

## ABSTRACT

Title of Dissertation: LITERACY BASED BEHAVIORAL INTERVENTIONS FOR AUTISTIC AND NEUROTYPICAL CHILDREN

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The neurodiversity model of disability is a relatively new approach to teaching and working with autistic individuals. As a result, many interventions align with earlier models of disability, such as the medical and social models, and aim to assimilate autistic individuals among their neurotypical peers rather than celebrate their differences as one of life's natural diversities. This study investigates how educators can create Literacy Based Behavioral Interventions (LBBIs) that align with the neurodiversity paradigm and foster equitable friendships between autistic and neurotypical children. I conducted focus groups with 34 autistic middle school and high school students and eight educators to determine how to feasibly meet autistic students' social needs. Themes found across these focus groups included autism education for teachers and neurotypical peers, barriers to communication, and the impact of social stigma against autistic individuals. These findings indicate a need for LBBIs and overall classroom environments that amplify autistic perspectives and are not rooted in neurotypical standards.

LITERACY BASED BEHAVIORAL INTERVENTIONS FOR AUTISTIC AND  
NEUROTYPICAL CHILDREN

by

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## Dedication

My work honors the memory of the little girl who changed my life, Kyli Abbinanti. Kyli, I think of you every day and am reminded of the joy you brought to this world. Each smile, each giggle, each moment of happiness was a gift to witness. Thank you for teaching me patience, kindness, and selflessness. I miss you with all of my heart, and I promise to always lead a life filled with love.

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# Table of Contents

Dedication .....	ii
Acknowledgements .....	iii
Table of Contents .....	iv
LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
CHAPTER 1 - INTRODUCTION .....	1
Introduction .....	1
Overview of the Research Synthesis .....	9
Overview of the Current Study Methodology .....	10
Overview of the Study Findings .....	11
CHAPTER 2 – REVIEW OF THE LITERATURE .....	14
Literacy Based Behavioral Interventions to Teach Peer-Oriented Social Skills ....	14
Theoretical Perspectives .....	16
Literacy Based Behavioral Interventions .....	20
Research Questions .....	23
Method .....	23
Inclusion Criteria .....	24
Coding Procedures .....	27
Analysis Methods.....	28
Results .....	31
Participants.....	31
Independent and Dependent Variables .....	33
Study Designs .....	43
Characteristics of Successful LBBIs (RQ1) .....	45
Neurotypical Peer Involvement (RQ2) .....	55
Discussion .....	56
Limitations .....	57
Implications for Research .....	58
CHAPTER 3 - METHODS.....	60
Study Design.....	60
Participants and Recruitment .....	61
<i>Autistic Student Participants</i> .....	61
<i>Educator Participants</i> .....	63
<i>Participant Recruitment</i> .....	64
Data Collection .....	65
<i>Focus Groups</i> .....	65
Data Analysis .....	67
<i>Trustworthiness</i> .....	68
<i>Researcher Positionality</i> .....	69
CHAPTER 4: FINDINGS.....	70
What Attributes Do Autistic Children Value When Making Friends? (RQ1).....	70
<i>Equality</i> .....	70
<i>Benefits of Friendship</i> .....	71

<i>Collaboration</i> .....	71
<i>Differences versus Deficits</i> .....	73
What Challenges Do Autistic Children Face During Friendship Development? (RQ2) .....	74
<i>Social Stigma and Inequality</i> .....	74
<i>Communication</i> .....	76
<i>Collaboration</i> .....	77
How Can Teachers Support Friendship Development Between Autistic and Neurotypical Children? (RQ3).....	78
<i>Autism Education for Teachers</i> .....	78
<i>Classroom Accessibility</i> .....	80
What Programs and Interventions Will Support Teachers in Fostering Friendship Development Between Autistic and Neurotypical Children? (RQ4).....	81
<i>Collaboration</i> .....	81
<i>Autism Education for Neurotypical Peers</i> .....	83
<i>Autism Education for Teachers</i> .....	84
CHAPTER 5 – GENERAL DISCUSSION .....	86
<i>Connection to the Literature</i> .....	87
Limitations .....	89
Implications for Practice .....	90
Implications for Research .....	91
CHAPTER 6 – FOSTERING NEURODIVERSITY IN THE CLASSROOM USING LBBIS .....	94
Deficits of Current LBBIs.....	95
<i>Adherence to Neurotypical Standards</i> .....	95
Neurodiversity as the Future Foundations of LBBIs .....	98
1..... Establish a Relationship with Autistic Students .....	99
2..... Autism Education for Teachers and Neurotypical Peers .....	102
3..... Creating Opportunities for Collaboration, Not Competition .....	104
Conclusion .....	107
Appendices.....	109
Glossary .....	114
References.....	116

## LIST OF TABLES

Table	Page
1. Synthesis participant characteristics.....	32
2. Synthesis variables and results.....	35
3. Characteristics for AB reversal designs.....	48
4. Characteristics for multiple baseline/multiple probe designs.....	49
5. Characteristics for alternating treatments designs.....	51
6. Quantitative analysis results.....	52
7. Descriptive data for Tau-U scores across behavior types.....	55
8. Participant Demographics Across Student Focus Groups.....	62
9. Participant Demographics Across Educator Groups.....	64
10. Summary of Recommendations for Educators.....	98

## LIST OF FIGURES

Figure	Page
1. PRISMA diagram for article selection.....	27
2. Design types and statistical significance.....	43
3. What Works Clearinghouse criteria.....	44

## CHAPTER 1 - INTRODUCTION

### **Introduction**

Autism spectrum disorder (ASD), or autism, is a neurodevelopmental disability associated with difficulty in social, behavioral, and communication behaviors (Centers for Disease Control [CDC], 2022). In recent years, disability rights activists have adopted the neurodiversity paradigm, which focuses on the impact of societal structure on disability (Singer, 2016; den Houting, 2019). The neurodiversity movement states that the basis of autism as a disability is the inhospitable environment towards its physical, emotional, and behavioral characteristics (den Houting, 2019). This paradigm extends to research interventions, particularly impacting those aligned with the medical and social models of disability. The medical model focuses on fixing these autistic characteristics with the goal of assimilation into a neurotypical society (Kapp et al., 2019). The social model acknowledges that disability is caused by lack of cohesion between disability and environment (den Houting, 2019); however, social skills researchers typically use this model to try and alter autistic behaviors to be more socially acceptable (Singer, 2016). The neurodiversity model directly challenges this notion, taking what these models classify as deficits and redefining them as differences (Kapp et al., 2019; Singer, 2016).

Most social skills interventions for autistic students are driven by the medical or social models (Singer, 2016). This means that they aim to extinguish autistic traits or change them to reflect the neurotypical standard. Reframing these interventions using the neurodiversity model would mean big changes at all levels. **Interventions**

must be more than just “inclusive” and would need to address not just the autistic target student but also the environment. Jones and colleagues (2021) found that non-autistic adults who received autism acceptance training engaged in fewer instances of explicit bias towards autistic individuals than those who did not receive the training; however, implicit bias did not differ based on the training condition. While autism acceptance training for non-autistic adults starts to reduce the stigma against autistic individuals, there is no training for children. This is particularly troubling, as bias towards marginalized groups begins as early as elementary school, often expressed as social exclusion and bullying (Nesdale, 2007). Non-autistic children characterize their peers with autism as being “less friendly” and “less socially competent” than non-autistic children (Aubé et al., 2021). Perhaps one of the most common misconceptions about autistic people is that they have a reduced desire for friendships and prefer to be alone. In actuality, research shows that autistic children have a greater desire for friendships than non-autistic children (Rowley et al., 2012). These findings suggest that non-autistic individuals need more intensive social skills interventions in addition to peer and teacher training in order to reduce anti-autism bias; specifically, interventions targeted towards children.

Considering the societal shift towards the neurodiversity model of disability, there is a need to begin altering interventions to be more inclusive of autistic participants’ needs. One type of intervention that is commonly used with autistic participants is literacy based behavior interventions (LBBIs). LBBIs follow the social model of disability to teach academic, social, or daily living skills to individuals with disabilities (Bucholz et al., 2008). The literacy component is the story that

participants read or have read to them, depending on their reading level (Buchholz et al., 2008; Gray & Garand, 1993). This study aims to explore how researchers can better align LBBIs with the neurodiversity model. To achieve this, I first conducted a research synthesis that analyzed LBBIs that teach peer-oriented social skills to autistic children (Chapter 2).

The inclusion of autistic participants in target behavior selection has not been widely implemented or studied, particularly within social skills interventions. Neurodivergent individuals are people with neurodevelopmental disorders such as autism and intellectual impairments (Dwyer, 2022). The neurodiversity model of disability explains neurological and cognitive differences as one of life's normal diversities, rather than deficits (Singer, 1999; 2016). Anderson-Chavarria (2022) describes autism as a "predicament" of the neurodiversity model (p. 1334), stating that some aspects of autism itself can be disabling (e.g., difficulties paying attention), while other barriers are strictly societal and vary based on the inclusivity of one's environment (e.g., forced eye contact). In this way, there is more nuance between the polarizing perspectives of autism as a medical condition or autism as a result of an exclusionary society (Baron-Cohen, 2017).

The neurodiversity model also promotes the inclusion of neurodivergent opinions and experiences when developing interventions that target their behaviors. Among autistic adults, the neurodiversity movement has been the backbone for major political change, with neurodivergent advocates uniting for more accessible government spaces (Craine, 2020). Autistic adults are increasingly prevalent in research spheres, providing insight to make meaningful change for the neurodivergent

community as a whole (Stark et al., 2021). The question remains: how do non-autistic researchers engage in inclusive research with autistic children?

Early disability research excluded input and collaboration from disabled people in favor of promoting non-disabled voices. This only contributed to the alienation of marginalized groups (Oliver, 1992), particularly with the rise of the eugenics movement (McGuire, 2016). Autistic individuals were treated as subjects who needed observing, rather than valuable contributors to research about their disability (Milton & Bracher, 2013). Additionally, Lovaasian treatments described autistic individuals as having “mis-wired” brains that caused “bad behavior” (McGuire, 2016). The ultimate goal of these behavioral interventions was to make autistic children “indistinguishable from their normal friends” (Lovaas, 1987, p. 8) and aimed to make them appear “normal” rather than normalize differences in the human condition (Kapp et al., 2019). Researchers sought to change the behaviors of disabled people, rather than challenging the societal frameworks that keep the disabled marginalized (Barnes, 2002; Danieli & Woodhams, 2005).

Even research that has been conducted recently can be superficial in nature if it does not adequately address the root societal problems associated with disability. The original social model of disability, for example, looked at the disabled population as one cohesive group, rather than as a collection of individual experiences (Shakespeare, 2013). It is imperative to take into consideration how social barriers impact different disabilities in different ways. For autistic people, this can include being required to make eye contact despite the discomfort it brings them, or linguistic inaccessibility, such as not having access to augmentative alternative communication

(AAC) devices (Singer, 2016; Rosqvist et al., 2019). The newer social model of disability takes into consideration both the societal barriers and individual limitations associated with different disabilities (Shakespeare, 2013).

Unfortunately, these controversial foundations of autism research are still embedded in our current practices, underscoring the need for autism advocacy (McGuire, 2016). Research anchored in the neurodiversity model of disability not only acknowledges neurological differences, but celebrates them (Kapp et al., 2019). Participatory and emancipatory research empowers disabled people inside and outside of research settings, benefitting more than just the researcher, and the disability rights movement as a whole (Johnson & Walmsley, 2003). Moreover, neurotypical (individuals who are not neurodivergent) or non-autistic researchers should be framed as the “outsiders,” and autistic individuals could be regarded as the experts on their own experiences (Oliver, 1992; Johnson & Walmsley, 2003). The newer social model of disability, colloquially known as the ‘strong social model’ (Shakespeare, 2013), looks at the way that environment and cultural norms all intersect to impact disabled peoples’ experiences. This model frames disability as a condition that can be reduced given proper environmental modifications and accommodations.

When researchers include autistic children in intervention development, researchers could get insight into the support autistic students may need to be successful in school and in their community. Harrington and colleagues (2014) found that when interventionists relied on diagnostic criteria and the deficits associated with autism, they were more likely to create restrictive interventions and strategies, creating learning environments that autistic children perceived as hostile. Kärnä

(2015) emphasizes the extension of inclusive learning environments to a research setting using “participatory” or “emancipatory” approaches which includes marginalized groups as active researchers to solve a problem, rather than research subjects. An example of this participatory approach includes Project CASCATE, a technology-based method of creating “supportive learning environments” that used various modalities to enhance learning: (a) symbol matching, (b) Lego building, (c) storytelling, and (d) playing (p. 127). This inclusive environment was created by autistic students who communicated nonverbally or with augmentative or alternative communication (AAC) systems. Two of Project CASCATE’s principles can be applied across various settings: (a) fostering children’s active role and creativity, and b) fostering their strengths (p. 125). These principles focus on prioritizing the opinions and experiences of the autistic population by meeting their educational needs as well as bolstering their participation in their own learning.

