Disease Control and Prevention, 2014), 15% to 40% of individuals with autism spectrum disorder (ASD) also present with concurrent intellectual disability (ID) in the United States. Individuals with ASD, with or without ID, are more likely to experience socio-emotional and psychiatric difficulties, and to require complex and specialized interventions (CDC, 2006; De Bruin, Ferdinand, Meester, De Nijs, & Verheij, 2007, Joshi et al., 2013, 2014). Severe emotion dysregulation has the potential to escalate into crisis situations (e.g., risk to self and others) and long-term negative outcomes (e.g., placement breakdowns, hospitalizations). Manualized
psychotherapeutic treatments for emotional dysregulation are not targeted for individuals with these unique biological vulnerabilities and socio-emotional challenges, nor do they adequately account for cognitive delays. As such, the adaptation of existing manualized approaches to this population represents a significant challenge for clinicians to this day.

Traditionally, effective interventions targeting behavior dysregulation in individuals with ASD concurrent with ID have focused on environmental modifications and behavioral supports (e.g., applied behavior analysis (ABA), positive behavior supports (PBS) (Cipani & Schock, 2011; Neidert, Dozier, Iwata, & Hafen, 2010). There is increasing evidence, however, that individuals with ASD and/or mild-to-moderate ID can benefit from psychotherapy and develop skills to successfully cope with everyday stressors and increase frustration tolerance. Behaviorally based therapeutic interventions, such as relaxed body posturing or breathing techniques, were shown to improve the coping abilities of individuals with ASD and/or mild-to-moderate ID (Mullins & Christian, 2001; Paclawskyj, 2011). Systematic desensitization procedures effectively address anxiety-based avoidance of medical procedures (e.g., physical exam, blood draws, medication intake) in this clinical population (Beck, Cataldo, Slifer, Pulbrook, & Guhman, 2005; Cavalari, DuBard, Luiselli, & Birtwell, 2013; Ricciardti, Luiselli, & Camare, 2006). Moreover, recent clinical trials have revealed promising results using cognitive-behavioral therapy (CBT) to address maladaptive behaviors and cognitive distortions in youth with ASD and/or mild-to-moderate ID (Brown, Brown, & Dibiasio, 2013; Lang, Regester, Lauderdale, Ashbaugh, & Haring, 2010).

The goal of the present study was to synthetize these two evidence-based clinical approaches, CBT and behavior-analytic techniques, and devise an individual psychotherapeutic intervention to effectively target severe emotion dysregulation in verbal youth with ASD concurrent with ID. The intervention was tailored to consider and meet these individuals’ unique communication, cognitive, and socio-emotional challenges. In accordance with recent prevalence studies (CDC, 2014), individuals with ASD and ID, with conversational abilities, represent an increasingly higher proportion of the overall student population at our facility in recent years.

How to best teach and promote the generalization of skills acquired in one context to another context is a common challenge faced by psychotherapists and educators (Hofmann, 2011; Stokes & Baer, 1977). As the learning challenges of individuals with ASD concurrent with ID exceed those of a general outpatient population, the importance of generalization across settings becomes even more important. One element that was pivotal to the successful implementation of this
intervention was the planning and implementation of skills-generalization strategies.

This article presents an individual therapeutic intervention, combining cognitive-behavioral and behavior-analytic approaches, to target emotion dysregulation in verbal youth with ASD concurrent with ID. The article focuses on two specific individuals who received the treatment. For these students, emotion regulation difficulties had the potential to quickly escalate to severe behaviors, including physically and verbally aggressive behavior (e.g., aggression, threats to harm others). Single-subject methodology utilizing a nonconcurrent multiple-baseline design across behaviors and participants was used to evaluate the intervention. Results suggest positive outcomes for these two individuals, including a reduction in the frequency and intensity of disruptive behaviors and an increase of these youths’ coping abilities, self-advocacy, and social participation. First, assessment and treatment techniques for different intervention phases are detailed. The method used to evaluate this intervention is then presented, followed by the intervention outcomes. Finally, intervention challenges, treatment outcomes, and future directions for clinical research are discussed in the conclusion.

**Description of the Intervention**

**Clinical Setting**

This intervention was implemented within a private therapeutic school for children with developmental disabilities located on the northeast coast of the United States. The school provides educational and vocational services to children, ages 3 to 22, with ASD and other developmental disabilities (DD), using principles/strategies from applied behavior analysis (ABA). The classrooms typically consist of one-to-one (1:1) to one-to-two (1:2) staff-student ratios. Approximately 40% of the 150 students attending the school are also receiving residential services. Individuals are typically placed within the setting as a result of behavioral challenges that impede their ability to learn in a general education setting. The school’s educational team is composed of doctoral-level clinical directors, certified special education administrators, master’s-level certified special education teachers, behavior analysts (BCBAs), behavior specialists (BCaBAs), allied health therapists (occupational, physical, and speech therapy), on-site registered nurses, family services, a consulting physician and a consulting psychiatrist. The school is accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF), and licensed by the Department of Elementary and
Secondary Education (DESE) and the Department of Early Education and Care (EEC).

