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ABA Literature Summary

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TOPIC : BEHAVIOR

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General Interventions for Challenging Behavior

A. Using a Modified Social Story to Decrease Disruptive Behavior of a Child with Autism

Crozier and Tincani (2005) conducted research using a modified social story as an intervention method to decrease disruptive behavior in one 8-year old boy in a pre-school setting. The boy had been diagnosed with autism. He demonstrated pre-requisite skills including emergent literacy skills and the ability to sit and read a book with adult support.

The disruptive behavior is the boy talking out of turn to his teachers without raising his hand or being called out to speak. The goal of the study was to find out if this inappropriate behavior could be corrected using the intervention of modified social stories.

A social story is a short simple story that provides guidance on appropriate behaviors in terms the child can understand. This intervention was developed to help individuals deficient in social interaction to "read" and understand social situations by presenting appropriate social behaviors in the form of a story. Read repeatedly, the story will enable the child to successfully replicate appropriate skills taught and hopefully be able to apply them in social situations (Gray, 1993). Although social stories has a specific guideline to follow, deviations from this may be necessary in some situations. Modified social stories as are those that deviates from the guidelines of Social Story development as designed by Gray (1993).

Methodology:

The authors modified a social story by changing the ratio of directives to perspective sentences from 1:2 to 3:5 and by incorporating only vocabulary that the boy could easily read independently. In addition to reading the story alone, the authors implemented an intervention phase where the social story was read and verbal prompts were also provided by the teacher.

This study utilized an ABAC reversal design, where (A) is the baseline phase, (B) first intervention phase where the modified social story is read prior to observation, and (C) is the second intervention phase which includes reading the social story and incorporating teacher verbal prompts.

Outcomes/Results:

During the first baseline phase, the frequency of "talking out" occurred on an average of 11.2 times in a 30-minute observation. The first intervention showed a decrease to an average of 2.3 accounts of talking out in a 30-minute period. When data was collected in a return to baseline phase, the participant emitted the target behavior 8 times on average in a 30-minute period. Finally in the final intervention phase, the target behavior dropped to near zero, an average of 0.2 times in a 30-minute period. Low rates of behavior continued during maintenance probes (conducted 2 weeks after the last session of intervention).

Discussion:

These results demonstrated that a modified social story was effective in reducing disruptive behavior in an 8-year old boy with autism. The authors also examined social validity by asking the teachers how likely they would be to use such a technique. The teachers responded favorably to social stories as a potential intervention, as they felt this could be easily incorporated into their classroom routines.

Limitations and Recommendations:

One important component to this study was that the authors first required the participant to have specific emerging literacy skills. Using a standardized reading assessment helped to identify the student's reading level. This would suggest that future research should explore assessed reading levels and the correlation with success of social stories as an intervention. Other future studies may include examining alternative prompts in addition to the verbal prompts combined with the social story.

B. The Effects of an Abolishing Operation Intervention Component on Play Skills, Challenging Behavior, and Stereotype

The study by Lang, O'Reilly, Sigafoos, Machalicek, Rispoli, Lancioni, Aguilar, & Fragale, (2010) attempted to decrease stereotype and challenging behaviors of four children while increasing appropriate toy play. These children, aged 4 to 7 years, have been diagnosed with autism and displayed little to no functional play skills, and engaged in frequent stereotypic behaviors likely maintained by automatic reinforcement. They are the participants in this study. Some children with autism chose age appropriate toys, however, they engaged in stereotypy with these toys rather than en-



gage in appropriate toy play. The authors utilized a play intervention with and without abolishing operations component (AOC).

Laraway, Snyckerski, Michael, & Poling (2003) defined an abolishing operation as any stimulus or series of events that reduces the value of a particular reinforcer. For example, if an individual is permitted free access to a particular reinforcer with no time constraint, that stimulus may lose its reinforcing value in due time. It follows that with a child who has unrestricted opportunities to engage in a stereotyped behavior, such behavior may lose its reinforcing value eventually, while acquisition of new skills are being promoted. It is then understood that in the incorporation of an abolishing operation component (AOC) into an intervention, it is likely to reduce the reinforcing value of stereotypy, resulting in the child's improved responsiveness to the intervention.

