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## **Position Statement on the Use of Restraint and Seclusion as Interventions for Dangerous and Destructive Behaviors: Supporting Research and Practice Guidelines**

### **Severe Problem Behavior**

Some individuals with mental health or developmental disorders display problem behavior that puts themselves or others at risk of injury. Prevalence rates of such problem behavior among individuals with developmental disabilities in the U.S. range from 2–28% for aggression, 10–31% for self-injury, and 7–30% for property destruction, with rates consistently higher for individuals with more severe difficulties and those who are diagnosed with autism (Borthwick–Duffy, 1994; Eyman, Borthwick–Duffy, & Miller, 1981). Levels of severity can range from relatively minor and brief to very severe, chronic, and potentially life-threatening (Totsika, Toogood, Hastings & Lewis, 2008).

Among individuals with developmental disorders who display self-injurious behavior (SIB), head-hitting and head-banging are among the most commonly reported forms (Kahng, Iwata, & Lewin, 2002). Other forms of SIB include self-biting, body-hitting, self-scratching, and eye-poking. Injuries that have been documented to result from SIB include soft tissue injury, lacerations, contusions, infections, permanent scars, callus formation, and permanent damage to the eye such as retinal detachment (Hyman, Fisher, Mercugliano, & Cataldo, 1990). These injuries sometimes require suturing of lacerations, skin grafts to replace damaged tissue, and retinal reattachment surgery (Patton, 2004).

Pica – ingesting inedible items – is another form of SIB that can be dangerous and potentially life threatening. Materials that have been reported to be ingested include feces (Hagopian & Adelinis, 2001), car keys (Piazza, Roane, Keeney, Boney, & Abt, 2002), rocks, glass, dirt, wood, hair, grass, plants (McCord Gorsser, Iwata, & Powers (2005), and cigarette butts (Goh, Iwata, & Kahng, 1990; Piazza, Hanley, & Fisher 1996). Pica has been reported to result in lead poisoning, choking, parasitic infections, dental injury, gastrointestinal obstructions and perforations, and death (Ali, 2001; Steigler, 2005; Williams, Kirkpatrick–Sanchez, Enzinna, Dunn, & Borden–Karasack, 2009).

Aggressive behavior such as biting, hair–pulling, hitting, choking, punching, and head–butting can also be severe (see Sigafos, Elkins, Kerri & Attwood, 1994). Aggression is the most common form of problem behavior leading to referral of people with developmental disorders for specialized treatment, and is one of the main barriers to placement in integrated educational and community settings. It is also associated with high service costs and high staff turnover rates in service programs (Allen, 2000).

The financial cost of problem behaviors is significant. Matson and Sevin (1994) reported that half of U.S. mental health beds may be taken by patients with developmental disorders, while Paclawskyj, Kurtz, and O'Connor (2004) estimated annual costs at greater than \$3 billion for individuals with developmental disorders who exhibited severe problem behaviors. The cost of problem behaviors is not limited to the healthcare dollars spent in treating injuries that result from them, however. If not treated effectively, these behaviors tend to persist and stabilize over time, often impairing social and adaptive functioning and limiting access to services across the lifespan (Allen, 2000; Borthwick–Duffy, Lane, & Widaman, 1997; Paclawskyj et al., 2004; Thompson & Reid, 2002). For many individuals with developmental disorders, problem behavior may represent the greatest barrier to integration and participation in typical educational, family, and community activities (Lowe, Allen, Jones, Brophy, Moore, & James, 2007). Severe behavior problems have been shown to cause significant stress in families, and to be correlated with decreased parental well–being as well as decisions to seek residential placement for children who exhibit these behaviors (Hauser–Cram et al., 2001; McIntyre, Blacher, & Baker, 2002).

### **Effective Treatment**

Fortunately, research has demonstrated that even individuals with the most severe behavior problems can be helped – and many of the aforementioned negative consequences can be avoided or alleviated – with interventions developed by the discipline of applied behavior analysis (ABA). Those interventions, which involve the application of scientific principles of learning and behavior, have broad efficacy for building useful skills and reducing

challenging behavior in people with and without intellectual, developmental, and other disorders.