Non-autistic researchers labeling themselves as “inclusive” is not enough to adequately establish that trust between themselves and a marginalized group; they must advocate for equitable and just treatment and make those goals evident in their research (Johnson & Walmsley, 2003). Non-autistic researchers must also challenge the power structures that keep disabled individuals categorized as “outsiders,” even when the research focuses on their disability (Rosqvist et al., 2019). This marginalization occurs because of an overarching misunderstanding that disability is a deficit based on an established norm, and the belief that non-disabled researchers had more knowledge of a disability than those with that disability (Danieli & Woodhams, 2005; Rosqvist et al., 2019).

Participatory research and emancipatory research are two ways to include autistic perspectives in intervention development. The goal of participatory and emancipatory research is to foster meaningful social change for targeted populations (Johnson & Walmsley, 2003). Emancipatory research differs from participatory in that emancipatory research must also be empowering and reciprocal to the target population (Oliver, 1992; Zarb, 1992). Danieli and Woodhams (2005) state that emancipatory research must actively work to “dissolve power relationships between researchers and researched” by establishing equal relationships between the two groups; that is, researchers must position themselves as partners, not experts (p. 287). Neurotypical researchers who have used these methods often report favorable results, stating that they have been made aware of issues that they would not have recognized without their autistic co-researchers (Chown et al., 2017). For example, autistic researchers pointed out the issue of using figurative language in a project aimed at helping empower autistic people (Martin, 2015). Martin (2015) explained that this is problematic because interpreting figurative language is often challenging for autistic individuals. Similarly, Singer (2016) emphasizes that many autistic behaviors that have been considered “inappropriate” (e.g., hand-flapping, fidgeting, rocking back and forth) are ways of dealing with sensory overstimulation. When neurotypical researchers revoke autistic individuals’ abilities to engage in these behaviors, they are taking away coping mechanisms for the sake of neurotypical presentation (Singer, 2016).

When asked about their experiences with friendship, autistic children are often eager to make friends. Studies have found that autistic children view friendship as an

essential part of life, one that can combat bullying and prevent them from experiencing loneliness (Calder et al., 2013; Murphy et al., 2017). Interviews with autistic adolescents indicated that companionship (e.g., having people to spend free time with, having people to talk to) was a major motivating factor in friendship development (Calder et al., 2013; Sedgewick et al., 2016). While autistic children may desire to have fewer friends than their neurotypical peers, they do not altogether eschew the idea of making friends; in contrast, autistic children value playing and socializing with their peers (Calder et al., 2013). Findings from this study suggest that autistic children do not desire as many friendships as neurotypical children, but both groups equally desire meaningful and reciprocal friendships. Even in adulthood, autistic individuals express wanting deep and meaningful friendships, a theme seemingly consistent throughout their lives (Müller et al., 2008).

The education system plays an important role in fostering autism acceptance and neurodiversity among children, but teachers are often hindered by the systemic oppression embedded in education's roots (Dawson, 2022; Singer, 2016). Teachers may have misconceptions regarding autism that prevent teachers from embracing the neurodiversity model of disability in their classrooms, including the causes of autistic behaviors, and acknowledging different learning behaviors (Hamsho et al., 2024). Ableism and oppressive normativity, which is the discrimination of autistic individuals because of their diagnosis and symptoms, inhibit neurodiversity from flourishing in classroom settings (Sweetapple, 2022). Shifting the foundation of special education to neurodiversity requires educators to understand how their classroom can be a disabling environment (Armstrong, 2017).

First, current disability programming focuses on what students cannot do, rather than what they can do; under a neurodiversity paradigm, teachers acknowledge autistic students' strengths and needs, using these strengths to overcome any challenges (Sweetapple, 2022). Second, under the current deficit-based special education paradigm, social skill instruction is rooted in compliance and assimilation rather than celebrating diversity (Armstrong, 2017; Sweetapple, 2022). The neurodiversity paradigm does not discount the various social-emotional and academic struggles that autistic students face; rather, it aims to use autistic students' strengths to work through those difficulties (Armstrong, 2017; Sweetapple, 2022). There's also an emphasis on emotional validation in the neurodiversity model of disability, which requires a positive relationship with the student and knowledge of the function of their behavior (Watson, 2022). In the neurodiversity model, teachers may learn about the autistic child on an individual level so the child could learn how to healthily acknowledge and express their feelings (Sweetapple, 2022). The question remains: what constitutes a celebration of these neurological differences and how can teachers feasibly implement these changes?

### **Overview of the Research Synthesis**

The results of my synthesis showed that Social Stories were the LBBIs most frequently implemented by researchers and practitioners. Social Stories were most effective when used to increase prosocial behaviors, rather than decrease antisocial behaviors, and when they adhered to What Works Clearinghouse (WWC) single-case design standards. The findings also indicated that only one study (5%) reported participant contribution to target behavior selection (Williams, 2012). Additionally,

neurotypical peers did not receive any training on autism or autistic communication. Most studies (65%) that reported peer involvement only included them as part of the observation environment, in which neurotypical children are present just for participants to interact with but are not part of the intervention. Two (10%) of studies that reported neurotypical peer involvement had them model appropriate behaviors for autistic participants (Sansosti, 2005; Sutton et al., 2021). This is particularly problematic because it implies that neurodivergent children should emulate their neurotypical peers in order to gain social acceptance. The issue is compounded by the lack of collaboration between neurotypical and autistic children, further separating children into groups of “us” and “them.” Social validity measures rarely included autistic participants, with only three studies (20%) obtaining their input. As a result, we as researchers cannot determine if the target behaviors are socially relevant to the target participants.

### **Overview of the Current Study Methodology**

Perhaps the most efficient way to determine whether an intervention and its target behaviors are meaningful is to engage in emancipatory research. This practice involves empowering individuals in the target population while breaking down the power imbalance between researcher and participant (Danieli & Woodhams, 2005). When marginalized groups, such as autistic individuals, become part of the research team, it helps neurotypical researchers take on perspectives they might not otherwise consider (Chown et al., 2017). While similar to participatory action research (PAR), emancipatory research must be reciprocal; this means that it must benefit both the researcher and the participants (Zarb, 1992).

The study draws on phenomenological research methodology. The overall goal was to understand two phenomena: 1) friendship development between autistic and neurotypical children, and 2) teacher facilitation of these friendships. In order to learn about these phenomena, I used transcendental phenomenology with both autistic children and special educators (Moustakas, 1994; Creswell & Poth, 2018). This required me, as the principal researcher, to set aside my own biases and expectations and interpret the participants' responses. The questions I asked served to further explore their experiences and how these experiences impacted friendship development (autistic participants) and friendship facilitation (special educator participants).

### **Overview of the Study Findings**

The findings from the focus groups with autistic children indicated that friendship is a crucial part of their lives, but that there are various obstacles that make friendship development difficult. First, neurotypical children often lack knowledge and have misconceptions about autism. Participants explained that their socialization differences are frequently misconstrued as a lack of interest, and that educating neurotypical peers on autism socialization and empathy patterns would make friendship development easier. This ties in with the 'difference, not deficit' approach that the neurodiversity model of disability promotes (Singer, 2016). Suggestions included collaborative groups and training sessions involving children with and without autism.

Participants also identified school as the most convenient setting for friendship development, citing the amount of time spent there and accessibility to

peers their own age. This included academic and non-academic activities, such as school-sanctioned clubs. One barrier to friendship development in schools that participants frequently discussed was that teachers lacked knowledge of autism. Participants specifically noted that teachers would benefit from training to learn about and support autistic characteristics. Given this insight, it was important to investigate implementation of neurodiverse practices in the classroom and what measures need improvement.

Further research into educator perspectives on neurodiversity shows that special education teachers often lacked knowledge about autism symptoms. While they consistently identified socialization difficulties as a symptom, most did not recognize other important aspects of autism, such as rigid and repetitive behaviors and sensory sensitivity (Hannant, 2021). Teacher involvement in neurodiverse practices typically begins and ends with academic skills, such as curriculum individualization and creating learning environments that foster academic productivity (Honeybourne, 2018; Sewell & Park, 2021). Previous studies have identified various barriers to embracing neurodiversity within the classroom, the most prominent being ableism and oppressive normativity (Armstrong, 2017; Sweetapple, 2022). This often leads to bias and prejudice development from teachers and neurotypical students.

Teacher focus group findings showed that equitable friendship development between autistic and neurotypical children starts in the classroom. School staff, including teachers, paraprofessionals, and administrators, need to model inclusive behaviors for their students to emulate. Special educators discussed the lack of

general education teacher training on autism and other neurodivergent diagnoses. This training should not be limited to those who have neurodivergent students; rather, it should be extended to all staff. One special education teacher noted that some general education teachers in her school went out of their way to avoid her students in the hallways. Neurotypical students often question autistic behaviors, such as stimming and sensory processing issues, and the responsibility primarily falls on special educators to explain their functions. Many of the teacher focus group participants stated that students would benefit from a schoolwide social-emotional learning (SEL) curriculum that taught about different types of communication and socialization preferences, and that teachers would benefit from professional development materials directly addressing how to establish relationships with autistic students. The results of these focus groups will help create programming that emphasizes neurodiversity as a celebration of differences, rather than neurological deficits that need to be fixed.

## CHAPTER 2 – REVIEW OF THE LITERATURE

### **Literacy Based Behavioral Interventions to Teach Peer-Oriented Social Skills**

Literacy based behavioral interventions (LBBIs) for social skills predominately center around teaching individuals with disabilities and neglect their neurotypical counterparts. As a result, there is an expectation for the autistic population to conform to societal norms, with no emphasis on neurotypical individuals to learn about neurodivergent communication. While recent studies adhere to Institutional Review Board ethical standards, they often omit participant input on intervention development (Camarata, 2022). Additionally, studies show that children with autism are more likely to be bullied than their neurotypical peers (Cook et al., 2020). This begets the question, who actually benefits from these social skills interventions?

This research synthesis seeks to determine whether LBBIs that teach peer-oriented social skills are successful in their endeavors, and how the inclusion of neurotypical peers in these interventions impacts the outcomes. Previous analyses of LBBIs assessed intervention effectiveness but did not consider the influence of neurotypical peer involvement or alignment with the neurodiversity movement. The results of these indicate inconsistent evidence for LBBi effectiveness (Leaf et al., 2015; Milne et al., 2020). Despite this inclusivity, researchers continue to use LBBIs to teach academic, social, and behavioral skills.

Despite the prevalence of the disability rights movement over the last sixty years, there are still myriad misconceptions and prejudices towards autistic individuals. Turnock et al. (2022) highlights three types of stigmas: public/enacted,

felt/self, and affiliate/courtesy. Public or enacted stigma refers to discrimination that a stigmatized individual faces. Felt or self stigma is internalized stigma, which can include fear of experiencing prejudice due to disability status. The third type of stigma, affiliate or courtesy, is discrimination experienced by those affiliated with a stigmatized individual, include family members or friends (p. 78).

Autism is a pervasive developmental disorder characterized by impairments in social communication, social-emotional reciprocity, nonverbal communication, and relationship development (Centers for Disease Control and Prevention, 2022a).

Approximately 1 in 44 children have been diagnosed with autism, a statistic that has steadily increased over time across levels of race, ethnicity, , and income (Centers for Disease Control and Prevention, 2022b). Research indicates that males are between three and four times more likely to receive an autism diagnosis than females, primarily due to females often hiding their symptoms, also known as camouflaging or masking (Ratto et al., 2018; McQuaid et al., 2022). The CDC also found that white children are more likely to receive an autism diagnosis compared to their Black or Hispanic counterparts, likely due to systemic issues that hinder access to services and evaluation. Autistic adolescents and adults who often camouflage their symptoms are more likely to experience mental health challenges, such as depression and anxiety (Bernardin et al., 2021). The social pressures for neurodivergent individuals to conform to neurotypical standards lead to symptom camouflaging. As diagnoses become more prevalent, so do interventions targeting the challenges associated with the disorder. These interventions often align with the socially constructed idea of

normalcy, requiring autistic individuals to communicate and socialize like their neurotypical peers (Leadbitter et al., 2021; Singer, 2016).

### **Theoretical Perspectives**

There are various theories that explain the social skill deficits and subsequent lack of friendships for autistic children. The Social Motivation Theory of Autism (Chevallier et al., 2012) underscores the need for social skills interventions, including LBBIs, for this population. Autistic children frequently struggle to understand social cues and norms (Gray & Garand, 1993). Chevallier and colleagues (2012) theorize that this occurs because they pay less attention to social stimuli than their neurotypical peers. LBBIs draw a child's attention to particular social stimuli and provide instructions and explanations for engaging in specific behaviors in the presence of a stimulus (e.g., a friend saying, "hello," to you warrants a response with a similar greeting). This lack of understanding of the social world results in decreased motivation to engage in social activities. This does not mean that autistic children do not desire any friendships; research indicates that they often have a stronger desire for friendships compared to their neurotypical peers (Rowley et al., 2012). With both groups of children seeking meaningful friendships, what prevents them from socializing together?