Methodology:

For the play intervention alone, therapists modeled appropriate toy play using greatest to least levels of prompting. Each toy in the room had a duplicate, so the therapist could model the toy that the participant expressed an interest in, without removing the toy from the child. In the play intervention with AOC, the same prompting strategy was implemented to model appropriate toy play, however, prior to this setting, the participants were allowed free access to engage in stereotypy until they indicated satiation. On average, the participants indicated satiation after approximately 34 minutes. After this satiation was recognized, this "pre-session" was terminated and the play intervention immediately began. The functional play, stereotypy and challenging behaviors of the participants were observed in both play intervention without AOC and play intervention with AOC. These intervention types were given in alternating fashion.

Outcomes/Results:

For the first participant, functional play increased and stereotypy decreased in both the AOC and no AOC conditions, however, there was greater success in the AOC conditions. Challenging behavior actually increased compared to baseline in both conditions, although there was a slightly higher increase in the no AOC condition.

For the second participant, functional play increased in both conditions, although slightly elevated levels remained in the AOC condition. Also in the AOC condition, stereotypy decreased, while its level remained in the no AOC condition.

Challenging behavior remained level in both AOC and no AOC conditions.

The third participant increased functional play to about similar levels in both the AOC and no AOC condition. She decreased in stereotypy for both conditions, although she showed lower levels in the AOC condition. Challenging behavior actually increased in both conditions, although it increased to a greater extent in the no AOC condition.

Finally, the fourth participant increased in functional play and decreased in stereotypy in the AOC condition, while these same behaviors decreased and remained level, respectively, in the no AOC condition. Challenging behavior remained level in both AOC and no AOC conditions.

Discussion:

These results indicate that allowing opportunities to engage in stereotypy freely prior to instruction may satiate the desire to engage in such behavior during instructional periods. Also, because functional play increased and stereotypy decreased, there may be an inverse relationship suggesting that functional play skills may be an effective method for decreasing stereotypical behavior. The increase in challenging behavior may be a result of the interruption and blocking of stereotypy and the increase in prompting to engage in appropriate toy play. This may have led to frustration and thus an increase in challenging behavior.

Limitations and Recommendations:

Although this study had some promising results in the utilization of AOC with an intervention, data was not collected on maintenance or generalization, so it is unknown if these increases in appropriate play and decrease in stereotypy are maintained outside of intervention. Hence, further research would need to explore these phenomena.

C. Using Key Instructional Elements to Systematically Promote Social Skill Generalization for Students with Challenging Behavior

Smith and Gilles (2003) provided insight and direction for using key instructional elements to promote generalization and maintenance of social skills for children with challenging behaviors. This is in relation to research demonstrating that limited social skills result in poor peer relationships, potential risk for delinquency and suicide.



Gaining social skills may increase the quality of life for individuals. The authors explore the promotion of social skills training by explaining the problem with current instructional strategies, describing effective instructional strategies, providing samples of these strategies, and discussing the implications for using such strategies.

The authors have explored the literature on social skills training and have found that while several strategies exist for developing social skills, research on the generalization of such skills is lacking. Individualized Curriculum Sequencing (ICS), stemmed from Functional Curriculum Sequencing, is a model specific for learners with significant disabilities. ICS is a general instructional strategy, not necessarily specific to social skills. However, the strategy may be effectively utilized with social skills training. ICS is designed to provide multiple opportunities to a learner by responding to natural cues and consequences across a variety of stimuli which occur in a natural setting.

Six elements are incorporated into the ICS matrix.

1. Functional skills must be introduced in natural, meaningful environments.
2. Embedded instructions allow for opportunities to be practiced within a natural context across multiple activities.
3. Skill clustering or distributed trial training employs two to six behaviors sequenced in a natural order and taught simultaneously.
4. Vary stimuli and response expectations during the acquisition phase of learning.
5. Enable students to respond to natural occurring cues or contingencies.
6. Provide opportunities for the learner to make choices to reduce the need for the learner to try to "control" the instructional period.