ABA interventions for problem behaviors focus on establishing and reinforcing new skills, providing access to preferred activities and items, providing choice-making opportunities, increasing appropriate communication, making complex situations more predictable, and reducing maladaptive behaviors. Effective ABA techniques range from focused interventions for increasing specific functional skills and/or decreasing specific problem behaviors to comprehensive programming. For some reviews and meta-analyses of the hundreds of studies documenting the effectiveness of these interventions, see Campbell (2003); Didden, Duker, and Korzilius (1997); Eikeseth (2009); Green (in press); Grey and Hastings (2005); Hanley, Iwata, & McCord, 2003; Horner et al. (2002); Kahng, Iwata, and Lewin (2002); McClannahan, MacDuff, and Krantz (2002); National Autism Center (2009); Weisz, Weiss, Han, Granger, & Morton, 1995; and Wolery, Barton, and Hine (2005). There is also evidence that comorbid psychiatric conditions are common in people with developmental disabilities, and that certain medications can be effective when used in conjunction with behavioral treatment (see Aman et al., 2002; Thompson, Moore, & Symons, 2007).

Within the field of ABA, there is a general consensus that interventions should focus on increasing adaptive behavior and altering the environment as means of preventing and decreasing problem behaviors. Interventions should be individualized, and based on functional behavioral assessment to identify environmental events that trigger and reinforce the problem behavior. Interventions are designed to engineer the environment to decrease the probability that problem behaviors will occur and to make sure that they are not reinforced (to the extent possible) while simultaneously building communication, academic, social, leisure, and other adaptive skills using positive reinforcement. The individual's preferences for activities and items should be assessed frequently, and those preferred stimuli are used as reinforcers to both strengthen adaptive behavior and decrease problem behavior. These ABA procedures can ensure that even individuals with the most severe disabilities have ample opportunities to express their preferences and choices and to develop useful skills, thus empowering them to actively participate in educational programming as well as family and community life.

### **Safe and Effective Use of Interventions Involving Restraint and Seclusion**

Advances in behavior analytic assessments and interventions have made it possible to reduce many severe problem behaviors without using restraint, seclusion, or other techniques that might be considered restrictive (Horner et al., 2002; Kahng et al., 2002; Pelios, Morren, Tesch, & Axelrod, 1999). There is widespread consensus among professionals who treat individuals with severe

challenging behaviors that more restrictive interventions should be used only when less restrictive interventions have failed, or are determined to be unsafe or insufficient. In some cases, however, severe problem behaviors can be resistant to positive interventions, and carefully designed and monitored restraint or seclusion procedures can be essential for minimizing the risk of harm.

Many investigations of the inappropriate use of restraint and seclusion have revealed that individuals implementing such procedures were inadequately or inappropriately trained, and that their use of those procedures was not consistent with research and ethical guidelines on the safe and effective use of restraint and seclusion. Additionally, the procedures were not part of an intervention plan that was based on a functional assessment of the dangerous behaviors conducted by a qualified behavior analyst. *It is APBA's position that restraint and seclusion procedures should never be implemented in isolation, but should only be used as components of properly designed and approved behavior intervention plans that emphasize state-of-the-art strategies for reinforcing adaptive skills and preventing problem behavior. They should only be implemented by individuals who are trained in behavioral intervention and in the use of the specific restraint or seclusion procedures included in the plan, and who are supervised by a behavior analyst with experience in treating dangerous behaviors.*

When restraint is used as a component of such an intervention plan, it generally consists of gently holding a person (e.g., at the wrists) for a brief period of time (e.g., 30 to 60 seconds) to interrupt and reduce the future occurrence of a dangerous behavior (such as hand-to-head SIB). For a small subgroup of people who display very severe SIB that occurs almost continuously, specialized mechanical restraints such as soft arm splints or mitts may be used to prevent injury. Such restraint is intended to be faded (gradually decreased) over time as the behavior decreases. Seclusion is used rarely, and only when the behavior of concern presents an immediate danger to others. It generally consists of a brief room timeout (i.e., of 2–10 minutes, 15 minutes at the most) when non-exclusionary timeouts are not feasible because of risks to others, or have proved ineffective.

Summaries of three sources of support for APBA's position follow: (I) research on seclusion and restraint procedures as components of interventions for dangerous behaviors; (II) reviews of research on the treatment of severe problem behaviors; and (III) other organizations' position statements and practice guidelines pertaining to the use of restraint and seclusion procedures.

## I. Research on Safe and Effective Use of Restraint and Seclusion Procedures

**IMPORTANT NOTE:** In behavior analysis, the term “punishment” does not mean retribution as it does in everyday language, or the delivery of some unpleasant or uncomfortable (“aversive”) consequence. Instead, punishment occurs when a consequence follows a behavior with the result that the behavior is less likely to occur in the future. Following are descriptions of some procedures that can reduce the occurrence of dangerous behaviors.