**Intervention Phases**

The present intervention included three phases: (1) initial assessment, (2) skills acquisition (CBT), and (3) skills generalization (CBT + generalization procedures). Specific goals and tasks for each intervention phase are detailed in this section. Referrals for psychotherapy services came from the students’ families, teachers, and educational team. Youth who were typically supported with an individual (1:1) educational aide during the school day attended the therapy session with their aide.

**Initial Assessment**

Following referral into the program, an interview was conducted with the student’s teacher and parent to determine its appropriateness and subsequently guide treatment planning. Prerequisite skills assessed included emotion identification, basic social skills, communication abilities, and disruptive behaviors exhibited in the classroom setting. Emotion recognition was of primary concern, considering the high comorbidity of these deficits in individuals with ASD and ID and the propensity of emotion regulation struggles to interfere with treatment (Lickel, MacLean, Blakeley-Smith, & Hepburn, 2012).

An individual’s baseline ability to correctly identify emotions and understand social situations (e.g., interpreting other’s affect, using empathy and perspective-taking skills) were closely examined. Emotions assessed included happiness, anger, sadness, and anxiety. If a prospective student demonstrated considerable deficits in these domains, the teacher initiated emotion-recognition training in the educational environment before CBT began (Downs & Strand, 2008). A student was deemed to master this area of content when he or she was able to provide correct responses in at least 80% of the session’s trials for a preestablished number of consecutive sessions.

Classroom data collection was initiated to establish a baseline of the frequency and intensity of the individual’s most challenging behaviors, as well as to clarify any antecedents and consequences potentially contributing to their occurrence. Data collection helped identify the behavioral function of maladaptive behavior (e.g., escape from unpleasant task) and assisted in the development of a list of functionally equivalent prosocial behavior skills that were taught through individualized CBT therapy sessions (e.g., asking for a break instead of throwing materials at a teacher). A list of alternate prosocial skills was developed on an individual basis for each student and baseline data were collected on their frequency pre-treatment.
Data collection and assessment methods were adapted to the unique communication and learning challenges of individuals with ASD and ID. For example, teacher support was provided to assist in the completion questionnaires when needed (e.g., rewording of difficult items). Similarly, students with more limited reading and/or receptive language abilities did not complete questionnaires but were able to talk about their triggers and moods using visually supported rating scales (e.g., a 3-point rating scale or “mood thermometer”).

The ability to use at least one communication system (e.g., single words or sentences, alternative and augmentative communication devices) was a critical prerequisite skill when working with individuals with ASD and ID. Length and pace of therapy sessions were tailored to the students’ attentional capacity and work abilities. Modifying the flow of sessions is particularly important when working with a clinical population presenting with heterogeneous clinical needs. The capacity to work with an adult and transition easily from the classroom to an analog setting were necessary for therapy participation.

**Skills Acquisition (CBT)**

Adaptations (i.e., structure or content), modifications (i.e., treatment components) and/or tailoring (i.e., focus or delivery style) of standardized interventions are often necessary when working with special populations (Eyberg, 2005; Reaven, 2009). Baseline results were used to develop an individualized, clinically and developmentally appropriate therapy curriculum that met each student’s unique learning, communication, and behavioral challenges while using manualized CBT protocols to guide treatment (e.g., *The Coping Cat*, Kendall & Hedtke, 2006; Kendall, Choudhury, Hudson, & Webb, 2002; *Think Good Feel Good*, Stallard, 2002).

Introductory therapy sessions were used to build therapeutic rapport, familiarize the individual with the therapy process, identify the students’ interests, preferences, daily schedule/routines, and significant others/caregivers important to incorporate in therapy. Participants’ personal interests, strengths, and weaknesses were utilized to facilitate sustained attention and socially relevant processing, as well as to develop treatment plans and materials.

The “think-feel-do” CBT model (Kendall et al., 2002; Kendall & Hedtke, 2006; Stallard, 2002) was used to help the participants identify their own triggers and the feelings, actions, and thoughts that were associated with these situations. Session activities included matching exercises (e.g., selecting pictures illustrating everyday activities and matching with emotion evoked by these activities) and creating social stories on a board (e.g., “When I am asked to (name/illustrate trigger), it makes me feel (select emotion icon). When I am (pick emotion), I (name/role-play/select picture illustrating behavior).” Students who could read completed writing exercises (e.g., fill in the blanks) during sessions. Participants learned to use a rating scale to identify their feelings and to develop their own rating scale over time. They
progressively learned to identify mildly, moderately, and highly upsetting situations and behaviors/strategies related to each situation. The youth learned to recognize their own precursors of anger and anxiety to proactively and efficiently using coping strategies.