The authors explain that using these key elements will not come easily, so adequate planning is essential. In planning, developing a matrix is the first step. A matrix includes opportunities the learner will have access to throughout the day, and specifically stating which goals or targets should be accomplished during such activities. The matrix serves as a guide for daily instructional planning. The matrix is also compatible with any social skills training curriculum, but al-

lows planned opportunities for generalization and maintenance of such skills. Generalization rarely happens spontaneously among persons with developmental disabilities. Therefore, planning specifically for generalization of skills is not only important but necessary. The ICS matrix is one such tool that may assist in achieving this goal.

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Assessing Challenging Behavior

Being able to assess the function and frequency of challenging behavior in clients is a skill that clinicians need to hone. Due to the nature of challenging behavior, it is imperative that clinicians are able to predict when it will occur so that safety measures can be secured and maintained while learning takes place. Knowing the cause and function of challenging behavior is also essential when trying to formulate interventions for such behaviors. Many people with autism engage in challenging behavior as a form of communication. Having an awareness of what that individual wants to express with the behavior makes it easier to help him learn functional ways of communicating so that his needs can be met.

A. Context-Based Assessment

Cale, Carr, Blakeley-Smith & Owen-DeSchryver (2009) studied the process of evaluating the context in which the problem behavior of an individual occurs and developed an intervention that addressed context-based difficulties in three children diagnosed with autism aged 5 to 8 years. These children were observed to have exhibited problem behavior in the home, community or school. The three contexts identified as triggers for problem behavior include: transitions, ending a preferred activity and the presence of a feared stimulus.

Methodology:

A multiple baseline design across participants was used for this study. The goal of the study was to identify and assess why certain contexts created problem behavior and what types of intervention can be effectively used to make the context less aversive.

The interventions employed to reduce maladaptive behavior are the following: for transition driven behavior, the intervention was a combination of a visual schedule, verbal warnings of impending transitions, altering the environment and "what did I miss?" cards. For behavior caused by termination of a preferred activity, the intervention was countdown cards. For behavior caused by the presence of a feared stimulus, the intervention was choice of stimuli that did not include the feared items versus stimuli that did.

From these interventions, the researchers studied the percentage of transition steps completed by the participant, the amount of inactivity to terminating the session after an adult's verbal directive and the number of sessions that were stopped because of problem behavior exhibited by the participant.

Outcomes/Results:

The goal of the study was to identify and assess why certain contexts created problem behavior and what types of intervention can be effectively used to make the context less aversive. The researchers found that because the contexts (a seemingly neutral stimulus) was paired with something aversive (e.g. a difficult Occupational Therapy (OT) task, a sound that the child did not like or the termination of playing), the context itself became generalized as an aversive stimulus. For example, the child who exhibited tantrum behavior during transitions, this behavior began when he was required to transition to an unpleasant OT task. Eventually, this negative experience was generalized to all transition episodes.

Discussion:

By giving the participants interventions where they had some control or forewarning of the situation to come, the context was altered so that it reduced the participants' aversion to the context. Therefore, the problem behavior lost its function.

Recommendations:

The researchers recommend that future studies address stimulus generalization in the form of using the interventions across various settings. This is to validate if the interventions remain effective in reducing the challenging behaviors in different settings with different stimuli. The researchers also suggest that future studies address positive responses generalizing over to the participants' other behaviors and maintaining the positive outcomes.

B. Functional Assessments of Challenging Behavior in Adults

When assessing the function of challenging behavior, it is important to understand everything about the individual the practitioner is working with. The functions of challenging behaviors in children, adolescents and adults are often very different, so one must be careful in not over generalizing what he knows about one population and transferring it to other populations, who may have completely different treatment needs. Matson & Wilkins (2009) studied the effectiveness of functionally assessing challenging behavior in 95 participants in a developmental center aged 15-86. Of the 59 males and 36 female participants, majority had an IQ in the profound range. These individuals had low rates of



aggression and self-injurious behavior. Because the rates of these behaviors are so low, it is very difficult to accurately assess the function of the behaviors. This study assessed the reliability of the Questions About Behavior Function (QABF) checklist tool for analyzing the function of high and low rate behavior.

Methodology:

The conducted study was a reliability analysis of an assessment tool, the Questions About Behavior Function (QABF). The frequency of the challenging behaviors and the reliability of predicting the function of such behaviors were measured in the participants along with the validity of the tool.

