Intellectual Disability and Aggression: A Literature Review of Best Practices

By

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ABSTRACT

The needs of individuals with intellectual disability (ID), especially those with aggressive behavior, present a growing health concern. Finding the most effective practices for individuals with ID is important for clients, families, and stakeholders alike. Previous research (Royston et al., 2023) on the topic has reviewed what general mechanisms contribute to effective interventions for this population. Examples of such mechanisms include those who work with the client, relationships in the treatment team, and facilitating factors at a systems level (among others). This study sought to expand on previous research by examining specific best practices when delivering interventions to individuals with ID and aggression. This review found that most of the non-pharmacological interventions in the articles had at least some benefits with small to moderate effect sizes in reducing aggression. Interventions were more effective when they included the manipulation of antecedents. This study provides a list of effective interventions for professionals to consider using with the ID population and highlights several key elements of best-practices in service delivery such as meaningful activities, relationships, and in-depth personalization of interventions. Several barriers to research synthesis among different articles were also noted. For example, articles provided varying operational definitions of aggression, were more specific than others when describing interventions, and often did not include social validity measures. Future research should focus on more consistent operational deficits, become more conceptually systematic, and evaluate social validity of services with stakeholders.

Keywords: aggression, antecedents, best practices, personalization, intellectual disability, intervention

Table of Contents

Intellectual Disability and Aggression: A Literature Review of Best Practices

Approximately 1% of the general population has an intellectual disability (Groves et al., 2020). The Center for Disease Control (CDC) approximates that 6.5 million people in the United States have an intellectual disability, a relatively high number (1.9%) for a developed country. Research suggests that about one-fourth of persons with intellectual disability have problems with dysregulation and have outwardly challenging behaviors (Royston et al.,2023). Recent research has indicated that approximately 10% of those with intellectual disability display aggressive behaviors (Groves et al., 2020, Royston et al., 2023), while Hackett and colleagues (2020) reported that 18% of individuals with intellectual disabilities display challenging behaviors. Bruinsma and colleagues (2020) described that these behaviors reduce the quality of life for the individual and those that care for them and can lead to social isolation and institutionalization. These authors also reported that caregivers can face both physical and verbal abuse, and reported feelings of anxiety, fear, anger, and emotional exhaustion. Individuals with intellectual disabilities that display aggressive and challenging behaviors have needed effective treatment for some time. Regardless if individuals are receiving services based in applied behavioral analysis (ABA) or other services, children and adults who are intellectually disabled have the right to receive services that utilize research-based best practices. Best practices involve honest effort from professionals utilizing their education and experience to get to know the individuals they serve and find the most effective methods to help them better understand and express themselves. Reducing aggressive behaviors in these individuals can improve their quality of life, as well as those who care for them (Prior et al., 2023).

Intellectual Disability and Aggression: Defining Behaviors and Their Impact

Royston and colleagues (2023) define aggressive challenging behavior as any non-verbal,

verbal, or physical behavior perceived to be threatening or that causes harm to others or property. Many definitions also include self-injury as an aspect of aggressive or challenging behavior. Challenging behaviors are described as behaviors that present difficulties to the individuals themselves, caregivers, and education and health-care services such as self-injurious behaviors, destruction of property, and aggression (Groves et al., 2023). Bruinsma and Colleagues (2020) describe challenging behaviors including physical aggression, self-injury, disruptive and socially inappropriate behaviors, Treatment for behaviors like aggression is important for the safety of clients, families, and caregivers. Other authors have also reported that outward aggressive behaviors reduce the quality of life for the individuals and those impacted by the behavior and can lead to social exclusion and sometimes even inpatient psychiatric admissions (Prior et al., 2023).Previous research indicates that about 33% of those with intellectual disabilities present emotional dysregulation and challenging behaviors (Bruinsma et al., 2020) with about 10% displaying “clinically significant” aggression (Royston et al., 2023).

Review of Best Practices: Non-Pharmacological Interventions

The National Institute for Health and Care Excellence (NICE) suggests that non-pharmacological interventions should be the first interventions utilized to address aggressive behaviors in the intellectually disabled population. There is flexibility in the development of non-pharmacological interventions that allows professionals the opportunity to manipulate different aspects of the intervention to best suit the needs, preferences, and abilities of the individual it is intended for. Clients' right to individualized treatment for mental and behavioral health is written into numerous ethics codes, as well as in state and federal law. This is a fundamental aspect of best practices in service delivery. Many types of interventions are gaining traction and support in research as effective interventions for treating aggression in individuals with ID, such as Art and

Music therapy, Narrative therapy, Soles of the Feet Meditation and other mindfulness-based interventions, Multi-Modal Interventions, Microswitch Technology, Cognitive Behavioral Therapy, and others mentioned later in this review. Beyond this, there are other important mechanisms that should be included when developing interventions and providing treatment to these individuals.

Behavioral Interventions

Although individualized treatment is important, there are general goals that tend to be focused on among individuals with intellectual disabilities and aggression who receive treatment. Interventions based on applied behavior analysis (ABA), sometimes referred to as *behavior modification,* are commonly used with individuals with neurodevelopmental disorders like ID and autism spectrum disorder (ASD). ABA is, in essence, the application of principles of learning and operant conditioning to issues of social importance such as treatment of individuals with ID or other health conditions. ABA is considered the standard in treating individuals with ASD, but more research is needed in support of its treatment effects for other developmental disabilities (Alarifi et al., 2024). Reinforcement, extinction, chaining, individualized treatment planning, functional assessment of problem behavior, and data-based decision making are all hallmarks of ABA that are incorporated into treatment of ID. *Functional assessment of problem behavior* refers to a systematic approach to identifying the specific consequences that maintain a behavior (which in this review is aggressive behavior) in the environment. For example, if data indicates the most common antecedent to aggression is presenting a client with task demands and the most common consequence is removal of that demand, the likely function the aggression services is to terminate non-preferred demands.