Skills-acquisition sessions also targeted the development of personal tools that would prevent challenging or crisis situations in the future. These included the teaching and practice of skills such as relaxation (e.g., deep breathing, behavior relaxation training, Jacobson relaxation), distraction strategies (e.g., counting, singing/listening to a favorite song), thought correction (e.g., “They hate me,” “I’m a bad boy,” “I’m stupid”), and cognitive flexibility skills (e.g., “What else could we do?” “What’s another reason why they asked you to do this?”). Behaviors incompatible with the maladaptive behavior were practiced, such as squeezing a relaxation ball when upset instead of hitting a desk or throwing an object or talking with a moderate-level voice instead of yelling profanities. Proactive interpersonal skills were also rehearsed, including getting other people’s attention appropriately (e.g., saying with a moderate-level voice, “Excuse me?” or “Do you have a minute?” instead of yelling or pushing others), initiating and maintaining social conversations about a variety of topics, conflict resolution, and self-advocacy skills (i.e., asking a designated adult for help, telling others when something makes them feel upset). Individual coping-skills selection was discussed collaboratively with the students (with input from their parents and teachers) to maximize motivation and practical usability. A list of the individual’s personal strengths, coping tools, and “safe” people to talk to when upset was developed during therapy sessions in preparation for skills generalization.

Homework is a key component in most cognitive-behavioral therapies (Hofmann, 2011). Repeated practice with immediate performance feedback is also a core component of many behavior-analytic interventions. As such, the participants were asked to practice skills reviewed in therapy session throughout the school week. Such opportunities were set up and prompted by their classroom teachers. For instance, one teacher would review and practice breathing exercises daily with a student at a time when the student was calm and receptive to such practice. Classroom teachers also kept track of issues raised by the student or incidents to discuss in the next therapy session or of post-session reinforcement suggestions from the adolescent participating in the intervention (e.g., “Next week, I would like to (activity) after my session with (therapist)”). As such, in addition to the capacity of building an effective therapeutic relationship with the student, the ability of developing close collaborations with their classroom teachers and educational team was a key clinical skill to the intervention’s success.
Skills Generalization (CBT + Generalization)

Following skills acquisition, the focus of therapy shifted to using the skills in the classroom environment and across a variety of situations. A behavioral protocol was developed to outline when and how to prompt the students to use their coping strategies. The protocol also included de-escalation strategies for crisis situations. Training was provided to all classroom teachers working with the youth prior to the protocol’s implementation. Staff performance was observed through data collection and corrective feedback was provided as needed. Visual cues used in therapy sessions were introduced in the classroom environment to program for similar stimulus conditions to the learning environment (e.g., list of coping skills to choose from, emotion rating scale to talk about upsetting situations, list of personal strengths and safe people to talk to). After the strategies were generalized to the classroom and coping strategy use continued, the coping skill protocol was added to the students’ behavior support plan (BSP) to facilitate staff training, promote consistency in supports’ delivery, and maximize day-to-day learning opportunities. Clinical instruments developed for the students (e.g., relaxation hand-outs) were kept in the classroom in a separate binder (along with their other individualized educational supports) for an easy reference and to remain discreet.

Episodes of dysregulation were identified by classroom teachers and triggers and other sequelae to negative emotions were reviewed during therapy sessions with the individual. Consultations were also completed with the students’ caregivers (i.e., parents, teachers, educational team) to continue identifying potentially challenging situations for the student and address them proactively. As a result, an increasing number of individualized and socially valid coping strategies and clinical tools were added to the adolescent’s behavior repertoire. Coping skills and self-advocacy strategies were frequently modeled by the therapist, role-played, and practiced to increase fluent and competent execution in both therapy and classroom settings.

Systematic prompting and differential reinforcement strategies were included for skills-generalization purposes. The student was prompted by his teacher to use coping skills when exhibiting behavioral indicators of escalation, a time when the student could benefit from using the strategy. Differential reinforcement strategies were implemented to promote use of coping strategies and reduction of challenging behaviors across increasing intervals. Coping strategies and reinforcers were chosen based on the participant’s individual preferences, their ease of implementation, and their ability to be generalized across a variety of situations and environments. Coping-strategy use was initially prompted by classroom staff and progressively faded for independence. Similarly, reinforcement for coping-strategy use and the absence of problem behaviors was provided on an increasingly diverse schedule for generalization purposes. For instance, in addition to the differential reinforcement parameters outlined in the adolescent’s BSP, an additional special activity
could be added to the student’s schedule by his/her educational team to celebrate a particularly successful day or week for the student.

As the participants made progress in their ability to independently use coping strategies and solve everyday problems, individual therapy sessions were progressively faded out and replaced by continued consultation to classroom on prompting strategies and identification of new precursors and adaptive strategies for skill-maintenance purposes. The clinician remained available for consultation if the student expressed the need to talk and a preference for the clinician. Frequently, new clinical goals were added as the students made progress on their respective ability to cope with change/stressors.

**Methods**

Single-subject methodology utilizing a multiple-baseline design across behaviors and participants was used to evaluate this intervention (Carr, 2005; Christ, 2007; Kazdin, 1982). Clinical progress was monitored through repeated measurements on behavior targets over intervention weeks. Criteria to introduce a new intervention phase were based on the students’ mastery of identified prerequisite skills instead of on specific session sequence (e.g., fourth session), which is common in many manualized treatments. Given these clinical considerations, a nonconcurrent multiple-baseline design was selected due to its experimental flexibility and established ability to control for internal validity threats, such as maturation, test–retest, and instrumentation (Carr, 2005; Christ, 2007; Harvey, May, & Kennedy, 2004).

