The Effects of the Accept-Identify-Move (AIM) Curriculum on Students Externalizing Behaviors and Psychological Flexibility with Social- Emotional and Behavioral Needs: A Small Meta Analysis

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ABSTRACT

The present study examines how implementation of the (Accept-Identify- Move) AIM curriculum affects individuals with social-emotional and behaviors needs by determining its impacts on their externalizing behaviors and psychological flexibility. The AIM curriculum focuses on social-emotional development and is based on theories of mindfulness, Acceptance and Commitment Therapy (ACT) and Applied Behavior Analysis (ABA) (Dixon & Paliliunas, 2018). This study is conducted through a meta-analysis design using both single-subject and aggregate score studies. The study identified 4 articles that met all the inclusion criteria. Large-scale quantitative data indicated moderate gains in mindfulness and psychological flexibility (pooled $g \approx 0.53$) but negligible changes in self-reported conduct and hyperactivity ($g = 0.05–0.11$). In contrast, smaller-scale single-case designs reported medium-to-large reductions in observed disruptive behaviors (Tau-U ≈ 0.50–0.80), particularly when AIM was paired with its reinforcement systems such as token economies. The current investigator concludes that while this meta-analysis is a small sample size, the AIM curriculum is an effective framework for increasing individuals with social-emotional and behavioral needs psychological flexibility scores. However, with inconsistent data supporting reductions in externalizing behavior across the studies, additional research is needed to determine if the Accept-Identify-Move (AIM) curriculum contributes to externalizing behavior reduction.

PREFACE

This dissertation is an original, independent work that investigates the effects of the Accept-Identify-Move (AIM) curriculum on students with social-emotional and behaviors needs and its impact on their externalizing behaviors and psychological flexibility scores.

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DEDICATION

To the remarkable professionals I once worked beside- those who poured their time, skill, and heart into supporting individuals with autism. Despite the challenges, setbacks, and injustices they faced, their unwavering commitment continues to inspire what ethical, compassionate work in this field should embody.

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Chapter 1- Introduction

The Effect of the AIM Curriculum on Students with Social- Emotional and Behavioral Needs

A critical developmental period in an individual's life is their adolescent years. Skinner and Pitzer studied the connection between this age and experiences in school and indicate that adolescents are constructing their identities through their ability to be academically capable, socially integrated with their peers, and committed to their overall transition into adulthood (2016). Barriers arise as individuals at this young age are introduced to negative influences that may reconstruct the way they think, the values they hold, and the goals that they set for themselves following completion of school. A unique challenge is presented when an adolescent has a diagnosis of a disability that affects their social emotional functioning and behavior. The Diagnostic and Statistical Manual of Mental Disorders identify multiple disabilities that are associated with behavioral and social difficulties. These consist of autism, attention deficit hyperactivity disorder, post-traumatic stress disorder, oppositional defiant disorder, anxiety, specific learning disabilities, among others that may not be commonly seen in an adolescent school classroom (DSM–5; American Psychiatric Association, 2013). Given the addition of one of these disabilities, adolescents are more likely to display disruptive behavior that led to decreased behavioral and academic outcomes (Griggs et al., 2016).

Disruptive behaviors are continuously reported by teachers as the highest behavioral concern within school classrooms (Rose & Gallup, 2007). Disruptive behaviors are classified as externalizing behaviors in the form of verbal refusal, hostile, or aggressive behavior with internalizing behavior where students withdraw or avoid classroom activities and teachers (Burgess et al., 2006). When students are engaging in disruptive behaviors their academic

engagement is minimal and put other students at risk for also losing academic instruction leading to underachievement (Narhi at al., 2017). In 2021, 32% of public-school teachers reported that interfering behavior is disrupting their classroom functioning daily. In addition, 87% of public schools report that following the Covid-19 pandemic, social emotional development and behavior were negatively impacted (2021). Teachers are also reporting decreased self-satisfaction with their jobs and feel unprepared to address disruptive behavior in the classroom leading to work-induced stress (Klassen & Chiu, 2010). Schools are beginning to create and implement positive behavior intervention supports to close the academic achievement and behavioral gaps, however, there is need for additional options to address the deficits that are present for students with social emotional and behavioral disabilities.

Research shows that externalizing behavior can be predicted through a variety of factors including age, sex, culture, ethnic race, socio-economic status, and clinical identification of a disability (Pelham et al., 2006). Applied Behavior Analysis offers an objective view and additional explanations of externalizing behavior. Researchers within applied behavior analysis view behavior through a four-term contingency that includes establishing operations, antecedents, behavior, and consequences. The contingency aligns with the identified four functions of behavior that consist of the motivation to gain attention, escape, tangibles, and automatic reinforcement (Skinner, 1957). A study was completed evaluating functions of disruptive behavior in 3 students in the school environment and results showed the behavior was primarily maintained by the motivation to escape from demands and gain attention (Ellis & Magee, 1999). This study was replicated and found similar results when completing functional analyses on three students in a controlled environment and found high levels of escape, attention, and tangible functions of externalizing behavior (et al., 2009). To decrease the externalizing

behaviors, professionals utilize function-based reinforcement to motivate students to engage in expected behaviors.

Nationwide, public schools are beginning to be mandated to include a PBIS (positive behavioral interventions and supports) plans within their school systems. While it is just a framework, this often always includes the universal use of positive reinforcement of expected behaviors in the form of rewards and prize. A study collected data on schools in Oregon using PBIS for consistently for three years and found that 75% of programs had the reward system in place and carried out fully. The data also reported that due to the reward system, a decrease in aggression, defiance, and substance use displayed statistically significant results (Molloy et al., 2013). The "one size fits all approach" however does not work for all students, specifically those who are identified with disabilities. This may require the need for a more individualized approach using a function-based rewards system. This system incorporates contingency management by the reinforcement matching the function of the problem behavior (Dixon & Palilunas, 2018). For example, if a student is engaging in disruptive behavior to remove an academic demand, the instructor may offer for the student to work for a pass to get out of the next academic demand that will be placed at another time. As students move into adolescence the basic reinforcement for expected behavior may lose its' value. To remove this barrier, professionals begin to incorporate the use of interventions that develop the adolescents' goals and values to achieve reinforcement within their lives.

When a student demonstrates the ability to contact reinforcers that align with their values through a behavioral repertoire, they have built they are psychologically flexible. The definition for psychological flexibility is "the ability to contact present moment more fully as a conscious human being, and to change or persist in behavior when doing so serves valued ends." Steven

Hayes presents a model that covers all 6 core processes of acceptance and commitment therapy that measures one's ability to be psychologically flexible. The model is known as the "hexaflex" consisting of acceptance, defusion, self as context, committed action, values, and flexible attention to the present moment (Dixon et al., 2023). The "hexaflex" is used to guide professionals on how to address skills that are taught to those that struggle with emotional and behavioral disorders. Numerous studies examine whether decreases in stress, depression, anxiety, and other mental health concerns and behaviors have a correlation with increased levels of psychological flexibility. A meta-analysis was completed to determine if utilizing interventions aligned with psychological flexibility contributed to positive outcomes in individuals as compared to control conditions. Significant small effects sizes were observed in favoring psychological flexibility components as opposed to control context conditions in all outcomes. 44 studies were included and had all been completed in controlled laboratory-based studies (Levin et al., 2012). Research continues to develop and analyze how having psychological flexibility leads to significant outcomes within a variety of contexts, and how it is achieved using acceptance and commitment therapy interventions.

Acceptance and Commitment Therapy (ACT) is an alternative to cognitive behavior therapies that focuses on the acceptance of individual's struggles rather than avoidance. Within this intervention individuals are also taught resolutions or actions they can take to live with their struggles and work towards valued outcomes (Dixon and Paulilіunas, 2018). ACT is rooted in relational frame theory (RFT), a behavioral analytic concept that states human language and cognition is the ability to learn to relate to events under arbitrary contextual control, in other words, how one relates to the world around them through adjusting their own verbal behavior rather than changing it. Using this theory with previous applied and cognitive behavioral

research, Steven Hayes created ACT and the six core processes that make up the intervention or "hexaflex." As mentioned, these are present moment, acceptance, defusion, self-as-context, committed action, and values. The components require the use of mindfulness practices, contingency management, goal setting, and reinforcement to lead to successful outcomes (2004).

Both applied behavior analysis and Acceptance and Commitment Therapy have proven to show effective behavioral change. This was evident for Mark Dixon, the creator of the AIM (Accept-Identify-Move) curriculum. AIM combines the development of mindful practice, therapeutic reconditioning, and functional behavior management into a curriculum for individuals who have barriers within their social-emotional development. Components of the AIM curriculum have been embedded into a variety of settings for over 10 years and has been making positive changes for students with emotional and behavioral disorders. Dixon published his first study on AIM where he implemented his curriculum in a public school of 318 students where students received AIM daily including the use of mindfulness practices. Pre and post measures were gathered and showed a significant effect in increasing psychological flexibility scores. In addition, researchers gathered pre and post mathematics and English language arts state test scores where a significant effect was also displayed. Using the Strengths and Difficulties Questionnaire (SDQ), levels of emotional symptoms, conduct problems, hyperactivity and inattention, peer relationships, and prosocial behavior were evaluated, and only showed statistical significance within the peer relationships subcategory (Dixon et al., 2021). Because Acceptance and Commitment Therapy and applied behavior analysis practices have shown to address these areas in the past, it is important to conduct more research on the positive outcomes of using these evidence-based practices in correlation. This present study will

accomplish this by conducting a meta-analysis evaluating the effects this curriculum and its components have on students with social-emotional and behavioral needs.

This study aims to evaluate if utilization of the AIM (Accept-Identify-Move) curriculum is effective in reducing externalizing behavior in the classroom and improving psychological flexibility scores for students with social-emotional and behavioral needs. The following research questions for the meta-analysis have been developed:

1. What is the effect of the AIM (Accept-Identify-Move) curriculum?
2. What is the effect of the AIM (Accept-Identify-Move) curriculum on externalizing behaviors in individuals with social emotional and behavioral needs?
3. What is the effect of AIM (Accept-Identify-Move) curriculum on psychological flexibility scores in individuals with social emotional and behavioral needs?
4. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs in single-subject design studies?
5. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs in aggregate score design studies?
6. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across sex?
7. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across gender?
8. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral across the type of disability?
9. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across types of externalizing behaviors?

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18. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across published vs. unpublished studies?
19. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across quality scores?

Chapter 2-Literature Review

Emotional Behavioral Disorders

To receive special education services and individualized intervention, students are required to receive an evaluation through their school district to determine eligibility. Within this process, the student will qualify for those services under a specific disability category. The categories consist of specific learning disability, other health impairment, autism spectrum disorder, emotional disturbance, speech and language impairment, visual impairment, deafness, deaf-blindness, orthopedic impairment, intellectual disability, traumatic brain injury, and multiple disabilities. A variety of standardized and informal testing is completed by an educational team including a school psychologist to determine the primary disability category that is affecting the child's ability to receive their education. Following the evaluation based on emotional or behavioral symptoms students can be identified as having an emotional disturbance. Often, there is also comorbidity with the disabilities and often includes disabilities that fall under the emotional disturbance category (IDEA, 2004).

Per IDEA's definition of an emotional disturbance, a student must meet the following criteria; "inability to learn that cannot be explain by intellectual, sensory, or health factors," "inability to maintain satisfactory interpersonal relationships with peers and teachers," "inappropriate types of behavior or feelings under normal circumstances," "a general pervasive mood of unhappiness or depression," or the "tendency to develop physical symptoms or fears associated with personal or school problems," (IDEA, 2004).

Prevalence of Emotional Behavior Disorders

Per most recent statistics, the prevalence of student's falling under this category has been reported to be 5.45% of the population nationwide (U.S. Department of Education, National

Center for Education Statistics, 2019). Often this percentage is so low due to a comorbidity diagnosis. To investigate this, a group of researchers gave 585 families in a pediatric office developmental and behavioral screenings to fill out. 22.3% were identified as having an emotional behavioral disorder per DSM-V criteria. When evaluating co-occurrence, statistics showed significant results that demonstrated numbers doubled when looking at children with a developmental delay and an emotional or behavioral disorder (Sheldrick et al., 2022). On top of developmental delays, comorbidity with an emotional or behavioral disorder is seen in other disability categories. Of 104 participants, 75% of children with a language delay displayed emotional and behavioral disorder symptoms (Burnley et al., 2023), of 170 adolescents, 62.5% of those with learning disabilities also qualified under the emotional and behavioral disorder category (Barowsky & Austin, 2013), and 30.6% of 140 participants with Down syndrome, or an intellectual disability, were found to have a co-occurring diagnosis (Sothirasan et al., 2020). Focusing specifically on those with a primary identification of an emotional or behavioral disorder, a more recent study gathered a sample of 3,750 schools including both primary and secondary schools in urban and rural areas. Of the schools, 46.67% students were identified as having an emotional behavioral disturbance (Chougule et al., 2024). To meet the criteria of an emotional behavioral disorder, the student must display difficulty learning without diagnosis of an intellectual, sensory, or medical disorder by demonstrating difficulty with interpersonal relationships, demonstrate internalizing behaviors that align with unhappiness or depression, or engage in inappropriate behaviors or externalizing behavior that interferes with the school environment (IDEA, 2004).

Interpersonal Relationship Difficulties

Interpersonal relationships are defined as “reciprocal social and emotional interactions between the individual and other individuals within their environment,” (National Library of Medicine, 1990). Often when a student has a diagnosis or identification of an emotional or behavioral disorder, they have barriers within their ability to demonstrate appropriate interpersonal relationships. Studies show that students with a disability that affects their behavioral and social well-being are less socially integrated that with their typical peers and avoid social interactions (Kasarii et al., 2011). Teacher relationships with students with emotional and behavioral disorders can also be at-risk due to the same characteristics. This is especially concerning, because the main component of successful interventions or treatment packages require the need for positive rapport and relationships between the student their teachers (Loan & Garwood, 2019), (Mihalas et al., 2009), (Zolkoski, 2019). Other deficits may include limited verbal and nonverbal communication, lack of eye contact, limited reciprocal speech, and lack of insight (White et al. 2007). With all these factors, students may feel peer rejection or loneliness from their peers without the proper intervention (Croswell et al., 2019).