One theory that could explain this disconnect is Social Identity Development Theory (SIDT; Nesdale, 2007). According to this theory, prejudice develops throughout early and middle childhood. There are four phases of intergroup prejudice development: 1) undifferentiated, 2) group awareness, 3) ingroup preference, and 4) outgroup prejudice. An ingroup is the group to which a person belongs, while an

outgroup is any group with which the person is not affiliated. It is appropriate for children to prefer to spend time with their ingroup; however, problems arise if they develop outgroup prejudice. The way a person's ingroup treats other groups influences his or her beliefs towards outgroups. If one's ingroup treats outgroup members poorly, the person develops a bias against the outgroup. Unfortunately, children can develop prejudices against those with autism as early as elementary school. Aubé et al. (2021) found that neurotypical children were more likely to describe their autistic peers as less competent and less friendly than their neurotypical peers. Since this study focuses on including neurotypical peers in the intervention to promote neurodiversity, it is important to understand the complexities of prejudice development and what prejudices they may hold against their autistic peers.

Intergroup Contact Theory (Allport, 1954) provides a framework for reducing implicit and explicit biases towards outgroups. Positive contact between members of different ingroups can occur upon meeting four conditions: First, groups should have perceived equal status. There should not be an imbalance of power or a hierarchal relationship between the groups. Second, members of the different groups should share a common goal. Third, the members of the different groups should collaborate on a task or activity. Allport emphasizes using a non-competitive activity, as participants should focus on cooperation rather than rivalry. Fourth, there must be support from authority figures, such as teachers. Encouragement from respected adults to work collaboratively on a collective task leads to a reduction in outgroup prejudice. I used this theory to understand the type of collaboration that should occur in an LBBI to promote intergroup contact (e.g., learning new skills together), rather

than create a competition (e.g., comparing autistic participants to their neurotypical peers).

The neurodiversity model takes a different approach to disability altogether. Though this model has implications for various neurological disabilities, for the purpose of this analysis, I am only focusing on its relevance to autism. Developed by a woman on the autism spectrum, this model eschews the superficial focus on symptoms and instead emphasizes their causes (Singer, 2016). She cites “hypersensitivity to sensory stimuli” as the cause of most autism symptoms, particularly difficulty forming friendships, repetitive speaking, and lack of Theory of Mind (p. 32). According to neurodiversity theorists, environment accommodations and modifications are required for true inclusion, regardless of an individual’s support level needs.

One of the key components of neurodiversity is the criticism of autistic trait erasure (den Houting, 2019; Rentenbach et al., 2017; Singer, 2016). While the term “disability” is not inherently disparaging, comparison to the concept of “normalcy” and the expectation for autistic individuals to conform to it is problematic (den Houting, 2019; Singer, 2016). Autism interventions that follow the medical model often try to fix or cure people by assimilating with the neurotypical population. Some of these skills, like eye contact, cause emotional discomfort for autistic people. Other interventions attempt to reduce or eliminate behaviors that autistic individuals use to deal with sensory overstimulation. Stereotypy, colloquially known as stimming, refers to repetitive motor movements such as rocking back-and-forth, hand flapping, or pacing (Kapp et al., 2019, p. 1782). Their research findings showed that stimming

helped people self-regulate their emotions by coping with or blocking out excessive sensory stimuli. Moreover, Kapp and colleagues found that people felt angry, ashamed, and nervous when asked to stop stimming. Approaching intervention strategies using the neurodiversity model poses the question: are these interventions helping those with autism, or are they catering to the comfort of the neurotypical population?

The purpose of this paper is to determine components associated with successful Literacy Based Behavioral Interventions (LBBIs) and how they can evolve to align with the neurodiversity model of disability. I analyzed the dependent variables, independent variables, roles of neurotypical peers, and social validity measures. The neurodiversity model emphasizes teaching neurotypical peers how to create equitable and resilient friendships with autistic individuals (Leadbitter et al., 2021). Social validity represents the degree to which an intervention's goals and procedures are acceptable to the participants and implementors as well as the social importance of an intervention's goals and outcomes (Wolf, 1978). The rationale for measuring social validity to evaluate how society perceives these components; however, more recent literature suggests focusing on those receiving the intervention and those delivering it (Luiselli & Reed, 2011).

Autism treatments and interventions have also evolved over the years. Early efforts aligned more with the medical model of disability (Chown & Beardon, 2021), such as institutionalization and subsequent seclusion from society (Donovan & Zucker, 2016). These institutions were often overcrowded, and patients lived in inhumane conditions. Later treatments like applied behavior analysis (ABA) focused

on assimilation into neurotypical society by reinforcing prosocial behaviors (e.g., making eye contact, initiating play, taking turns) and punishing maladaptive behaviors (e.g., hitting, batting, eloping). ABA interventions include Discrete Trial Training (DTT), where a stimulus is presented, the participant engages in a behavior, and a consequence is delivered based upon the behavior; Functional Communication Training (FCT), in which participants learn appropriate communication strategies to replace inappropriate behaviors; and Pivotal Response Training (PRT), which uses a participant's interests to increase their social and communication repertoires (Lindgren & Doobay, 2011). Unfortunately, ABA and other behavior therapies do not account for neurodiversity (Singer, 2016).

### **Literacy Based Behavioral Interventions**

LBBIs is a type of social narrative used to teach various social and daily living skills to individuals with disabilities (Bucholz et al., 2008). With this intervention, participants read a story that informs them how to engage in a target behavior, including the steps and the circumstances under which they should perform the behavior. If participants are unable to read the story independently, a researcher or teacher will read it aloud to them. Interventionists measure behavior frequency or duration before, during, and after intervention delivery. While researchers typically implement LBBIs to alter social behaviors, they can also use them to improve academic outcomes and daily living skills (Gray & Garand, 1993).

One of the most common LBBIs is Social Stories (Gray & Garand, 1993). Social stories explain how to perform a specific behavior in which the target individual has difficulty. Social Stories consist of step-by-step instructions to

illustrate when, where, and how to engage in a behavior. Interventionists must create a social story specifically tailored to the target participant's strengths and needs. They can present these stories on a written or printed book, video modeling, multimedia presentation, or on an electronic medium. Social Stories use three types of sentences: descriptive, directive, and perspective (Gray & Garand, 1993). Descriptive sentences provide a background (e.g., setting or activity) under which the target behavior should occur. Directive sentences are explicit, positively stated expectations of the target behavior (e.g., "I can wait in line" rather than, "I will not cut the line"). Perspective sentences offer the perspective of another individual dependent on the participant engaging in the target behavior (e.g., "My friends will be happy if I share my toys with them"). These sentences typically follow a directive sentence. Interventionists use Social Stories to increase specific prosocial behaviors or to decrease aberrant behaviors.

The Power Cards strategy is another type of LBBI. This intervention has two primary components: 1) a social problem that the participant's special interest character needs to solve, and 2) a three- to five-step strategy to solve that problem (Gagnon, 2001). These steps can be in the form of a short story or a list of instructions (Kuligowski, 2010). Unlike the Social Story intervention, researchers can use Power Cards to teach more general behavior goals, such as showing good sportsmanship or on-task behavior, rather than requiring specific target behaviors (Daubert et al., 2015). Interventionists typically use this strategy to increase prosocial behaviors.

A third type of LBBIs is shared-reading peer-mediated intervention (PMI). Although interventionists typically use this method to increase reading fluency and comprehension, recent studies also use it to promote social development (Watkins et al., 2014; Simpson, 2020). PMI can include peer initiating, prompting, reinforcing, and proximity (placing participants near each other). In the context of prosocial behaviors, the goal of these interventions is to increase positive, meaningful communication between participants. Shared-reading PMI specifically involves placing participants in dyads or small groups to read, ask questions, and make relevant comments about a book. The interventionists encourage participants to praise one another for engaging in any of these collaborative behaviors. Like with Power Cards, interventionists typically use this strategy to increase prosocial behaviors, rather than decrease aberrant behaviors.

Previous studies have used LBBIs with mixed results. A methodological review by Leaf and colleagues (2015) found that most LBBIs (51.2%) did not demonstrate evidence of efficacy, 41.4% demonstrated partial evidence of efficacy, while only 7.3% demonstrated convincing evidence of efficacy. All of the studies that showed convincing evidence in this review introduced the intervention when baseline data were stable or trending correctly, staggered intervention conditions correctly, and indicated a clear change in behavior during intervention sessions with 100% accuracy. In contrast, accuracy for studies with lower efficacy ranged from 0-100% ( $M=46.9%$ ,  $Mdn=50%$ ). A later review by Milne and colleagues (2020) found similar results, with 76.9% not demonstrating any evidence of efficacy, 15.3% demonstrating partial evidence, and 7.8% demonstrating convincing evidence of efficacy. Like the

earlier analysis, studies with convincing evidence of efficacy had implemented the intervention with higher accuracy than those with partial or no convincing evidence. There did not seem to be discrepancies in the outcomes between studies that aimed to increase favorable behaviors or decrease maladaptive behaviors.

The findings from these analyses, while insightful, do not take into consideration social validity measures nor neurotypical peer involvement. It is crucial to evaluate these aspects to determine whether they align with the neurodiversity model of disability and to ensure that the autism community is represented in the research. My synthesis will analyze the components of neurodiversity to see how studies that use LBBIs do align with this model, and how future iterations of LBBIs can improve their adherence to this model.

### **Research Questions**

Although there is evidence that LBBIs can successfully enact behavior change for autistic students, there is minimal data determining efficacy for different types of LBBIs among preschool and autistic elementary school students, and how they differ given certain characteristics or procedures. This synthesis aims to answer the following research questions:

1. What are the characteristics of successful LBBIs?
2. To what degree does the inclusion of neurotypical peers impact intervention outcomes?

### **Method**

I conducted a comprehensive review of LBBi literature using the following electronic databases: *Academic Search Complete*, *Academic Search Premier*,

*Academic Search Ultimate, APA PsycInfo, eBook Collection, eBook Comprehensive Academic Collection, Education Source, ERIC, OpenDissertations, Psychology and Behavioral Sciences Collection, and Teacher Reference Center.* I paired intervention search terms (“*literacy based behavioral intervention,*” “*LBBI,*” “*social story OR social stories*”) with search terms for the population (*autism OR ASD OR autism spectrum disorder OR Asperger’s OR Asperger’s syndrome OR autistic disorder*), (*cognitive impairment OR cognitive dysfunction OR cognitively impaired*), (*elementary school OR primary school OR grade school*), (*early elementary OR kindergarten OR first grade OR second grade OR third grade*), (*peer mediated intervention OR peer-mediated intervention*) for a total of four unique searches per database. Three hundred fifty articles met this search criteria, with 340 left after removing duplicates.

### **Inclusion Criteria**

For inclusion in this synthesis, participants must have been enrolled in a pre-kindergarten through fifth grade classroom for the duration of the study. At least one participant in the study must have a diagnosis of autism, autism spectrum disorder, Asperger’s Syndrome, autistic disorder, cognitive impairment, or cognitive dysfunction. The independent variable must be an LBBI targeting a social behavior. Interventionists should have assessed participants with at least one social behavior outcome measure before and after beginning the intervention. The study must use quantitative data as its primary data source. Sixth, the intervention needed to be delivered in English. Last, the intervention should be delivered by professionals, such

as a classroom teacher or the interventionists, and not by parents. Fifty-five articles (15.7% of the original sample) met this inclusion criteria.

The first author and a second independent researcher double-coded a randomly selected 30% of all the studies ( $n=94$ ), to determine reliability of inclusion coding. We calculated percentage of agreement by dividing the number of agreements by the number of agreements plus disagreements. This initially resulted in 84% agreement. We later determined the lower rate of agreement was due to a misunderstanding of the inclusion criteria, in which the independent researcher included LBBIs with academic outcomes. The first author clarified the rule and ensured that the independent researcher understood by randomly selecting 10 articles to code together. We ensured by selecting 10 new articles to code, we reached 100% agreement given the clarified coding criteria. The coding was then repeated for all 94 articles. The subsequent rate of agreement was then 95%. After double-coding independently, the two coders met to resolve any disagreements.

Upon reading the abstracts of the 55 included articles, I determined that my search criteria for populations was too broad, as autistic children have different needs than those with cognitive delays or impairments. I thus narrowed my focus and removed any articles that didn't include at least one participant diagnosed with autism, autism spectrum disorder, Asperger's Syndrome, or autistic disorder; this excluded participants who had diagnoses of cognitive delay or impairment.