- A. *Response blocking or response interruption*** involves momentarily physically preventing the individual from engaging in certain movements that produce trauma. Although these procedures do not involve holding, some view them as a form of restraint. For example, response blocking for hand-to-head SIB might involve the care provider moving his arm between the individual’s hand and head (once the individual begins the hand-to-head motion) in order to prevent the individual’s hand from contacting his head. Depending on the form and speed of the dangerous behavior, it may not be possible to successfully block all occurrences. That is, response blocking or response interruption may not offer sufficient protection in cases where the problem behavior is intense and occurs with little warning, and risk of significant injury is great. These procedures have proved effective, however, when used as part of a comprehensive reinforcement-based behavior intervention for reducing many forms of dangerous behavior, including SIB, pica, aggression, and elopement (Hagopian & Adelinis, 2001; Lerman & Iwata, 1996; McCord, Grosser, Iwata, & Powers, 2005; Reid, Parsons, Phillips, & Green, 1993; Smith, Russo & Le, 1999).
- B. *Timeout from reinforcement.*** Timeout involves removing access to reinforcers for a brief period of time following occurrences of a problem behavior. It is used as part of an intervention that includes abundant positive reinforcement for adaptive behaviors. Studies describing the use of timeout with seclusion (“room” or “exclusionary” timeout) are rare. Those procedures generally are used only when the problem behavior poses imminent risk to others, and then each timeout is brief (2–15 minutes). In nearly all published studies, timeout was non-exclusionary and involved removing preferred materials, preventing access to preferred activities or items, or using screens to prevent the individual from seeing reinforcing activities for a few minutes following each occurrence of problem behavior (Falcomata, Roane, Hovanetz, & Kettering, 2004; Keeney, Fisher, Adelinis, & Wilder, 2000).
- C. *Timeout procedures involving physical restraint*** refers to care providers holding the individual during timeout in order to limit movement. In some cases, directing the individual to sit in a chair during timeout can be effective; however, for individuals with severe behavior problems, the individual may

need to be physically held to prevent aggressive or self-injurious behavior that would place her or others at risk of injury and to keep her in timeout. Techniques include brief holds (typically 30 to 60 seconds in duration) that involve a single care provider securing the individual or his hands during timeout contingent upon problem behavior, or holding the individual's hands in her lap or at her sides for 30–60 seconds (e.g., Lerman, Iwata, Shore, & DeLeon, 1997). These procedures are used along with reinforcement of adaptive behaviors, and are distinct from crisis management procedures, which often involve multiple people physically holding the individual after problem behavior has escalated to some level, and then releasing her when certain criteria are met (discussed later).

Examples of studies on the use of the procedures just described include:

**Hanley, G.P., Piazza, C.C., Fisher, W.W., & Maglieri, K.A. (2005). On the effectiveness of and preference for punishment and extinction components of function-based interventions. *Journal of Applied Behavior Analysis*, 38, 51-65.**

The relative effectiveness of functional communication training (FCT) with and without a punishment component was evaluated with 2 children for whom functional analyses demonstrated behavioral maintenance via social positive reinforcement. The results showed that FCT plus punishment was more effective than FCT in reducing problem behavior. Subsequently, participants' relative preference for each treatment was evaluated in a concurrent-chains arrangement, and both participants demonstrated a clear preference for FCT with punishment. These findings suggest that the treatment-selection process may be guided by person-centered and evidence-based values.

**Hagopian, L. P., Fisher, W. W., Sullivan, M. T., Acquisto, J., & LeBlanc, L. A. (1998). Effectiveness of functional communication training with and without extinction and punishment. *Journal of Applied Behavior Analysis*, 31, 211–235.**

FCT with extinction was effective in reducing problem behavior for the majority of clients (n=21) and resulted in at least a 90% reduction in problem behavior in nearly half the applications. However, when demand or delay-to-reinforcement fading was added to FCT with extinction, treatment efficacy was reduced in about one half of the applications. FCT with punishment (both with and without fading) resulted in at least a 90% reduction in problem behavior for every case in which it was applied.

**Perry, A. C., & Fisher, W. W. (2001). Behavioral economic influences on treatments designed to decrease destructive behavior. *Journal of Applied Behavior Analysis*, 34, 211-215.**

In this study, behavioral economics principles were used to develop and evaluate a treatment package that reduced destructive behavior to zero while communication and compliance were increased.