**Participants**

Two adolescent male students participated in this pilot individual and school-based CBT intervention. They were selected due to similarities in their clinical profile (e.g., behavioral difficulties, conversational abilities, learning and adaptive functioning challenges). Sensitive socio-demographic information of the individuals who received the intervention was modified to protect privacy and confidentiality.

Nicolas is a 16-year-old male residential student diagnosed with ASD and ID and co-occurring mood and behavioral disturbances. He is fully conversational, although much of his conversation involves perseveration on preferred topics. Nicolas’s full-scale cognitive ability was in the 1st percentile (low range) based on the Wechsler Abbreviated Scale of Intelligence–Second Edition (WASI-II). His adaptive functioning was in the 1st percentile (low range) on teacher report of the Vineland Adaptive Behavior Scales–Second Edition (Vineland-II). His verbal abilities were rated as an area of strength on this scale, emerging in the 7th percentile (borderline range). At the time of the intervention, Nicolas was attending a special
classroom for youth with severe behaviors and had 1:1 staff in both school and residential settings due to aggressive behavior, such as biting and hair pulling. Additional clinical concerns included threatening to harm others and throwing/breaking objects. Physical management procedures were included in Nicolas’s BSP to ensure his and others’ safety. Teachers working with him also wore protective equipment (e.g., arm guards, bandana/hat) to reduce the risk of injuries. As a result of his initial low frustration tolerance, most of Nicolas’s educational programs were previously mastered goals on his IEP. He was not required to participate in related service and vocational activities available through his school (e.g., art, music, vocational training) for the same reason. Nicolas had no previous history of participating in individual CBT.

Peter is a 12-year-old male day student diagnosed with ASD and ID and co-occurring behavioral and mood disturbances. His cognitive abilities were in the 1st percentile (low range), across on indices including the full-scale score on the Wechsler Intelligence Scale for Children–Fifth Edition (WISC-V). Peter’s adaptive behavior skills were between the 5- and 7-year-old range based on teacher report measured by the Scales of Independent Behavior–Revised (SIB-R). His receptive language skills were in the 1st percentile (low range) based on the Receptive One-Word Picture Vocabulary Test (ROWPVT) and his expressive language ability was in the 8th percentile (borderline range) based on the Expressive One-Word Picture Vocabulary Test (EOWPVT). His overall language abilities were in the 1st percentile (low range) based on the Clinical Evaluation of Language Fundamentals–Fourth Edition (CELF-4). Like Nicolas, Peter was fully conversational and situations challenging Peter’s tolerance to frustration quickly escalated into episodes of physical and verbal aggression. Similar supports were provided in his school environment to prevent and manage behavioral incidents, including a 1:1 staff-student ratio, educational programs in maintenance goals, and consistent behavioral supports (i.e., behavior support plan). Peter was given choices but generally refused to participate in extracurricular activities. Unlike Nicolas, Peter had previously received psychotherapy services prior to participating in this intervention, with a focus on emotion recognition, triggers identification, and initial relaxation training (i.e., taking one deep breath).

**Data Collection**

**Aggressive Behavior**

Incidents of aggressive behavior included both physical and verbal aggression. Physical aggression was defined as any observable use of physical force against another individual or objects. Verbal aggression consisted of the use
of verbal threats to harm others that were general or specific in their content. The frequency of physical and verbal aggression incidents was collected on a daily basis by the students’ teachers. Incidents of physical and verbal aggression were recorded throughout the day whenever they occurred using a datasheet attached on a clipboard carried by the teacher actively working with the student.

**Coping Skills**
Coping strategy use was defined as any use by the students of one of the coping strategies learned in CBT when presenting with precursor signs of anger (i.e., daily opportunity to use strategies). When the adolescent was not observed to independently use a coping strategy, use was then prompted by classroom staff (as a teaching opportunity). Rates of independent coping strategy use were calculated utilizing the number of independent uses (without staff prompts) over daily opportunities (i.e., precursor signs observed). This ratio was multiplied by 100 and converted into a daily percentage of opportunities (%).

For treatment integrity purposes, data were collected by the authors on a regular basis through classroom observations and performance feedback provided during weekly clinical meetings.

**Social Validity Assessment**
In addition to measuring rates of maladaptive and adaptive behavior, a social validity assessment was completed. Interviews and classroom observations were completed by the authors throughout this intervention. Interviews were completed with Nicolas and Peter, their families, teachers, and educational team. The social validity assessment included variables such as the students’ self-advocacy skills (e.g., are the students approaching significant adults to attempt to solve classroom conflicts? Are the students providing solutions to prevent and solve conflicts?), and their ability to participate in school-wide activities, community activities, and family activities per caregivers’ report and direct observation (when possible).