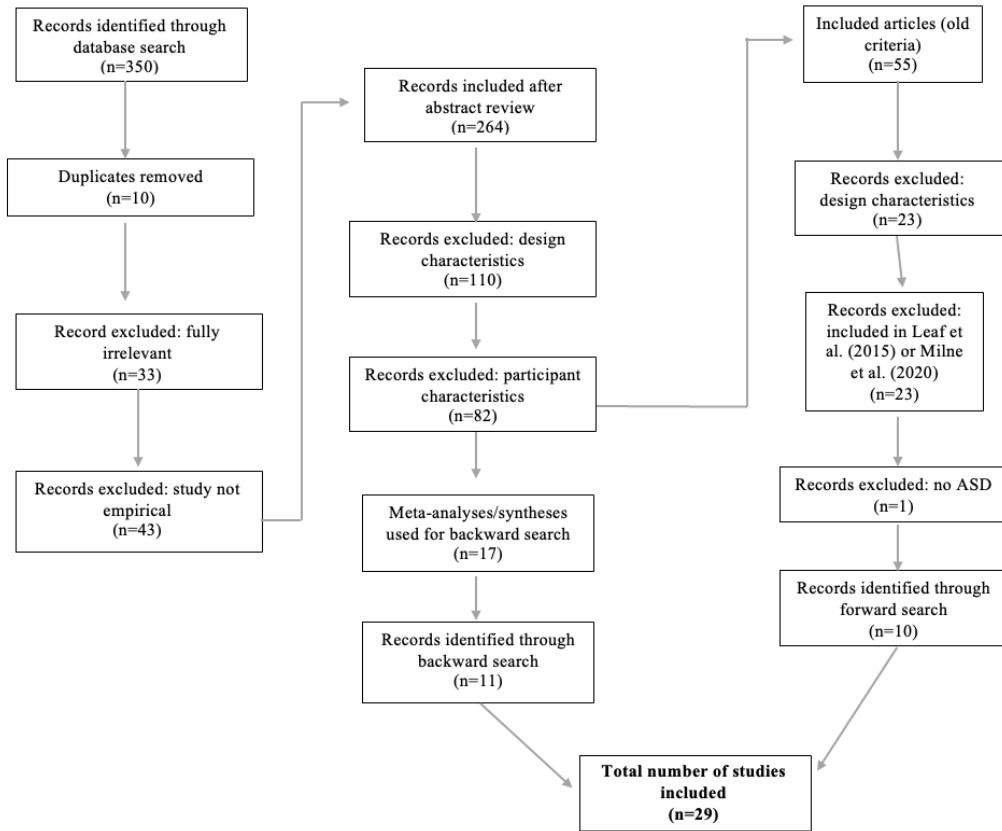
First, the study must use a single-case design. Third, the social behavior that interventionists assessed needed to be peer oriented. Fourth, studies should not already be included in either the meta-analysis by Leaf and colleagues (2015) or

Milne and colleagues (2020). Eight articles remained after I implemented the new criteria.

After updating the article pool using the revised criteria, I conducted an ancestral search by screening previous meta-analyses and syntheses for articles not identified in the database search and not included in the Leaf et al (2015) and Milne et al (2020) syntheses. During the revised article search, I flagged all meta-analyses and syntheses and identified relevant articles from their respective reference lists. I included dissertations and theses in addition to peer-reviewed articles to create a more robust analysis comprised of significant and non-significant outcomes. The ancestral search yielded 11 relevant articles, bringing the total number of articles in the corpus to 19. To conduct the forward search, I used the Google Scholar “cited by” list for each relevant record and determined which met the inclusion criteria. The forward search yielded 10 relevant articles, for a total of 29 included articles. For the quantitative analysis, I excluded studies that did not provide a means of visual analysis. Twenty-seven studies met the criteria for quantitative analysis. This information is pertinent to answering the first research question. Figure 1 shows the PRISMA flow chart diagram, which provides a detailed analysis of study selection.

**Figure 1**

*PRISMA diagram displaying article search results.*



## Coding Procedures

We coded each study for general information (participant characteristics, design characteristics, intervention characteristics, statistical analysis; Table xx). The first author and an independent researcher evaluated 30% of the studies ( $n=10$ ) that were randomly selected to obtain interrater reliability. After independently analyzing the literature, the first author compared answers and divided the number of agreements by the number of agreements plus disagreements and multiplied the answer by 100. Interrater agreement was 98.3%.

In addition to the other coding factors, I used the What Works Clearinghouse (WWC) Standards Handbook 4.1 (Institute of Education Sciences [IES], 2020) to evaluate study design rigor. The WWC single case design standards include both general and specific criteria for quality based on design type (reversal, multiple baseline and multiple probe, changing criterion, and alternating treatments designs). The key design features that the WWC examines are: (a) number of phases, (b) number of data points per phase, (c) fidelity data collection, (d) reliability data collection, and (e) interrater agreement. The first author coded each of these components as part of the synthesis. An independent researcher evaluated 30% of the studies ( $n=10$ ) to obtain interrater reliability. The first author divided the number of agreements by the number of agreements plus disagreements and multiplied the answer by 100. Interrater agreement was 97%.

### **Analysis Methods**

**Tau-U Scores.** To answer the first and second research questions, I determined standardized effect sizes using Tau-U scores. This effect size measure accounts for variations in units of measurement and types of designs. This statistic combines trend and nonoverlap to analyze single case experimental designs (Parker et al., 2011). I used the web-based Tau-U calculator to analyze the data (Vannest et al., 2016).

In order to calculate the Tau-U I first used the WebPlotDigitizer version 4.5 (Rohatgi, 2020) to accurately extract data for all relevant participants and behaviors. This software allows users to correctly locate each datapoint, convert it to numerical data, and export the information. For each graph, I first calibrated the  $x$ - and  $y$ -axes.

After, I selected all data points within each phase to digitize them. Then, I copied the digitized data and pasted it under the corresponding phase in the Tau-U calculator. I contrasted consecutive phases and obtained each between-phase Tau-U score and  $p$  value to make accurate inferences from the data (Brossart et al., 2018). I repeated the procedure for each different behavior within phases across studies. Upon digitizing the visual data for each behavior, I calculated the mean Tau-U score for all statistically significant results. Additionally, I calculated the percentage of statistically significant results across each behavior.

**Qualitative Components.** There were five study components that I analyzed qualitatively to address the research questions (i.e., verbal ability, dependent variables, neurotypical peer involvement phases, neurotypical peer involvement roles, and social validity). Though there is not a singular definition for each level of verbal ability, I used the guidelines for determining nonverbal, limited verbal abilities, and functional verbal communication from a recent systematic review (Koegel et al., 2020). Nonverbal refers to a verbal repertoire of fewer than 10 words, limited verbal abilities refer to a verbal repertoire of 10-75 words, and functional verbal communication refers to a verbal repertoire of greater than 75 words.

**Dependent Variable Overview.** I also created a general overview of the dependent variables to organize the types of desired target behaviors by labeling each peer-oriented social behavior with one of four categories: verbal communication, nonverbal communication, play, and aberrant behaviors. Verbal communication includes verbal initiations, commenting, greetings, completed independent compliment steps, compliments observed per session, acknowledging or repeating

utterance, agreeing, answering questions, related responding, confirming or clarifying a question or comment, requesting attention or acknowledgement, calling a peer's name to gain attention, vocalizations for joint attention, expressing enjoyment of peer interaction, social reciprocity, joining conversations, maintaining conversations, or thanking a peer. Nonverbal communication behaviors include eye contact, looking at speaker, non-verbal response, gestures for joint attention, or raising their hand for attention. Appropriate play includes reinforcing a peer for winning, sharing, turn-taking, initiating gameplay, using toys appropriately, reciprocal play, on-task play, parallel play, or sitting at table with peers. Aberrant behaviors include physical aggression, name-calling, laughing at another's misfortune, threats, verbal protest, grabbing, inappropriate touching, poking, play-fighting, wandering from a peer, off-topic response, or a non-response. I categorized dependent variable selection into four categories: participant, parents or guardians, school staff (general education teacher, special education teacher, school psychologist), and researcher. To determine which phases that neurotypical peers participated in the study, I categorized phases as pre-intervention, which included pre-intervention probes, baseline sessions, and training; intervention, which included intervention or treatment sessions; and post-intervention, which included post-intervention probes, maintenance, follow-up, or generalization sessions. This information helps quantify the neurotypical peers' level of involvement. Since one of the goals of this synthesis is to measure the impact of neurotypical peer involvement, it is necessary to report this information.

To create a more comprehensive analysis of neurotypical peers' roles, I sorted each type of peer inclusion into one of three categories. Part of the observation

environment, peer models, or comparison standard. The first category meant that neurotypical peers did not actively participate in study; they served as a way for data collectors to observe whether the autistic participants engaged in the target behaviors. When peers were just part of the observation environment, they were usually unaware of their roles. Peer models refers to a condition where the interventionists instructed neurotypical peers as models, to show the participants how to engage in the target behaviors. The final category refers to the use of peer data to determine if the autistic participants engaged in target behavior at same rate or with same frequency as peers before, during, and after intervention.

## **Results**

### **Participants**

There were 104 total participants across all eligible studies and 83 (79.8%) had the diagnostic, age, and desired behavioral outcome. Sixty-six participants were male and 17 were female, a ratio that is consistent with differences in autism diagnosis between sexes (Ratto et al., 2018). Eleven (37.9%) studies reported race or ethnicity across 31 participants, 71% (22) Caucasian, 16.1% (5) Black or African American, 9.7% (3) Asian, and 3.2% (1) Hispanic. Participants ranged in grade level from preschool to fifth grade (4.0 to 10.6 years). No studies reported data on participants' socioeconomic or free/reduced-price meals status.

Participants' verbal abilities varied throughout the studies. Twenty-two studies (75.9%) reported levels of verbal behavior. Thirty participants (36%) consistently used functional verbal communication; another 30 (36%) had limited verbal abilities. Two participants (2%) were non-verbal and communicated using

methods such as American Sign Language (\*Nasr, 2015). Authors did not report verbal ability for the remaining 21 participants (25%). Table 1 displays participant characteristics.

**Table 1**

*Participant characteristics*

Author, Year	Sample Size (Analyzed Participants)	Identity <sup>a</sup>	Sex	Age Range in years
Abraham, 2008	4 (1)	White	Male	8
Almutlaq & Martella, 2018	3 (3)	Caucasian	Male	7-10
Anderson et al., 2016	3 (3)	NR	2 male, 1 female	5-6
Bailey, 2008	4 (1)	NR	Male	10
Bosnak & Turhan, 2020	3 (3)	NR	2 male, 1 female	5-7
Bricker, 2015	4 (4)	Caucasian	2 male, 2 female	5-7
Daneshvar et al., 2019	4 (4)	NR	2 male, 2 female	5.11-10.5
Daubert et al., 2015	2 (2)	African American	Male	9-10
Demiri, 2004	5 (5)	NR	Male	5.2-7.11
Doody, 2012	3 (3)	Caucasian, African American	Male	7.5-9.10
Francis et al., 2013	1 (1)	NR	Female	9
Gikas, 2013	3 (2)	Caucasian	Male	5.10-9.9
Keyworth, 2004	3 (3)	Caucasian	Male	7-12
Krasch, 2013	4 (4)	Hispanic, Asian, Caucasian	Male	4.0-5.6
Kuligowski, 2010	5 (3)	NR	2 male, 1 female	5-7
Li et al., 2021	3 (3)	Taiwanese	2 female, 1 male	7-8
Nasr, 2015	3 (3)	NR	Male	11
Ozdemir, 2008	3 (3)	Caucasian, African American	Male	5.6-6.4
Sansosti, 2005	4 (4)	NR	Male	6.6-10.6
Simpson, 2020	4 (4)	NR	2 male, 2 female	1-2 <sup>b</sup>

Soenksen & Alper, 2006	1 (1)	NR	Male	5
Sutton et al., 2021	5 (5)	NR	3 male, 2 female	6-9
Teague, 2015	6 (3)	NR	2 male, 1 female	8
Tino, 2017	1 (1)	NR	Male	4
Vanderborght et al., 2012	4 (4)	NR	2 male, 2 female	4-8
Wiesen, 1999	3 (3)	NR	Male	4-5
Williams, 2012	10 (2)	NR	Male	7-8
Wright, 2007	4 (4)	Caucasian, African American	Male	4.1-5.0
Xin & Sutman, 2011	2 (1)	NR	Female	9

<sup>a</sup> Race, ethnicity, or nationality

<sup>b</sup> Grade level

### **Independent and Dependent Variables**

All the studies in this synthesis evaluated the use of an LBBI. The type of LBBI in 23 (79.3%) studies was Social Stories. Not all studies delivered their Social Stories in the same manner. Nine studies (39.1%) implemented Social Stories in accordance with the guidelines set by Gray and Garand (1993). The interventionists in these studies used printed or written books. Six (26.1%) studies implemented modified Social Stories. Four (17.4%) studies used Social Stories presented on an electronic medium, such as a tablet, SmartBoard, or social robot. Four (17.4%) studies compared Social Stories with other intervention conditions or compared different types of Social Stories. Only six (20.7%) studies used a non-Social Story LBBI, including Social Stations, Power Cards, shared-reading peer-mediated intervention, social narratives, and narrated LBBI.

Table 2 provides a list of the behaviors measured in the included studies by category. Interventionists measured 44 different peer-oriented social behaviors: 18 verbal communication behaviors, five nonverbal communication behaviors, nine play

behaviors, and 12 aberrant behaviors across all studies. Fourteen studies measured behaviors in just one category, 9 measured behaviors in two categories, 5 measured behaviors in three categories, and 1 measured behavior in all four categories.

Within the studies that measured social validity 15 (51.7%), most of them assessed it among professionals such as teachers and school staff (12, 80%). Five (33.3%) studies used parent input to measure social validity. Social validity measures frequently excluded autistic participants, with only two studies (13.3%) including them or their neurotypical peers (3, 20%).