Outcomes/Results:

The researchers expressed that the rates of occurrences of behavior and the severity of the behavior affect the clinician's ability to identify the function of behavior. This study identified that one can only reliably identify a tangible function of low frequency behaviors but one can identify tangible, physical and escape reliably in a high frequency behavior.

Discussion:

By giving the participants interventions where they had some control or forewarning of the situation to come, the context was altered so that it reduced the participants' aversion to the context. Therefore, the problem behavior lost its function.

Recommendations:

The researchers recommend that future studies address what parameters should be added or removed from data to maintain or establish reliability. Establishing which procedures can be used to identify reliable data collection in low and high frequency behavior functions should also be clarified in future research on this area.

C. Functional Assessment of Problem Behavior in Children with Autism Spectrum Disorders: A Summary of 32 Outpatient Cases

Love, Carr, and LeBlanc (2009) examined archived data to explore relationships between the function of behavior and multiple variables including descriptive assessments, functional analysis, participant diagnoses, and hypothesized function of behavior based on informant assessments. Cases of children aged 2-12 years, all diagnosed with Autism, Asperger's Syndrome, or Pervasive Developmental Disorder - Not Otherwise Specified (PDD-NOS) were reviewed. These cases spanned four years. The children were clients of a university based clinic serving children and were identified as having displayed some type of problem behavior. They were serviced through the clinic's problem behavior service. Because many individuals with autism spectrum disorders engage in problem behavior, prior to developing an individualized intervention plan, correctly identifying the function of the behavior is of great benefit.

Methodology:

This was a correlational study design utilized to determine if a relationship exists between the identified function of problem behavior and the descriptive and functional assessments, participant diagnoses, and the functional assessment method used.

Outcomes/Results:

Several relationships were analyzed in this study. The first analysis determined the percentage of behavioral functions identified across all participants. A large portion (88%) of the function of problem behavior was maintained by social reinforcement. This is consistent with other related research (Iwata, et al., 1994; Asmus et al., 2004). This may appear to be counter-intuitive, as many persons with autism display a deficit in social interactions. However, this may actually be explained by the fact that children with autism may not have the skills required to access social attention, and thus may learn maladaptive means to access such attention.

The second analysis is the distribution of behavioral functions and the type of assessment, either descriptive assessment or functional analysis. A relationship between the distribution of behavioral functions of descriptive assessments and functional analysis was not found to be statistically significant ($F(4) = 3.268, p > 0.05$) although visual



analysis would appear to show these to be similar. The relatively low number of cases reviewed may account for this, as well as the fact that the descriptive assessments are utilized on low rate behaviors, while the functional analysis was utilized solely for high rate behavior.

Thirdly, the relationship between the distribution of behavioral function and diagnosis was analyzed. The diagnoses, Asperger's Syndrome and PDD-NOS were combined to increase the sample size. There were two differences observed. First, children diagnosed with Asperger's or PDD-NOS were less likely to engage in problem behavior maintained by escape or avoidance, when compared to the children diagnosed with autism. However, these results were not found to be statistically significant ($z = 1.23$, $p = .109$). The second difference is that those diagnosed with Asperger's Syndrome or PDD-NOS were more likely to engage in problematic behavior maintained by activity restoration. Again, this difference was not found to be statistically significant ($z = 1.18$, $p = .119$).

Finally, the relationship between the hypothesized function of behavior was analyzed with the actual function of the behavior as determined by the results of the assessments. Results demonstrate that there was a statistically significant higher number of cases in which there was a true positive or true negative result compared with the cases with a false positive or false negative ($z = 9.07$, $p < 0.001$). Likewise, cases identified as false positive were significantly higher than those identified as false negative ($z = 2.76$, $p < 0.05$).

Conclusion:

The results of the study were promising as they suggest that descriptive assessments and functional analyses accurately identify the correct function of problem behavior. This is especially important for descriptive assessments as it shows that such assessment accurately identifies antecedents and consequences of such problematic behavior, thus, makes it easier to find solutions and create interventions for it.

D. Individualizing Functional Analysis to Assess Multiple and Changing Functions of Severe Behavior Problems in Children with Autism

LaBelle and Charlop-Christy (2002) explored multiple and changing functions of problem behavior in three boys aged 9;6 years, 8;6 years and 8;8 years., all diagnosed with autism. Natural environment observations were conducted to gather pre-experimental data, and continued with the traditional analogue functional analysis across 5 different conditions (attention, escape, play, alone, and tangible). The researchers also conducted an experimental condition in which they assessed within-session changing functions. This was utilized to determine if the function of the behavior changed rapidly in a single session.