**Procedure**
The two participants took part in one weekly individual CBT therapy session with a therapist. The first two authors provided direct services (therapy sessions) in addition to their participation in the intervention’s design and evaluation. The clinicians had doctoral-level behaviorally based and psychotherapy-based training, and were thus trained to utilize both a highly structured approach, as well as to think flexibly about therapy tools/strategies. Individual therapy sessions were 15–20 minutes long and were scheduled at an optimal time to promote student’s participation. On the day of therapy,
participants’ teachers would incorporate therapy participation in their daily schedule in an effort to establish expectations and create a smoother transition. The session’s structure was outlined using visual aids (e.g., pictures and checkmarks). A treatment integrity checklist was completed by the therapist during the session to ensure treatment adherence. The session’s structure included: (1) covering elements from the CBT curriculum (e.g., think-feel-do); and (2) skills-building activities (e.g., relaxation exercise, role-play). The session was always ended on a positive note (e.g., positive feedback on the student’s participation, discussion of an upcoming event or subject the student is particularly enthusiastic about). It was immediately followed by a 15-minute break which included a post-session reinforcement activity of the student’s choice (e.g., printing a color picture, playing a game with a favorite staff member of their choice). In addition to weekly therapy sessions, the student’s therapists participated in weekly classroom consultations for 30–60 minutes per week for treatment planning, progress reporting, and problem-solving purposes.

**Initial Assessment**

A list of common trigger situations in home for Peter, residential for Nicolas, and in school settings for both students (Nicolas and Peter) was developed with their family and educational teams. For Nicolas, common triggers included challenging academic tasks, domestic chores, and denied access to preferred items. Peter’s list included triggers such as sharing with siblings, classroom peers’ behavior, and preferred activities’ interruption (e.g., being asked to go back home after a visit to the park). A list of physical and verbal precursor signs to severe aggressive behavior was individually developed and used with both participants to teach the use of coping strategies (e.g., arguing for Nicolas, cursing for Peter). An individualized list of adaptive coping strategies was developed for each student that also functioned as functionally equivalent replacement behaviors.

The initial assessment of prerequisite skills indicated there was no need to teach emotion recognition in therapy, as both students mastered the task (i.e., over 80% correct answers). Areas of strengths and weaknesses were also identified for both individuals. For example, Nicolas had no previous experience with the CBT model and the coping strategies to be taught. He also tended to misinterpret social situations (e.g., thinking somebody is angry at him when there is no evidence of anger). Because Peter had previous experience with CBT, the initial assessment occurred along with skills acquisition to help determine what to review, teach, and master prior to introducing skills generalization.

Therapy session duration was set at approximately 15 minutes for both students (between 10 and 20 minutes) in an attempt to accommodate for deficits in sustained attention and thus achieve optimal participation.
Minimal participation criterion in CBT sessions was identified as absence of severe aggressive behaviors, and post-session reinforcement was delivered for all standard-length sessions. Precursor signs of behavioral escalation (e.g., hitting the table with fists, yelling) were allowed during therapy sessions since they could be redirected easily and become teaching opportunities.

**Skills Acquisition (CBT)**

During skills acquisition, the list of triggers and precursors continued to be updated based on student feedback, classroom observations, and consultations with their caregivers. Coping strategies were modeled and practiced in therapy sessions, including taking three deep breaths, reaching out to a familiar staff for assistance, and asking for “a moment” or “a break” when upset. These skills were broken down into smaller teachable units through a task analysis and practiced to full mastery (i.e., over 80% correct) with both youths. Visual materials were developed to facilitate skills practice (e.g., relaxation handouts). Using the CBT model, maladaptive thoughts were identified for both participants and addressed through cognitive restructuring exercises, such as a “true or false” gameshow or a “black cloud/white cloud” matching exercise. Examples of maladaptive thoughts included: “They won’t understand,” “I can’t help it,” and “I’m a bad/terrible person.” Social stories about “good” and “not so good” examples of coping with frustration were created with and by both students using a storyboard and pictures depicting common triggers/situations for them. Maladaptive behavior and thoughts were also identified as triggers to initiate coping strategies discussed with the participants. Students’ progress was monitored in-session (i.e., over 80% correct) and outside session (i.e., independent use of strategies). Classroom consultations were provided on a weekly basis to review both participants’ progress with their respective educational team. Similarly, students’ progress was reviewed with their families on a regular basis.

**Skills Generalization (CBT + Generalization)**

The goal of the skills-generalization phase was to teach students how to use of the coping strategies learned in individualized CBT sessions in real-life situations (i.e., when they actually need them). The school setting was selected as a first environment for skills generalization. A behavior protocol outlining trigger situations, precursor signs, coping strategies, and supports to be provided by classroom teachers was developed for each student, and closely reviewed with their teachers. Nicolas and Peter were prompted to use their coping strategies each time they exhibited precursor signs of escalation within the school environment.

Nicolas’s behavior protocol consisted of the following steps: (1) make a descriptive statement (“you look upset”), (2) physically model “taking a deep breath,” and (3) praise for coping-strategy use. If Nicolas argued with his
teachers along with exhibiting precursor signs, staff asked him if he would like to “talk about it” (what was upsetting him), two options were reviewed with him, and a choice-making opportunity provided (replacement skill to arguing). Peter’s behavior protocol included an initial descriptive statement from staff. In addition, the following steps were described: (1) presented with visual hand-out and prompted to pick one coping strategy, (2) assist with coping strategy use, only if needed or requested by student, and (3) praise statement for coping strategy use. Peter was also provided with headphones if the escalation episode resulted from elevated noise in the classroom. If irritated by a peer’s behavior, conflict resolution was modeled once he was calm.