Daubert and colleagues (2015) surveyed participants and found that they enjoyed the modified Power Card intervention, stating that it helped them learn new social skills. Simpson (2020) interviewed participants, who stated that they felt “happy” when spending time with their dyad members (p. 43). Researchers that included parents and professionals used formal or informal interviews ( $n=6$ ), Intervention Rating Profile 15 (IRP-15; Lane et al., 2009;  $n=4$ ), surveys ( $n=3$ ), Likert scale ( $n=2$ ), peer comparison ( $n=1$ ), or the Behavior Intervention Rating Scale (BIRS; Elliott & Treuting, 1991;  $n=1$ ). Overall, professionals stated that LBBI were easy to implement, and both parents and professionals stated that participants’ behavior improved, even if the data did not suggest the same.

**Table 2***Variables and results*

Author, Year	Design	Independent Variables	Dependent Variables	Target Behavior Selection	Neurotypical Peer Involvement Phases	Neurotypical Peer Involvement Roles	Intervention Results	Social Validity Results
Abraham, 2008	Multiple probe/baseline	SS & Generalization SS	VC	School staff	None	NA	Behavior increased & maintained	N/A
Almutlaq & Martella, 2018	Multiple probe/baseline	SS on iPad	VC	School staff	Pre-intervention, post-intervention	Part of observation environment	Behavior increased from baseline to intervention, stable or decreased during generalization	Participants enjoyed using iPads, participants, teachers, & peers found classroom iPad use socially acceptable
Anderson et al., 2016	Multiple probe/baseline	Narrated LBBI	AB	NR	None	N/A	Physical aggression decreased for 100% of participants	N/A
Bailey, 2008	AB	SS, SS + Prompts, Prompts Only	VC, NC, P, AB	School staff, parents	Pre-intervention, intervention, post-intervention	Part of observation environment	Frequency of appropriate social behavior highest, inappropriate social behavior lowest in SS + Prompts and Prompts Only conditions	Not collected for target participant

Bosnak & Turhan, 2020	Multiple probe/baseline	SS on tablet	P	School staff	None	NA	Behavior increased & maintained	SS effective for sharing; easy to use; beneficial for students, teachers, and parents; tablet software helped improve participant concentration
Bricker, 2015	Multiple probe/baseline	SS	VC	NR	None	N/A	All participants learned target behaviors from SS; maintained for 75% of participants	N/A
Daneshvar et al., 2019	Multiple probe/baseline, alternating treatment	SS & SSS comparison	VC, P	School staff, parents	None	NA	SSS more effective for learning, maintaining, and generalizing social behaviors	N/A
Daubert et al., 2015	Multiple probe/baseline	Modified Power Card strategy	P	NR	None	NA	Increased appropriate initiating and relinquishing a turn	Parents reported some improvements but difficult intervention implementation; One participant enjoyed intervention and liked turn-taking
Demiri, 2004	Multiple probe/baseline	SS	NC, P, AB	NR	Pre-intervention, intervention	Part of observation environment	Verbal protest, grabbing, sitting idle, and game play behaviors	Parents reported positive perceived effect of SS on behavior

							decreased. Eye contact and nonfunctional toy use increased.	
Doody, 2012	Multiple probe/baseline	SS	VC, NC	NR	Pre-intervention, post-intervention	Part of observation environment	Appropriate social interactions increased and maintained for 100% of participants	Mean IRP score of 6.2/7 from 3 teachers
Francis et al., 2013	AB	Modified SS	VC, P	School staff	Pre-intervention, intervention, post-intervention	Part of observation environment	Verbal play and communication behaviors increased	N/A
Gikas, 2013	Multiple probe/baseline	SN	VC	School staff, parents	Pre-intervention, intervention, post-intervention	Part of observation environment	Initiations increased from baseline to intervention, did not maintain	Favorable opinions (slightly agree/agree/strongly agree) across parents & teachers
Keyworth, 2004	AB	SS	VC, P, AB	NR	Pre-intervention, intervention, post-intervention	Part of observation environment, observed participants reading social story	Requests increased in all settings; responses, on-task play, and parallel play increased for all participants in most settings	Parents, teachers, & associates found SS easy to implement & beneficial for some children with autism
Krasch, 2013	Multiple probe/baseline	SS w/ modified	VC	School staff	None	NA	Verbal social initiations	Favorable opinions (agree/strongly

		perspective sentence					increased for 75% of participants	agree) across all teachers
Kuligowski, 2010	AB	Power Card strategy	VC, AB	Parents	None	N/A	Conversation frequency decreased; adaptability & social awareness behaviors increased	N/A
Li et al., 2021	Multiple probe/baseline	SS + teaching aid	VC	NR	Pre-intervention, intervention, post-intervention	Part of observation environment	Increases in SRS scores from beginning to end of SS + teaching aid intervention	N/A
Nasr, 2015	Multiple probe/baseline	SS	VC, AB	Parents	Pre-intervention, intervention	Part of observation environment	ASI increased from baseline to intervention 1 for 66% of participants, 100% from intervention 1 to intervention 2	Teachers found SS appropriate, effective, and suitable for various social skill deficits  No data for parent interviews
Ozdemir, 2008	Multiple probe/baseline	Multimedia social stories	VC	School staff	Pre-intervention, intervention, post-intervention	Part of observation environment, received training on appropriate interactions	Mean seconds of social engagement increased and maintained	N/A

Sansosti, 2005	Multiple probe/baseline	Video modeled SS	VC	Researchers	Pre-intervention, intervention, post-intervention	Part of observation environment; models in videos	Verbal communication increased from baseline to intervention for 100% of participants and maintained for 66%	Mean IRP-15 score ranged from 4.00-5.67 (out of 6)
Simpson, 2020	AB	Shared reading PMI	VC	NR	Pre-intervention, intervention	Comparison standard	100% of participants increased social participation w/ neurotypical peers; 50% at social participation levels similar to/surpassing neurotypical peers; 75% showed increases in peer initiations	100% reported participation enjoyment & having fun with dyad member
Soenksen & Alper, 2006	Multiple probe/baseline	SS w/ written & verbal cues	VC, NC	School staff, parents	Pre-intervention, intervention, post-intervention	Part of observation environment; comparison standard	Increased attempts through verbalization or looking at peer from baseline to intervention & intervention to maintenance in all settings	Parents selected target behavior; participant lower than peers' average during baseline and higher during intervention

Sutton et al., 2021	Multiple probe/baseline	Social stations	VC, AB	School staff	Pre-intervention, intervention, post-intervention	Peer models, conversational partners	Verbal on-topic initiations and responses increased, verbal off-topic initiations decreased; changes maintained	Mean effectiveness score=4.84/5
Teague, 2015	Multiple probe/baseline	SS	VC, NC, P	School staff	None	NA	Mean child-to-child social engagement ratios increased	N/A
Tino, 2017	Multiple probe/baseline	SS	VC, NC, P	NR	Intervention	Part of observation environment	Behavior occurrence frequency increased	N/A
Vanderborgh et al., 2012	AB	SS with RAT	VC, P	Researchers	Pre-intervention	Peer model	Fewer prompts needed in SS condition for 75% of participants & in SS+RAT condition for 100% of participants	N/A
Wiesen, 1999	AB	SS	VC, NC, P	School staff	None	NA	Increase in verbal and nonverbal communication, play from baseline to social stories 1 and 2; decrease from social story 2 to social story 3	N/A

Williams, 2012	AB	SS with symbols & SS with photos comparison	AB	Participant, school staff	Pre-intervention, post-intervention	Part of observation environment	SS with photos more effective at decreasing maladaptive social behavior	70% of teachers rated SS effectiveness & ease of implementation at 7/10 or above; 100% said they would use SS again
Wright, 2007	Multiple probe/baseline	SS	VC, AB	School staff, parents	Pre-intervention, intervention, post-intervention	Part of observation environment; comparison standard	Mean minutes of verbal communication increased and mean minutes of aberrant behavior decreased overall	Teachers “strongly agreed” that intervention was easy to implement, could be effective for many behaviors, and they would use it again
Xin & Sutman, 2011	AB	SS on SmartBoard	P	School staff	Pre-intervention, intervention	Part of observation environment	100% of steps completed after intervention with some gestural & verbal prompts	N/A

*Note.*

SS= Social Stories

LBBI=Literacy Based Behavioral Intervention

SSS=Steps for Social Success

SN=Social narratives

PMI=Peer-mediated intervention

RAT=Robot-assisted therapy

Verbal Communication (VC): verbal initiations, commenting, greetings, completed independent compliment steps, compliments observed per session, acknowledging or repeating utterance, agreeing, answering questions, related responding, confirming/clarifying question/comment, requesting

attention/acknowledgement, calling peer's name to gain attention, vocalizations for joint attention, expressing enjoyment of peer interaction, social reciprocity, joining conversations, maintaining conversations, thanking peer

Aberrant Behaviors (AB): physical aggression, name-calling, laughing at another's misfortune, threats, verbal protest, grabbing, inappropriate touching, poking, play-fighting, wandering from peer, off-topic response, non-response

Nonverbal communication (NC): eye contact, looking at speaker, non-verbal response, gestures for joint attention, raising hand for attention

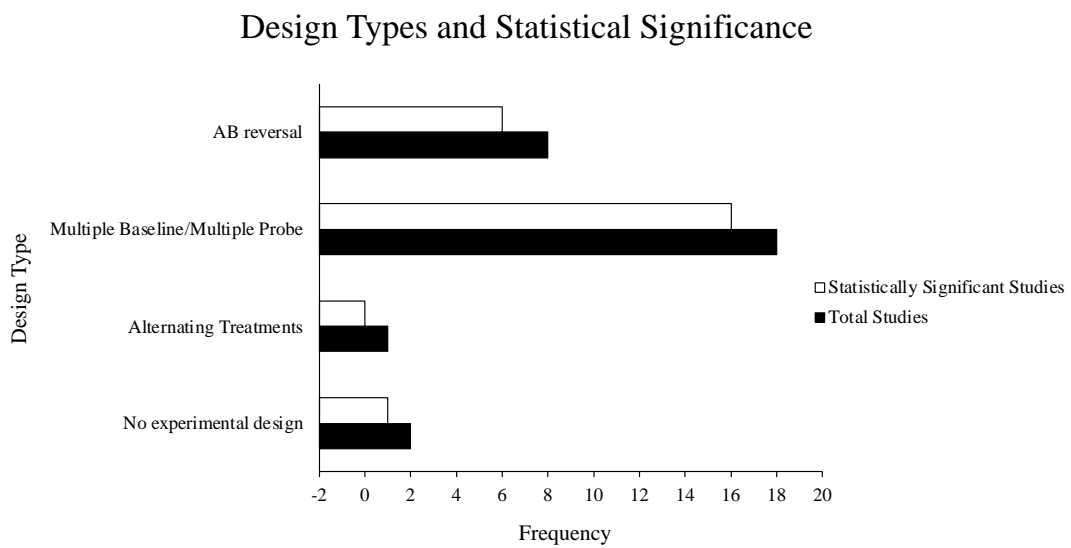
Appropriate Play (AP): reinforcing peer for winning, sharing, turn-taking, initiating gameplay, using toys appropriately, reciprocal play, on-task play, parallel play, sitting at table with peer

## Study Designs

Of the 29 studies that met the eligibility criteria, 12 were peer-reviewed journal articles, 16 were dissertations or theses, and one was a conference paper. Most of the studies in this synthesis used at least one of the following designs: AB reversal, multiple baseline/multiple probe, or alternating treatments. One study used an alternating treatments design with a multiple baseline control (Daneshvar et al., 2019). Two studies did not use any experimental design (Tino, 2017; Li et al., 2021). Figure 2 displays the number of studies that used each design and the number of studies with statistically significant results for each design type. Most studies measured at least one behavior in one setting; only one study measured one behavior across multiple settings (Krasch, 2013), and two measured multiple behaviors across multiple settings (Keyworth, 2004; Soenksen & Alper, 2006).