Methodology:

The research design utilized for this study was the multi-element experimental design. The children were exposed to pre-experimental, naturalistic observation condition and five to six experimental conditions (attention, tangible, escape, changing contingencies conditions, alone, and play conditions). In all conditions, their identified problem behaviors were observed. For two of the boys, the specific problem behavior was disruptive behavior. The other boy engaged in inappropriate vocalizations. Their problem behaviors were measured in the percentage of intervals by which they occurred.

Outcomes/Results:

For all three participants, results from the pre-experimental condition demonstrated possibly multiple functions for problem behavior. Experimental conditions confirmed this, as many of the conditions showed similar levels of problem behavior as well as moderate variability. However, conditions in which functions of behavior were identified in the analogue functional analysis demonstrated different rates of behavior compared to naturalistic observation.

Conclusion:

The results of the study suggest that mere naturalistic observation may suffice at identifying correct functions of behavior. Incorporating functional analysis correctly and completely identifies correct functions of problem behavior. However, determining rapid changes in function within a session is only evident within session changing contin-



gencies condition. This finding demonstrates how multiple functions can change quickly and that interventions must be designed to appropriately address these multiple functional contingencies.

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Interventions for SIB

A. Functional Analysis and Intervention to Reduce Self-Injurious and Agitated Behavior When Removing Protective Equipment for Brief Time Periods

Individuals who display self-injurious behavior (SIB) often need to wear protective equipment to protect themselves from injury. This equipment is often restricting and uncomfortable and when it is removed even for brief periods, the self-injurious behavior often increases, as well as the risks for harm. O'Reilly, Murray, Lancioni, Sigafoos & Lacey (2003) attempted to identify a specific function of the absence of the target behavior, in order to design an effective treatment for the SIB. The subject for this study is a 27-year old male with Down Syndrome who engaged in self-injurious behavior from the age of three and has since that time worn mechanical restraints.

Methodology:

This study used the multi-element treatment design and required three specific studies. The first study incorporated a general functional analysis of social consequences across the conditions of attention, task, alone, and play. The behavior to be observed was the participant's head hitting behavior, which is defined as striking the helmet with one or both extended arms. Based on the results of the first functional analysis, possible sensory functions in a sensory functional analysis were probed. They then tested this to determine if the consequence could increase an appropriate behavior. The results of these assessments led to an intervention developed to non-contingently deliver vibrating stimuli with or without sound as a means of decreasing self-injurious behavior upon removal of protective equipment.

The second study used a withdrawal design with the functional analysis of sensory consequences found from the first phase of the study. The functional analysis was done across the following conditions: continuous attention, vibration and sound, sound, vibration, control toys, and alone. Apart from this, the variable of contingent stimulation was introduced for phase two. The behavior to be observed for this second study was the participant's placing of toys independently in a toy box.

The third study used an alternating treatments design using a non-contingent delivery of vibration or vibration with sound.

The behavior to be observed was the head hitting behavior of the participant and his agitated behavior, defined as crying or grimacing (bearing teeth and closing eyes).

Outcomes/Results:

Results of the first functional analysis on social consequences demonstrated that head hitting was highest in the alone condition ($M = 52.72\%$) and in the attention condition ($M = 43\%$). The target behavior was lowest in the play condition ($M = 13\%$). This led to the second functional analysis, as the authors hypothesized that some form of stimulation received in the play condition, may compete with the consequences of head hitting behavior.

The results of the functional analysis on sensory consequences showed the lowest rates of head hitting in the vibration ($M = 7\%$) and vibration with sound ($M = 12\%$) conditions. In the contingent stimulation phase, contingent stimulation produced higher frequency of independently placing toys in a toy box, compared to baseline levels.

The third study applied the non-contingent delivery of the vibration or vibration with sound in an attempt to reduce SIB and agitated behavior. This study recorded the target behavior across the continuous attention condition and the vibration with or without sound condition. Head hitting and agitated behavior levels remained high in the continuous attention condition, and decreased in the vibrating stimuli condition. During the replication phase, only the vibrating stimuli condition was present, and target behaviors remained low. During the follow up phase, maintenance probes demonstrated continued decrease of both target behaviors to near zero.