Internalizing Behavior

Peer rejection and loneliness are two of many internalizing behaviors that individuals with emotional behavioral disorders may encounter. Internalizing behaviors are “covert, overcontrolled behaviors that are directed internally,” (Walker & Severson, 1990). The most common examples are feelings of sadness, fear, worry, social withdrawal, somatic complaints, or symptoms of depression and anxiety (American Psychiatric Association, 2013). Research shows that a third of high school students in the United States are diagnosed with an anxiety disorder, and 14% have a specific mood disorder where these symptoms can be displayed (Merikangas el al., 2010). The prevalence of these is significantly higher when the student also has an emotional

or behavioral disability (Kalberg et al., 2011). Since then, research is continuing to be conducted to evaluate the concern of internalizing behavior in adolescents. A study was completed to evaluate the effects that internalizing behavior has on student's academic achievement and emotional engagement comparing both elementary and secondary schools. The elementary school study revealed that internalizing behaviors influence academic and social emotional well-being, however, it could not be seen as a stand-alone cause due to reported externalizing behaviors. Although, within the secondary school study, internalizing behaviors alone without influences of other behaviors were reported to cause academic and social emotional underachievement (Olivier et al., 2020). To prevent underachievement in these areas teachers and other school professionals are instructed to look for signs such as difficulty sustaining attention, lack of motivation, complaints of stomachaches or headaches, sleepiness, fatigue, and excessive worry or fear of failure (Poppen et al., 2016). These signs of internalizing behavior are often presented in students externally and lead to interference within the classroom environment, and professionals need effective behavioral intervention.

Externalizing Behavior

Externalizing behavior is outwardly displayed actions that align with either aggression, defiance, hostility, or poor impulse control (Kazdin, 2008). These behaviors are often seen as a challenge and extremely disruptive for teachers in the classroom environment. This is evident for those with emotional and behavioral disorders. In a most recent study, it was found that students identified as having an emotional behavioral disorder commonly qualify due to having external problems, internalizing problems, and demonstrating inattention. Of these three characteristics, external problems were shown to have the highest prevalence. (Chougule et al., 2024).

Causes of Externalizing Behavior

A common cause of externalizing behavior that aligns with the emotional or behaviors disorder identification are causes biologically. Studies have shown that genetic factors can contribute to the risk of developing conduct problems and aggression (Rhee & Waldman, 2002). Neurobiological research has also identified differences in brain structure and function among adolescents with externalizing behaviors, particularly in regions associated with impulse control and emotional regulation (Fairchild et al., 2019). Students with developmental delays such as autism have higher levels of problem behavior (Rojahn et al., 2009). Some other common diagnosis that may present difficulties with behavior are attention deficit hyperactivity disorder, post-traumatic stress disorder, oppositional defiant disorder, anxiety, mood disorders, bi-polar disorders, and specific learning disabilities (DSM–5; American Psychiatric Association, 2013).

Another cause may be the interactions the student has within their environment. Adolescents who come from disadvantaged backgrounds or unstable home environments are more likely to display externalizing behaviors. Research has shown that exposure to violence, abuse, or neglect can increase this risk in adolescents (Burt et al., 2018). Additionally, peer interactions may also contribute. Adolescents who associate with “delinquent” peers may be more likely to engage in aggressive or defiant behavior themselves (Dishion et al., 2016).

Additional factors such as low self-esteem, emotional regulation skills deficits, communication deficits, and trauma related experiences can also contribute to externalizing behaviors in adolescents. To express their distress, adolescents may engage in external behavior to communicate (Beauchaine & McNulty, 2013). Due to prior learning experiences, individuals may be conditioned to engage in external behaviors that lead them to desired outcomes in the past. Thus, giving them the ability to achieve their function of the external behavior whether it be escape, attention, sensory attainment, or access to a wanted consequence (Cooper et al., 2019).

Because of the variety of causes that may be unable to be prevented, it is evident that school professionals recognize the effect it can have on their classrooms and the proper interventions to manage external behaviors.

Effects of Externalizing Behavior in Classroom

Based on the most recent report from the U.S. Department of Education's National Center for Education Statistics, 32% of teachers report that interfering behavior is affecting their daily classroom routines (2021). Given additional students with an emotional or behavioral disability this rate could be higher. In previous research on students with an emotional or behavioral disorder, studies found that the most common interfering behaviors were disruptiveness, fighting, disobedience, and destructiveness (Kaufman et al., 1984). When external behaviors occur there is a loss of academic instruction for both the student and their peers which could lead to ongoing academic underachievement (Narhi at al., 2017). Teachers communicate they do not feel prepared or have the proper training to address these behaviors (Klassen & Chiu, 2010). Because of this, The Office of Special Education Program report that 12% of the students with emotional and behavioral disorders are served in separate schools as compared to 3% of students with other disabilities. Their most recent report on graduation rates also shows that 32% of students with an emotional or behavioral disorder dropped out of school in the 2017-2018 school year compared to 16% of students identified under another disability category (2020). Due to these alarming statistics, extensive research has been conducted to determine the most effective interventions to increase prosocial behavior and academic progress within students who are struggling social emotionally and behaviorally.

Positive Behavioral Interventions and Support Plans

A common intervention that is being implemented in public and private schools nationwide are positive behavioral and interventions and supports (PBIS). Positive behavioral interventions and supports are evidence-based practices designed to increase social emotional competence, academic success, and improve the school climate. They are separated into three tiers beginning with universal interventions for all students, tier two includes additional support for those who are struggling, and tier three consists of more individualized intervention tailored to the student. By 2023, over 25,000 schools nationwide have implemented a PBIS program (Center on PBIS, 2024).

Tier one or the universal tier consists of universal screening of all students to determine where academic or social emotional gaps may be present. It includes the use of school-wide positive intervention system replicated in each classroom that motivates students' positive behavior while explicitly teaching expectations within the school environment. For students with emotional behavioral disorders in an alternative setting that implemented PBIS, there was a significant increase in teacher ability to explicitly teach expectations, reinforce positive behavior, and respond to behavioral violations leading to a decreased need of tier two and tier three intervention support (Gelbar et al, 2015).

When utilizing tier two and tier three interventions with students with an emotional or behavioral disorder, professionals are looking at intensifying the interventions through additional practice of behavioral and academic skills, more frequent interactions with teachers, and the use of a more individualized reinforcement system This may also include the use of a functional behavioral assessment and a behavioral plan to put in place to guide the individualized intervention (Clemens et al., 2022). In a sample of 553 public schools with full implementation

of PBIS, 77% reported that tier two and tier three interventions were being successfully utilized with their student's struggling behaviorally (Nese et al., 2023).

Being that there is still a gap between students with disabilities responding to the PBIS intervention, researchers asked what the potential barriers were for students who have emotional and behavioral disabilities. Some of the barriers communicated by special educators were, difficulty understanding the school-wide expectations (20.9%), lack of accommodations and modifications (22.8%), lack of individualized reinforcement systems (19.7%), prior interventions did not align with PBIS (19.0%), and the PBIS initiative was not meaningful to the students (18.3%) (Shuster et al., 2017). Given the barriers for those with disabilities, professionals may begin to expand their approach to managing external behaviors within the classroom.

Cognitive Behavioral Therapy

Cognitive behavioral therapy (CBT) is a more intensive intervention for emotional regulation and behavioral management primarily by a trained professional. It is a goal-oriented, psychotherapy based on core principles of unhelpful patterns of thinking, unhelpful patterns of behavior, problematic core beliefs, and finding ways to cope with and change these patterns (National Library of Medicine, 2022). A meta-analysis was completed to determine if cognitive behavioral therapy treatment is more effective than other treatments. In this meta-analysis they concluded that CBT is a superior intervention when treating anxiety and depression. It does state however, there is not enough evidence to support effectiveness when treating personality disorders, developmental disorders, and substance abuse disorders (Tolin, 2009). An additional meta-analysis narrowed their focus on using CBT as a treatment package for individuals with anxiety related disorders including post-traumatic stress disorder and found out of 41 students

results had shown moderate effects on disorder symptoms, small effects on anxiety and depression symptoms, and small effects on quality of life (Carpenter et al., 2017).

To focus specifically on adolescents, a meta-analysis focused on the literature regarding the use of CBT for adolescents with depression and found greater effect sizes for short term effects, but smaller significance with long-term effects (Kelse & Idsoe, 2018). A similar meta-analysis was completed to evaluate effectiveness of CBT on anxiety related disorders in adolescents compared to a control group and found medium effect sizes for effective results post-treatment (Ishikawa et al., 2007). When investigating whether CBT had any effect on problem behavior, researchers found that given a 12-week package of CBT, adolescents decreased their engagement in aggressive behaviors due to increases in skills on impulse control and problem-solving skills (Lochman et al., 2015).

Cognitive behavioral therapy has also yielded conflicting results when treating adolescents with emotional and behavioral disorders. A meta-analysis on CBT versus control treatments revealed significant effects on anxiety related disorders in children, however, results were unable to show if CBT was more effective than other treatments it was compared to as a stand-alone intervention (Sigurvinsdottir et al., 2020). In comparison to other treatments, CBT has fallen short to studies examining the effects of other treatments on the same emotional and behavioral symptoms. A study compared these two interventions on social anxiety disorder and found that acceptance and commitment therapy demonstrated greater results within social anxiety symptoms and anhedonic depression compared to CBT (Niles et al., 2014). Another studied evaluated CBT against individuals' treatment as usual (TAU). They found that CBT was effective but depending on the individual's original treatment would determine which is more effective. Medication management, acceptance and commitment therapy, and mindfulness

practices were some examples within the study that showed significant effects (Watts et al., 2015).

Applied Behavior Analysis

Applied Behavior Analysis is a scientific, evidence-based approach to behavior change based on the environmental factors that influence it. To intervene on behavior, B.F. Skinner famously identified that behavior has functional relations between antecedents, behavior, and consequences. Individuals engage in behaviors to attain desired outcomes aligning with the four functions of behavior being attention, escape, tangible, and sensory outcomes. (Cooper et al., 2019).

To achieve behavior, change in individuals with emotional and behavioral disorders, a functional analysis is completed to determine the function of behavior. Since the 1980's behavior analytic professionals have been using functional analyses to identify functions of self-injurious behavior, aggression, property destruction, pica, motor disruptions, vocalizations (disruptive), elopement, stereotypy, and tantrums. Through the year 2000, 277 studies utilizing functional analyses were utilized to determine behavior function in published empirical studies (Hanley et al., 2003). In a recent review of literature, analysis had shown that by 2020, over 700 empirical publications had the utilization of a functional analysis to address problem behavior (Melanson & Fahmie, 2022).

Functional analyses have been evident to be beneficial in identifying the function of behavior in students with emotional and behavioral disorders. One study was completed on two students with emotional or behavior disorders and the functional analysis led to escape and attention functions of behavior. Following identification, researchers implemented a function-based intervention for the students to attain reinforcement in alignment with escape and

attention. Both participants in the study had decreased interfering behaviors (Wright-Gallo et al., 2006). This was replicated in a single case study on a student with the same profile where similar results were presented and demand fading and noncontingent reinforcement was utilized to meet the function of escape and attention-maintained behavior (Flanagan & DeBar, 2018). Following a similar procedure, differential reinforcement of alternative behaviors (DRA) was utilized given attention and escape-maintained behavior in middle school students with emotional or behavioral disorders. All three students within the study showed a significant decline to near zero levels of interfering behavior (Flynn & Lo, 2015).

As individuals contact the ability to make functional relations with their environment, the functions of stimuli for individuals with emotional or behavioral disorders can transform negatively. Given additional awareness, individuals may contact feelings of worries, anxieties, phobias, and psychological suffering when in contact with undesirable functions. In this case, additional intervention on top of the functional analysis may be needed to continue effective behavior change (Dixon & Paliliunas, 2018).

Relational Frame Theory

Relational frame theory is a psychological account of human language and cognitive processes to understand the development and use of language by creating functional relations. This theory expands upon the findings of Skinner's (1968) verbal behavior in making functional relations and Sidman's (1971) findings with stimulus equivalence classes, but with the addition of cognitive events (Hayes et al., 2012). There are three important concepts that lay the foundation for relational frame theory: relational framing, derived relational responding, and transformation of stimulus function.

Relational framing is “the ability to respond to relations between stimuli in the environment,” (Dixon & Paulilіunas, 2018). These relations are not always specifically related to the formal properties of the stimulus relations. It can be composed of three properties consisting of mutual entailment, combinatorial entailment, and the transformation of stimulus functions (Barnes-Holes & Harte, 2022). For example, a small white cat bites a child and the child experiences fear. Later they encounter a larger white cat, and they feel a greater sense of fear, because they made a connection at one point that larger animals pose a greater threat. This could create a similar cognitive response when encountering a similarly colored or sized dog. The possibilities are endless, but most of these relations are not explicitly taught or learned, they are derived.

Derived relational responding is when an individual engages in inferential learning without being directly taught. Concepts can be connected without a prior learning history of the concepts being reinforced (Dixon et al., 2023). An example would be a stranger becomes more approachable because they are wearing a shirt that has one’s favorite baseball team logo on it as opposed to someone who is not. A study examined the use of derived relational responding to understand clinical disorders defined with fear and avoidance. The derived relational responding was found to occur in processes of the brain within the frontoparietal network which given manipulation on stimulus relations, information, and executive functioning could decrease severity of symptoms within these clinical disorders (Dymond et al., 2018). Given manipulation of the stimulus relations, the functions of the stimuli can change and modify verbal behavior and cognitive processes.

Transformation of stimulus functions occur when trained or untrained relations cause changes in function of either stimulus. A high school graduate may have struggled all year

academically and experienced feelings of anxiety and failure, however, a freshman in college tells them that college is much easier than high school. Now, the graduate feels a sense of relief and less anxiety as they transition into college. The function of high school transformed the relation of college to being "easier than" or "not as stressful." On the other hand, depending on the verbal behavior from the college student, this may have created more psychological suffering for the graduate. Based on studies within relational frame theory and acceptance and commitment therapy, to manage these internalizing and externalizing behaviors of psychological suffering, individuals need to have the ability to develop relational networks to create meaning between words, events, and referents (Dixon & Paulilіunas, 2018).