Individual therapy sessions continued to be scheduled on a weekly basis and were used to discuss and problem-solve around the “best” and “most challenging” moments of the week. The CBT model handout, the storyboard and situations pictures, as well as a “thumbs up/down” materials were used as visual supports during sessions. As Nicolas and Peter made clinical progress, new educational goals were introduced for both of them (e.g., new academic challenges for Nicolas, new staff-student ratio for Peter). Conflict resolution was also modeled in the classroom during/after behavioral incidents. Although consultations with these students’ educational teams and families were provided throughout the intervention; it was noted to be particularly critical during the generalization phase given its pragmatic emphasis.

**Results**

Intervention results on maladaptive and adaptive behavior goals are presented across treatment phases (see Table 1) and across intervention weeks (see Figures 1 and 2). Results from the social validity assessment (observations and interviews) are also reported under this section.

Means and standard deviations for the intervention targets are presented across phases for both students in Table 1. As evidenced in Table 1, mean rates of aggressive behavior (both physical and verbal) decreased over the course of the intervention for both participants. Overall, the average rates of

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<th>Table 1. Mean and Standard Deviation for Intervention Targets for Both Students (Aggressive Behavior and Independent Coping Skills) Across Treatment Phases.</th>
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coping-skills use increased between the skill-acquisition and generalization phases for both students. Peter experienced a temporary decrease in coping-skills use when new educational objectives were introduced, which resulted in lower average use during that phase in Table 1.

In addition to mean and standard deviation scores, intervention results are displayed on a weekly basis for further analysis in Figures 1 and 2. Presentation of data on a weekly basis allows for a better understanding of which variables affected clinical change and how they operated over time for both students (e.g., data variability, trends).

**Figure 1.** Rates of aggressive behavior (physical and verbal) for both participants across intervention phases and weeks.
Aggressive Behavior

Figure 1 displays the rates of physical and verbal aggression over intervention weeks for both students. Weekly rates of physically aggressive behavior decreased and remained at zero levels after approximately 25 weeks of intervention for both participants (i.e., 25 weeks for Peter, 26 weeks for Nicolas). Individual differences in aggressive behavior reduction patterns were noted.

Peter’s rates of physical aggression decreased relatively quickly when the skills-generalization procedures were introduced. At the 11th week of intervention, rates of physical aggression were consistently down to zero. Peter’s coping abilities were initially challenged when new educational goals were introduced in the 19th week, as observed by an increase in weekly rates of physically aggressive behavior between the 19th and 25th week of intervention. He was eventually able to successfully cope with frustration resulting from significant change to his educational programs within 6 weeks. Rates of physical aggression decreased and remained at zero levels following the 25th week of intervention, suggesting some improved coping abilities compared to baseline (i.e., when CBT/skills acquisition was first introduced). This represents a clinically significant finding for an individual whose educational goals had been on hold due to low tolerance levels.

As can be seen in Figure 1, Nicolas’s pattern of reduced aggression followed a gradually decreasing trend, with extreme data points during skills acquisition (5th week) and skills generalization (25th week). Despite the variability noted in this pattern, Nicolas’s pattern of behavior reduction also looks steady, as evidenced by rates of physical aggression remaining at zero when his coping abilities were challenged by new educational goals. This pattern suggests that, for Nicolas, the acquisition of alternate prosocial coping skills generalized to new situations in which his emotions were more likely to escalate. This represents a clinically significant change for an individual whose behavioral challenges could quickly escalate into severe risks for his caregivers (e.g., biting/hair-pulling incidents). Also of note, Nicolas had no prior CBT experience, except for some deep breathing exercises.

Figure 1 also includes the weekly rates of verbal aggression incidents for both students. In approximately 25 weeks of intervention, weekly rates of verbal aggression (Peter, 0–4 incidents per week; Nicolas, 1–24 incidents per week) were significantly lower for both students (Peter, 0 incidents per week; Nicolas, 2–8 incidents per week after 27 weeks). Peter’s episodes of verbal aggression appear to progressively reduce in their frequency over time (i.e., increasing number of weeks between incidents) before completely disappearing after 25 weeks of intervention. Verbal aggression rates initially increased with the introduction of new educational challenges, between the 19th and 24th week of the intervention. Rates of verbal aggression returned to zero
after the 25th week, suggesting that following further generalization trials, Peter was able to successfully cope with frustration relating to new academic challenges within a month.

Nicolas continued to exhibit incidents of verbal aggression on a weekly basis, yet their prevalence was noticeably lower after the 27th week of intervention compared to initial rates. Of note, rates of verbal aggression increased between the 25th and 27th week of intervention, when consistent skills-generalization procedures were first introduced. Rates of verbal aggression also initially increased as rates of physical aggression decreased, suggesting “behavioral contrast” (i.e., when improvement in one area results in worsening in another area at first) and possibly an “extinction burst” (i.e., behavior rates initially increase before they decrease) (Lerman & Iwata, 1995).