**Vorndran, C.M., & Lerman, D.C. (2006) Establishing and maintaining treatment effects with less intrusive consequences via a pairing procedure. *Journal of Applied Behavior Analysis*, 39, 35-48.**

The generality and long-term maintenance of a pairing procedure designed to improve the efficacy of less intrusive procedures were evaluated for the treatment of problem behavior maintained by automatic reinforcement exhibited by 2 individuals with developmental disabilities. Results suggested that a less intrusive procedure could be established as a conditioned punisher by pairing it with an effective punisher contingent on problem behavior. Generalization

across multiple therapists was demonstrated for both participants. However, generalization to another setting was not achieved for 1 participant until pairing was conducted in the second setting. Long-term maintenance was observed with 1 participant in the absence of further pairing trials. Maintenance via intermittent pairing trials was successful for the other participant.

**Wacker, D. P., Steege, M. W., Northup, J., Sasso, G., Berg, W., Reimers, T., Cooper, L., Cigrand, K., & Donn, L. (1990). A component analysis of functional communication training across three topographies of severe behavior problems. *Journal of Applied Behavior Analysis, 23*, 417-429.**

We evaluated the separate treatment components of a functional communication training program for 3 severely handicapped persons who each displayed different topographies of aberrant behavior. Following a functional analysis of maintaining conditions for inappropriate behavior (self-injury, stereotypy, aggression), each participant was trained to emit a communicative response that functioned to solicit reinforcement. For 2 participants, consequences (time-out or graduated guidance) for inappropriate behavior were also included. Treatment continued until the participants emitted the communicative response independently and no occurrences of inappropriate behavior were observed for at least two sessions. Following treatment, the separate contributions of the treatment components for communicative responding and for inappropriate behavior were evaluated with a reversal design. The results indicated that both sets of treatment components were necessary for maximal control over aberrant behavior. These results are discussed in relation to the efficiency, history, and control over reinforcement of both appropriate and inappropriate responses.

**Lerman, D. C., Iwata, B. A., Shore, B. A., & DeLeon, I. G. (1997). Effects of intermittent punishment on self-injurious behavior: An evaluation of schedule thinning. *Journal of Applied Behavior Analysis, 30*, 187-201.**

Although the use of punishment often raises ethical issues, such procedures may be needed when the reinforcers that maintain behavior cannot be identified or controlled, or when competing reinforcers cannot be found. Results of several studies on the effects of intermittent schedules of punishment suggest that therapists must use fairly rich schedules of punishment to suppress problem behavior. However, residential caretakers, teachers, and parents often have difficulty implementing programs that require constant monitoring of the client's behavior. In this study, we examined the feasibility of gradually thinning the delivery of punishment from a continuous schedule to an intermittent schedule during the course of treatment for self-injurious behavior (SIB). Results of functional analyses for 5 individuals who had been diagnosed with profound mental retardation indicated that their SIB was not maintained by social consequences. Treatment with continuous schedules of time-out (for 1 participant) or contingent restraint (for the other 4 participants) produced substantial reductions in SIB. When they were exposed to intermittent schedules of punishment (fixed-interval [FI] 120 s or FI 300 s), SIB for all but 1 of the participants increased to levels similar to those observed during baseline. For these 4 participants, the schedule of punishment was gradually thinned from continuous to FI 120 s or FI 300 s. For 2 participants, SIB remained low across the schedule changes, demonstrating the utility of thinning from continuous to intermittent schedules of punishment. Results for the other 2 participants showed that intermittent punishment was ineffective, despite repeated attempts to thin the schedule.

**D. Mechanical restraint** refers to the use of devices that limit movements that produce injury. Research on the use of mechanical restraint is limited to the management of severe SIB. Mechanical restraints include devices such as arm splints (which limit or prevent elbow flexion) and mitts (which cover the hands

and limit use of the fingers; e.g., Fisher, Piazza, Bowman, Hanley, & Adelinis, 1997; Lerman, Iwata, Smith, & Vollmer, 1994; Pace, Iwata, Edwards, & McCosh, 1986; Powers, Roane, & Kelley, 2007). Extensive research on the use of mechanical arm restraints illustrates how those devices can reduce severe SIB through (a) continuous application and subsequent fading (Fisher et al., 1997; Pace et al., 1986; Powers et al., 2007); (b) when applied as a consequence to reduce SIB (Rapoff, Altman, & Christophersen, 1980); and (c) when applied as a reinforcing consequence to increase appropriate behavior (Favell, McGimsey, & Jones, 1978; Favell, McGimsey, Jones, & Cannon, 1981). Use of such devices in the context of a reinforcement-based intervention can reduce severe SIB and increase appropriate behavior (Lindberg, Iwata, & Kahng, 1999). These devices are more commonly applied continuously but removed periodically to avoid problems with circulation and skin breakdown, and their restrictiveness is gradually reduced over time to permit increased range of motion. A number of studies have described effective fading of arm restraints to gradually permit increased elbow flexion while minimizing risks of self-injury (Fisher et al., 1997; Lerman et al., 1994; Pace et al., 1986).