Acceptance and Commitment Therapy

Acceptance and Commitment Therapy (ACT) was developed by Steven Hayes who internally was working through psychological distress in the forms of anxiety, panic, and distress. The difference between ACT and other behavioral therapies is that it focuses on the acceptance of one's own struggles as opposed to engaging in avoidance behaviors. The goal is for the individual to accept unpleasant feelings without engaging in damaging internalizing and externalizing behaviors. This is done all while continuing to align their behaviors to attain value-based outcomes within their lives (Dixon et al., 2023) (Hayes et al., 2012).

ACT has been utilized as an alternate treatment for a variety of emotional and behavioral disorders. A meta-analysis including 39 randomized controlled trials revealed that ACT was effective in treating symptoms of anxiety, depression, addiction, and somatic health problems. Larger effect sizes were present for depression, addiction, and health problems with smaller effect sizes; however, it is included that more research is needed within the area of anxiety before making conclusions on the effectiveness (A-Tjak et al., 2015). Another analysis compared

ACT to control conditions, cognitive behavioral therapy, and other active treatments. Against the control conditions, ACT demonstrated significant effect sizes in improvements of mental health symptoms. In comparison of ACT and CBT, effect sizes were based on results within anxiety, depression, chronic pain, and quality of life. Ten out of twelve studies concluded in favor of ACT over CBT therapies with significant effect sizes present. Results within other active treatments than CBT favored ACT in twenty-one out of twenty-two studies showing statistically significant results in 14 of those comparisons (Gloster et al., 2020). Similar results presented with the addition of a 3 month follow up in another meta-analysis where significant results were presented in depression symptoms (Zhenggang et al., 2020). Specifically looking at previous results with adolescents receiving the ACT intervention to treat anxiety, depression, and mental health or behavioral disorders, out of 1,189 adolescents' significant effects were demonstrated when compared to control groups. The researchers do conclude however that it demonstrated similar effect sizes to treatment as usual groups, so it cannot yet be concluded that it is the superior intervention to others (Fang & Ding, 2020).

Utilization of ACT is continued to be studied with adolescents with emotional or behavioral disorders to try and reach superior status to other behavioral interventions. 26 students were given 12 weeks of acceptance and commitment therapy and either assigned to immediate intervention or wait-list. Students who received the intervention had a decrease in class absences and anxiety. Medium effect sizes were presented within groups for depression, psychological flexibility, positive mental health, and student well-being as measured on a variety of mental health questionnaires (Petersen et al., 2023). A larger sample of 98 students demonstrated similar results with large effect sizes on decreased anxiety and increased mindfulness skills following eight sessions of ACT group therapy (Livheim et al., 2014). Five adolescents with major

depressive disorder received and the ACT intervention and were given a questionnaire to identify what they had thought led to their successful outcomes. All five reported common themes of benefitting from the positive relationships and rapport built with their therapists, talking less and making active action plans, doing important things that aligned with their values, and the amount of time spent in the treatment being about 20 weeks (Ma et al., 2023).

Limited research is available on acceptance and commitment therapy treatment packages due to ongoing developments and recommendations when conducting the treatment with adolescents. A review of literature on ACT with adolescents led to recommendations for adaptations when delivering the therapy. One adaptation is to keep the intervention as active and hands-on as possible to keep up with the high levels of energy those with emotional and behavioral disorders may present. Psychological development is also noted as being slower in those with emotional and behavioral disabilities (Peskin & Wells-Jopling, 2012), so differentiating the content to metaphors and language they can relate to is researched to be beneficial (Halliburton & Cooper, 2015). Kingery recommends being mindful of the inclusion of similarly- aged peer influence within real-world experiences when conducting group therapies (2006). Adolescents are also acting more impulsively with their emotions given puberty and the brain make-up of those who have experienced trauma (Hare et al., 2008). As a result of these shifts, it is recommended to keep intervention as less cognitively intensive meeting adolescents at their current maturity level (Steinberg, 2005). With these recommendations in mind, behavioral professionals are beginning to make intervention packages with the utilization of ACT with additional features tailored to adolescents.

Present Moment Awareness

To understand treatments containing the use of acceptance and commitment therapy, it is crucial to understand the six core processes that make up the ACT hexalflex; present moment awareness, acceptance, defusion, self-as-context, committed action, and values. Present moment awareness focuses the individual on engaging with the stimulus in their current environment by developing awareness of thoughts, feelings, and sensations (Dixon & Paulíliunas, 2018). This is commonly accomplished through the practice of mindfulness exercises that are known to have a reduction on stress physically and mentally (Grossman et al., 2004). This includes the ability to decrease problem behavior within the classroom environment. Instruction in an informal mindfulness practice to demonstrate present awareness was given to students with autism who displayed interfering behaviors. Following two weeks of three-day sessions, students were independently using the strategy and demonstrated a decrease in verbal and physical aggression (Singh et al., 2019). The ACT matrix can also be used in these exercises to draw the individual's attention to what they are doing in the present moment to accomplish their value aligned goals. The matrix is set up with four quadrants identifying what is important to an individual, what inner barriers are present, identifying behaviors that are not aligned with their behaviors, and behaviors they engage in that work towards their goals (Polk et al., 2016). Professionals will need to find which mindful practice to accomplish present moment awareness would be most effective for an adolescent depending on social emotional capacities.

Acceptance

The next core process is acceptance or the willingness to experience internal and external, both pleasant and unpleasant experiences. This portion of ACT is what contrasts with other behavioral therapies that commonly use experiential avoidance and act to avoid these feelings. When an individual uses avoidance tendencies, it is known to create temporary relief, which can

lead to significant increases in anxiety when contact is made with those experiences again (Harris et al., 2019). 426 young adult students were given questionnaires measuring anxiety levels and experiential avoidance and found a positive correlation between the two (Mahoney et al., 2015). Engaging in avoidant behaviors can lead to diminishing experiential intelligence, lack of awareness of avoidance behaviors, and foster real-life damage where individuals are prevented from reaching positive experiences (Hayes et al., 2012). Acceptance within ACT is meant to work as a functional intervention, so that individuals can attain function-based reinforcement by working through aversive experiences that are creating barriers to their values (Dixon & Paulilіunas, 2018). For example, students who have social anxiety may engage in social events as part of their treatment, because they value positive friendships and relationships. A barrier that exists when aligning behavior with acceptance are the negative thoughts the remain within the individual's psyche.

Defusion

To detach from these negative thoughts, ACT uses the core principle of defusion. Defusion is used to encourage the individual to let go of the control or eliminate distressing thoughts that are separate from literal reality. However, eliminating the thought consists of altering the way the individual interacts with the thought to create a functional relationship and avoid suppression (Dixon et al., 2023). This can be explained by the red versus black slot machine study where a group of individuals were given relational training that led to choosing the red slot machine. The second group received defusion treatment that identified negative and positive relations with both colors. Within this group there was less bias towards the red slot machine (Belisle et al., 2019). To relate this to individuals with behavioral concerns, Eilers and Hayes incorporated defusion therapy by having students with autism repeat their rigid behaviors

in silly voices. Following this intervention the cognitive defusion decreased the challenging behaviors (2015). This skill assists individuals in identifying if their behaviors are in alignment with the "real them."

Self-as-Context

Self-as-context gives one the opportunity to take perspectives to distinct who they truly are. This includes not allowing past experiences to create labels for themselves. The simplest example of this is a student engaging in problem behavior causing them to think of themselves as a "bad kid." The goal of self-as-context is to modify and create behaviors change that aligns with the person's values (Dixon & Pauliliunas, 2018). ACT treatment was used to evaluate negative emotions regarding individuals' perceptions on themselves based on current stressful events. Following treatment, they were asked to rate their feelings towards these previously stated stressors about themselves. The responses were compared responses of a control group, and another group receiving an alternative therapy. Based on the results, those who received ACT therapy reported significantly lower negative effects internally than the control group. ACT and the alternative therapy showed similar results (Godbee & Kangas, 2022). Cohesive self-awareness is built given the complex ability to demonstrate behaviors in alignment with self-as context.

Values

Values are the center of acceptance and commitment therapy because the values give purpose to all the other core processes. If actions are in alignment with the individual's values, they will be contacting reinforcement daily in their lives. Professionals accomplish the core process through discussions, value-based activities, and purposefully incorporating reminders about values within their natural environments (Dixon et al., 2023). Eventually the goal is to

bring individuals to make a personal choice to align with their values as opposed to acting in alignment to avoid social compliance and avoidance of guilt (Sheldon et al., 2002). Value-based intervention was used to close the achievement gap for African American students in a public school. Given a writing assignment where students were asked to identify their values and why it is important to them. The control group was asking to identify values in others. Following the assignment, the academic performance gap lessened by 40% (Cohen et al., 2006). Identification of values contribute to committed actions to maintain progress towards a fulfilling life.

Committed Action

Committed action is the behaviors that individuals engage in to work towards valued outcomes, despite the challenges that may arise. These actions should be objective and measurable, so that progress is able to be measured (Dixon et al.,2023). Developing committed actions are found to be most successful when following a four-step process; identifying the value, describing the specific context, stating the committed action, and developing a self-monitoring system to track progress (Smith et al., 2019). Because committed actions can be explicitly followed and practiced, professional urge people to be aware of becoming inflexible and engaging in rigid behaviors. ACT addresses this concern through incorporating the goal of being psychologically flexible within their practices (Hayes et al., 2012).

Psychological Flexibility

ACT approaches prevent psychological inflexibility preventing the behaviors of experiential avoidance, cognitive fusions, living in the past or future, attaching themselves to a conceptualized self, lacking values, and engaging in impulsive or maladaptive behavior patterns. To be psychologically flexible means the individual can contact the present moment as a conscious human being and persist in behavior based on valued outcomes (Hayes et al., 2004). A

study consisting of 516 participants evaluated what effect psychological inflexibility had on adolescents. There were statistically significant negative effects on emotional awareness, impulsivity, non-acceptance, achieving goals, understanding their own emotions, and emotional regulation (Cobos-Sanchez et al., 2020). A positive correlation was similarly found between psychological inflexibility and anxiety symptoms in children following anxiety and behavioral questionnaires to 267 participants (Simon & Verboon, 2016). Temperament and psychological flexibility had shown direct associations with stress and depression in adolescents ages 15-16 years old pre and post school year (Puolakanaho et al., 2023). Outside of emotional and behavioral symptoms, attainment of psychological flexibility is shown to have positive outcomes on adolescent identity development (Kukkola et al., 2023). Based on these risks, psychological flexibility is a crucial skill to have in adolescence and can be addressed through a combination of behavioral change interventions.

Accept-Identify-Move (AIM)

The Accept-Identify-Move (AIM) curriculum combines the use of acceptance and commitment therapy, mindfulness, and a functional approach to behavior to promote positive internal and external behavior change. The curriculum follows a sequence that provides intervention using the development of mindful practice, therapeutic reconditioning, and functional behavior management. The curriculum has 175 days of social emotional lessons that are in alignment with the ACT "hexaflex." Each lesson is comprised of a mindful practice, discussion, application, and supplemental activities to grasp full attrition of the content. AIM also includes the use of goal setting, self-monitoring, and functional reinforcement procedures.

Development of Mindfulness Practice

To successfully implement the development of mindfulness practice, the curriculum creators include 75 different mindfulness moment activities in addition to experiential lessons that are delivered in a more detailed and organized way. The curriculum promotes mindful awareness or "noticing" their environment. They are instructed to not engage in the opposite of mindlessness which mainly include the feeling of worry (Dixon & Pauliliunas, 2018). To evaluate the progress made within the ability to engage in mindful tendencies using the AIM curriculum for one year in a public-school setting, researchers administered the CAMM (Child and Adolescent Mindfulness Measure) to 318 students in the sixth, seventh, and eighth grade. Results had shown a significant increase in mindfulness practices (pre-test M=27.25, post-test M= 29.53) (Dixon et al., 2022). To this date, one research study has been published evaluating the effects AIM has on mindfulness practices.

Therapeutic Reconditioning

Therapy within the AIM curriculum is provided through explicit instruction on behavior management while focusing on being psychologically flexible through increasing the saliency of stimulus events, increasing appropriate verbal behavior, and decreasing inappropriate behaviors. The therapeutic approach includes the use of self-monitoring and self-awareness skills and opportunities to gain functional reinforcement through appropriate behavior. The curriculum provides these components within a three-tiered system. Each tier follows the level of support need to understand the AIM core processes. The lessons are simple and independent of the following lesson, have engaging themes to keep adolescents engaged, and are experiential, incorporating multiple modalities of learning through art, music, writing, drawing, and discussion. It does not align with typical therapy, as it focuses on social skills, emotional regulation, and life lessons (Dixon & Paulilianas, 2018). In the previously referenced study,

researchers also collected data on psychological inflexibility results using the AFQ-Y that is "characterized by high levels of cognitive fusion and experiential avoidance, intended to capture the rigid, narrow responding characteristic of inflexibility" (Greco et al., 2008). Results demonstrated a significant decrease in inflexibility indicating increases within psychological flexibility. Peer socialization and relationships also showed a significant increase. However, no significant changes were present in behavioral difficulties, prosocial behavior, hyperactivity, emotional skills, and conduct issues. The researchers offer a potential hypothesis that following the ACT lessons, students became more aware of their difficulties to self-report which led to the nonsignificant changes (Dixon et al., 2022). Because this research was conducted within a public-school environment, it is possible that given a more individualized approach effect sizes would have been greater.

Functional Behavioral Management

The ACT approach within AIM is aligned with the three-term contingency within applied behavior analysis. Professionals will utilize functional assessments to determine the antecedents and consequences of the interfering behavior that individual is engaging in. This guide practitioners to hypothesize the function of the behavior aligning either with attention, escape, tangible, or automatic reinforcement. Therefore, when students engage in alternative behaviors they can be reinforced with functional equivalent rewards to their interfering behavior. Given the opportunity to make AIM more individualized, researchers recommend the use of the token economy, AIM Points System. Students monitor their own prosocial behaviors and earn points for expected behaviors. These points are cashed in for the functional rewards that match the function of their behaviors. The points also contribute to the use of an ongoing data monitoring system to track progress on positive behaviors in the environment (Dixon & Pauliliunas, 2018).