Common ABA interventions that include utilize functional assessments typically will use

functional communication training and differential reinforcement and address the goals of improving functional communication and adaptive skills (Groves et al., 2023). An example of differential reinforcement for screaming behavior maintained by attention from other people might consist of teaching an individual to tap somebody on the shoulder to gain their attention rather than screaming, hitting, or throwing an object (which would be placed on extinction). Next, an alternative more appropriate form of communication (such as using the appropriate word, sign language, or picture from a choice board) could be taught to the exclusion of aggressive behavior. If an individual was sensitive to loud noises and subsequently became aggressive, a therapeutic intervention might include teaching the individual how to ask to be removed from the area as opposed to engaging in aggressive behavior. Other common interventions delivered to individuals with intellectual disabilities deal with functional communication training (FCT), differential reinforcement, and discrete trial training (DTT) but it is imperative to personalize these interventions in a detailed manner and establish rapport with clients and caregivers to maximize benefits (Prior et al., 2023, Royston et al., 2023).

For individuals with mild to moderate intellectual disabilities, other interventions might include teaching individuals to identify or understand triggers for aggression, teach what are appropriate and inappropriate responses to anger, and develop new skills or replacement behaviors to replace undesirable responses to anger. Being able to understand the most appropriate mediums of communication between those providing and those receiving services is critically important. For all individuals with intellectual disabilities service providers should be able to deliver meaningful activities that help meet the sensory and social needs of the individual in an activity that is enjoyable for them. This helps greatly with developing rapport and an effective therapeutic relationship (O'Regan et al., 2024). This can include things like recruiting

peers for board games or card games, scripting the individual's favorite shows with them, or throwing a ball back and forth. Such activities can appropriately stimulate individuals, reduce boredom, and improve quality of life by making treatment more enjoyable, while potentially reducing aggressive behaviors caused by boredom and unmet needs (Royston et al., 2023).

Personalized Treatment

Regardless of the type of treatment (i.e., ABA) used, personalized or individualized treatment is critical for success. Personalizing treatment includes much more than including individual's preferences in program materials; like including visuals from their favorite shows or their favorite songs, but that is an important part of it. Personalizing treatment can lead to increased engagement and satisfaction, both of which help to reduce aggressive behaviors and make the individual more receptive to treatment (O'Regan et al., 2024, Royston et al., 2023). Beyond preference-based intervention content, service providers should consider session order, the pace of the session, the duration of interventions, and the delivery format. Family members, caretakers, and the individuals themselves can help you understand their preferences such as favorite cartoons, characters, objects such as cars or trains, celebrities, sports, games, and other preferences associated with desired leisure activities. Identifying circumstances that could contribute to aggressive behavior such as poor sleep, changes in diet, or medical concerns and may allow service providers to make changes throughout the day that could allow the individual to be more successful.

Delivery Format

When considering delivery format, an individual may benefit from using a device to express their choices rather than pointing to a choice board. An individual that utilizes a choice board may be able to use it more accurately if there is Velcro rather than just pointing if they

struggle with coordination. If an individual can express their wants, needs, and choices more accurately, this can reduce aggressive behaviors. Intervention duration is important to consider, some individuals may need to do interventions daily, even after a long duration, or they may quickly lose the skills they've learned (Royston et al., 2023). Contrarily, some individuals may develop and maintain new skills, and continuing the intervention daily may not be the best use of treatment time at that point.

Current research suggests that these idiosyncratic considerations when developing interventions can be more important than the interventions themselves (Royston et al.,2023). There is a consensus in the reviewed literature that interventions that improve functional communication, improve self-awareness, and manipulate antecedents are most effective at reducing aggression in individuals with intellectual disabilities. This often includes teaching appropriate behaviors, prompting hierarchies, and utilizing differential reinforcement. When interventions are individualized to such an extent, they are bound to have a more sizeable effect than those that don't align with individual's needs, preferences, and abilities. This is an issue professionals can run in to when they must serve many individuals with many needs and attempt to deploy "copy and paste" interventions that save time but are ultimately ineffective.

Current Research on Best Practices

Groves and colleagues (2023) completed a review of the literature on treatment of aggressive behavior exhibited by individuals with ID. In their review, they identified 3 "overarching domains" that encompassed their findings. These were working with the person displaying aggressive challenging behavior, relationships, and team focused approaches, and sustaining and embedding facilitating factors at team and systems levels for those working in this population. Their findings are reviewed below. Royston and colleagues (2023) identified

emotional regulation training, sensory based approaches, and the inclusion of meaningful activities as key components of complex interventions that can support the reduction of aggression, improved relationships, and improved quality of life.