*Mechanical restraints should only be used by appropriately trained persons and with careful monitoring, as they are highly restrictive, can cause long-term negative side effects, and can interfere with client training goals if used improperly (Lovaas & Simmons, 1969; Rojahn, Schroeder, & Mulick, 1980).*

Relevant studies include:

**Fisher, W. W., Piazza, C. C., Bowman, L. G., Hanley, G. P., & Adelinis, J. D. (1997). Direct and collateral effects of restraints and restraint fading. *Journal of Applied Behavior Analysis*, 30, 105-119.**

Mechanical restraints are commonly used to reduce the risks associated with severe self-injurious behavior (SIB), but may result in movement restriction and adverse side effects (e.g., bone demineralization). Restraint fading may provide a method for decreasing SIB while increasing movement and reducing these side effects. In the current investigation, rigid arm sleeves and restraint fading (gradually reducing the rigidity of the sleeves) were used with 3 clients who engaged in hand-to-head SIB. Restraints and fading reduced the hand-to-head SIB of all clients. However, for 1 client, the addition of a water mist procedure further reduced SIB to near-zero levels. For a 2nd client, another form of SIB developed that was not prevented by the rigid sleeves. For a 3rd client, a topography of SIB that was not physically prevented by the rigid sleeves was also reduced when restraints and fading were introduced.

**Lerman, D. C., Iwata, B.A., Smith, R.G., Vollmer, T. R. (1994). Restraint fading and the development of alternative behaviour in the treatment of self-restraint and self-injury. *Journal of Intellectual Disability Research*, 38, 135-148.**

Restraint fading and differential reinforcement were used to reduce the self-injurious behaviour (SIB) and self-restraint of a profoundly retarded man. The variables maintaining both behaviours could not be identified via pre-treatment functional analysis; however, self-restraint exerted at least some stimulus control over SIB. In Phase 1, the subject's topography of self-restraint (wrapping arms in shirt) was replaced with another topography (wrapping wrists in towel) that



could be more easily faded to a headband. However, the subject's restraints could not be completely faded, and any movement was accompanied by SIB; thus, in Phase 2, a compliance training procedure was implemented to reduce his SIB while increasing time out of restraint. In Phase 3, the subject was taught to mand for edibles during training sessions. Results indicated that restraint fading combined with the development of alternative behaviour could be an effective treatment procedure for those who engage in both self-restraint and SIB.

**Oliver, C., Hall, S., Hales, J., Murphy, G., & Watts, D. (1998). The treatment of severe self-injurious behavior by the systematic fading of restraints: Effects on self-injury, self-restraint, adaptive behavior, and behavioral correlates of affect. *Research in Developmental Disabilities, 19*, 143-165**

Severe self-injurious behavior (SIB) in people with mental retardation is difficult to treat when dangerously frequent or intense responding rules out functional analysis and interventions that permit free responding. This situation is common when restrictive devices, such as straight arm splints, are used. In this study, the effects of introducing flexion into a straight-arm splint, on SIB, self-restraint, adaptive behavior, and behavioral correlates of affect were examined for three individuals with severe mental retardation. Using single-case design methodology, for two individuals self-injury was reduced to zero, while the overall level of restriction was also significantly reduced. From the observed behavioral correlates of affect, there was no evidence of an increase in negative affect with the introduction of the new splint and the fading procedure, but there was evidence of an increase in positive vocalizations. Engagement in activities and social contact were not affected by the introduction of the new splint. The reasons for a decrease in SIB with a corresponding decrease in restriction in the absence of any manipulation of contingencies for SIB are discussed, with particular reference to stimulus control.