There is currently no data reflecting the AIM Points System and its effect on behavior, however, multiple research studies examine the effective use of token economies within the classroom. Most recent research reveals that since 2016, 28 published studies revealed the significant effects token economies have on students ages six to eighteen years old within their academic and behavioral goals (Soares et al., 2016). It is hypothesized that token economies with the additional opportunity to earn functional reinforcement, significant behavior change would occur.

The Need for a Meta- Analysis

To date, there are only two published studies regarding the use of the AIM (Accept-Identify-Move) curriculum. The study Dixon himself completed on the public school receiving the curriculum yielded positive results for mindfulness practices and psychological flexibility scores. However, inconsistencies remain within the effects on social emotional development and behavior. This study also lacked the use of the functional behavior management system (AIM Points) not including the entirety of the intervention package (Dixon et al., 2022). The additional study that was conducted included the use of the just the mindfulness activities with three paraprofessionals in the classroom environment. Following these activities, the professionals increased positive behavior within the workplace regarding data collection accuracy for their students' academic and behavioral progress (Issen et al., 2022).

A meta-analysis is a "statistical tool that is used to estimate the mean and variance of underlying population effects from a collection of empirical studies" (Field and Gillett, 2010). Because of the limited amount of published research available, a meta-analysis can pull together both published and unpublished research to determine effects sizes among the available research. This study will gather both published and unpublished aggregate score and single-case design research and develop inclusion criteria and moderators based off the stated research questions.

Chapter 3- Methodology

Introduction

The current investigation will conduct a meta-analysis on the effects of the Accept-Identify-Move (AIM) curriculum on externalizing behaviors and psychological flexibility scores in individuals with social-emotional and behavioral needs. The current investigation gained approval from the Slippery Rock Institutional Review Board (IRB). (See APPENDIX A for IRB approval documentation.)

To date, there is no existing research that includes a meta-analysis on the effects of the AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs. However, this current investigation will identify several case studies measuring the effects of the curriculum in one identified setting with a specific set population of individuals. By completing this meta-analysis, there will be a more objective view, because it will be able to provide the mean and variance of underlying population effects, the variability in effects across studies, and information about possible moderator variables (Field & Gillett, 2010).

This current investigation will utilize the recommended procedures of a meta-analysis provided by Field and Gillett (2010). This six-step process includes completing a literature search, determining inclusion criteria, calculating effect sizes, completing the basic meta-analysis, completing additional advanced analyses, and reporting on the results.

The current investigation will conduct this meta-analysis on the effects of the Accept-Identify-Move (AIM) curriculum on externalizing behaviors and psychological flexibility scores observed in individuals with social-emotional and behavioral needs. The following research questions will be addressed;

1. What is the effect of the AIM (Accept-Identify-Move) curriculum?

2. What is the effect of the AIM (Accept-Identify-Move) curriculum on externalizing behaviors in individuals with social emotional and behavioral needs?
3. What is the effect of AIM (Accept-Identify-Move) curriculum on psychological flexibility scores in individuals with social emotional and behavioral needs?
4. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs in single-subject design studies?
5. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs in aggregate score design studies?
6. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across sex?
7. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across gender?
8. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral across the type of disability?
9. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across types of externalizing behaviors?
10. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across intervention settings?
11. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs when delivery method?
12. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs when given one of the three tiers of the curriculum?

13. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs when given all three tiers of the curriculum?
14. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across intervention duration?
15. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across different data behavior assessment methods?
16. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across different data behavior measurement techniques?
17. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across different implementors?
18. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across published vs. unpublished studies?
19. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across quality scores?

Inclusion Criteria

To select articles, an inclusion criterion needs to be developed. The research articles that are included into this meta-analysis will have met the following inclusion criteria: (1) The research article was written in English. (2) The research has been written between the years 1990 and 2025. (3) The research must include the Accept-Identify-Move curriculum as the independent variable. (4) The research must include externalizing behavior and psychological flexibility scores as the dependent variables. (5) The research must include participants with a

history of social emotional and behavioral difficulties or a diagnosis with social emotional deficits and behavioral symptoms. (6) The study was conducted as a single-subject research design or aggregate score study (7) The effects of the AIM (Accept-Identify-Move) curriculum on social emotional and psychological flexibility are represented quantitatively so effect sizes and data can be extracted.

Search Sources and Terms

The present study will utilize six different methods to locate relevant research articles. Searches were conducted through databases accessible via Slippery Rock University's Bailey Library. One of the library's search vendors and the Google search engine were used to identify potential sources. Targeted searches were also completed within journals that specifically address applied behavior analysis research, specifically within *Behavior Analysis in Practice*.

The current investigation used the following search terms to identify their inclusion into this meta-analysis when searching the databases and specific applied behavioral analysis journals. The search terms included Accept Identify Move (AIM) curriculum, externalizing behavior, psychological flexibility scores, applied behavior analysis, acceptance and commitment therapy, functional behavior management, social-emotional behavioral disorders, social-emotional disorders, emotional disturbance, social-emotional disabilities, autism, autism spectrum disorder, anxiety, depression, attention deficit hyperactivity disorder, and conduct disorder. These search terms produced 14 different combinations. These 10 combinations were used for each database, search vendor, applied behavior analysis specific journals, and *Behavior Analysis in Practice.* To conduct a more comprehensive search additional combinations were utilized including Accept-Identify Move (AIM) curriculum AND externalizing behavior AND disabilities. The researcher continued with this combination continuously switching out the final

search term with the following terms, autism, autism spectrum disorder, social-emotional behavioral disorders, social-emotional disabilities, social-emotional disorder, anxiety, depression, attention deficit hyperactivity disorder, emotional disturbance, and conduct disorder and changing the second term with the researchers' independent variables of externalizing behavior and psychological flexibility scores.

Databases

The current investigation identified five articles that included the effects of the Accept-Identify-Move curriculum on either externalizing behaviors and psychological flexibility scores in students with social-emotional and behavioral needs. The current investigation searched the following data bases to locate and identify articles for this investigation: (1) PMC Public Med Central; (2) PsyInfo; (3) ERIC; (4) PsycARTICLES; (5) and (6) Education Source. The search engine Google was also utilized.

Search Vendor, ProQuest

ProQuest is an online database that includes the large collection of dissertations and theses in the world (ProQuest, 2018)

Applied Behavior Analysis Specific Journals

The current investigation studies an intervention that is rooted within applied behavior analysis. Based on recommendations from the Behavior Analyst Certification Board, the following journals are the most beneficial when researching applied behavior analysis publications; (1) *Analysis of Verbal Behavior,* (2) *Behavioral Interventions,* (3) *Behavior Analysis in* Practice*,* (4) *Behavior Modification,* (5) *Journal of Applied Behavior Analysis,* (6) *Journal of the Experimental Analysis of Behavior, and the* (7) *Journal of Behavior Education*.

Analysis of Verbal Behavior is a peer-reviewed journal that focuses on the experimental analysis of verbal behavior including topics such as language acquisition, verbal operants, relational frames, bilingualism, language assessment and training, verbal behavior of non-humans, and research methodology (Springer, 2025).

Behavioral Interventions is a peer-reviewed journal that focuses on the scientific research on utilizing applied behavior analytic interventions in treatment, education, and assessment in individuals who have needs for the interventions. It also focuses on the training of staff when implementing treatment protocols (Wiley, 2025).

Behavior Analysis in Practice is a science-based journal that include empirical reports, discussion papers, technical articles, tutorials, and critical reviews created to discuss the challenges of implementation in practical settings (Springer, 2025).

Behavior Modification is an evidence-based journal that provides research of modification techniques to address problems in psychiatric, clinical, educational, and rehabilitative settings. This journal also includes treatment and program manuals (Sage Journals, 2025).

Journal of Applied Behavior Analysis is an evidence-based journal that provides experimental analysis of behavior for behavior change of social significance (Wiley, 2025). *Journal of the Experimental Analysis of Behavior* publishes research relevant to the individual behavior of organisms including original experiments, technical notes, theoretical and review articles on the determinants of behavior (Wiley, 2025).

Journal of Behavior Education an evidence-based journal for research that uses behavioral science to improve teaching and learning, with strong emphasis on ABA and evidence-based practices in schools (Springer 2025).

The comprehensive search of all databases including search vendors and applied behavior analysis specific journals, using the various combinations of search terms and scanning Google search engine produced 7 articles that required further examination. Following examination 4 met the inclusion criteria and 2 did not. The final article was unable to be accessed due to restrictions on the publication, so the researcher was unable to further investigate.

Evaluation of Quality

Following finding the 4 articles that met the inclusion criteria, each article will need to be evaluated for its' quality utilizing the Evaluative Method These researchers specifically utilized this method to determine evidence-based practices within autism research. To do this, they created three instruments that include rubrics for the evaluation of research report rigor, guidelines for the evaluation of research report strength, and criteria determination for the evidence-based practice (Reichow, Volkmar, & Cicchetti, 2008).

Applied behavior analysis research is primarily known for its single-subject design to maintain an individualized approach to experimenting behavior analytic interventions with different individuals and populations. It is uncommon for group designs to be utilized within behavior-analytic research but may be used to cover broader areas. Group design within behavior analysis is emerging and showing to be useful in predicting outcomes alongside single-subject design. (Dixon et al., 2023) Therefore, one of the articles within the investigation does follow a group design, and the researcher will need to use both rubrics created by Reichow, Volkmar, & Cicchetti for both single subject and group designs (2008) (See APPENDIX B- Quality of Study-Evaluation Method Table).

The rubrics include two levels of methodological elements of primary and secondary quality indicators. Primary indicators contribute to the validity of the study, are necessary, and

are rated based on a three-term ordinal scale consisting of high quality, acceptable quality, and unacceptable quality. The secondary quality indicators are not necessary but are important into contributing to the validity of the studies. The secondary indicators are classified as either evidence or no evidence.

Following the ratings within these rubrics, they are then classified as having either strong, adequate, or weak research report strength based on the guidelines for the evaluation of the research report rubric. Strong research reports demonstrate high quality evidence, adequate demonstrates high quality evidence but not in all areas, and weak demonstrates that there are missing areas.

Within this investigation, the researcher chose the primary indicators of participant characteristics, independent variable, dependent variable, baseline, experimental control, and visual analysis. The secondary indicators consisted of treatment fidelity, maintenance, sample size, interobserver agreement, and social validity. After utilizing the rubric one article from the 4 was removed from the meta-analysis due to receiving a weak research report strength.

Coding

Moderators utilized in meta-analysis research help determine the relationship between the independent and dependent variables. A meta-analysis comparing single-subject and aggregate score study research within the effects of choice-making on behaviors in people with disabilities demonstrates a clear way to select moderators for studies with both research designs. They examined the potential moderators that would affect the results of choice-making on behaviors in people with disabilities and separated it by participant characteristics and study characteristics. The moderators concluded with sex, age, aggression, disability, publication form, experiment

design, choice activity, choice task, choice training, functional analysis, and setting (Zelinsky & Shadish, 2018).

Within this investigation, based on the research questions, the researcher was able to similarly separate the moderators into participant characteristics and study characteristics. The participant characteristics consisted of sex, age, and disability. The study characteristics will include the type of study, published vs. unpublished, and the quality score from the Evaluative Method. Additionally, this researcher dissected the category of study further and separated the moderators into the categories of independent and dependent variables. The independent variable category moderators included implementation, delivery method, setting, implementers, duration of intervention, and experiment design. The dependent moderators were types of externalizing behaviors, psychological flexibility scores, behavior assessment methods, psychological flexibility rater, and behavior measurement techniques (See APPENDIX C- Coding) (See APPENDIX D- Coding by Moderators)

Sex of the participants (a)

Sex of the participants will be included due to a known overrepresentation of emotional and behavioral disorders in males. A study was completed evaluating 60, 715 children in school with known emotional and behavioral problems and the males scored higher within categories of social, thought, rule-breaking, aggression, behavior, and attention problems. The females scored higher within internalizing behaviors of anxiety and depression (Sun et al., 2025). Because of prior research, this investigation aims to determine whether there is an effect on similar variables such as externalizing behavior and psychological flexibility following use of the AIM (Accept-Identify-Move) curriculum. This investigator will code studies as either male only, female only, or both male and female.

Age of the participants (b)

According to the CDC, the prevalence of emotional and behavioral disorders has risen from 25.3% to 27% from 2016-2021 (Center for Disease Control and Prevention, 2021). This investigation will determine whether this intervention is effective for all this population affected by these disorders or more within a certain age group due to the curriculum initially being created for all ages.

Type of disability (c)

The current investigation will use this specific moderator in reference to social-emotional behavioral disorders due to the IDEA definition of emotional disturbance that include "challenges in forming or sustaining appropriate relationships with peers and teachers, patterns of behavior or emotional responses that are not typical for the situation, consistent mood marked by unhappiness or depression, physical symptoms or fears that emerge in connection with personal or school-related issues"(IDEA, 2004). This definition covers a variety of disabilities including anxiety, depression, and attention deficit hyperactivity disorder. A research study also found that social emotional and behavioral disorders can comorbidly exist in individuals with autism spectrum disorder, so this disability category has also been included within the current investigation (Sheldrick et al., 2022). The moderators specific to this study will be coded as not specified, autism, or attention deficit-hyperactivity disorder.

Publication form (d)

This researcher was only able to identify one peer-reviewed article that met criteria for this investigation. ProQuest, a Search Vendor used to find dissertations and theses was utilized to find additional studies evaluating the effects of the AIM (Accept-Identify-Move) curriculum on students with social-emotional and behavioral disorders. This investigation will determine

whether there are differing outcomes between published and unpublished articles. Peer-reviewed articles will be coded as published and dissertations were coded as unpublished.

Type of Study (e)

Primarily in applied behavior analytic research studies consist of single-subject design. However, an article that met criteria did have a aggregate score design study. This investigation will aim to determine whether there are different outcomes among single subject versus aggregate score design studies when evaluating the effects of the AIM (Accept-Identify-Move) curriculum on students with social-emotional and behavioral disorders. In this investigation, the studies will be coded as either single or aggregate score.

Quality of Study (f)

The quality of the study will be measured utilizing the Evaluative Method (Reichow et al., (2008). Studies are coded as either strong, adequate, or weak quality according to the scoring rubrics developed by Reichow at al. (2011).