![Figure 2](image-url)  
*Figure 2.* Rates of independent coping strategy use (%) for both participants across intervention phases and weeks.
Overall, trends for rates of physical and verbal aggression suggest that both the frequency and intensity of Nicolas’s and Peter’s challenging behaviors decreased over the intervention. Physical aggression was consistently down to zero rates of incidence after about 25 weeks of intervention. Verbal aggression appeared a more resistant behavioral target than physical aggression, yet it also decreased over the intervention and was significantly lower after about 25 weeks of intervention for both students. This pattern suggests that verbal aggression may have initially replaced physical aggression for both students whenever they experienced frustration, yet it was also effectively targeted by the intervention. Both individuals presented lesser risks to others when confronted with negative emotions after approximately 25 weeks of intervention. This resulted in a reduction of crisis interventions and more time allocated for educational activities. It also represents major clinical gains for two adolescents who were receiving significant behavioral supports prior to the intervention (e.g., 1:1 staff-student ratios; educational goals on hold).

**Coping Skills**

Figure 2 reveals the rates of independent coping-strategy use for both students participating in the intervention. An increase in independent coping-strategy use was observed for both participants compared to initial levels (i.e., when skills acquisition was first introduced), yet a different pattern of skills acquisition is observed over time.

Peter exhibited some independent coping skills when skills-acquisition procedures were first introduced; yet a decreasing trend was observed. The skills-generalization phase helped stabilize a decreasing trend in Peter’s coping abilities at first (CBT/skills acquisition phase) to approximately 60% independent use during skills generalization. The introduction of new educational goals challenged this stabilization trend between the 19th and 29th weeks of intervention. However, the consistent generalization procedures appear to favor Peter’s adapting abilities to new educational goals, as evidenced by a clear increasing trend as of the 30th week. By the 37th week, Peter was using coping skills more than 80% of the time without any prompting from his teachers. This increase represents a significant gain for an individual whose behavioral supports were being faded around the same time (e.g., from a 1:1 to 2:1 staff-student ratio).

Nicolas displayed a steady progression in the independent use of coping skills. As evidenced in Figure 2, the generalization phase clearly helped accelerate the learning trend observed in coping-strategy use. Although Nicolas’s coping abilities slightly decreased after the introduction of new educational goals, they remained superior to his average use of coping skills at skills-acquisition (11%) and generalization levels (39%); and stabilized
around 50% independent use. This increase represents a significant gain for an individual who presented with significant behavioral difficulties requiring high-intensity educational supports and who was rarely using coping abilities when skills acquisition was first introduced.

Overall, skills-generalization procedures were necessary to promote the use of coping skills outside of the therapy session and to maintain independent coping abilities when academic challenges challenged these two individuals’ tolerance to frustration.

**Social Validity Assessment**

Positive outcomes were observable across raters and methods. Nicolas’s parents reported a reduced number of conflicts during weekend visits, and they noted that conflict resolution was noticeably easier when conflicts occurred. Similar progress in the home setting was endorsed by Peter’s parents. Students’ teachers and educational teams reported the successful introduction of new community activities (e.g., ability to participate in social events, such as going to a movie theater, restaurant, or bowling alley) for both participants. These positive outcomes were corroborated with clinical observations completed by the authors in the school environment. They were also endorsed by the adolescents themselves through interviews. For example, Nicholas stated, “You know, before I got upset all the times…but I had no friends. Things are better now.” The students’ families, teachers, and educational teams all reported positive outcomes following treatment and approved of the feasibility of the intervention during the generalization phase.

**Discussion/Conclusion**

This intervention sought to synthesize two evidence-based clinical approaches in the field of developmental disabilities (CBT and behavior-analytic techniques) to devise an individual psychotherapeutic intervention effective in dealing with severe emotion dysregulation in verbal youth with comorbid ASD and ID. The intervention consisted of three phases and resulted in socially valid educational and social outcomes, as reported by the youths themselves and by their caregivers. The adaptation, modification, and tailoring of manualized interventions was necessary to meet these individuals’ unique learning, communication, and behavioral challenges. For instance, visual storyboards and handouts were used to discuss behavioral incidents with the student or to prompt/practice coping strategies. Two case studies were provided for illustration purposes.

Combining techniques from both cognitive-behavioral and behavior-analytic backgrounds was particularly effective in increasing coping skills and decreasing
the frequency/intensity of aggressive behaviors. The use of the CBT model and exercises helped students to identify maladaptive feelings, behaviors, and thoughts, as well as to understand the interconnection among these elements and gain clinical insight into their own triggers and precursors. Behavior-analytic techniques, such as prompting, shaping, modelling, and task analysis, helped participants acquire and fluently master new functionally equivalent adaptive skills. Antecedent-based strategies (e.g., self-advocacy, choice making) and differential reinforcement were used to reduce maladaptive behaviors and increase independent coping-strategy use. Of these cognitive-behavioral and behavior-analytic strategies, programming for skills generalization, through the development and implementation of a coping skills protocol, was particularly helpful in promoting the participants’ independent and effective use of coping skills across a variety of situations and settings. The coping-skills protocol also facilitated staff training and treatment integrity.