### Figure 2.

*Total number of studies and the number of statistically significant studies for each design type.*

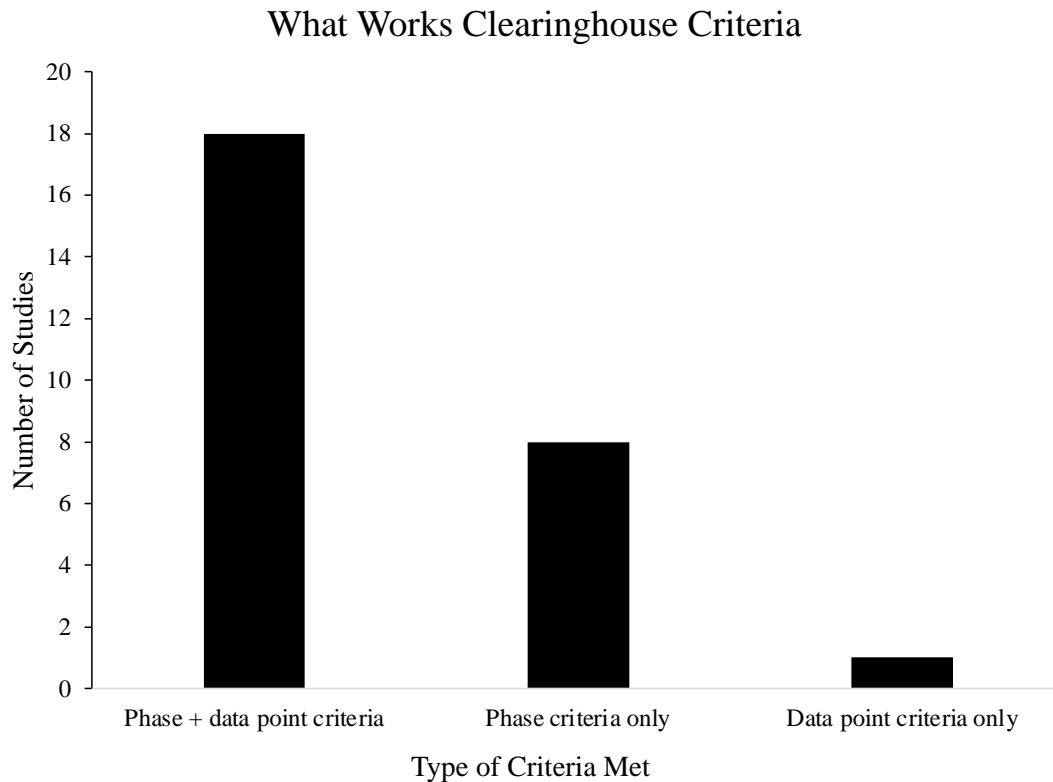


*What Works Clearinghouse Standards*

Figure 3 displays the number of studies that met the What Working Clearinghouse visual analysis criteria. All studies met at least phase amount or data point amount criteria. Of the nine studies that only met phase amount criteria, two (22.2%) used an AB design and seven (77.8%) used a multiple baseline or multiple probe design. One study met only data point amount criteria; this study used an AB design. Of the 18 studies that met phase and data point amount criteria, six (33.3%) used an AB design, 11 (61.1%) used a multiple baseline or multiple probe design, and one (5.6%) used an alternating treatments design.

**Figure 3.**

*Number of studies that met each What Works Clearinghouse visual analysis criterion.*



Collection of implementation fidelity data was rare, with less than one quarter of the studies (7, 24%) collecting fidelity for at least 30% of sessions. Even fewer studies (2, 6.9%) reported fidelity findings. There were 20 (69%) studies that included how interventionists trained data collectors prior to baseline sessions. Twenty (69%) studies also reported that inter-rater reliability data were gathered but only 10 (50%) of them met the What Works Clearinghouse minimum standard of collecting reliability for at least 30% of sessions. Of the 27 (93.1%) studies that reported interrater agreement, 25 (92.6) used point-by-point interobserver agreement (IOA), and two (7.4%) calculated Cohen's kappa. The median percentage of sessions where researchers measured reliability was 27.5% (Range=10-83%), and the median average interrater agreement was 92.75% (Range=72-100%).

### **Characteristics of Successful LBBI s (RQ1)**

The results of the synthesis indicate that 24 studies had at least one significant effect. Ten of these studies were peer-reviewed journal articles, 12 were dissertations, and two were theses. I calculated descriptive statistics for Tau-U scores for verbal communication, nonverbal communication, play, and aberrant behaviors. Table 7 displays the mean, median, and range of Tau-U scores across each behavior category. Overall, the mean significant outcome per behavior was 54% (Range=11-100%; Median=44%). On average across all studies in the corpus, 54% of participants showed statistically significant changes in the frequency or rate of behavior occurrence.

There are some discrepancies in intervention effectiveness across LBBI type and implementation. All of the studies ( $n=9$ ) that used a traditional Social Story had

at least one significant outcome. Of the studies that used a modified Social Story, 83% ( $n=5$ ) had at least one significant outcome (Sansosti, 2005; Soenksen & Alper, 2006; Ozdemir, 2008; Francis et al., 2013; Krasch, 2013). Of the studies that presented the Social Story on an electronic medium, 75% ( $n=3$ ) had at least one significant outcome (Vanderborght et al., 2012; Almutlaq & Martella, 2018; Boşnak & Turhan, 2020). Of the Social Story comparison studies, 50% ( $n=2$ ) had a significant outcome (Bailey, 2008; Wright, 2012). Of the studies that used a non-Social Story LBBI, 83% ( $n=5$ ) had at least one significant outcome (Gikas, 2013; Daubert et al., 2015; Anderson et al., 2016; Simpson, 2020; Sutton et al., 2021). These results suggest that studies that used the traditional LBBI consistently produced statistically significant desired outcomes.

Data for LBBI effectiveness and What Works Clearinghouse standards indicated that 83% of studies ( $n=15$ ) that met the phase and data point amount criteria had a significant outcome. 100% of studies ( $n=8$ ) that only met the phase amount criterion had a significant outcome. The one study that only met the data point number criterion did not have a significant outcome. There was no discernable pattern among article types and criteria adherence. Six studies (66.7%) that did not adhere to all standards were peer-reviewed journal articles; three studies (33.3%) were dissertations or theses. Seven studies (77.8%) had at least one statistically significant result. Since the studies did not adhere to all the standards, I cannot determine whether the significant results can be attributed to the intervention, or if the researchers obtained them prematurely (e.g., before obtaining a stable baseline trend).

Twenty studies included information about dependent variable or target behavior selection. Ten (50%) used only on school staff input, two (10%) used only parent or guardian input, two (10%) used only researcher input, five (25%) used a combination of parent and school staff input, and one (5%) used participant and school staff input. Tables 3, 4, and 5 display the characteristics for studies using AB reversal designs, multiple baseline/multiple probe designs, and alternating treatment designs, respectively.

**Table 3***Characteristics for AB reversal designs*

Author, Year	Publication Type	≥4 phases (Y/N)	≥5 data points per phase (Y/N)	Fidelity/Sessions (%)	Data Collector Training Reported (Y/N)	Reliability Sessions (%)	Mean Interrater Agreement (%)	Social Validity Measures
Bailey, 2008	Dissertation	Y	Y	NR	Y	25	88	Teacher questions
Francis et al., 2013	Journal Article	Y	NR	NR	N	NR	NR	None
Keyworth, 2004	Dissertation	Y	Y	NR	Y	40-83	92.8	Parent Likert scale
Kuligowski, 2010	Dissertation	Y	Y	NR/100 (intervention sessions)	N	20 (baseline), 19 (intervention)	94 (baseline), 84 (intervention)	None
Simpson, 2020	Journal Article	Y	N	100/NR	Y	20 per participant	89.5	Neurotypical & autistic student interviews
Vanderborght et al., 2012	Journal Article	Y	Y	NR	Y	40	≥0.8 <sup>a</sup>	None
Wiesen, 1999	Thesis	Y	Y	NR	N	NR	NR	None
Williams, 2012	Dissertation	Y	Y	NR	Y	NR	0.66 <sup>a</sup>	Teacher rating
Xin & Sutman, 2011	Journal Article	N	Y	NR	N	NR	NR	None

<sup>a</sup> Used Cohen's kappa for interrater agreement

**Table 4***Characteristics for multiple baseline/multiple probe designs*

Author, Year	Publication Type	≥ 6 phases (Y/N)	≥5 data points per phase (Y/N)	Fidelity/ Sessions (%)	Data Collector Training Reported (Y/N)	Reliability Sessions (%)	Mean Interrater Agreement (%)	Social Validity Measures
Abraham, 2008	Dissertation	Y	Y	100/30	Y	20	98.5	None
Almutlaq & Martella, 2018	Journal Article	Y	N	NR/60	N	10 (baseline), 20 (intervention)	86	Teacher, professional, & peer interviews
Anderson et al., 2016	Journal Article	Y	Y	NR	Y	55-58	94.3	None
Bosnak & Turhan, 2020	Journal Article	Y	N	NR/30	Y	30	97	Teacher interviews
Bricker, 2015	Dissertation	Y	N	NR	Y	20	99.2	None
Daneshvar et al., 2019	Journal Article	Y	N	NR	N	33	92.5	None
Daubert et al., 2015	Journal Article	Y	Y	100/33	Y	33	92.7	Parent & student surveys
Demiri, 2004	Dissertation	Y	Y	NR/100 (Stanley), 20 (all others)	Y	30 per target behavior	90.2	Informal parent & professional surveys
Doody, 2012	Dissertation	Y	Y	NR/100 (treatment)	Y	57 (baseline), 32.6 (intervention), 61 (maintenance)	93 (baseline), 91.3 (intervention), 95.4 (maintenance)	Intervention Rating Profile for classroom staff
Gikas, 2013	Dissertation	Y	N	NR	N	33 per participant	91	Intervention Rating Profile for special education teacher

Krasch, 2013	Dissertation	Y	Y	100/20	Y	20	94 (social initiations only)	Teacher Likert scale
Nasr, 2015	Dissertation	Y	Y	99.5/NR	Y	20 (baseline) 25 (intervention)	88-100	Intervention Rating Profile for teachers, informal parent interview
Ozdemir, 2008	Journal Article	Y	Y	NR	Y	NR	89.7	None
Sansosti, 2005	Dissertation	Y	Y	92-96/NR	Y	20 (baseline), 25 (intervention), 20 (follow-up)	90.3	Intervention Rating Profile for teachers
Soenksen & Alper, 2006	Journal Article	Y	N	NR	Y	20 (baseline) 21 (intervention) 20 (maintenance)	94.3	Subjective evaluation from parent, peer comparison
Sutton et al., 2021	Journal Article	Y	Y	75-100/NR	Y	20	98.3	Behavior Intervention Rating Scale for teachers
Teague, 2015	Dissertation	Y	N	NR	Y	NR	76	None
Wright, 2007	Dissertation	Y	Y	NR/25 (intervention)	Y	≥30 (baseline), ≥33 (intervention), ≥40 (maintenance)	95	Teacher questionnaire

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**Table 5***Characteristics for alternating treatments designs*

Author, Year	Publication Type	≥5 data points for baseline phase (Y/N)	≥2 data points per remaining phases (Y/N)	Fidelity/ Sessions (%)	Data Collector Training Reported (Y/N)	Reliability Sessions (%)	Mean Interrater Agreement (%)	Social Validity Measures
Daneshvar et al., 2019	Journal Article	Y	Y	NR	N	33	92.5	None

Of the eight studies that targeted aberrant behaviors, seven of them also included a prosocial replacement behavior; six had statistically significant outcomes (Demiri, 2004; Keyworth, 2004; Wright, 2007; Bailey, 2008; Nasr, 2015; Sutton et al., 2021). Neurodiversity scholars emphasize the importance of autistic children being able to express themselves (Rentenbach et al., 2017; den Houting, 2019); however, this does not include violent or teasing behaviors. Instead, interventions that follow the neurodiversity model teach alternate behaviors that serve the same function (e.g., appropriate commenting for attention rather than kicking a peer). Tables 6 and 7 display quantitative analysis results and descriptive data, respectively.

**Table 6**

*Quantitative analysis results*

Study	Mean significant Tau U score	<i>p</i>	Percentage significant outcomes ( <i>n</i> )
Almutlaq & Martella, 2018	0.9762 ( <i>number of compliment steps completed</i> )	0.0227* 0.0201*	33%
Anderson et al., 2016	-0.9605 ( <i>aberrant behavior</i> )	0.0011** 0.0004*** < 0.0001***	100%
Bailey, 2008	1 ( <i>appropriate social interaction</i> )	0.0143*	100%
Bosnak & Turhan, 2020	1 ( <i>appropriate play behaviors</i> )	0.0167*	33%
Bricker, 2015	0.7673 ( <i>greetings</i> )	0.0275* 0.0472* 0.0302*	37.5%
Daubert et al., 2015	1 ( <i>initiating</i> )	0.0011** 0.0018** 0.0019** 0.0010*** 0.0009*** 0.0027**	100%
	0.9917 ( <i>relinquishing</i> )	0.0010***	100%

		0.0009***	
		0.0019**	
		0.0017**	
		0.0009***	
		0.0019**	
	0.3468 ( <i>appropriate commenting/turn-taking</i> )	0.0057**	50%
		0.0030**	
		0.0208*	
Demiri, 2004	-0.8824 ( <i>verbal protest</i> )	0.0033**	50%
	-0.6071 ( <i>touching</i> )	0.0491*	100%
	0.6786 ( <i>body facing speaker</i> )	0.0279*	100%
Doody, 2012	-0.4573 ( <i>appropriate verbal behaviors</i> )	0.0322*	33%
	0.7944 ( <i>appropriate nonverbal behaviors</i> )	< 0.0001***	33%
Francis et al., 2013	1 ( <i>initiating, responding, or playing</i> )	0.0495*	100%
		0.0495*	
		0.0495*	
Gikas, 2013	0.85 ( <i>verbal initiations</i> )	0.0109*	100%
		0.0052**	
Keyworth, 2004	0.7778 ( <i>requests</i> )	0.0024**	11%
	0.6779 ( <i>responses</i> )	0.0074**	22%
		0.0153*	
	-0.6270 ( <i>other responses</i> )	0.0128*	17%
	0.8571 ( <i>other interactions</i> )	0.0402*	17%
	0.0996 ( <i>cooperative play</i> )	0.0239*	33%
		0.0009***	
		0.0466*	
	-0.6429 ( <i>parallel play</i> )	0.0225*	33%
Krasch, 2013	0.7444 ( <i>structured play centers</i> )	0.0027**	100%
		0.0012**	
		0.0013**	
		< 0.0001***	
	0.9000 ( <i>recess</i> )	0.0164*	50%
		< 0.0001***	
Nasr, 2015	0.75 ( <i>social story alone</i> )	0.0151*	33%
		0.0044**	33%