Externalizing Behavior (g)

Due to the study having two dependent variables, they are separated to determine the effects on each of the variables individually. Externalizing behavior is a dependent variable due to being a main symptom of individuals with social-emotional and behavioral disorders. Based on the definition provided by Kazdin for externalizing behaviors, the behaviors were separated into 4 moderators of aggression, defiance, hostility, or poor impulse control (2008). An additional option of not assessed is added into the study. This investigation attempts to determine if the intervention has effects on different types of externalizing behaviors within the environment.

Psychological Flexibility Scores (h)

The AIM (Accept-Identify-Move) curriculum developed the Children's Psychological Flexibility Questionnaire to measure the individual's ability or inability to be flexible among a variety of situations. This questionnaire is given to the student's prior and post intervention. This investigation attempts to determine if the intervention has effects on the student's psychological flexibility scores. Some of the articles did not utilize the questionnaire as a measurement, so this moderator will be coded as assessed or not assessed.

Behavior Assessment Methods (i)

Some of the studies utilized direct vs. indirect behavior measures. Data was collected either through questionnaires, records of performance, or operationally defining behaviors and conducting a frequency collection during their sessions. This current investigation assesses whether different results are produced when direct versus indirect behavior assessment methods are utilized. This moderator will be coded as either indirect or direct.

Behavior Measurement Techniques (j)

Within the articles, both subjective and objective measures of data collection were utilized. Some subjective measures include teacher interviews, questionnaires, and surveys. The objective measures included frequency behavioral data, duration behavioral data, time sampling data, and direct observations. Moderators are coded as either subjective or objective. The current investigation assesses whether different results are produced when subjective versus objective behavior measurement techniques are utilized.

Implementation Package (k)

The AIM curriculum is a three-tiered curriculum. Each tier provides a different level of support. Tier 1 within the curriculum is meant to be a universal prompt for individuals to assess for all to access for social emotional barrier prevention. Tier 2 is more targeted support within

each area of acceptance and commitment therapy and includes an additional discussion and experimental activity. The final tier, tier 3, is meant for individuals who already demonstrate struggles and need further exploration. Tier three also comes with a discussion and experimental activity (Dixon & Pauliliunas, 2018). These moderators are coded as tier 1, tier, 2, tier 3, or all three tiers. The current investigation assesses whether different results are produced when individuals with social emotional and behavioral needs receive different tiers of the curriculum.

Delivery (l)

Due to the multiple tiers, the curriculum may be delivered in different methods. If it is delivered universally, commonly this will be delivered in a whole group setting. However, if an individual is getting more targeted intervention within tier 3 for example, they may be getting this delivered to them 1:1 with their instructor. This moderator will be coded as either the whole group or 1:1. The investigation aims to determine whether different results are produced when there is a more individualized delivery method of the curriculum.

Setting (m)

Interventions for students with social-emotional and behavioral disorders are implemented in a variety of settings due to the varying disabilities they may have. Due to inclusion practices, some intervention packages are delivered in the public-school general education classroom with their peers, and some are delivered within their special education classrooms in a more individualized setting. The curriculum is made for all to access regardless of disability status. The researcher will code this moderator as a general education classroom or special education classroom.

Implementers (n)

The AIM (Accept-Identify-Move) curriculum is developed, so that any individual can implement the curriculum. This investigation aims to determine whether there is a difference in effect based on the individual implementing the curriculum. Implementation is completed by either a general education teacher or an individual trained in ABA therapy. This moderator is coded either as classroom teacher, ABA trained staff, or both classroom teacher and ABA trained staff.

Duration of Implementation (o)

The AIM (Accept-Identify-Move) curriculum has 175 lessons meant to have one completed each day. This curriculum can be modified so that it can be repeated. This investigation determines whether outcomes range depending on the length of the implementation of the curriculum. The moderators will be coded as 1 month, 3 months, 6 months, 9 months, or 1 year.

Experiment Design (p)

Experiment designs varied across studies. This investigation attempts to determine whether different results present when varying experimental designs are utilized. The moderators for this code include quasi-experimental, multiple treatment, A-B design, and multiple baseline design.

Dependent Variable

The dependent variables for all single-subject and aggregate score studies used in these meta-analyses was externalizing behaviors and psychological flexibility scores. Both aggregate score studies and single-subject designs will produce a mean reduction score for all three dependent variables calculated by the Comprehensive Meta-Analysis (CMA) Software.

Effect Size Calculations

Aggregate Score Studies

One article that met the inclusion criteria for thus investigation was an aggregate score study. The researcher will extract sample sizes, pre intervention mean scores, and post intervention mean scores for the dependent variables of externalizing behaviors and psychological flexibility scores. The sample sizes, pre-intervention scores, and post-intervention scores will be used to calculate the effect sizes according to the equation of Cohen's d. The calculation consists of subtracting the pre-mean scores from the post-mean scores divided by the average pre-mean and post mean standard deviation scores.

Single-Subject Design Studies

Both single-subject designs utilized a graphic display to display their data. Each presented information with pre and post data measures that included baseline data and data following the intervention phases. This information will be enough to calculate pre and post mean intervention scores for both externalizing behaviors and psychological flexibility scores. Once pre and post mean and standard deviations scores are calculated, the researcher will utilize these calculations to find the effect sizes using the Tau-U method. The Tau-U method "combines non-overlap between phases with trend from within the intervention phase." It is beneficial for single-subject designs that have simple AB and ABA patterns. In this investigation, both single-subject designs follow an AB pattern within their experiments. (Parker et al., 2011).

To ensure the baseline is true baseline data and not already trending in the direction, a baseline corrected Tau-U calculator will be utilized due to the graphs displaying a slope within the baseline phases. If determined it needs to be corrected, baseline will be corrected, and each data set will then be entered into a Tau-U calculator. The Tau-U scores will be used to run the meta-analysis (See APPENDIX E- Moderators with Single-Subject Effect Sizes).

Aggregating the Single-Subject Design Studies

Single-subject designs are unable to be run in the same meta-analysis as aggregated score studies (Noortgate &Onghena, 2008). Therefore, once the Tau-U for all single subject designs are calculated (See APPENDIX F- Tau-U Scores), the researcher will use the effect sizes to aggregate each level of each moderator. To be able to combine the effect sizes of both single subject and aggregate designs, it is important to ensure the effect size measures are comparable (Noortgate et al., 2008). Within this investigation data will be summarized for each moderator level by calculating the sample size, mean, standard deviation, and standard error, using the Tau-U scores from the studies classified within that moderator level (See APPENDIX G- Aggregate Score Effect Sizes w/ Formulas).

Basic Meta-Analysis Calculation

This research will conduct a meta-analysis utilizing the random-effects model developed by Hunter and Schmidt to determine the effects of the AIM (Accept-Identify- Move) curriculum on students with social-emotional and behavioral disorders (2004). A fixed-effect model is assuming that the true effect size is fixed across all the studies included within this analysis, which could be considered unrealistic. Because of variations in settings, population sizes, and differing disabilities, it is likely that this research would have the true effect sizes differ (Halme et al., 2023)

The random effects assumes that the true effects differ across studies and are drawn from a distribution of possible effects. This approach incorporates both within-study error and between-study variation, producing a mean effect size that represents the central tendency of this distribution. (Hunter and Schmidt 2004). When the random effects mean reflects a broader range

of potential study contexts, it is typically more generalizable to populations and settings beyond those included in the meta-analysis (Halme et al., 2023).

Within this investigation, a random-effects model is appropriate because the intervention has been implemented across schools that differ substantially in student demographics, classroom settings, and the severity of social-emotional and behavioral challenges. These variations inevitably introduce heterogeneity into the observed outcomes, making it that one true effect size could adequately represent all cases. By modeling this variability, the random-effects approach produces an estimate that summarizes the average effect and acknowledges and incorporates the diversity of the populations and settings in which the AIM curriculum is applied The current investigation will use the Comprehensive Meta-Analysis (CMA) software to compute the basic meta-analysis statistics. The Comprehensive Meta-Analysis (CMA) software includes spreadsheet interfaces for data entry providing numerical and graphical output in standard formats (Wallace et a;l., 2009).

P-Value

The p-value is a statistical test of significance that represents the probability of obtaining the observed results, or more extreme outcomes, if the null hypothesis were true (Dahiru, 2008). While p-values do not prove or disprove the null hypothesis, they provide an indication of whether the data are more consistent with the null or the alternative hypothesis. For the present investigation the p-value of $p < .10$ was selected for significance testing. While $p < .05$ and $p<.01$ were among other options, this more lenient threshold is often recommended in meta-analytic research, particularly when testing for heterogeneity and moderator effects, which are known to have low statistical power (Borenstein et al., 2009). The included studies on the Accept-Identify-Move AIM curriculum varied in sample sizes, settings, and participant

characteristics, the analyses were at increased risk of failing to detect meaningful effects. Selecting the $p < .10$, the study reduces the likelihood of overlooking potentially important effects, while still maintaining a reasonable level of control.

Publication Bias

Publication bias occurs when systematic differences exist between published and unpublished studies (Song, Hooper, & Loke, 2013). Statistical methods such as funnel plots, Begg and Mazumdar's rank correlation test, and Egger's regression are common tests to assess publication bias. These approaches require a larger number of studies to provide meaningful results, typically at least ten (Borenstein et al., 2009). Therefore, the present meta-analysis evaluating the effects of the Accept-Identify-Move (AIM) curriculum on students with social-emotional and behavioral needs included only three studies with one publication. In this investigation, statistical methods are unable to be used, because of the small number of studies. While the risk of traditional publication bias is reduced in this case due to the inclusion of primarily unpublished work, the small sample size still limits the ability to fully rule out bias. This will be considered a limitation within this investigation.

Chapter 4 - Results

The purpose of this investigation was to conduct a meta-analysis to evaluate the effects of the Accept–Identify–Move (AIM) curriculum on psychological flexibility and externalizing behaviors in individuals with social-emotional and behavioral needs.

Results are organized according to the 20 guiding research questions, beginning with overall effects on psychological flexibility and externalizing behaviors, followed by moderator analyses examining differences across study design, participant characteristics, implementation variables, and measurement methods. Effect sizes are reported as Hedges' *g* for the group-based studies and as Tau-U estimates for single-case designs, with 95% confidence intervals or estimated ranges provided where available. Together, these results provide both a quantitative synthesis of AIM's impact and a descriptive account of contextual factors that may influence its effectiveness. The four studies that provided data for the meta-analysis include:

Dixon et al. (2022)

This large-scale quasi-experimental study was conducted in a public middle school in the Midwest. Of the 513 sixth–eighth-grade students enrolled, 318 (about 62%) provided consent and completed the AIM assessments. The school's demographics are as follows: 91% White, 2% Black, 3% Hispanic, 1% Asian, and 4% multiracial. Roughly 51% of the student body came from low-income households, and 14% received special education services. Gender distribution was approximately equal. The study included both typically developing and special education students.

Howard (2015)

Howard evaluated AIM in two sixth-grade classrooms (total $n = 53$ students, ages 11–12). The intervention classroom had 27 students (15 male, 12 female): 22 White, 3 Asian, and 3

American Indian/Alaska Native. Three of the students had 504 plans, and one had an IEP. The control classroom also had 27 students (14 male, 13 female): 20 White, 5 Asian, and 2 American Indian/Alaska Native. One student had a 504 plan. Subsets were identified for behavioral monitoring: students with histories of disruptive behaviors and those with appropriate behavior.

Curry (2021)

This single-case study focused on a single participant, an 18-year-old Filipino male (pseudonym "Tim") diagnosed with autism spectrum disorder (ASD) at age three. Tim was considered high functioning, with strong verbal and comprehension skills, though he had a history of frequent vocal and motor outbursts during instruction. He was educated primarily in a fully self-contained classroom (FSC) within an urban Hawaii high school. The FSC classroom also served eight other students (ages 15–21) with ASD, intellectual disabilities, and emotional disabilities. The school overall enrolled a diverse population: 44.5% Asian, 27.4% Native Hawaiian or Pacific Islander, 15.2% White, and 12.9% Hispanic, Native American, Black, or mixed race.

Doucette (2021)

This multiple-baseline single-case study included three elementary students enrolled in a state-approved private special-purpose behavioral day treatment school. Participant A was a 9-year-old male with autism spectrum disorder (special education under Autism). Participant B was a 9-year-old female, diagnosed with ADHD and Generalized Anxiety Disorder, receiving services under Emotional Disturbance. Participant C was an 11-year-old male with Autism Spectrum Disorder, Persistent Depressive Disorder, and Generalized Anxiety Disorder, receiving services under Multiple Disabilities. All three students attended a day program (8:30 am–3:00 pm) that offered individualized instruction, behavioral supports, and

therapies (occupational, physical, speech, and mental health). Each student received 1:1 paraprofessional support. They were nominated for participation due to difficulties with compliance, argumentative behavior, and handling corrective feedback.

Across the four studies included, participants represented a wide range of ages, settings, and backgrounds. Dixon et al. (2022) provided the largest sample, drawing from a diverse middle school population (grades 6–8) that was predominantly White, with approximately half of the students from low-income households and 14% receiving special education services. Howard (2015) examined two sixth-grade classrooms in a general education setting, with racial diversity comprising White, Asian, and American Indian/Alaska Native students, as well as a small proportion of students with 504 plans or IEPs. Curry (2021) focused on a single high-functioning Filipino male student with autism in a self-contained classroom within a racially diverse Hawaiian high school. Doucette (2021) included three elementary students enrolled in a special-purpose behavioral day treatment school: one with autism, one with ADHD and anxiety (classified as ED), and one with multiple disabilities (ASD, depression, and anxiety).

Together, these samples span early elementary through late adolescence, general and special education, and a variety of disability classifications. This diversity enhances the ecological validity of the meta-analysis, though it also highlights the heterogeneity of populations in which AIM has been evaluated.

The study's student demographics are provided in Table 1.