We found each step of this intervention to play an important role in its overall success. The initial assessment and ongoing monitoring of the intervention helped tailor the manualized intervention to the individual’s unique learning, communication, and behavioral challenges; assess the intervention’s effectiveness; and make adjustments as necessary. Skills were introduced and practiced to mastery through skills-acquisition therapy sessions. The generalization phase offered ecologically valid teaching opportunities to effectively use skills learned in therapy sessions on a day-to-day basis, thus fostering long-lasting positive outcomes across a variety of situations and environments. Most importantly, although these students continue to meet criteria for segregation to a special school program due to the nature of their emotional and behavioral challenges, a progressive and positive trend in the topography of their behavior represents an important step toward their social participation in school-wide and community environments.

The implementation of this intervention had several challenges. A first potential challenge for the therapist was time allocation and management skills. Due to its focus on socially valid and generalizable results, the planning and implementation of this intervention required frequent consultations with the students’ teachers, educational teams, and families, as well as time spent in the classroom for direct clinical observations or conflict-resolution purposes. While the school in which the intervention took place allowed for this high-intensity program because the therapists were housed there, external validity is limited, particularly for an outpatient therapy setting. At the same time, there is a clear clinical need to develop individualized intervention for individuals with ASD and ID. In addition, there may always be some individuals who require more intensive model of services (such as 1:1 supports) despite prevention and inclusion efforts and policies. The adaptation of therapy materials and planning/monitoring of classroom data collection required significant time from the therapist, especially in the early stages of the intervention. Staff training
and treatment integrity monitoring was also time intensive. However, as the youths made progress, the therapist’s time demands were mitigated during the transition to a consultative role. The inclusion of the students’ triggers, precursors, and coping strategies to their BSPs was particularly efficient in promoting consistent supports and treatment integrity as the therapist faded.

In a high-intensity therapeutic setting such as a special school for children with special needs and severe behavioral challenges, professional qualities such as calm and flexibility are often key for any direct services providers, including therapists and educators. Optimal times to schedule therapy sessions varied from one week to another and were based on the student’s socio-emotional needs (e.g., a calm versus stressful day). Also, it was important for the therapist to address potential threats to the therapeutic relationship (e.g., possible involvement of the therapist in physical management procedures, if clinically required) proactively with the youths and their educational teams. Behavioral incidents were reviewed in an immediate fashion to favor learning opportunities for the student.

Due to ethical and clinical considerations, (e.g., learning, need for intervention), it was not possible to use a reversal experimental design to demonstrate variable codependence (e.g., ABAB design). The multiple-baseline design is a well-accepted experimental design alternative within the research community and is usually used in similar conditions (i.e., nonreversible interventions due to learning or ethical considerations) (Kazdin, 1982). Treatment integrity procedures were also used to limit potential threats to data collection and intervention delivery. The comparison of results across students and phases can demonstrate variables’ codependence and control for internal threats.

More studies are needed to further investigate the effectiveness of adapted therapeutic interventions with verbal individuals with co-occurring ASD and ID. Replication of this study is recommended with different subjects and across different authors for empirical validation purposes. Similarly, exploring ways to extend this work to the outpatient therapy setting will be a critical step for feasibility and acceptability, which may necessitate the formal manualization of this protocol. The idiosyncratic needs of the students, affected strongly by their cognitive levels, would indicate that a modular approach may be the most pragmatic way to construct this type of standardization. In addition, future studies should include participants with no prior experience with CBT for more experimental control. A randomized control trial (RCT) would provide more information on the statistical effectiveness of adapted therapeutic interventions with individuals with co-occurring ASD and ID. This current study focused on the combination of CBT and ABA methodology. As such, it would be appropriate for an RCT to include CBT, ABA, and combined treatments against a control condition. This would require, however, a large and homogeneous sample of students (i.e., age,
clinical diagnoses, behavior challenges), a well-documented challenge in the applied developmental field (CDC, 2006, 2014). A subsequent step in this line of research would consist of further investigation of clinician’s characteristics using a dismantling design.

Clinicians working in the field of developmental disabilities can find themselves isolated when facing the unique challenge of tailoring available manualized intervention and integrating therapeutic models (e.g., CBT, PECS, positive behavior supports) to meet their clients’ needs. As such, the adaptation, modification, and tailoring of psychotherapy to special populations represents a relatively new and exciting area of study. This study represents an important step toward the development and validation of effective interventions for mental health professionals working with individuals with ASD and ID. Given the unfortunately high prevalence of psychiatric and/or socio-emotional difficulties among verbal individuals with co-occurring ASD and ID, and their associated costs (e.g., hospitalizations, long-term residential placements, unemployment; Amendah, Grosse, Peacock, & Mandell, 2011; CDC, 2014), the development and validation of effective adapted interventions to specifically address emotion dysregulation with this clientele is likely to benefit individuals with ASD and ID, their families/caregivers, and society.

References