Best Practices: Moderating Variables and Antecedents

Groves and colleagues (2023) also urged professionals to not overlook addressing moderating variables that affect intervention success, such as underlying medical conditions, pain, and poor sleep. NICE suggested that preventative interventions should be utilized on individuals who have emergent and persistent aggressive and challenging behaviors, addressing pain, poor sleep, low mood, or other factors that could potentially contribute to or maintain these behaviors. (Groves et al., 2023). These could be setting events for aggressive behaviors. Considering these variables and the broad range of behaviors that may be described as aggressive or challenging behaviors, the true effectiveness of interventions is hard to magnify. Preventative interventions should be explored and delivered to individuals that frequently display aggressive behaviors. This can include monitoring sleep patterns and modifying settings to prevent or reduce bodily injury (Groves et al., 2023). If professionals attempt to explore and address these potential variables contributing to poor treatment outcomes, their treatment may begin to have better results. A potentially successful intervention put in place in a clinical setting may never yield results if the individual receiving services is not sleeping much in the home setting.

Level of Intellectual Delay

The level of intellectual disability is relevant as several studies have found that IQ is negatively correlated with irritability, and that irritability may have more to do with cognition than it does mood. Those with lower IQ's may struggle more with communication and adaptive skills, and, therefore, may run into frustrating situations more frequently (Bruinsma et al., 2024).

Understanding how differences in intellectual functioning can help service providers focus on the right things, such as reducing irritability by considering antecedents and teaching emotional regulation in a way that is appropriate for the learner. Further, the intellectual ability of individuals is related to individuals' ability to recognize and regulate their own emotions (Groves et al., 2023, Jabbari Daneshvar et al., 2022). For some, this may even include creating an appropriate environment that provides comfort to the individual by manipulating the environmental stimuli like light, noise, and textures. Those with milder intellectual disabilities could be frustrated by a lack of autonomy in their routines which can leave them feeling overstimulated, under-stimulated, or stressed. These individuals may benefit from antecedent manipulation strategies that promote relaxation or increased opportunities to exercise their autonomy (Hackett et al., 2020, Royston et al.,2023). Some individuals with intellectual disabilities may be triggered to engage in aggressive behaviors when dealing with excessive verbal interactions. Thus, reducing excessive verbal interactions and verbal instruction could improve interventions effectiveness and treatment outcomes (Hackett et al., 2020). Controlling this can help reduce aggressive behaviors and create an environment where more learning is possible.

Best Practices: Service Delivery and Relationships

A goal and standard of any service provider should be to facilitate a therapeutic and healthy relationship between the staff providing services and the individual receiving them. Developing this relationship is important and can help the individual feel both respected and understood (Royston et al., 2023). This is vital for promoting engagement from the individual and positive treatment outcomes (Visser et al., 2021). As discussed earlier, an important intervention that can promote the development of such a relationship is engagement in

meaningful activities. Hackett and Colleagues (2020) utilized an intervention that had individuals engage in art activities during psychotherapy, which subsequently led to reduced aggression and healthier interactions between therapists and the individuals they serve. Without an established therapeutic relationship, treatment will not be nearly as effective or enjoyable. Making time during treatment to pair, or bond, can help with this and is certainly worth the time. Care provided should always be respectful, ethical, and involved. Some things that can hurt a relationship are talking to a client like they are a toddler or child or meeting their aggression with an aggressive demeanor. Some professionals may find it challenging to remain positive or neutral if they are hit, pinched, kicked, but maintaining composure and professionalism is necessary to preserve a therapeutic relationship and avoid ethical concerns.

Visser and colleagues (2022) saw the use of non-violent resistance led to reduced incidents of aggression between staff and patients in 3 different facilities, which led to improved relationships and healthy communication. This was accomplished by removing physical restraint protocols and employing non-violent resistance. A therapeutic relationship can help those receiving services get the most out of those services and have benefits like improved functional communication Improved communication skills can also help improve the relationship between the individual and their family members, caretakers, etc. Beyond this, things like parent training can help teach parents or other family members to better communicate with and understand the person in their care. This can lead to reduced misunderstandings and conflicts, improved relationships, and reduced aggression (Royston et al., 2023). Additionally, family members may be able to understand triggers, functions of behaviors, and become more efficient in their response to behaviors. This level of improved understanding can also generate increased empathy and acceptance. If the individual has paid careers outside of treatment, this should apply

to them as well.

Finally, Royston and colleagues (2023) suggest that a healthy and trusting relationship between the service providers and the family can greatly improve service outcomes. Without this collaboration, progress can be significantly minimized. Developing this relationship involves providing the family with sufficient and honest information about the person's treatment progress, reflecting on common goals and values and shared responsibilities. It's important that the family believes the service provider has genuine care and concern for the individual's well-being. This trusting relationship will help promote the best potential outcomes and promote attendance and treatment adherence.

Statement of the Problem

While the research of Groves and colleagues (2023) was important, information on the specific non-pharmacological interventions that are helpful for those with ID and aggression is also important. These, in turn, could be used within a larger framework like that described by Groves and colleagues (2023). Research has shown many non-pharmacological interventions can be effective at treating aggression in individuals with intellectual disabilities. A lack of understanding the specific interventions can contribute to ineffective interventions and misunderstanding the function of the individual's behaviors. Thus, this review's purpose was to include an up to date understanding of key elements of best practices in treatment for individuals with intellectual disabilities that engage in aggressive behaviors.

Method

Search Parameters and Inclusion Criteria

All articles were searched for on Google Scholar using different combinations of the following keywords included in the title of the article: intellectual, disability, disabilities,

aggression, non-pharmacological, challenging. Due to the sheer number of articles generated on Google Scholar, strict parameters for searching were used. Articles had to have been published in 2020 or later, written in English, and contained research examining effectiveness of a non-pharmacological interventions that was specifically aimed at reducing aggression in individuals with intellectual disabilities. Articles were excluded if they focused on employee training, research unrelated to reducing aggression and improving treatment outcomes, including examining factors associated with aggression (triggers, trauma and abuse). Articles were excluded if they did not include individuals with intellectual disabilities. Articles were also excluded if full-text versions were unavailable without purchase. Articles were excluded if they were based upon physiological interventions that required specific medical equipment such as brain stimulation, contingent electrical stimulation, or electroconvulsive therapy.