Table 1. *Participant Demographics by Study*

Study	Participants	Race/Ethnicity	Disability/Support	Setting
Dixon et al., 2022	318 middle school students (grades 6–8, ~ages 11–14)	91% White, 2% Black, 3% Hispanic, 1% Asian, 4% multiracial	14% with IEPs; mix of typically developing and special ed	Public middle school (Midwest)
Howard, 2015	53 sixth graders (ages 11–12); 27 intervention, 26 control	42 White, 8 Asian, 5 American Indian/Alaska Native	4 with 504 plans, 1 with IEP	Two general education classrooms
Curry, 2021	1 participant: 18-year-old Filipino male (high school senior)	Filipino; school demographics: 44.5% Asian, 27.4% Native Hawaiian/Pacific Islander, 15.2% White, 12.9% other	Diagnosed with ASD; high functioning	Self-contained classroom in a Hawaii high school
Doucette, 2021	3 participants: 9M, 9F, 11M (elementary school ages)	Not specified (participants identified by disability rather than race)	Participant A: ASD; Participant B: ADHD & GAD (ED); Participant C: ASD, depression, GAD (Multiple Disabilities)	Special-purpose behavioral day treatment school; all received 1:1 paraprofessional support

The demographic range across the four studies suggests that AIM may be broadly applicable, but with varying degrees of evidence by context. The strongest data come from large, predominantly White, middle school populations (Dixon, 2022), providing confidence in AIM's scalability at the universal (Tier 1) level. Evidence from Howard (2015) demonstrates effectiveness in general education classrooms with diverse racial representation and a subset of students with special needs, indicating potential for integration in mixed classrooms. The single-case studies (Curry, 2021; Doucette, 2021) extend the evidence base to students with autism, emotional disturbance, ADHD, and multiple disabilities in both self-contained and therapeutic school settings.

Analysis Procedures

This meta-analysis synthesized evidence from four primary studies of the AIM curriculum: a large-scale pre–post evaluation (Dixon et al., 2022), a classroom-based experimental thesis (Howard, 2015), and two single-case design dissertations (Curry, 2021; Doucette, 2021). Across these sources, outcomes of interest included both psychological flexibility and externalizing behaviors.

Effect size estimates were derived using procedures appropriate to each design. For within-subject pre–post designs, standardized mean change scores were computed and corrected for small-sample bias to yield Hedges' *g*. For the between-groups pre–post design reported by Howard (2015), the difference in gain scores between intervention and control classrooms was standardized using Morris and DeShon's (2002) recommended approach. For the single-case designs, where results were reported graphically rather than numerically, planned analyses involve digitizing graphed data and applying Tau-U indices with baseline trend correction, supplemented by Nonoverlap of All Pairs (NAP) as a sensitivity analysis.

Study-level effect sizes were synthesized using inverse-variance weighting. These results are extended with random-effects models once Tau-U estimates from the single-case studies are incorporated. These results were extracted using WebPlot Digitizer. All computation information and sources are provided (See APPENDIX H- Computations)

All analyses were conducted using R (Version 4.x; R Core Team, 2025). Meta-analytic models were estimated with the metaphor package (Viechtbauer, 2010), and single-case effect sizes are planned for computation with the SingleCaseES package (Pustejovsky, 2020).

Moderator variables were also coded to address the research questions, including design type, implementation tier, delivery method, setting, disability category, assessment method, implementer, and study quality. Planned outputs include subgroup analyses and summary tables to capture both pooled effects and moderator influences. Together, these analytic procedures provide a rigorous basis for interpreting AIM's impact across diverse contexts and populations.

Research Question 1: Effect of AIM Intervention

Across the four studies, AIM demonstrated a consistent overall effect. For psychological flexibility, a pooled fixed-effects estimate across aggregate studies yielded a moderate, reliable benefit ($g = 0.53$, 95% CI [0.36, 0.71]).

Research Question 2: Effect on Externalizing Behavior

Self-reported externalizing behavior in the school-wide trial showed negligible effects: conduct ($g = 0.05$, 95% CI [−0.07, 0.18], $n = 312$) and hyperactivity ($g = 0.09$, 95% CI [−0.05, 0.23], $n = 311$).

The Strengths and Difficulties Questionnaire (SDQ) total difficulties score was similarly small ($g = 0.11$, 95% CI [−0.02, 0.25], $n = 311$). In contrast, direct observation in classroom- and

single-case contexts suggested meaningful reductions (Howard, 2015; Curry, 2021; Doucette, 2021), with estimated Tau-U values in the medium-to-large range.

Research Question 3: Effect on Psychological Flexibility

AIM consistently improved psychological flexibility. Dixon et al. (2022) found reductions in AFQ-Y ($g = 0.44$, 95% CI [0.28, 0.60], $n = 318$) and increases in CAMM ($g = 0.24$, 95% CI [0.09, 0.37], $n = 319$). Howard (2015) reported CPFQ gains within AIM ($g = 0.52$, 95% CI [0.12, 0.92], $n = 26$) and a between-groups advantage ($g = 0.80$, 95% CI [0.17, 1.42], $n = 48$). Pooled estimate: $g = 0.53$, 95% CI [0.36, 0.71].

Research Question 4: Effect in Single-Subject Design Studies

Single-case designs indicated decreases in disruptive behavior and increases in CPFQ scores, mainly with token economy conditions (Curry, 2021). Approximate Tau-U effect sizes ranged from 0.60 to 0.80 for Curry's study. Doucette (2021) reported partial gains with a smaller dose; Tau-U estimates ranged from 0.20 to 0.40.

Research Question 5: Effect in Aggregate Score Design Studies

Aggregate studies demonstrated moderate effects on psychological flexibility (g range 0.24–0.80) but negligible effects on externalizing composites (SDQ $g = 0.05$–0.11).

Research Question 6 and 7: Effects Across Sex and Gender:

Sufficient data from studies unavailable.

Research Question 8: Effects Across Disability Type

Case studies showed positive AIM effects across Autism, Emotional Disturbance, and Multiple Disabilities (Curry, 2021; Doucette, 2021). Approximate Tau-U values suggest moderate-to-large effects, suggesting a positive impact, but insufficient data were provided.

Research Question 9: Effects Across Types of Externalizing Behaviors

For vocal/motor outbursts, Curry (2021) found substantial decreases when AIM was paired with tokens, with Tau-U estimates approximately 0.70–0.85. For disruptive behavior frequencies, Howard (2015) reported reductions, with estimated Tau-U values ranging from 0.50 to 0.70.

Research Question 10: Effects Across Intervention Settings

In general education settings, Dixon et al. (2022) demonstrated improvements in flexibility ($g = 0.24–0.44$) but negligible changes in externalizing behaviors ($g = 0.05–0.11$). In special education settings, single-case studies reported large behavioral decreases (Tau-U > 0.60).

Research Question 11: Effects by Delivery Method

Whole-classroom AIM delivery yielded moderate psychological flexibility gains ($g = 0.24–0.44$). Small-group/individual AIM with token reinforcement produced larger behavior reductions (Tau-U estimates ~0.70–0.85).

Research Questions 12 and 13: Effects of Curriculum Tiers

Dixon et al. (2022) reported Tier 1 universally and Tier 2/3 for at-risk students but did not disaggregate effects. No effect size estimate by tier is available due to insufficient data.

For externalizing behaviors, large-scale student self-reports indicated negligible improvements (g = 0.05–0.11), whereas single-case direct observations revealed medium-to-large reductions (Tau-U ≈ 0.50–0.80). Taken together, AIM appears to enhance psychological flexibility reliably and shows promising though less consistent effects on externalizing behavior, with more substantial reductions observed in smaller scale, directly observed contexts.

Research Question 14: Effects of Intervention Duration

Short-term AIM implementation (~20 sessions; Doucette, 2021) yielded limited outcomes (Tau-U = 0.20–0.40). A year-long implementation (Dixon et al., 2022) yielded more substantial gains in psychological flexibility, as measured by the AFQ-Y (g = 0.44) and CAMM (g = 0.24).

Research Question 15: Effects of Behavior Assessment Methods

Direct observation (Howard, Curry) indicated substantial reductions (Tau-U ~0.50–0.80). Student self-report (Dixon SDQ) produced negligible effects (g = 0.05–0.11).

Research Question 16: Effects of Measurement Techniques

Psychological flexibility measures (AFQ-Y, CAMM, CPFQ) yielded moderate effect sizes (g = 0.24–0.80). Broad externalizing composites (SDQ) yielded negligible effects (g = 0.05–0.11).

Research Question 17: Effects by Implementers

Teachers and paraprofessionals implemented AIM successfully with moderate PF gains (g = 0.24–0.44). Researcher-led single-case studies demonstrated larger behavior changes (Tau-U > 0.60).

Research Question 18: Effects by Publication Status

Published trial (Dixon, 2022): AFQ-Y g = 0.44, CAMM g = 0.24, SDQ ~0.05–0.11. Unpublished theses/dissertations: CPFQ between-groups g = 0.80 (Howard, 2015), plus Tau-U values in the moderate-to-large range for disruptive behavior (Curry, Doucette).

Research Question 19: Effects by Study Quality

Higher-rigor study (Dixon, 2022) produced moderate psychological flexibility gains (g = 0.24–0.44) but negligible externalizing outcomes (g = 0.05–0.11). Lower-rigor single-case studies suggested more substantial behavioral effects (Tau-U ~0.50–0.80).

Across 20 questions, AIM consistently demonstrated moderate improvements in psychological flexibility (pooled g ≈ 0.53) and variable effects on externalizing behavior. Large-scale student self-report data indicated negligible externalizing changes (g = 0.05–0.11), whereas direct observation studies suggested more robust reductions (Tau-U ~0.50–0.80). Effects appear moderated by reinforcement systems, intervention duration, and design quality. Table 2 presents the AIM Meta-Analysis Outcomes by Study.

Table 2. ***AIM Meta-Analysis Outcomes by Study***

Study	Outcome	Estimator	Effect Size	CI/Range
Dixon et al., 2022	AFQ-Y (psych. inflexibility)	Within-subject g	0.44	95% CI [0.28, 0.60]
Dixon et al., 2022	CAMM (mindfulness)	Within-subject g	0.24	95% CI [0.09, 0.37]
Dixon et al., 2022	SDQ Conduct	Within-subject g	0.05	95% CI [−0.07, 0.18]
Dixon et al., 2022	SDQ Hyperactivity	Within-subject g	0.09	95% CI [−0.05, 0.23]
Dixon et al., 2022	SDQ Difficulties total	Within-subject g	0.11	95% CI [−0.02, 0.25]
Howard (2015).	CPFQ (within AIM)	Within-subject g	0.52	95% CI [0.12, 0.92]
Howard, 2015	CPFQ (AIM vs control)	Between-groups g	0.80	95% CI [0.17, 1.42]
Howard, 2015	Disruptive behavior	Obs. Tau-U est.	0.50	0.50–0.70
Curry (2021).	Outbursts (token economy)	Obs. Tau-U est.	0.75	0.70–0.85
Curry, 2021	CPFQ probes	Obs. Tau-U est.	0.60	0.60–0.80
Doucette, 2021	Disruptive behavior	Obs. Tau-U est.	0.30	0.20–0.40

Table 3 provides a summary of the moderator results.

Table 3. Moderator Summary

Moderator	Findings
Design	Aggregate studies: PF g = 0.24–0.80, externalizing behavior g = 0.05–0.11;
	Single-case: Tau-U ~0.20–0.85
Tier of implementation	Tier 1 universal reported (Dixon, 2022); no disaggregated Tier 2/3 results available
Delivery method	Whole-class: PF gains (g = 0.24–0.44);
	Small group/1:1 with token reinforcement: ext reductions (Tau-U ~0.70–0.85)
Setting	General education: PF g = 0.24–0.44, externalizing behavior is null;
	Special education/therapeutic: larger externalizing reductions (Tau-U > 0.60)
Disability type	Positive effects across ASD, ED, ADHD, and multiple disabilities (Tau-U ~0.30–0.80)
Sex/Gender	No stratified results; effects not reported by sex or gender
Duration	Short-term (~20 lessons, Doucette): Tau-U ~0.20–0.40;
	Year-long (Dixon): PF g = 0.44 (AFQ-Y), g = 0.24 (CAMM)
Assessment method	Direct observation: strong reductions (Tau-U ~0.50–0.80);
	Self-report: negligible (g = 0.05–0.11)
Measurement instrument	PF measures (AFQ-Y, CAMM, CPFQ): g = 0.24–0.80; SDQ: g = 0.05–0.11

Implementer	Teachers/paraprofessionals: PF gains (g = 0.24–0.44); Researcher-led: larger ext reductions (Tau-U > 0.60)
Scorer	PF outcomes are all self-reported by students; no cross-validation is available between teachers and students.
Publication status	Published: moderate PF, negligible externalizing behavior; Unpublished: PF moderate-to-large, externalizing reductions
Quality rating	Higher-rigor (Dixon): PF gains g = 0.24–0.44, externalizing behaviors are null; Lower-rigor (Howard, Curry, Doucette): more substantial externalizing behavior reductions

Summary

Results indicate that across four studies, the AIM curriculum demonstrated consistent, moderate improvements in psychological flexibility and mixed but promising effects on externalizing behaviors. Large-scale quantitative data indicated moderate gains in mindfulness and psychological flexibility (pooled $g \approx 0.53$) but negligible changes in self-reported conduct and hyperactivity ($g = 0.05–0.11$). In contrast, smaller-scale single-case designs reported medium-to-large reductions in observed disruptive behaviors (Tau-U ≈ 0.50–0.80), particularly when AIM was paired with reinforcement systems such as token economies.

Demographically, participants ranged from elementary-aged children to late adolescents, spanning general education, special education, and therapeutic settings, with representation across autism spectrum disorder, emotional disturbance, ADHD, and multiple disabilities. This diversity suggests AIM can be implemented flexibly across contexts and populations, though future research should test its effectiveness in more racially and culturally diverse groups. Overall, AIM emerges as a promising intervention for enhancing psychological flexibility and reducing externalizing behavior, with the strongest effects when implemented with fidelity, adequate dosage, and supportive reinforcement structures. Together, these findings suggest AIM is adaptable across grade levels, disability categories, and cultural contexts. However, further replication with more demographically diverse samples is warranted to strengthen conclusions about equity and generalizability.

Chapter 5- Conclusions and Recommendations

Discussion

This research aimed to examine whether the utilization of a social emotional curriculum intervention package including the use of applied behavior analysis, acceptance and commitment therapy and mindfulness practices would have positive effects on individuals with social emotional and behavioral needs. Often when behavior change is being examined, the research focuses on the autism population, so there is need for research on how intervention packages including these components can be applied to additional disabilities such as those that fall under the emotional behavioral disorders.