Conclusion:

The results of the study indicate that the interventions of play, an engaging activity, and the use of sensory stimulation like vibration and sound may be effective in reducing SIB, as these interventions have more appeal to the participant than being idle and alone, triggering his SIB perhaps due to lack of stimulation.



B. A Review of Behavioral Treatment for Self-Injurious Behaviors in Individuals with Autism Spectrum Disorders

Matson and LoVullo (2008) reviewed 35 articles representing behavioral treatments for SIB in persons with Intellectual Disabilities (ID) and Autism Spectrum Disorder (ASD). The purpose of this comprehensive literature review was to provide an overview of trends in treatments of SIB in persons with ASD and to provide insights into future considerations for treatment methods. The cases reviewed were seventeen articles representing behavioral treatment for SIB in persons with Intellectual Disabilities, and eighteen articles representing behavioral treatment for SIB in individuals with Autism Spectrum Disorder.

From the study, literature indicates that the history of SIB spans many decades. Early research in the 1970's targeted SIB in persons with Intellectual Disabilities, and rarely specific to ASD. Since the nineteen eighties research focusing on SIB specific to ASD gained more coverage. The authors of this current study proposed that researchers may not address SIB singly in ASD compared to persons with ID as there is much perplexity with ASD, and research covers many different aspects of this disorder. With ID alone, SIB is a central topic to this field of study. Research in ASD tends to be focused on young children and specific outcome variables including IQ, adaptive behaviors, and communication skills.

The literature reviewed showed a wide range of behavior topographies for SIB. Authors found that 82.5% of the participants with ASD exhibiting SIB had profound or severe ID. They also found that many participants who displayed SIB also had extensive communication deficits. The authors suggest that this finding may need to be considered, as treatment for SIB tends to often include communication training, which they suggest may not be necessary unless the replacement behavior competes effectively with the problem behavior.

The authors found that differential reinforcement did not appear to be an effective strategy with the high rate SIB, and also found that most individuals who engaged in SIB were unable to self monitor their behavior. The use of positive interventions appears to be on the increase while aversive procedures appear to be declining in the literature. It appears that the more serious risk of injury and harm, the more likely the intervention may include an aversive

approach. In terms of pharmacotherapy, it was found that drugs such as Risperidone are being utilized as part of treatment packages.

Conclusion:

From the comprehensive literature review, Matson and LoVullo (2008) realized that as positive interventions are increasingly being used and aversive procedures are being decreased, there may be a premature notion to not consider punishment as an effective technique. They identified a gap in research that ascertained alternative treatments that are gaining popularity are as scientifically proven as punishment, and as effective treatment methods of reducing SIB. The authors are also concerned about the high incidents of pharmacological interventions proposed, that treatment should first exhaust positive methods before turning to more aversive methods and to use pharmacotherapy as a last resort. Another gap in research is the involvement of significant caregivers as the primary goal in treatment. It is recommended that the gaps found in the comprehensive literature review be filled with further studies on the aforementioned areas in order to gain more knowledge to help individuals with SIB in a variety of conditions and circumstances.

C. The Effects of Non-Contingent Self-Restraint on Self-Injury

Marzullo Kerth, Progar, and Morales (2009) explored the relationship between self restraint and self-injurious behavior (SIB). The authors reported findings that between 10% and 50% of individuals who engage in SIB also engage in self-restraint. The study analyzed the behavior of one participant, a 16-year old boy diagnosed with autism, intermittent explosive behavior, and intellectual disabilities. His behaviors were used to identify if there is a relationship between self-restraint and self-injurious behavior (SIB).

For this study, self-injurious behavior (SIB) was defined as using any part of the body to hit another part of the body, using any part of the body to hit a surface, biting self, and kicking self. On the other hand, self restraint was also defined as interlocking fingers with other people's fingers, interlocking hands or arms around himself or others, placing hands or arms under or behind another person or self while seated, wrapping or twisting any ropelike material around arms, wrists, or hands, pulling the back of his shirt over his head, pulling the shirt collar around his face, pulling his arms into his sleeves, and keeping his arms under his shirt in an effort



to control any risky behavior that may harm self or others.