Article Screening

After using the key words and time frame to select articles, the researcher read through the full text (excluded if full text was not available) of each article to determine if it should be included in this literature review. If an article included pharmacological interventions but also included non-pharmacological interventions that were entirely absent of pharmacological interventions, they were not excluded, but only relevant information and results regarding non-pharmacological interventions were considered for inclusion in this review. Articles were excluded if they could not produce effect data in results due to dropout or lack of posttest. Articles that focused on populations other than those diagnosed with intellectual disabilities, such as individuals solely diagnosed with autism, were not included. However, articles including populations with more than one diagnosis were included if intellectual disability was one of the diagnoses (i.e., autism with intellectual disability). Finally, the articles had to address

interventions for treating, reducing, or replacing aggressive behaviors. Some articles examined how often certain interventions are used but included no measures of their effectiveness. Some articles referred to such behaviors as challenging behaviors, behavior problems, and some looked at self-injurious behaviors solely. Articles that were included contained one or a combination of self-injurious behavior, outwardly aggressive behaviors, and property destruction. Some of these articles included measures of irritability but were excluded if they did not mention any of the listed behaviors.

Article Characteristics

Once it was determined that an article met inclusion criteria, the researcher reviewed the articles and coded them based on three key characteristics. These characteristics include the specific intervention(s) for reducing aggression, specific aspects of service delivery, and any author-reported moderating variables that impacted the effectiveness of interventions. Several articles included were systematic reviews synthesizing findings from numerous sources of previous research.

Results

Initially, 187 articles met all criteria, all obtained using Google Scholar using different combinations of keywords (see table 1). A total of 90 articles were found searching for keywords “intellectual”, “disabilities”, and “challenging”. A total of 67 articles were found searching for keywords “intellectual”, “disability”, and “challenging”. A total of 11 articles were found searching for keywords “intellectual”, “disabilities”, and “aggression”. A total of 11 articles were found searching for keywords “intellectual”, “disability”, and “aggression”. A total of 6 articles were found searching for keywords “intellectual”, “disabilities”, and “non-pharmacological”. A total of 2 articles were found searching for keywords “intellectual”, “disability”, and “non-

pharmacological".

Initially, 168 of these 187 articles were excluded during screening due to various reasons stated above. This left 19 articles that appeared to meet the criteria for this review. After close review of the full text versions of the 19 articles were examined, 6 more were excluded. These 6 were generally excluded because they described the results of interventions that did not align with the stated purpose of this review (e.g. pharmacotherapy, specific training such as social problem-solving skills), did not describe an outcome measure on challenging or aggressive behavior, or did not target people with intellectual disabilities. This left 13 articles that were included in the final review.

Three articles were published in 2020, 2 in 2021, 2 in 2022, 3 in 2023, and 3 in 2024. One article was a quasi-experimental stepped-wedge design, 2 articles were quasi-experimental pretest-posttest designs, 4 articles were systematic reviews, 1 article was a randomized controlled feasibility study and another was described simply as a feasibility study, 1 article was an ABCBC multiple treatments design, 1 article was a non-randomized controlled trial, 1 article was a meta-analysis, and 1 article was described as a "rapid realist review". Table 3 summarizes each article and the type of research. Participants across the 13 studies included ranged in age from 1 to 84 years (see Table 4).

Effect Sizes

Art psychotherapy, which combined some elements of best practices such as meaningful activities and antecedent manipulation, was shown to have a moderate effect size (.65) in reducing aggression compared to a control group (Hackett et al., 2020). Another study found an even larger effect size for reducing aggression utilizing non-violent resistance. This article saw incidents of aggression reduce similarly when aggression was high at baseline and when

aggression was relatively low at baseline and reported a large effect size (.80) (Visser et al., 2021). A case study comparing the effects of FCT and most-to-least (MTL) prompting found that both FCT and MTL reduced problem behaviors significantly. In baseline problem behavior occurred in 42% of 10 second intervals, dropping to 15% for FCT during second intervention phase and 1% for MTL during second intervention phase (Axe at al., 2022).

Prior and colleagues (2023) measured the effects of several anger management interventions in reducing outwardly aggressive behaviors in individuals with intellectual disabilities using mean difference (MD). While no interventions in this review yielded significant effects long term, results of this systematic review found that there was moderate-certainty evidence that anger management may reduce the severity of aggressive behavior post-treatment (MD −3.50, 95% CI −6.21 to −0.79; P = 0.01; 1 study, 158 participants) and also moderate-certainty evidence that positive behavior supports (PBS) may reduce aggressive behavior post-treatment (MD −7.78, 95% CI −15.23 to −0.32; P = 0.04, I^2 = 0%; 2 studies, 275 participants).

Groves and colleagues (2023) completed a review of 42 studies and examined effect size (Cohens d) to evaluate intervention effectiveness. The authors found small effect sizes for all interventions including CBT, Positive Behavior Support, Career Training, Parent Training on ABA Approaches, Mindfulness and Relaxation Based Interventions, Dialectical Behavioral Therapy. An additional finding was that interventions intended to reduce problem behavior had a SMD (–0·548, 95% CI –0·737 to –0·359, τ^2=0·197) than interventions that were intended to prevent problem behavior (SMD –0·193, 95% CI –0·444 to 0·057, τ^2=0·177) All other statistical analyses were not significant (Groves et al., 2023). A similar study shows larger overall effect size (d = 0.573, 95% CI [0.352–0.795]) for non-pharmacological interventions both short-term

and long-term, and sub-group analysis discovered that combining behavioral interventions with mindfulness techniques led to the greatest outcomes compared to other interventions by themselves (Bruinsma et al., 2020).