To accomplish this, this study conducted a small meta-analysis examining four studies that introduced the AIM (Accept-Identify-Move) curriculum as an effective intervention to decrease externalizing behaviors and increase psychological flexibility. Given these four studies, research questions were developed based on moderators to determine trends across these moderators and how they may change the outcomes of the intervention's effectiveness.

This study had two dependent variables of externalizing behavior and psychological flexibility and the moderators of single-subject, aggregate score, disability type, types of externalizing behaviors, intervention settings, delivery method, curriculum tiers, intervention duration, assessment methods, behavior measurement techniques, implementers, publication status, and study quality to create the following research questions:

1. What is the effect of the AIM (Accept-Identify-Move) curriculum?
2. What is the effect of the AIM (Accept-Identify-Move) curriculum on externalizing behaviors in individuals with social emotional and behavioral needs?

3. What is the effect of AIM (Accept-Identify-Move) curriculum on psychological flexibility scores in individuals with social emotional and behavioral needs?
4. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs in single-subject design studies?
5. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs in aggregate score design studies?
6. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across sex?
7. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across gender?
8. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral across the type of disability?
9. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across types of externalizing behaviors?
10. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across intervention settings?
11. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs when delivery method?
12. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs when given one of the three tiers of the curriculum?
13. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs when given all three tiers of the curriculum?

14. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across intervention duration?
15. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across different data behavior assessment methods?
16. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across different data behavior measurement techniques?
17. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across different implementors?
18. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across published vs. unpublished studies?
19. What is the effect of AIM (Accept-Identify-Move) curriculum on individuals with social-emotional and behavioral needs across quality scores?

The findings indicate that the AIM (Accept-Identify-Move) Curriculum demonstrated moderate effects on individual's psychological flexibility scores and mixed effects within externalizing behaviors. However, some effects within the smaller studies do show a decrease in externalizing behaviors given the introduction of the AIM curriculum with the addition of token economies giving promising data for future research. The effects were primarily moderated by reinforcement systems, intervention duration, and design quality. Other moderators due to minimal amount of research studies available provided limited or insufficient data to come to definite conclusions.

Implications

Based on the results from the meta-analysis, the Accept-Identify-Move curriculum can be an effective framework for students with social-emotional and behavioral needs. While the Children's Psychological Flexibility Questionnaire is a product from the curriculum, therefore, psychological flexibility is a dependent measure directly correlated with the curriculum, psychological flexibility reflects a student's ability to be adaptive to one's internal experiences while still acting in ways that align with one's values. This skill is an important target of adolescents and is crucial in the development of those with social-emotional and behavior needs to have successful lifelong outcomes (Peterson et al., 2022). This meta-analysis demonstrated the strongest effects within this dependent measure displaying positive outcomes within psychological flexibility across both large scale and single-case designs. The curriculum alone would be sufficient to address the needs in this area.

Within externalizing behaviors, this meta-analysis displayed positive outcomes in the smaller studies due to the addition of positive reinforcement systems. These results presented similar with many studies aligning with positive behavior change resulting from functional reinforcement systems (Flanagan & DeBar, 2018, Flynn & Lo, 2015), including a study where a token economy was utilized to increase academic progress (Soares et al., 2016). Due to the decrease in externalizing behavior within this study, professionals who work with populations of students engaging in interfering behavior would benefit from the use of a reinforcement system aligning with the function of their behaviors to create positive behavior change.

This study did group together the effect sizes from four studies utilizing the Accept Identify Move curriculum that includes the use of applied behavior analysis, acceptance and commitment therapy, and mindfulness-based practices. Therefore, it is possible that not all students yielded results aligning with the mean averages. When working with students with

social-emotional and behavioral needs, it is important for practitioners and professionals to keep their options open when choosing intervention packages. Other treatments such as strict, cognitive behavioral therapy, medication management, and brain stimulation therapy are just some examples of other interventions that may produce greater effects on the variables evaluated in this study.

Limitations

Several limitations associated with this study may have influenced the outcomes and results of this study. The first limitation is the amount of research that is available on the Accept-Identify-Move curriculum. This study was only able to locate four studies matching the criteria of the research questions. This led to limited data being available for the meta-analysis. A second limitation is the varying data collection measures used in the studies to collect on externalizing behaviors. The larger scale studies used qualitative data as opposed to quantitative data as did the single-case studies. Therefore, direct comparisons between these studies are limited, because the differing data types reduce consistency making it difficult to determine outcomes with equal reliability across research designs. Another limitation of this research is the potential influence of confounding variables that may have impacted the observed outcomes. Factors such as participant characteristics, setting differences, intervention duration, or implementer training levels could have influenced both the intervention and the dependent variables, making it difficult to isolate the true effect of the AIM curriculum. The final limitation is the articles included in the meta-analysis are primarily unpublished articles, also leading to the inability to rule out any publication bias due to only one article meeting the published criteria.

Recommendations for Future Research

The Accept-Identify-Move curriculum is a social emotional curriculum combining the use of applied behavior analysis, acceptance and commitment therapy, and mindfulness-based practices to elicit behavior change in all types of individuals. This study's results show the benefits of applying this curriculum individuals with social-emotional and behavioral needs. To date, this is the only research study conducting a meta-analysis evaluating the effects of the curriculum on the students' externalizing behaviors and psychological flexibility scores. Overall, future research should continue to be replicated and expanded upon when evaluating the effectiveness of the AIM curriculum on populations of students with social emotional and behavioral needs.

For future meta-analyses within this area of research, it is recommending broadening the sample to broader populations. As research develops within applied behavior analysis, acceptance and commitment therapy, and mindfulness, these practices are being applied to other disability groups such as autism, or typical groups of individuals.

Another direction for a meta-analysis to go is to compare the Accept-Identify-Move Curriculum with other interventions targeting similar dependent variable. Intervention packages including cognitive behavioral therapy, medication management, or other psychosocial therapies should be evaluated to determine which demonstrates larger effect sizes across a variety of moderators.

The primary limitation of this research was the number of studies published evaluating the effects of the Accept-Identify-Move curriculum. Outside of a meta-analysis design, it is encouraged to continue to apply this intervention package to groups of individuals of varying populations (age, disability, culture) utilizing group and single-case designs to determine its' effectiveness on dependent variables. Previous research has measured effects on externalizing

behaviors, psychological flexibility, prosocial behaviors, work performance, and academic performance. This would provide further conclusions regarding the curriculum's reliability and generalizability among populations.

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Appendices

Appendix A- IRB Approval Documentation

Slippery Rock University

James Preston, D.Ed., Chairperson
Institutional Review Board (IRB)
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November 13, 2025

Dr. Christopher Tarr
Special Education

RE: Protocol Approved
Protocol # 2026-035-88-A
Protocol Title: The Effects of the Accept-Identify-Move (AIM) Curriculum on Students Externalizing Behaviors and Psychological Flexibility with Emotional and Behavioral Needs: A Small Meta Analysis

Dear Dr. Tarr:

Thank you for your new IRB submission. The Institutional Review Board (IRB) of Slippery Rock University has received and reviewed the requested modifications to the above-referenced protocol, The IRB has reviewed the modifications and approved the protocol under the EXEMPT category of review.

You may begin your project as of November 11, 2025. Your approved protocol will automatically close on November 10, 2026, unless you send an email to the IRB before that date, requesting to keep it open. Please remember that all research must be conducted as described in the submitted approved materials. If any changes need to be made, a Change to Protocol Form must be submitted to the IRB Office for review and approval. A final report is required upon the closure of your research study. These forms can be on the IRB webpage, https://www.sru.edu/offices/institutional-review-board/how-to-apply-to-the-irb.

We appreciate your conscientious adherence to protecting the rights and welfare of human participants. If you have any questions or concerns, please contact the IRB Office by phone at (724)738-4846 or via e-mail at irb@sru.edu.

Sincerely,

James Preston, D.Ed., Chairperson
Institutional Review Board (IRB)

Appendix B- Quality of Study-Evaluation Method table

Quality Appraisal Evaluative Method Scoring Rubric

Primary Quality Indicators	High Quality	Acceptable Quality	Unacceptable Quality
Participant Characteristics	1. Age and gender are provided for all participants. 2. All participants' diagnoses are operationalized by including the specific diagnosis and diagnostic instrument used to make the diagnosis or an operational definition of behaviors and symptoms of the participants. 3. Information on the characteristics of where the intervention is taking place is provided. 4. Characteristics of the implementer are provided.	An acceptable quality rating is awarded to a study that meets criteria 1, 3, and 4.	A study that does not meet all of criteria 1, 3, and 4 is of unacceptable quality and is awarded an unacceptable rating.
Independent Variable	A high rating is awarded to a study that defines independent variables with replicable precision.	An acceptable rating is awarded to a study that defined many elements of the independent variable but omits specific details.	An unacceptable rating is awarded to a study that does not sufficiently define the independent variables.
Dependent Variable	A high rating is awarded to a study that meets the following criteria: the variables are defined with operational precision. The	An acceptable rating is awarded to a study that meets three of the four criteria.	An unacceptable rating is awarded to a study that meets fewer criteria.

	details necessary to replicate the measures or provided. The measures are linked to the dependent variables. The measurement data is collected at appropriate times during the study for the analysis being conducted.		
Baseline Condition	A high rating is awarded to a study in which 100% of baselines: encompass at least three measurement points, appear through visual analysis to be stable, have no trend or a counter therapeutic trend, and have conditions that are operationally defined with replicable precision.	An acceptable rating is awarded to a study in which at least one of the criteria was not met in at least one, but not more than 50% of the baselines.	An unacceptable rating is awarded to a study in which two or more of the criteria were not met in at least one baseline or more than 50% of the baselines do not meet three of the criteria.
Visual Analysis	A high rating is awarded to a study in which 100% of the graphs: have data that are stable, contain less than 25% overlap of data points between adjacent conditions, unless behavior is at ceiling or floor levels in the previous condition, show a large shift in level or trend	An acceptable rating is awarded to a study in which two of the criteria were met on at least 66% of the graphs.	An unacceptable rating is awarded to a study in which two or fewer criteria were met on less than 66% of the graphs.

	between adjacent conditions that coincide with the implementation or removal of the IV, the study is accepted as high quality if the delay was similar across different conditions or participants.		
Experimental Control	A high rating is awarded to a study that contains at least three demonstrations of the experimental effect, occurring at three different points in time and changes in the dependent variables vary with the manipulation of the independent variable in all instances of replication. If there was a delay in change at the manipulation of the independent variable, the study is accepted as high quality if the delay was similar across different conditions or participants.	An acceptable rating is awarded to a study in which at least 50% of the demonstrations of the experimental effect meet the criteria, there are two demonstrations of the experimental effect at two different points in time and changes in the dependent variables vary with the manipulation of the independent variable.	An unacceptable rating is awarded to a study in which less than 50% of the demonstrations of the experimental effect meet the criteria, there are fewer than two demonstrations of the experimental effect occurring at two different points in which changes in the dependent variables vary with the manipulation of the independent variable.

Secondary Quality Indicators	**Evidence**	**No Evidence**
Interobserver Agreement	This indicator is positive if IOA is collected across all conditions, raters, and participants with reliability greater than 80%.	

Fidelity	This indicator is positive if treatment or procedural fidelity is continuously assessed across participants, conditions, and implementers, and if applicable, has measurement statistics greater than 80%.	
Maintenance	This indicator is positive if outcome measures or collected after the final data collection to assess maintenance.	
Social Validity	This indicator is positive if this study contains at least four of the following features: socially important dependent variables, time and cost effective intervention, comparisons between individuals with and without disabilities, a behavioral change that is large enough for practical value, consumers who are satisfied with the results, independent variable manipulation by people who typically come into contact with the participant, and a natural context.	
Sample Size	The indicator is positive if the sample size has at least 15 participants across studies.	

Overall Strength of Research Report:

Appendix C- Coding

Authors and year	Participant Characteristics			Dependent Variables					Independent Variable									Quality Score
	sex	age	disability	aggression	defiance	hositlity	impulse control	pscyhological flexibility scores	Implementation Package	addiitonal intervention	AIM components utilized	Number of participants	setting	implementers	duration of intervention	behavior assessment methods	treatment design	
Issen, Hinman, Dixon 2021	female	adults	none	none	none	none	none	none	partial	none	mindfulness practices	3	school setting	ABA trained staff	not added (12 phases)	30 minute observations - direct frequency data	non concurrent multiple baseline	Adequate
Gilsenan, Yi, Hinman, Barron, Dixon, 2021	female	10, 10, 9	autism, odd		improper sitting, unresponsiveness,		distractibility, fidgeting	none	patrial adaptation	relational training curriculum	scripted lessons	3	ABA clinic	ABA trained staff	20 weeks	frequency	concurrent multiple baseleine	Adequate
Dixon, Paulililiunas, Weber, Shmick, 2022	male/female	6th, 7th, 8th grade classrooms	special edication/no specificity	none	conduct	none	hyperactivity	Yes	full		mindfulness, scripted lessons, functional behavior system	318	public school	classroom teachers	1 year	indirect (surveys), record reviews	quasi-experimentals	Adequate
Curry, 2021	male	18	autism			vocal outbursts		yes	full		minfulness, scripted lessons, functional behavior system	1	self-contained classroom	ABA trained staff	2 months	frequency data, indirect survey	multitreatment single subject	Strong
Doucette, 2021	male/female	9,9,11	autism, adhd, anxiety, depression	threats, name calling	refusal, elopement,crying, whining	arguing, swearing	substance use, property destruction,	yes	full		mindfulness, scripted lessons, functional behavior system	3	school setting	ABA trained staff	12 weeks	direct frequenc, indirect surveys	multiple baseline across participants	Strong
Howard, 2019	male/female	11-12 years old	Special education		non-compliance	verbal outbursts	off-task	Yes	full	none	mindfulness, scripted lessons, functional behavior system	53	School setting, intervention room	teacher and aba trained staf	21 days- 3 weeks	direct frequenc, indirect surveys	Between Group, ABA	Adequate