Methodology:

This study used a multi-element design. To study the relationship between SIB and self restraint, functional analysis was conducted across the conditions of attention, tangible, social attention, demand, toy play, and alone conditions. The participant's self-restraint evaluation of his hooded sweatshirt and no hooded sweatshirt phase were analyzed in an ABAB reversal design that was also used as a tool for this study.

Outcomes/Results:

The functional analysis revealed that the tangible condition produced the highest frequency of target behavior ($M = 2$ per minute) suggesting that self-injury was maintained primarily by access to tangible items. A second functional analysis was conducted and results were similar with the tangible condition producing the highest rates of target behavior ($M = 5$ per minute).

The authors then implemented several interventions (Functional communication training, extinction, differential reinforcement of alternative behavior, and combinations of these) based on the results of the functional analyses, but none of these interventions produced a significant decrease in the target behavior.

The self restraint evaluation session showed an increase in SIB and self-restraint during the no access to hooded sweatshirt phase, and a decrease in SIB and self-restraint with access to hooded sweatshirt phase (non-contingent access to self restraint). Self restraint was recorded at zero during the access to hooded sweatshirt phase. SIB maintained relatively high rates of behavior in the access to hooded sweatshirt phase. However, the observed frequencies were less compared to no access to hooded sweatshirt phase, $M = 13$, 17 per minute and $M = 7$, 5 per minute, respectively.

Conclusion:

The results suggest an idiosyncratic relationship between self restraint and self injurious behavior. More research needs to be dedicated to this issue and more interventions need to be tested in order to reduce, if not extinguish the condition as SIB can be dangerous to any individual, as well as self-restraint if it is extreme enough to cause damage to the individual.

D. What Factors are Related to a Negative Outcome of Self-injurious Behavior During Childhood Pervasive Developmental Disorder?

Baghdadli, Picot, Pry, Michelon, Burzstejn, Lazartigues, & Aussilloux (2008) conducted a longitudinal study to predict the risk factors associated with self-injurious behavior (SIB). Problem behavior, particularly SIB may be detrimental to learning social skills, developing social relationships, and may pose problems for classroom management. Although a large body of research exists for SIB in persons with intellectual disabilities, there is relatively little data on SIB specific to persons with Pervasive Developmental Disorders (PDD). The research presented in this study identified changes in SIB over time and determined variables predictive of a negative outcome of SIB in 222 young children aged 2 to 7 years at the beginning of the study and ages 5 to 10 at the second follow up. To be eligible for this study, children were required to have a diagnosis of PDD, 7 years-old or younger at the beginning of the study, and had obtained written parental consent.

Methodology:

This longitudinal study used an experimental design to observe the presence or absence of self-injurious behavior (SIB). The variables of age, gender, parents' social class, medical history (epilepsy, prenatal conditions, genetic or congenital malformations), Childhood Autism Rating Scales (CARS), psychological testing, number of hours per week of therapeutic programming, and speech levels were all considered in the experiment.

Participants were divided into two groups: positive outcome and negative outcome. The positive outcome referred to participants who had either never displayed SIB or the SIB disappeared at follow up; 123 participants met this category. The negative outcome referred to participants who either displayed SIB during both assessments or new SIB emerged at follow up; 62 participants met this category. A univariate analysis was completed to ensure that both groups did not differ significantly at baseline levels.

Outcomes/Results:

A multivariate analysis was completed to determine the predictive values of the dependent variables as risk factors of SIB.



Only two variables were found to be statistically significant in predicting SIB: lower speech levels (< 5 words), $p < .05$ and greater autism severity (as determined by CARS scores), $p < .001$.

Conclusion:

The results suggest an idiosyncratic relationship between self restraint and self injurious behavior. More research needs to be dedicated to this issue and more interventions need to be tested in order to reduce, if not extinguish the condition as SIB can be dangerous to any individual, as well as self-restraint if it is extreme enough to cause damage to the individual.

Conclusion and Recommendation:

Regular assessments may be necessary to identify children with higher risk for SIB to develop skills to prevent SIB in the future. The authors proposed that communication training may be a key factor in treatment interventions for children at risk for SIB.

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