A study by Jabbari Daneshvar and colleagues (2022) calculated effect size using eta squared to assess the amount of variance of the dependent variable that can be explained by one or more independent variables. In this study, narrative therapy had a significantly higher effect (0.69) than cognitive behavioral play therapy (0.35), although both had promising results. Alarifi and colleagues (2024) saw aggressive behavior rates fall from baselines to post-intervention in 4 cases, from 95% to 70%, from 95% to 57.5%, from 85% to 67.5%, and from 85% to 55%. Many of the studies included in this systematic review include ABA principles and antecedent based strategies. The types of non-pharmacological interventions included in a systematic review by O'Regan and colleagues (2024) included multi-modal interventions, microswitch technology, cognitive behavioral therapy and art, music and illustrated stories. The effectiveness of these interventions was calculated using different scales and statistical procedures and cannot be directly compared. However, the authors found that all interventions in the study had effects in reducing challenging behaviors. The authors mentioned the importance of the potential effectiveness of fun, engaging interventions that avoid older, more rigid, and restrictive strategies that don't promote improved rapport.

Null Hypothesis Results

Several studies reported statistics utilizing the null hypothesis testing to evaluate interventions. For example, Bruinsma and colleagues (2024) reported a reduction in aggression when positive behavior support (PBS) was used. Results were significant for those who had higher irritability at baseline (p=.02) and those with severe (p=.01) and profound (p=.02) ID.

Prior and colleagues (2023) reported significant results when PBS was used individually (p=.04) and more so when utilizing combined interventions (p=.01) and suggested there is some evidence that combining interventions may have cumulative benefits. Lastly, Mehrafza and colleagues (2021) found that music therapy had statistically significant effects at reducing relationship aggression (p=.01) and reactive verbal aggression (p=.05) in individuals with ID.

Discussion

The effectiveness and variety of interventions for individuals with ID is promising. The results of the current study indicated that several specific interventions were effective, at least to some degree, for reducing aggression with individuals with intellectual delays. Interventions varied and included music therapy, narrative-based therapy, psychotherapies, and traditional behavior-based interventions. The different types of interventions that were shown to be effective across articles is reflective of the need for individualized interventions tailored to the clients' needs. This means that effective treatment involves more than just selecting an appropriate intervention. It means that clinicians need to consider different idiosyncratic needs of each client *when* selecting the appropriate intervention. Professionals may find themselves searching for an intervention based on the specific kind of behavior but have not identified the client-specific foundation on which to base their service delivery. This begins with getting to know the individual and their preferences, as well as their abilities such as cognitive and communication, and discovering what medium or format is most appropriate for delivery.

ABA based interventions are popular and effective in treating those with ID and could become the standard of treatment, as it is with treating individuals with ASD. 6 of the 13 studies discussed the effectiveness of ABA or ABA-based interventions (PBS). These types of interventions may be a good starting point for professionals looking for appropriate interventions

to treat individuals with ID due to their long history of research. Still, clinicians should be aware and focus on the other key elements associated with best practices as they develop a plan for treatment. Some examples of key elements of included being open to combining interventions. In the current review, the most often "package intervention" was a function-based intervention combined with either mindfulness techniques or with antecedent based techniques. Another key element of complex interventions is the inclusion of meaningful activities which allows for the delivery of therapy through meaningful activities (art therapy, music therapy, cognitive behavioral play therapy). There are two aspects to meaningful activities that make them a key element of complex interventions. The first is that they promote increased engagement and enjoyment from the individual receiving services (Hackett et al., 2020, Royston et al., 2023) and the second is that they improve the relationship between the person delivering services and the person receiving services, which promotes improved treatment outcomes (Hackett et al., 2020, O'Regan et al., 2024, Royston et al., 2023).

Impact of Rapport

Another aspect to consider when designing appropriate interventions is the rapport between the individuals delivering and receiving therapy. Developing healthy and trusting relationships among all involved in treatment leads to increased engagement and quality of life (Royston et al., 2023). An equal emphasis should be placed on idiosyncrasy of client needs and the interrelationships of all involved in treatment. This includes the relationship between supervisors or administrators overseeing service delivery personnel. If clinicians fail to consider these key elements of practice, they may find it difficult to effectively reduce aggression in individuals with intellectual disabilities, regardless of the intervention(s). Art psychotherapy and non-violent resistance both promoted improving relationships between individuals with

intellectual disabilities and the professionals that provide their treatment (Hackett et al., 2020, Visser et al., 2021). Improving these relationships helps control potential antecedents for aggression and promote improved treatment outcomes, including more effective intervention delivery. (Visser et al., 2021, Hackett et al., 2020). Beyond the focus on healthy relationships (Royston et al., 2023, Visser et al., 2021, Hackett et al., 2020) and intricately personalized treatment (Groves et al., 2023, Royston et al., 2023), best practices derived from the articles in this review include meaningful activities, antecedent manipulation, and a long list of up-to-date non-pharmacological interventions that have shown to be effective at reducing aggression in individuals with intellectual disabilities. Utilizing all these elements of best practices in service delivery should promote improved treatment outcomes.