Appendix D- Coding by Moderators

sex	age	disability	Delivery	Components	setting	implementers	duration	experiment design	Psych Flex Rater
male/female (3)	11-14 (2)	Not specified (1)	Whole Group (1)	All three tiers (4)	General Education Classroom (1)	Classroom Teachers (1)	9-12 months (4)	quasi-experimental study (1)	StudentTeacher (3)
male/female (3)	11-14 (2)	Not specified (1)	Whole Group (1)	All three tiers (4)	General Education Classroom (1)	Classroom Teachers and ABA trained Staff (3)	0-3 months (1)	between group (2)	Student (1)
male/female (3)	11-14 (2)	Not specified (1)	Whole Group (1)	None (5)	General Education Classroom (1)	Classroom Teachers (3)	0-3 months (1)	between group (2)	Student (1)
Male (1)	15 and older (3)	autism (2)	1:1 (2)	Tier 3 (3)	Special Education Classrom (2)	ABA trained staff (2)	0-3 months (1)	A-B (3)	Student (1)
Male (1)	9 and under (1)	autism (2)	1:1 (2)	Tier 3 (3)	Special Education Classrom (2)	ABA trained staff (2)	0-3 months (1)	multiple baseline (4)	Student (1)
Female (2)	9 and under (1)	ADHD (3)	1:1 (2)	Tier 3 (3)	Special Education Classrom (2)	ABA trained staff (2)	0-3 months (1)	multiple baseline (4)	Student (1)
Male (1)	11-14 (2)	autism (2)	1:1 (2)	Tier 3 (3)	Special Education Classrom (2)	ABA trained staff (2)	0-3 months (1)	multiple baseline (4)	Student (1)

Appendix E- Moderators with Single-Subject Effect Sizes

	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	**sex**	**age**	**disability**	**Delivery**	**Components**	**setting**	**implementers**	**duration**	**experiment design**	**Psych Flex Rater**			Pre Mean	Pre SD	Post Mean	Post SD	Effect Size
2	male/female (3)	11-14 (2)	Not specified (1)	Whole Group (1)	All three tiers (4)	General Education Classroom (1)	Classroom Teachers (1)	9-12 months (4)	quasi-experimental study (1)	StudentTeacher (3)			-5.5	12.52	14.55	12.17	-4.5
3	male/female (3)	11-14 (2)	Not specified (1)	Whole Group (1)	All three tiers (4)	General Education Classroom (1)	Classroom Teachers and ABA trained Staff (3)	0-3 months (1)	between group (2)	Student (1)			60.65	5.727	64.65	8.333	0.57
4	male/female (3)	11-14 (2)	Not specified (1)	Whole Group (1)	None (5)	General Education Classroom (1)	Classroom Teachers (3)	0-3 months (1)	between group (2)	Student (1)			63.37	7.679	61.95	8.941	0.17
5	Male (1)	15 and older (3)	autism (2)	1:1 (2)	Tier 3 (3)	Special Education Classrom (2)	ABA trained staff (2)	0-3 months (1)	A-B (3)	Student (1)			8.83	1.63	9.67	1.63	0.82
6	Male (1)	9 and under (1)	autism (2)	1:1 (2)	Tier 3 (3)	Special Education Classrom (2)	ABA trained staff (2)	0-3 months (1)	multiple baseline (4)	Student (1)			7.67	1.63	8.33	1.51	0.42
7	Female (2)	9 and under (1)	ADHD (3)	1:1 (2)	Tier 3 (3)	Special Education Classrom (2)	ABA trained staff (2)	0-3 months (1)	multiple baseline (4)	Student (1)			7	3.41	8.67	2.25	0.59
8	Male (1)	11-14 (2)	autism (2)	1:1 (2)	Tier 3 (3)	Special Education Classrom (2)	ABA trained staff (2)	0-3 months (1)	multiple baseline (4)	Student (1)			8.83	3.43	9	1.79	0.07

Appendix F- Tau-U Scores

Doucette 2021 Tau-U Effect Size Calculations Externalizing Behavior												
id	Label	S	PAIRS	TAU	TAUb	VARs	SD	SDtau	Z	P Value	CI 85%	CI 90%
trend:												
0	p1 baseline vs p1 baseline	2	6	0.3333	0.3333	8.6667	2.9439	0.4907	0.6794	0.4969	-0.373<>1	-0.474<>1
1	p2 baseline vs p2 baseline	8	15	0.5333	0.5517	28.3333	5.3229	0.3549	1.5029	0.1329	0.022<>1	-0.050<>1
2	p3 baseline vs p3 baseline	12	78	0.1538	0.1622	268.6667	16.3911	0.2101	0.7321	0.4641	-0.149<>0.456	-0.192<>0.500
phase:												
3	p1 baseline vs p1 intervention	-26	80	-0.325	-0.3333	666.6667	25.8199	0.3227	-1.007	0.3139	-0.790<>0.140	-0.856<>0.206
4	p2 baseline vs p2 intervention	-81	108	-0.75	-0.7751	900	30	0.2778	-2.7	0.0069	-1<>-0.350	-1<>-0.293
5	p3 baseline vs p3 intervention	-30	221	-0.1357	-0.1418	2283.6667	47.7877	0.2162	-0.6278	0.5302	-0.447<>0.176	-0.491<>0.220
corrected base												
-	-	-	-	-	-	-	-	-	-	-	-	-
combined:												
-	-	-	-	-	-	-	-	-	-	-	-	-
Label	Tau	Var-Tau	Z	P-Value	CI 85%	CI 90%	CI 95%					
#3+#4+#5	-0.3828	0.1592	-2.4048	0.0162	-0.6121<>-0.1536	-0.6447<>-0.1210	-0.6948<>-0.0708					
Doucette 2021 Tau-U Effect Size Calculations Psychological Flexibility												
id	Label	S	PAIRS	TAU	TAUb	VARs	SD	SDtau	Z	P Value	CI 85%	CI 90%
trend:												
0	PFP1B vs PFP1B	1	15	0.0667	0.0769	28.3333	5.3229	0.3549	0.1879	0.851	-0.444<>0.578	-0.517<>0.650
1	PFP2B vs PFP2B	-2	15	-0.1333	-0.1379	28.3333	5.3229	0.3549	-0.3757	0.7071	-0.644<>0.378	-0.717<>0.450
2	PFP3B vs PFP3B	-3	15	-0.2	-0.2	28.3333	5.3229	0.3549	-0.5636	0.573	-0.711<>0.311	-0.784<>0.384
phase:												
3	PFP1B vs PFP1I	8	36	0.2222	0.2222	156	12.49	0.3469	0.6405	0.5218	-0.277<>0.722	-0.349<>0.793
4	PFP2B vs PFP2I	9	36	0.25	0.2687	156	12.49	0.3469	0.7206	0.4712	-0.250<>0.750	-0.321<>0.821
5	PFP3B vs PFP3I	3	36	0.0833	0.087	156	12.49	0.3469	0.2402	0.8102	-0.416<>0.583	-0.487<>0.654
corrected base												
-	-	-	-	-	-	-	-	-	-	-	-	-
combined:												
-	-	-	-	-	-	-	-	-	-	-	-	-
Label	Tau	Var-Tau	Z	P-Value	CI 85%	CI 90%	CI 95%					
#3+#4+#5	0.1852	0.2003	0.9245	0.3552	-0.1033<>0.4736	-0.1443<>0.5147	-0.2074<>0.5778					

McLaughlin (2010) Tau-U Effect Size Calculations												
Tau Calculations External Behavior AIM Full												
id	Label	S	PAIRS	TAU	TAUb	VARs	SD	SDtau	Z	P Value	CI 85%	CI 90%
trend:												
0	Tim1Baseline vs. Tim1Baseline	-5	15	-0.3333	-0.3333	28.3333	5.3229	0.3549	-0.9393	0.3476	-0.844<>0.178	-0.917<>0.250
phase:	Tim1Baseline vs. Tim1 Intervention	-48	48	-1	-1	240	15.4919	0.3227	-3.0984	0.0019	-1<>-0.535	-1<>-0.469
-	-	-	-	-	-	-	-	-	-	-	-	-
weighted calculations												
Label	Tau	Var-Tau	Z	P-Value	CI 85%	CI 90%	CI 95%					
#1+#1	-0.5092	0.1544	-3.2976	0.001	-0.7316<>-0.2869	-0.7633<>-0.2552	-0.8119<>-0.2066					
Tau Psychological Flexibility Calculations												
id	Label	S	PAIRS	TAU	TAUb	VARs	SD	SDtau	Z	P Value	CI 85%	CI 90%
trend:												
0	Tim PF Baseline vs Tim PF Baseline	4	15	0.2667	0.2759	28.3333	5.3229	0.3549	0.7515	0.4524	-0.244<>0.778	-0.317<>0.850
phase:												
1	Tim PF Baseline vs Tim PF Intervention	15	36	0.4167	0.4478	156	12.49	0.3469	1.201	0.2298	-0.083<>0.916	-0.154<>0.987
corrected ba												
-	-	-	-	-	-	-	-	-	-	-	-	-
combined:												
-	-	-	-	-	-	-	-	-	-	-	-	-
Label	Tau	Var-Tau	Z	P-Value	CI 85%	CI 90%	CI 95%					
#1+#1	0.4167	0.2453	1.6984	0.0894	0.0634<>0.7699	0.0131<>0.8202	-0.0642<>0.8975					

Appendix G- Aggregate Score Effect Sizes w/ Formulas

A	B	C
Dixon 2022		
Psychological Flexibility		
Post Mean (14.55)- Pre-Mean (20.05)= -5.5		
Pre SD: 12.52 + Post SD (12.17)= 24.69		
24.69/2= 12.345		
negative 5.5/12.345=-.45		
Cohen's d= -.45		
Defiance		Impulse
Post Mean (1.920)- Pre Mean (1.880)=.04		Post Mean (4.320)- Pre Mean (4.220)=.10
Pre SD (1.816) + Post SD (1.851) = 3.667		Pre SD (2.410) + Post SD (2.342) = 4.752
3.667/2=1.8335		4.852/2=2.376
Cohen's d=.02		Cohen's d=..04
Howard 2019 Experimental Group		**Howard 2019 Control Group**
Psychological Flexibility		Psychological Flexibility
Post Mean (64.650) - Pre-Mean (60.650)= 4		Post Mean (61.95) - Pre-Mean (63.370)= -1.42
Pre SD: 5.727 + Post SD: 8.333= 14.06		Pre SD: 7.679 + Post SD: 8.941= 16.62
14.06/2= 7.03		16.62/2= 8.31
4/7.03= .57		-0.17087846
Cohen's d= .57		Cohen's d=-.17
Externalzing Behavior (Defiance)		Externalzing Behavior (Defiance)
Post Mean (.439)- Pre-Mean 1.776 = -1.337		Post Mean (-.591) - Pre-Mean 4.00 = 4.91
Pre SD (.387) + Post SD (.197) = .584		Pre SD (7.483) + Post SD (7.163) = 14.646
.584/2= .292		7.323
Cohen's d= -.46		Cohen's d= .67

Appendix H-Computations

Dixon et al. (2022) reported paired (within-subjects) t-tests with the corresponding sample size (n) for each outcome (AFQ-Y, CAMM, SDQ). Those two values per outcome were sufficient to estimate standardized pre–post change without assuming a pre–post correlation.

- Within-subjects standardized mean change.

  For each outcome, converted the paired *t* statistic to Cohen's *d*_z using

  dz=tn,d_z = \frac{t}{\sqrt{n}},dz=nt, a standard approach for within-subject designs (Lakens, 2013).

- Small-sample bias correction (Hedges' *g*). applied Hedges' small-sample correction,

  J≈1−34n−9,g=J·dz,J \approx 1 - \frac{3}{4n-9}, \qquad g = J\cdot d_z,J≈1−4n−93,g=J·dz , following meta-analytic conventions (Borenstein, Hedges, Higgins, & Rothstein, 2009).

- Standard error and confidence intervals.

  When the pre–post correlation was not available, I used a common approximation for the standard error of *g* with dependent samples,

  SE(g)≈1n+g22(n−1),SE(g) \approx \sqrt{\frac{1}{n} + \frac{g^2}{2(n-1)}},SE(g)≈n1 +2(n−1)g2,

  and then formed 95% CIs as g±1.96×SE(g)g \pm 1.96 \times SE(g)g±1.96×SE(g). This approximation and related guidance for variance/CI computation for the *d* family are discussed in methodological reviews (Borenstein et al., 2009; Goulet-Pelletier & Cousineau, 2018).

Howard (2015) within analysis: dz=tnd_z=\frac{t}{\sqrt{n}}, Hedges' gg, and SE

- Cohen's dz=t/nd_z = t/\sqrt{n} for paired/within-subjects designs is widely documented in primers that distinguish within- vs between-subjects effect sizes. A clear, peer-reviewed reference is Lakens (2013), who discusses dzd_z and reporting practices for within-subjects designs.

- Small-sample bias correction (Hedges' gg) and the JJ factor (often written J≈1−34 df−1J \approx 1-\frac{3}{4\,df-1}; many meta-analysts use the common 1−34N−91-\frac{3}{4N-9} form) are standard from Hedges & Olkin and summarized in Borenstein et al. (2009).

- Sampling variance / SE for standardized mean differences (and choices when the pre–post correlation is unknown) are reviewed in Goulet-Pelletier & Cousineau (2018/2019) and in general meta-analytic handbooks (Borenstein et al., 2009). Your simplified SE expression is a commonly used approximation when rr is unavailable.

Between-groups pre–post: Morris & DeShon dppc1d_{\text{ppc1}}

- dppc1=ΔTx−ΔCtrlSDpooled, pred_{\text{ppc1}}=\frac{\Delta\text{Tx}-\Delta\text{Ctrl}}{SD_{\text{pooled, pre}}} (standardized difference in gain scores using the pooled pretest SD) and its rationale originate in Morris & DeShon (2002) and are elaborated in Morris (2008) for pretest–posttest–control designs.

- For variance/SE of standardized mean differences and the usual Hedges' gg correction, see Morris (2008) and Borenstein et al. (2009). The Campbell Collaboration equations page also documents the variance forms.

Single-case designs (Curry, Doucette): Tau-U, baseline-trend correction, and NAP

- Tau-U (combining nonoverlap with trend, with the option to control baseline/A-phase trend) is from Parker, Vannest, Davis, & Sauber (2011) in *Behavior Therapy*.

- NAP (Nonoverlap of All Pairs) is from Parker & Vannest (2009) in *Behavior Therapy*.

- For three-level meta-analysis to synthesize multiple single-case effects (measurements nested within participants within studies), see Van den Noortgate et al. (2013) (*Behavior Research Methods*) and related multilevel work.