	0.7576 ( <i>social story + restrictive interest</i> )		
Ozdemir, 2008	1 ( <i>social engagement</i> )	0.0077** 0.0027** < 0.0001***	33%
Sansosti, 2005	0.8425 ( <i>joining in</i> )	0.0034** 0.0127* 0.0027**	75%
	0.7908 ( <i>maintaining conversation</i> )	0.0011**	100%
Simpson, 2020	0.9444 ( <i>social participation</i> )	0.0282*	13%
	0.9444 ( <i>initiations</i> )	0.0282*	13%
Soenksen & Alper, 2006	0.8479 ( <i>looking at peer's face</i> )	0.0436* 0.0002*** 0.0022**	100%
Sutton et al., 2021	0.9167 ( <i>on-topic initiations</i> )	0.0120* 0.0048** 0.0011** 0.0059** 0.0006*** 0.0120* 0.0002***	70%
	-1 ( <i>off-topic initiations</i> )	0.0006*** 0.0002***	20%
	0.9467 ( <i>on-topic responses</i> )	0.0022** 0.0022** 0.0321* 0.0027** 0.0006*** 0.0002***	60%
Teague, 2015	0.7197 ( <i>social engagement</i> )	0.0428*	33%
Tino, 2017	0.8750 ( <i>sharing toy</i> )	0.0433*	25%
Vanderborght et al., 2012	-0.9764 ( <i>prompting level needed for appropriate social interaction</i> )	0.0009*** 0.0065** 0.0005*** 0.0022** 0.0019**	63%
Wiesen, 1999	0.7636 ( <i>appropriately gaining attention</i> )	0.0065**	100%
	0.7200 ( <i>sharing toys during parallel play</i> )	0.0184* < 0.001***	33% 67%

	0.2240 ( <i>raising hand to gain attention during lunch</i> )	0.0409*	
Williams, 2012	-0.6000 ( <i>getting upset at playtime</i> )	0.0233*	50%
Wright, 2007	0.9815 ( <i>prosocial behaviors</i> )	0.0018**	13%

**Table 7**

*Descriptive data for Tau-U scores across behavior types*

Behavior Type	Mean	Median	Range
Verbal Communication	0.7207	0.8834	-0.627 - 1
Nonverbal Communication	0.6804	0.7944	0.224 - 0.8571
Play	0.6157	0.8588	-0.6429 - 1
Aberrant Behavior	-0.5550	-0.7448	-1 - 0.72

### **Neurotypical Peer Involvement (RQ2)**

Although each of the included studies measured the peer-oriented social behavior of autistic children, typically developing peers themselves had minimal involvement. Twenty studies reported peer involvement within some study condition, with 16 including them in the intervention and at least one pre- or post-intervention condition. Four studies only included neurotypical peers in the baseline and maintenance or generalization conditions. Two studies trained neurotypical peers to model appropriate behavior. One study included neurotypical peers only in the intervention. The remaining studies ( $n=10$ ) did not report any neurotypical peer inclusion.

In most studies ( $n=12$ ), peers were only part of the observation environment. In studies where neurotypical peers served as peer models ( $n=2$ ), they modeled behaviors either in person (Sutton et al., 2021) or on video (Sansosti, 2005). Two studies used peers as a comparison standard for participant behavior. It is important to

note that if peers received any training, the purpose was to teach them how demonstrate the target behavior for the autistic participant (Li et al., 2021). Peers did not receive any training about different socialization and communication preferences among the autism community.

### **Discussion**

The results from this synthesis suggest that overall, LBBIs produce statistically and socially significant outcomes. Most studies used an LBBIs to teach prosocial behaviors, rather than reduce aberrant behaviors. Seven studies measured both prosocial behavior increase and aberrant behavior decrease. Recent studies indicated a movement towards using tablets for LBBIs presentation instead of written books, as the former seems to resonate more with younger children and is more socially acceptable among peers (Almutlaq & Martella, 2018; Bosnak & Turhan, 2020).

LBBIs are not inherently designed to align with the neurodiversity model but certain studies contain components that do. First, only autistic children served as participants for the social skill interventions, with no neurotypical peer education on autistic communication and behavior. This sets an expectation that autistic children must conform to neurotypical standards to build friendships. The issue is only compounded by the Social Identity Development Theory (Nesdale, 2007), which states that outgroup prejudice development starts in early elementary school. The shared-reading PMI study (Simpson, 2020) used pairs of buddies with one autistic child and one neurotypical peer. Both members of a buddy pair could earn reinforcing items for engaging in prosocial behaviors with each other. Both reciprocating

conversation (Kuligowski, 2010; Nasr, 2015; Teague, 2015; Simpson, 2020; Sutton et al., 2021) and engaging in reciprocal play (Wiesen, 1999; Francis et al., 2013) assume some peer involvement (e.g., peers initiate and maintain conversation or play with participants). These target behaviors encourage collaboration between children with and without autism, which is a tenet of neurodiversity (Singer, 2016). Additionally, only one study included participant input in the target behavior selection (Williams, 2012). The studies that included autistic participants in the social validity measures (Daubert et al., 2015; Simpson, 2020) provided a way for the target population to give their opinions on the intervention, rather than solely focusing on the perspectives of peers, teachers, or other adults. When social validity measures included autistic participants, results indicate that their opinions of LBBI were favorable. The remaining studies that reported this information relied on parents, school staff, or researchers to choose target behaviors. This indicates that LBBI interventions infrequently include input from autistic participants.

### **Limitations**

There were a few limitations present in this synthesis. First, initial coding reliability between myself and the independent researcher was 84% due to a discrepancy in inclusion criteria. We resolved this after discussing which target behaviors will be included. Two studies did not include figures with visual analysis (Xin & Sutman, 2011; Li et al., 2021); subsequently, I could not calculate Tau-U scores for their results. I also did not calculate a mean Tau-U score across all behaviors because the result would be skewed from the aberrant behavior data. I could not, then, find the overall Tau-U score for statistically significant behaviors.

Limited fidelity collection made it difficult to interpret how accurately the interventionists implemented the LBBIs. Lastly, I could not control for race or ethnicity nor socioeconomic status across all studies due to lack of data.

### **Implications for Research**

Future studies could use the findings from this synthesis to extend LBBi data to the neurodiversity model of disability and various intergroup contact theories. To combat this, and to align with the neurodiversity model, LBBIs teaching peer-oriented social skills to autistic children should also educate neurotypical peers on common autistic behavior. This can include having fixed interests, stimming, and difficulty comprehending social cues. Neurotypical participants can learn how to communicate their feelings outright, rather than relying on nonverbal social cues (e.g., saying, “it hurt my feelings when you said...” instead of crossing their arms and turning away from the autistic peer). Studies could include a social validity measure for autistic participants to determine whether the intervention and its goals and effects are meaningful to them. It is also possible to align LBBIs with Intergroup Contact Theory (Allport, 1954). Interventionists could include neurotypical peers in the intervention by using an LBBi to teach them about how their autistic peers prefer to communicate and socialize. Participants can then work collaboratively on a project to achieve a common goal, which should help reduce bias between groups.

Researchers should also be mindful of how they determine LBBi target behaviors that are beneficial to autistic participants. Before selecting these behaviors, researchers can collaborate with autistic children, adolescents, and adults and discuss a) behaviors that autistic children find socially meaningful, and b) information that

could help neurotypical peers better understand how to form friendships with their autistic peers. This places the responsibility of friendship development and maintenance on children with and without autism, rather than creating an expectation for autistic children to conform to neurotypical social standards. Once participants complete the intervention and post-intervention trials, researchers should include them in social validity measures. Both of these changes shift LBBI alignment to a neurodiverse perspective, ensuring that the methodology benefits the target participants.

## CHAPTER 3 - METHODS

The purpose of this study is to answer the following questions through phenomenological emancipatory research and analysis:

1. What attributes do autistic children value when making friends?
2. What challenges do autistic children face during friendship development?
3. How can teachers support friendship development between autistic and neurotypical children?
4. What programs and interventions will support teachers in fostering friendship development between autistic and neurotypical children?

### **Study Design**

I used a phenomenological approach to data collection and analysis (Moustakas, 1994). Creswell & Poth (2018) define this approach as “the common meaning for several individuals of their lived experiences of a concept or a phenomenon” (p. 75). For this study, I assessed two different yet related phenomena: 1) equitable friendship development for autistic children, and 2) educator approaches to fostering equitable neurodiverse classrooms. The descriptive phenomenological approach was the most appropriate design because it relies on evolving interpretations of lived experiences (Titelman, 1979). I conducted focus groups with autistic students and educators who teach autistic students to better understand (a) autistic children’s experiences making friends and (b) the systemic barriers educators face when helping autistic students socialize with their neurotypical peers.

## **Participants and Recruitment**

### ***Autistic Student Participants***

Thirty-four autistic individuals participated across eight student focus groups. The focus group size ranged from one to six participants. One focus group only had one participant because of scheduling issues, and groups had no more than six participants to ensure that each participant had ample time to discuss their experiences. To find a population theme prevalence of 30% (the average prevalence of autism in the population; CDC, 2022a) with a 90% of observing five instances of that theme, at least 25 participants needed to participate in focus groups (Fugard & Potts, 2015). To be considered for participation, individuals had to meet all of the following criteria: (a) self-identify as autistic, (b) have completed elementary school within the last seven years so they could readily reflect on their elementary school experiences, (c) live in the United States, and (d) be able to communicate verbally or by typing. I did not include an age criteria, only grade level, to ensure that participants had already completed elementary school but were still in the school system (middle or high school). Participants ranged in age from 13 to 17 years, with a mean age of 14.8 years. The mean age at autism diagnosis ranged from 5 to 12 years, with a mean age of 7.4 years. Twenty-three (67.6%) participants were female. Seven (20.6%) participants were Black/African American, four (11.7%) were Native American, three (8.8%) were Caucasian, three (8.8%) were Hispanic or Latino, one (2.9%) was Asian, and one (2.9%) was Native Hawaiian or Pacific Islander. Fifteen (44.1%) participants preferred not to disclose their race or ethnicity. In regard to geographic location, 11 (32.4%) participants were from the South, 10 (29.4%) were

from the West, eight (23.5%) were from the Midwest, and five (14.7%) were from the Northeast. Table 8 displays participant demographic information across student focus groups.

**Table 8**

*Participant Demographics Across Focus Groups (Autistic Children)*

Group	Number of participants	Mean age (years)	Mean diagnosis age (years)	Female (%)	Ethnicities	Location(s)
1	1	16	11	100	Black/African American	Midwest
2	3	15	8.67	66.7	Black/African American, Caucasian	South, Midwest, Northeast
3	4	16	8.5	75	Caucasian, Native American	South, Midwest, Northeast, West
4	5	14.2	8	100	Black/African American, Native American, Native Hawaiian/Pacific Islander, Asian	South, Midwest, West
5	5	15	7.6	80	Hispanic/Latino	South, Northeast, West
6	5	14.6	6.6	60	Black/African American, Hispanic/Latino	South, Midwest, Northeast, West
7	6	14.5	6.5	33.3	Black/African American, Native American	South, Midwest,

						Northeast, West
8	5	14.2	6.4	60	Black/African American, Hispanic/Latino, Native American	Midwest, West

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***Educator Participants***

Eight educators participated across five teacher focus groups. The focus group size ranged from one to two participants because of scheduling conflicts and time zone differences. To be considered for participation, all individuals had to meet the following criteria: (a) teach or have taught in a classroom with autistic children for at least one full academic year, (b) teach in a school with both autistic and non-autistic students, and (c) have completed at least 30 credits in special education (approximately half of what is required for education majors). All demographic information was based on participant self-report. All participants were in-service teachers. Participants' teaching experience ranged from four to 41 years, with a mean experience of 10.25 years. Since one participant's years of experience was an outlier (41 years), I also calculated the median experience, which was 5.5 years. Six (75%) participants were female. Six (75%) were certified special education teachers, one (12.5%) was a certified general education teacher who had at least one autistic student during the current school year and in two of her three previous years, and one (12.5%) was a paraprofessional who has been working in a middle school inclusion classroom for nine years. The paraprofessional had completed high school and some college but did not yet hold a Bachelor's degree. Of the six special education teachers, two (33.3%) worked in self-contained classrooms, and four (66.7%) worked in integrated classrooms. All the participants worked in public schools in the United

States. In regard to geographic location, four (50%) were from the South, three (37.5%) were from the Northeast, and one (12.5%) was from the West. To avoid potential participant identification, I assigned each participant a numerical alias across both student and teacher focus groups (Creswell & Poth, 2018). Table 9 displays participant demographic information across educator focus groups.