Limitations

Very few studies met inclusion criteria as it was intended be considered up to date by reviewing recent research on the topic. Screening questions narrowed results significantly, potentially ruling out some articles that may have been relevant to this research in some way. Very little was considered or discussed regarding the implications of the demographics of populations in this review and often did not include social validity measures. No implications were discussed regarding other demographic factors like socioeconomics. Due to the heterogeneity of the interventions, settings, and participants, this review does not strongly support any one intervention to be implemented with a specific population, but rather speaks to the general effectiveness of available interventions when implemented with fidelity.

Future Directions for Research

Future research should explore the extent to which organizations recognize and utilize the key elements of best practices. To better assess interrelationships, clinicians and researchers

could use or designing rating scales/questionnaires to better identify how those involved in treatment describe their relationships and collaboration, as well as the extent of which professionals know the individuals they treat and develop interventions based on their specific needs. As mentioned earlier, as many interventions as possible in treatment should be delivered in meaningful activities. Comparing these findings with better-defined treatment outcomes would help provide a clearer picture of the importance of specific interventions for reducing aggression within specific populations. Future research should also strive for more consistent operational definitions, becoming more conceptually systematic, and evaluate social validity of services with stakeholders. Additionally, the varying operational definitions of aggression and challenging behaviors needs to be addressed, as some included self-injurious behavior in their descriptions, and some did not. Addressing this issue will improve consistency between studies and improve researchers' ability to synthesize findings.

References

Alarifi, S., Denne, L., Alatifi, N., & Hastings, R. P. (2024). Interventions addressing challenging behaviors in Arab children and adults with intellectual disabilities and/or autism: A systematic review. *Journal of Applied Research in Intellectual Disabilities*, *37*(2), e13205. doi: 10.1111/jar.13205

Axe, J. B., Murphy, C. M., & Heward, W. L. (2022). Functional communication training and most-to-least prompting as treatments for problem behavior. *Clinical Case Studies, 21*(1), 48-60. https://doi.org/10.1177/15346501211030208

Bruinsma, E., van den Hoofdakker, B. J., Hoekstra, P. J., de Kuijper, G. M., & de Bildt, A. A. (2024). Effects of positive behaviour support delivered by direct staff on challenging behaviours and quality of life of adults with intellectual disabilities: A multicentre cluster-controlled trial. *Journal of Applied Research in Intellectual Disabilities*, *37*(1), e13164. https://doi.org/10.1111/jar.13164

Bruinsma, E., Van Den Hoofdakker, B. J., Groenman, A. P., Hoekstra, P. J., De Kuijper, G. M., Klaver, M., & De Bildt, A. A. (2020). Non-pharmacological interventions for Challenging behaviors of adults with intellectual disabilities: A meta-analysis. *Journal of Intellectual Disability Research*, *64*(8), 561-578. https://doi.org/10.1111/jir.12736

Groves, L., Jones, C., Welham, A., Hamilton, A., Liew, A., & Richards, C. (2023). Non-pharmacological and pharmacological interventions for the reduction or prevention of topographies of behaviors that challenge in people with intellectual disabilities: A systematic review and meta-analysis of randomized controlled trials. *The Lancet Psychiatry*, *10*(9), 682-692. https://doi.org/10.1016/S2215-0366(23)00197-9

Hackett, S. S., Zubala, A., Aafjes-van Doorn, K., Chadwick, T., Harrison, T. L., Bourne, J., ... & Kaner, E. (2020). A randomised controlled feasibility study of interpersonal art psychotherapy for the treatment of aggression in people with intellectual disabilities in secure care. *Pilot and Feasibility Studies, 6,* 1-14. https://doi.org/10.1186/s40814-020-00703-0

Jabbari Daneshvar, A., Hosseininasab, S., & Azmoodeh, M. (2022). Comparing the Efficacy of Cognitive-Behavioral Play Therapy and Narrative Therapy on Aggression and Assertiveness of Students with an Educable Intellectual Disability. *Iranian Journal of Learning and Memory*, *5*(17), 13-23. https://dorl.net/dor/20.1001.1.26455447.2022.5.17.2.7

Mehrafza, M., Nakhostin Goldoost, A., & Kiamarsi, A. (2021). The Effectiveness of Music Therapy on Attention and Concentration, Social Adjustment and Aggression of Students with Intellectual Disability. *Family and Health*, *11*(Adolescences), 117-135. http://journals.iau-astara.ac.ir/

O'Regan, O., Doyle, Y., Murray, M., McCarthy, V. J., & Saab, M. M. (2024). Reducing challenging behaviours among children and adolescents with intellectual disabilities in community settings: A systematic review of interventions. *International Journal of Developmental Disabilities, 70*(1), 20-39. https://doi.org/10.1080/20473869.2022.2052416

Prior, D., Win, S., Hassiotis, A., Hall, I., Martiello, M. A., & Ali, A. K. (2023). Behavioral and cognitive-behavioural interventions for outwardly directed aggressive behaviour in people with intellectual disabilities. *Cochrane Database of Systematic Reviews*, (2). https://doi.org/10.1002/14651858.CD003406.pub4

Roberts, J. L., Williams, J., Griffith, G. M., Jones, R. S., Hastings, R. P., Crane, R., ... & Edwards, R. T. (2020). Soles of the feet meditation intervention for people intellectual disability and problems with anger and aggression—A feasibility study. *Mindfulness*, *11*, 2371-2385. https://doi.org/10.1007/s12671-020-01454-y