**E. Restraint during crisis management.** Little research has examined the efficacy of crisis management techniques for managing problem behavior. The few studies that have been done compared the use of "planned" restraint (programmed contingent application as part of a behavior intervention plan) to "emergency" restraint (applied as a crisis management technique). They showed that programmed restraint is considerably safer for consumers than restraint applied under emergency circumstances (e.g., Spreat, Lipinski, Hill, & Halpin, 1986). Moreover, programmed contingent restraint (either physical or mechanical) has been found to produce fewer staff injuries than the emergency use of restraints (Hill & Spreat, 1987). This applies to both physical restraint and mechanical restraint. Overall, it appears that the programmed, therapeutic use of restraints differs along several dimensions from the emergency, unplanned use of restraint. The planned and careful use of restraint is less dangerous to both consumers and caregivers, can be faded to the point that it is used only infrequently, and can therefore result in less restraint over extended periods.

**Spreat, S., Lipinski, D. P., Hill, J., & Halpin, M. (1986). Safety indices associated with the use of contingent restraint procedures. *Applied Research in Mental Retardation, 7*, 475-481.**

The safety of four general classes of contingent restraint was evaluated in a sample of 2331 institutionalized mentally retarded persons. The use of mechanical restraints resulted in a significantly lower injury rate than did personal restraint. The use of restraint in emergency situations was found to be more dangerous than the planned use of such procedures.

**Henderson, L., Sidders, K., Wasser, T., Gunn, S., & Spisszak, E., (2005). Frequency of client and staff injury during physical restraint episodes: A comparison of two child restraint systems.**

*Journal of Clinical Outcomes Measurement, 12 (4), 193-198.*

Youth admitted under both voluntary and involuntary commitments to residential behavioral and mental health programs in Pennsylvania and New York and staff from these institutions.

Methods: Restraint events that occurred during 2003 were reviewed and stratified by method of restraint: Therapeutic Crisis Intervention (TCI) and Professional Crisis Management (PCM).

Results: There were 5580 restraint applications in the PCM group (n = 813) and 1274 in the TCI group (n = 194). The mean (SD) hold duration was significantly shorter for the PCM method (8.5 min [14.4] versus 15.1 min [13.7];  $P < 0.001$ ). TCI was associated with significantly more critical and serious client injuries (both,  $P < 0.001$ ). No difference between PCM and TCI was noted for critical staff injuries ( $P = 0.404$ ), although a trend toward significance was seen in serious staff injuries ( $P = 0.094$ ). More injuries occurred at higher restraint levels with TCI than with PCM.

Conclusion: The PCM method was associated with a lower frequency of client injuries compared with the TCI method. We recommend the PCM method over TCI for use in children.

*Despite the limited research on crisis management techniques and data supporting the advantages and efficacy of programmed procedures, crisis management procedures have a role in the safe management of severe problem behavior. Formal crisis management systems, such as Professional Crisis Management (PCM), provide numerous safeguards to prevent the use of unsafe techniques, and the misuse of appropriate procedures. PCM is a rigorous and structured program that includes intensive training and in-servicing requirements, data collection and monitoring, and ongoing review and oversight. Crisis management systems should not be viewed as a replacement for appropriate behavioral treatment, but as an adjunct. They are appropriate when behavioral interventions are not effective in averting an escalation of problem behavior that reaches crisis levels (Winston, Fleisig, & Winston, 2009).*

Information about PCM can be obtained from the organization's website:

<http://www.pcma.com/Default.asp>

## II. Reviews of Research on the Treatment of Severe Problem Behavior

**Campbell, J.M. (2003). Efficacy of behavioral interventions for reducing problem behavior in persons with autism: A quantitative synthesis of single-subject research. *Research in Developmental Disabilities, 24*, 120–138.**

The efficacy of behavioral interventions for problem behaviors in persons with autism was reviewed. One hundred and seventeen published articles representing 181 individuals with autism were examined. Articles were selected from 15 journals. Participant, treatment, and experimental variables were evaluated. Three effect sizes were calculated for each article. Behavioral treatments are effective in reducing problematic behaviors in individuals with autism. Type of target behavior and type of treatment did not moderate the average effect of treatment. As measured by percentage of zero data (PZD), three variables were predictive of behavioral suppression beyond that accounted for by behavioral topography and treatment type. Reliability of observation and number of treatment data points were positively related to PZD scores. Treatments based on experimental functional analysis (EFA) produced higher average PZD scores than treatments that did not include an EFA. The implications of the findings, study limitations, and suggestions for future research are discussed.

**Didden, R., Duker, P. C., & Korzilius, H. (1997). Meta-analytic study on treatment effectiveness for problem behaviors with individuals who have mental retardation. *American Journal on Mental Retardation, 101*(4), 387–399.**

Meta-analysis of 482 empirical studies on treatment of problem behaviors of individuals with mental retardation was conducted. A metric of treatment effectiveness was computed for 1,451 comparisons between baselines and treatments, 34 topographies of problem behavior, and 64 treatment procedures. Analysis of variance with percentage of nonoverlapping data as the dependent variable and comparison as the basic unit of analysis revealed that treatment of externally destructive behaviors had significantly lower mean percentage of nonoverlapping data scores than did treatment of socially disruptive and internally maladaptive behaviors. Response contingent procedures were significantly more effective than were other procedures. No significant interactions were found. Results of a stepwise regression showed that only performing a functional analysis made a significant contribution. These results may lead to more objective assignment of treatment procedures to problem behaviors.

**Grey, I. M., & Hastings, R. P. (2005). Evidence-based practices in intellectual disability and behaviour disorders. *Current Opinion in Psychiatry, 18*, 469–475.**

Literature published in the review period was from three traditions: applied behaviour analysis, psychopharmacology, and service evaluation. Applied behaviour analysis treatments have a large evidence base, and recent research has focused on refining issues such as dealing with low rate behaviours, improving generalization, the effects of choice-making, and setting event variables that may affect treatment outcomes. Recent interest in risperidone as a treatment for behaviour disorder has dominated the literature on pharmacological interventions. Several empirical studies support the use of risperidone in children, although a recent review is more sceptical of the quality of the evidence to date. A small number of service evaluation studies suggest in particular that applied behaviour analysis technologies can be scaled up to benefit large numbers of patients. Applied behaviour analysis methods for the assessment and treatment of behaviour disorders continue to be the focus of research, and continue to result in positive outcomes. Recent data show the value of using applied behaviour analysis technologies as a service model for people with behaviour disorders. Pharmacological treatments, especially risperidone, also have a developing evidence base despite a lack of understanding of their mechanisms of action. A number of questions about behaviour disorders remain unanswered, especially whether early intervention may be effective and their putative relationship with psychiatric conditions.

**Kahng, S., Iwata, B.A., & Lewin, A. (2002). Behavioral treatment of self-injury, 1964 to 2000. *American Journal on Mental Retardation, 107*, 212–221.**

A quantitative analysis of behavioral research on the treatment of self-injurious behavior (SIB) over the past 35 years is provided. A literature search covering the period from 1964 to 2000 yielded 396 articles (706 participants) on the treatment of SIB. Most research participants have been male and diagnosed with severe/profound mental retardation. The use of reinforcement-based interventions has increased during the past decade, whereas the use of punishment-based interventions has decreased slightly; both of these trends coincide with the increase in the use of functional assessments. Most treatments have been highly effective in reducing SIB; nevertheless, the disorder persists in spite of an abundance of research, suggesting that a greater emphasis should be placed on prevention.

**Matson, J. L., & LoVullo, S. V. (2008). A review of behavioral treatments for self-injurious behaviors of persons with autism spectrum disorders. *Behavior Modification, 32*, 61–76.**

Autism spectrum disorders (ASD) are considered to be among the most serious of the mental health conditions. Concomitant with many cases of ASD is intellectual disability. Further compounding the disability is the fact that both conditions are known risk factors for self-injurious behavior (SIB). To date, the most effective intervention methods, based on the available data, appear to be variants of behavior modification. This article provides an overview of the current status of learning-based interventions for SIB in ASD and provides a review of specific studies. Although most studies describe some combination of reinforcement and punishment procedures, efforts are under way to develop more positively oriented strategies, such as functional assessment, to decrease the use of punishment. However, almost all the treatment studies employ single case designs, thus preventing a comparison of treatment efficacy. These issues are discussed along with other strengths, weaknesses, and future directions for clinical practice and treatment.

**Pelios, L., Morren, J., Tesch, D., & Axelrod, S. (1999). The impact of functional analysis methodology on treatment choice for self-injurious and aggressive behavior. *Journal of Applied Behavior Analysis, 32*, 185–195.**

Self-injurious behavior (SIB) and aggression have been the concern of researchers because of the serious impact these behaviors have on individuals' lives. Despite the plethora of research on the treatment of SIB and aggressive behavior, the reported findings have been inconsistent regarding the effectiveness of reinforcement-based versus punishment-based procedures. We conducted a literature review to determine whether a trend could be detected in researchers' selection of reinforcement-based procedures versus punishment-based procedures, particularly since the introduction of functional analysis to behavioral assessment. The data are consistent with predictions made in the past regarding the potential impact of functional analysis methodology. Specifically, the findings indicate that, once maintaining variables for problem behavior are identified, experimenters tend to choose reinforcement-based procedures rather than punishment-based procedures as treatment for both SIB and aggressive behavior. Results indicated an increased interest in studies on the treatment of SIB and aggressive behavior, particularly since 1988.