Royston, R., Naughton, S., Hassiotis, A., Jahoda, A., Ali, A., Chauhan, U., ... & Rapaport, P. (2023). Complex interventions for aggressive challenging behaviour in adults with intellectual disability: A rapid realist review informed by multiple populations. *PLoS ne*, *18*(5), e0285590. https://doi.org/10.1371/journal.pone.0285590

Visser, K. M., Jansen, L. M. C., Popma, A., Vermeiren, R. R. J. M., & Kasius, M. C. (2021, April). Addressing aggression in the residential setting for juveniles with mild intellectual disability through training in non-violent resistance. In Child & Youth Care Forum (Vol. 50, pp. 333-349). https://link.springer.com/article/10.1007/s10566-020-09576-z

Table 1

Articles Found by Search Term Combination

Term(s)	Initial References Found
“intellectual”, “disabilities”, and “challenging”.	90
“intellectual”, “disability”, and “challenging”.	67
“intellectual”, “disabilities”, and “aggression	11
“intellectual”, “disability”, and “aggression”.	11
“intellectual”, “disabilities”, and “non-pharmacological”	6
“intellectual”, “disability”, and “non-pharmacological”	2

Table 2

Types of Articles in Current Review

Citation	Type of Article
Alarifi et al., 2024	Systematic Review
Axe et al., 2022	ABCBC Multiple Treatments Design
Bruinsma et al., 2024	Non-Randomized Controlled Trial
Bruinsma et al., 2020	Meta-Analysis
Groves et al., 2023	Systematic Review
Hackett et al., 2020	Randomized Controlled Feasibility Study
Jabbari Daneshvar et al., 2022	Quasi-Experimental Pre-Posttest Design
Mehrafza et al., 2021	Quasi-Experimental Pre-Posttest Design
O'Regan et al., 2024	Systematic Review
Prior et al., 2023	Systematic Review
Royston et al., 2023	Rapid Realist Review
Roberts et al., 2020	Feasibility Study
Visser et al., 2021	Quasi-Experimental Stepped Wedge Design

Table 3

Screening Questions in the Current Study

Article Screening Questions
1. Does the entire population of the study have an Intellectual Disability?
2. Does this study include non-pharmacological interventions not used along with pharmacological interventions?
3. Does this study include any other elements associated with best practices?
4. Is the study aimed at addressing aggression in individuals with intellectual disabilities?
5. What interventions were used?
6. What was the target of the intervention(s)? Was it to prevent, reduce or treat aggressive or challenging behaviors in individuals with intellectual disabilities?
7. Does the article report results? Are there issues with attrition or posttest?
8. Does the article deal with physiological interventions that require specific medical equipment? (i.e., brain stimulation, contingent electrical stimulation)
9. Is a full text version of the article available to the researcher or Youngstown State University?

Table 4

Age Ranges of Participants for All Research Articles

Citation	Age Range
Alarifi et al.,2024	15-18
Axe et al., 2022	11 years old (1 individual)
Bruinsma et al., 2024	18-73
Bruinsma et al., 2020	11-71 years
Groves et al., 2023	1-84 years
Hackett et al., 2020	18 and older, with an average of 30.6
Jabbari Daneshvar et al., 2022	Primary School Participants, No data provided
Mehrafza et al., 2021	Children in second grade, primary school. No data provided
O'Regan et al., 2024	6-18 years
Prior et al., 2023	No range given, "Children, adolescents, and adults"
Royston et al., 2023	No range given "Both young people and adults."
Roberts et al., 2020	Mean age of 34.8 (n=19)
Visser et al., 2021	3 sites, Mean ages of 24.92, 16.15, and 15.25.

Table 5

Non-Pharmacological Interventions Used in Research Articles

Citation	Type of Intervention(s)
Alarifi et al., 2024	Children were trained individually using modelling, reinforcement, promoting positive behavior, response induction, auditory closure, description, and extinction. Token economies, Differential Reinforcement
Axe et al., 2022	Functional Communication Training, Most-to-Least Prompting\
Bruinsma et al., 2024	Positive Behavior Support (PBS)
Bruinsma et al., 2020	Dialectical Behavior Therapy, Multisensory Therapy
Groves et al., 2023	Manualized Intervention for Parents, Care Staff Interventions (ABA, systemic), Cognitive Behavioral Based Interventions, Relaxation and Mindfulness Based Interventions
Hacket et al., 2020	Art Psychotherapy
Jabbari Daneshvar et al., 2022	Cognitive Behavioral Play Therapy, Narrative Therapy
Mehrafza et al., 2021	Music Therapy
O-Regan et al., 2024	Multi-Modal Interventions, Microswitch Technology, Cognitive Behavioral Therapy, and Art, Music and Illustrated stories.
Prior et al., 2023	CBT, Positive Behavior Support, Career Training, Parent Training on ABA Approaches, Mindfulness and Relaxation Based Interventions, Dialectical Behavioral Therapy
Roberts et al.,2020	Soles of the Feet Meditation Intervention
Royston et al., 2023	CBT Approaches, Mindfulness- Based Approaches, Positive Behavioral Support, Career Skills Training, Dialectical Behavioral Therapy, Multisensory Therapy, Multi-Component Interventions
Visser et al.,2021	Non-Violent Resistance

Table 6

Effect Sizes Report in Research Articles

Citation	Article Type	Effect Size Type	Effect Size Reported
Alarifi et al., 2024	Quantitative Review	Varied	Varied
Axe et al., 2022	Single *N*	PND	26/28 (92.8%)
Bruinsma et al., 2024	Non-Randomized Controlled Trial	P-Value, Null Hypothesis	*p=.02* *p=.01* *p=.02*
Bruinsma et al., 2020	Quantitative Review	Cohen's *d*	*d*=0.573
Groves et al., 2023*	Quantitative Review	Cohen's *d*	*d*=-0.422 *d*=-0.324 *d*=-0.238 *d*=-0.438 *d*=-0.255
Hacket et al., 2020	Feasibility Study	Cohen's *d*	*d*=0.65
Jabbari Daneshvar et al., 2022	Quasi-experimental Pre-Posttest Design	Eta Squared	*eta=0.35* *eta=0.36* *eta=0.69*
Mehrafza et al., 2021	Quasi-experimental Pre-Posttest Design	P-Value, Null Hypothesis	*p <0.05* *p <0.01*
O-Regan et al., 2024	Quantitative Review	Varied	Varied
Prior et al., 2023	Quantitative Review	P-Value, Null Hypothesis	*p=.01* *p=.04*
Roberts et al.,2020	Feasibility Study	Cohen's d	*d=0.44* *d=0.47*
Royston et al., 2023	Quantitative Review	Varied	Varied
Visser et al., 2021	Quasi-Experimental Stepped Wedge Design	Cohen's d	*d=0.80*

PND = Percentage of Nonoverlapping Data

Table 7

Descriptions of Problem Behavior

Citation	Description of Target Behavior
Alarifi et al., 2024	**Aggression** including beating and cursing.
Axe et al., 2022	**Challenging behaviors** including aggression, dropping to the floor, and throwing materials.
Bruinsma et al., 2024	**Challenging behaviors** including physical aggression, self-injury, disruptive and socially inappropriate behaviors.
Bruinsma et al., 2020	**Challenging behaviors** including physical aggression, self-injury, disruptive and socially inappropriate behaviors.
Groves et al., 2023	**Behaviors that challenge** including aggression, self-injury, and property destruction.
Hackett et al., 2020	**Aggression,** both physical and verbal.
Jabbari Daneshvar et al., 2022	**Aggression,** undesirable emotional reactions, behavior problems
Mehrafza et al., 2021	**Aggression,** problem behaviors, aggressive behaviors.
O'Regan et al., 2024	**Challenging behaviors** which include aggression, stereotypy, self-injury and destruction of property
Prior et al., 2023	**Outwardly aggressive behavior** including physical aggression towards others including hitting, kicking, throwing objects, and damage to property.
Roberts et al., 2020	**Challenging Behavior, Aggression,** aggressive behavior towards others or objects
Royston et al., 2023	**Aggressive challenging behavior** that is defined as "any non-verbal, verbal or physical behavior perceived to be threatening or that causes harm to others or property."
Visser et al., 2021	**Aggression** is described as aggressive incidents directed at others or at themselves.

Table 8

Summarized Key Findings Associated with Best-Practices

Citation	Key Findings
Alarifi et al., 2024	Behavioral (ABA based) interventions produced effective results in reducing aggression, many utilizing antecedent based strategies and differential reinforcement.
Axe et al., 2022	Most-to-Least Prompting showed to be more effective than Functional Communication Training at both reducing problem behavior and increasing appropriate responses during learning.
Bruinsma et al., 2024	PBS significantly reduced irritability in individuals with intellectual disabilities, with statistically significant effect found for individuals with high irritability at baseline, and with individuals with severe and profound levels of intellectual disability compared to those with mild to moderate.
Bruinsma et al., 2020	Combining mindfulness with behavioral (ABA) techniques was more effective than using behavioral techniques alone. The use of antecedent manipulation is an effective tool to combine with interventions.
Groves et al., 2023	A broad range of interventions are effective at reducing behaviors that challenge. This review highlights the importance of precision of defining and measuring specific behaviors and the importance of effortful and detailed construction of intervention components. Preventative interventions should be delivered to individuals to address moderating variables such as pain, poor sleep, and low mood. These interventions are often overlooked.
Hackett et al.,2020	Art Psychotherapy effectively reduced aggression in individuals with intellectual disabilities and utilized elements of best practices, focusing on improving relationships and manipulating antecedents (reducing verbal interactions during therapy)
Jabbari Daneshvar et al., 2022	Narrative Therapy was more effective than Cognitive Behavioral Play Therapy at reducing aggression.
Mehrafza et al., 2021	Music Therapy significantly reduced relationship aggression and reactive verbal aggression, but not physical aggression.

Table 8 (continued)

Citation	Key Findings
O'Regan et al., 2024	Found several interventions that include best practices like meaningful activities that promote increased engagement and improved relationships are effective at reducing aggression and avoid historical approaches that can lead to damaged relationships in therapy
Prior et al., 2023	CBT and PBS (based on ABA) may be effective at reducing outwardly directed aggression and evidence that supports combining more than one intervention.
Roberts et al., 2020	Soles of the Feet Meditation Intervention was effective at reducing aggression for individuals with intellectual disabilities and aggression.
Royston et al., 2023	Underlying mechanisms that are key to successful application of interventions were identified as improving understanding, addressing unmet needs, developing positive skills and alternative behaviors, and boosting staff motivation and self-efficacy. This review emphasizes the importance of and extent to which interventions need to be personalized and tailored to suit each individual. Establishing effective communication between service users, professionals, carers, and within staff teams to promote best outcomes and effective service delivery.
Visser et al.,2021	Non-Violent Resistance reduced aggressive incidents between staff and individuals with intellectual disabilities in three different facilities and improved relationships.