**Weisz, J.R., Weiss, B., Han, S.S., Granger, D.A., & Morton, T. (1995). Effects of psychotherapy with children and adolescents revisited: A meta-analysis of treatment outcome studies. *Psychological Bulletin, 117*(3), 450–468.**

A meta-analysis of child and adolescent psychotherapy outcome research tested previous findings using a new sample of 150 outcome studies and

weighted least squares methods. The overall mean effect of therapy was positive and highly significant. Effects were more positive for behavioral than for nonbehavioral treatments, and samples of adolescent girls showed better outcomes than other Age × Gender groups. Paraprofessionals produced larger overall treatment effects than professional therapists or students, but professionals produced larger effects than paraprofessionals in treating overcontrolled problems (e.g., anxiety and depression). Results supported the specificity of treatment effects: Outcomes were stronger for the particular problems targeted in treatment than for problems not targeted. The findings shed new light on previous results and raise significant issues for future study.

### III. Other Professional and Scientific Organizations' Practice Guidelines Related to Restraint and Seclusion

Several professional and scientific organizations outside the field of ABA have reviewed research findings and articulated best practice guidelines that support the appropriate use of procedures involving restraint and seclusion.

- **The National Institutes of Health** Consensus Conference on Destructive Behavior (NIH, 1989) concluded that "Behavior reduction procedures should be selected for their rapid effectiveness *only* if the exigencies of the clinical situation require such restrictive interventions and *only* after appropriate review. These interventions should *only* be used in the context of a comprehensive and individualized behavior enhancement treatment package."
- **American Association on Intellectual and Developmental Disabilities** (formerly the American Association on Mental Retardation – the largest and oldest professional organization concerned with mental retardation) "Guidelines on Psychosocial Treatments," published in **Rush, A. J. & Frances, A. (Eds.) (2000). Expert consensus guideline series: Treatment of psychiatric and behavioral problems in mental retardation [Special Issue]. *American Journal on Mental Retardation*, 105 (3).**

According to these best practice guidelines, the use of more intrusive interventions can be recommended when less intrusive interventions are insufficient. With regard to contingent procedures for reducing problem behavior, the guidelines indicated that when reinforcement-based interventions fail, then the "first line" treatment is response interruption. "Second line" treatments include response cost, non-exclusionary timeout, positive practice overcorrection, restitution overcorrection, exclusionary timeout, and mechanical restraints.

- **American Psychological Association, Division 33** “Guidelines on Effective Behavioral Treatment for Persons with Mental Retardation and Developmental Disabilities” (APA, 1994) recommended that “Highly restrictive procedures shall not be employed until there has been sufficient determination that the use of less restrictive procedures was or would be ineffective or harm would come to the client because of gradual change in the client's particular problematic behavior.” Retrieved February 1, 2010, from <http://www.apa.org/divisions/div33/effectivetreatment.html>
- **Technical Assistance Center on Positive Behavioral Interventions and Support (PBIS)**, U.S. Department of Education, Office of Special Education Programs April 2009 statement on “Seclusion and Restraint Use in School-wide Positive Behavior Supports” noted that “Seclusion and restraint should only be implemented (a) as safety measures (b) within a comprehensive behavior support plan, (c) by highly trained personnel, and (d) with public, accurate, and continuous data related to (1) fidelity of implementation and (2) impact on behavioral outcomes (both increasing desired and decreasing problem behaviors).” Retrieved February 1, 2010, from [http://www.pbis.org/common/pbisresources/publications/Seclusion\\_Restraint\\_inBehaviorSupport.pdf](http://www.pbis.org/common/pbisresources/publications/Seclusion_Restraint_inBehaviorSupport.pdf)

Professionals treating other populations, including individuals with mental illness and substance abuse problems, have expressed the understanding that restraint and seclusion interventions may be necessary in some cases:

- The **American Psychiatric Association, American Psychiatric Nurses Association, and the National Association of Psychiatric Health Systems** jointly published a document on the use of restraint and seclusion, stating that “Restraint and seclusion, when used properly, can be life-saving and injury-sparing interventions” Retrieved February 1, 2010, from <http://www.naphs.org/rscampaign/Learning.pdf>

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