**Table 9**

*Participant Demographics Across Focus Groups (Educators)*

Group	Number of Participants	Mean teaching experience	Female (%)	Ethnicities	Location(s)
1	2	25 years	50	Black/African American	Northeast, South
2	1	5 years	100	Caucasian	South
3	2	5 years	100	Caucasian	South, West
4	2	6.5 years	50	Asian, Black/African American	Northeast
5	1	4 years	100	Caucasian	South

***Participant Recruitment***

I recruited student participants throughout Summer 2023 via autism research listservs, including Montgomery County Needs (MCNeeds), So Kids Strive, Own, Achieve, and Realize (SOAR), Organization for Autism Research (OAR), and local autism clinics as well as posting flyers in the local library and children’s science center in Montgomery County, Maryland. Interested individuals who met the participation criteria reached out via email to schedule a focus group session. I recruited educator participants throughout Winter 2024 via previous schools in which

I worked as a teacher or teacher assistant, teacher social media groups, and educator listservs. Appendix A displays the recruitment email template sent to the listservs. Appendix B displays the recruitment flyer. Upon parental completion of the consent and demographics forms, I scheduled participants in a focus group.

### **Data Collection**

All the focus groups occurred over the Zoom online meeting platform, except for one group. The participant in the first student focus group was unable to configure her audio settings, so she elected to answer the questions on a Google Doc. The durations of the remaining seven student focus groups ranged from 25 to 35 minutes. The durations of the eight educator focus groups ranged from 30 to 40 minutes. I recorded and saved all student focus group chat messages to reference during data analysis; since all participants in the student focus groups opted to use the chat feature and did not answer questions aloud, I did not utilize the audio recording feature for those groups. Chat message transcripts ranged from two to five pages. Educators opted to speak during their focus groups, so I audio recorded all educator focus groups using the Zoom software. Audio transcripts ranged from 13 to 26 pages. I developed 15 pages of field notes across autistic student focus groups and eight pages of field notes across educator focus groups.

### ***Focus Groups***

I began each focus group by introducing myself and asking participants for their permission to record the session. I did not require participants to have their cameras on during the focus groups. Autistic participants opted not to use their cameras, while educator participants all used their cameras. During the student focus

groups, I first read the verbal assent form aloud and asked participants to state their agreement verbally or using the chat feature. Verbal assent agreement involved describing why participants were recruited for this study (e.g., grade level, autism diagnosis), the goal of the study, and explaining that participants could drop out of the study at any time without penalty. Once all participants in a group verbally assented, I began the focus group session. Appendix C displays the verbal assent script read to participants.

Next, the purpose of the study and the expectations during the focus group were discussed (e.g., being considerate and respectful of each other's experiences). I read each question aloud and published it in the Zoom chat box. Each participant had the opportunity to respond before I moved on to the next question. Participants could respond verbally or using the chat feature. After answering all of the questions, participants could ask about the research study and how I will use their responses to inform intervention development. I took notes using a pen and a notebook as participants spoke to supplement the chat transcripts. A total of eight pages of field notes were completed on autistic students' experiences making friends during their elementary school years. Appendix D displays the questions I asked during the student focus groups. Appendix E displays the questions I asked during the educator focus groups. I asked clarifying questions throughout focus groups to ensure accurate interpretation of participant responses. If participants responded with a vague answer, (e.g., stating "play" when asked what they liked to do with a friend), I asked a follow up question (e.g., "what did you and your friend like to play together?").

## **Data Analysis**

Throughout focus groups, I took analytic notes on participant responses such as why autistic students made friends most easily in certain settings (e.g., the classroom because they could work with peers on classwork, after-school clubs because they had common interests with the peers in those clubs) and to highlight important points that required further expanding such as suggestions to promote school wide understanding of autism (e.g., social-emotional learning curriculum, autism-specific professional development resources for general educators) (Miles & Huberman, 1994). These notes spanned a total of 15 pages. I used these notes as a reference when establishing common themes among responses.

Following the modified Van Kaam method of analysis of phenomenological data (Moustakas, 1994) and Saldaña's (2014) qualitative data analysis (QDA) methods, I categorized participants' phenomenological experiences and then used interrelation to draw comparisons and conclusions. First, I recorded all responses in relation to the research questions using horizontalization. Upon completing each focus group, I used attribute coding to categorize participant responses by their respective questions (Saldaña, 2014). For autistic student focus groups, I copy and pasted participants' responses from the chat transcript into a Google Sheet by question, such as "What would make it easier to connect with peers without autism?" or "What would you like your peers without autism to know about it?". For special educator focus groups, I copy and pasted participants' responses from the audio transcript into a Google Sheet by question, such as "What misconceptions, if any, do neurotypical children in your class/school have about autism?" or "What information

about autism and neurodiversity would be helpful when fostering friendships between autistic and neurotypical children?” Next, I analyzed each response for relevance to the experience and overlap with other experiences. The ones that brought context and detail to the experience and were invariant throughout responses remained in the analysis, while the others were eliminated. Then, I used pattern coding to thematically code responses into categories (Saldaña, 2013). For student responses, these themes included “benefits of friendship” and “autism education;” for special educator responses, themes included “classroom accessibility” and “social stigma.”

### ***Trustworthiness***

Throughout this process for both sets of focus groups, I worked with the epoch principle, putting aside my own biases and preconceptions to better understand participants’ perspectives (Moustakas, 1994). To strengthen the validity of this study, I engaged in member checking and reported any disconfirming evidence (Creswell & Poth, 2018).

To strengthen the reliability of this study, I used multiple coders to analyze the transcripts and obtain intercoder agreement (Creswell & Poth, 2018). First, I developed a list of common themes and reviewed them with both coders. Next, the coders and I defined each code and created a codebook. Finally, we applied the code definitions to the transcripts and calculated intercoder agreement. The first independent coder analyzed 100% of the student focus group chat transcripts with 91% agreement. The second independent coder analyzed 100% of the teacher focus group audio transcripts with 90% agreement. After calculating the agreement, I met

with each independent coder separately to discuss any discrepancies until 100% agreement was reached.

I also conducted member checking with teacher focus group participants to ensure that I accurately interpreted their responses. I contacted participants by focus group with a summary of their groups' findings via email. If participants did not respond to the initial email after one week, I sent out a reminder email. Four of the eight (50%) focus group participants responded affirming that I accurately represented their experiences fostering friendships between autistic and neurotypical students. The remaining four participants (50%) did not respond to the emails.

### ***Researcher Positionality***

At the time of the study, I was a fourth-year doctoral candidate. I am a neurotypical researcher and special educator who conducts qualitative and quantitative research on the neurodiversity movement as it relates to autistic children, particularly at the preschool and elementary school levels.

## CHAPTER 4: FINDINGS

Using pattern coding, I found common themes throughout focus group responses that answered my research questions. For RQ1 examining what autistic children value in friendships, themes such as equality and collaboration were identified. For RQ2 examining the challenges autistic children face when making friends, themes such as communication and social stigma were identified. For RQ3 examining how interventionists and educators can support friendship development, themes such as autism education for teachers and classroom accessibility were identified. For RQ4 examining the types of interventions teachers could feasibly implement to foster friendship development between autistic and neurotypical children, themes such as collaboration and autism education for teachers and peers were identified.

To differentiate between student and educator responses, student codes begin with an “S” (e.g., S01) and educator codes begin with an “E” (e.g., E01).

### **What Attributes Do Autistic Children Value When Making Friends? (RQ1)**

#### *Equality*

Autistic children valued when their neurotypical peers treat them as equals. Participant S14 stated that she “appreciated kindness and support” from her neurotypical peers; Participant S29 echoed this sentiment, saying that he wanted friends who “were respectful and kind towards other people.” Helpfulness was another common value, with Participant S12 appreciating peers who showed “patience with [her] during classwork,” and Participant S33 wanting friends who had a “commitment to helping people,” whether in an academic or social setting. While

Participant E03 emphasized that autistic children's specific values varied, she noted the overarching desire for inclusion:

One of the commonalities between all of them is they want to be included.

They want to feel accepted. You can see where they want to be in the room with their own peers and with gen ed peers. They're all very loving.

### ***Benefits of Friendship***

Focus group participants listed various benefits of having friendships.

Participant S21 stated that he wanted younger autistic children to know that "friendship is essential and is a beautiful thing to experience." When discussing their friends in elementary school, Participants S03 and S08 both said that having friends made them happy. Participant S03 stated that her friend "was a good friend because she has been part of every happy moment I ever had. She understood me and always made me happy." Participant S08 said that her best friend in elementary school "just used to make her [happy]." Friendship also offered them a support system that they would not otherwise have. Participant S34 said of his friend, "we love looking out for each other," and Participant S25 said that having friends "offered [him] a shoulder to lean on." Participant S26 added that friendship is important because autistic children in particular "need people to understand us."

### ***Collaboration***

Autistic students enjoyed working and playing alongside their neurotypical peers. Participant S05 and her friend liked "exploring each other's interests and hobbies." Other participants described collaborative activities that they enjoyed engaging in with their friends, including "drawing and playing" (Participant S07),

“watching cartoons” (Participant S03), and “playing games, especially football” (Participant S27).

Participant S34 stated that neurotypical peers “should feel free to approach [autistic children].” Educators noticed that when neurotypical students did approach autistic peers, there were positive social consequences. Participant E01 said:

[Neurotypical children] notice that [autistic children] struggle socializing, so [neurotypical children] will try to include [autistic children] if we're doing class activities. [Neurotypical children] will say, 'hey, come over to my group.' Or if they see an [autistic] student who does not want to join the group, [neurotypical children] will go over to them and interact with them and cater to their interests so they feel included.

Other educators discussed the importance of collaboration between autistic and neurotypical children during non-academic social situations. Participants E04 and E08 found that autistic students’ interests could be incorporated in school-based clubs.

One of my students with autism is obsessed with Pokémon. So he has been earning Pokémon cards when I work with him right away instead of earning something later on. I'm starting a Pokémon club, so instead of him going to recess, he and some of his peers--because they're not really friends right now--are joining him in a Pokémon club (Participant E04).

Participant E08 spoke specifically about the importance of having after-school clubs that provide some structure, as autistic students have ample opportunities to collaborate with their neurotypical peers while still having some structure.

I'm one of the sponsors for the Dungeons & Dragons Club. And funnily enough, a lot of the kids that end up getting attracted to that club are on the spectrum, and I think it's because it's a game that has a lot of details and if you want to learn everything about a thing, D&D is great because there's endless information. So you can always be researching. And because of that, I see a whole separate side of [kids in D&D club], communication-wise, in D&D than I do in class. I see how they can be very passionate about what they're talking about, especially if the people they're speaking to are feeding off of that and showing interest.

### *Differences versus Deficits*

Lastly, focus group findings indicated that autistic students found friendship development more feasible when their neurotypical peers saw their autistic characteristics as differences, rather than deficits. Participant S01 stated:

I would like my peers without autism to know that having autism doesn't mean I'm not interested in socializing or making friends. It may just be more challenging for me to understand social cues and interact in certain situations. Patience, understanding, and open-mindedness go a long way in building meaningful connections.

Another key to friendship development was understanding what autism is, or at least be willing to learn about it. Participant S09 said, "Peers without autism should know that individuals with autism may have unique ways of processing information and interacting socially. Being patient, understanding, and open to different communication styles can help bridge any gaps in understanding." Participants S08

and S32 had similar responses, the former stating that her friend “understood [her] so much,” and the latter stating that his friend “understood [him] well.” Participant S17 noted that his friend “could forgive when [Participant 017] reacted in an unexpected way” due to the friend’s knowledge of autism. Participant S02 described a similar experience, saying that her friend “used to understand [her] even though she did not have the disorder.” Participant S10 spoke of open-mindedness, stating: “it is important for those without autism to have an open mind when interacting with a person on the autism spectrum. It’s useful to understand that each person is unique and will have their own strengths and weaknesses.”

## **What Challenges Do Autistic Children Face During Friendship Development?**

### **(RQ2)**

#### ***Social Stigma and Inequality***

The prejudices that neurotypical peers held against autistic students contributed to their difficulties making friends. Many student participants discussed being treated as hierarchically beneath their neurotypical peers. Participant S07 described situations where he tried to play with his neurotypical peers, but they “ran away” from him, and Participant S17 said that many of his neurotypical peers did not understand “that autism is just like any other condition. People with autism are also human and need to be made feel part of [neurotypical peers’] existence.” Participant S11 stated, “I would want my peers without autism to know that having autism does not make someone lesser or define them.” Participant S19 said that he wanted his peers to know that autism “doesn't make one a lesser being. [Autistic people] still should be treated equally.” Similarly, Participant S30 said, “I would like

[neurotypical peers] to know that people with autism are also human beings” and Participant S21 said they wished neurotypical peers would “normalize treating us the same and get to know us better outside the condition.”

Another major misconception of autism is that autistic individuals can control the presence and severity of their disability. Participant S23 stated that “autism is not a crime, and we don't get to choose it.” Similarly, Participant S25 wished peers knew “that [having autism] is not a choice for us.” In reference to common autistic behaviors, (e.g., stimming, impulsive statements), Participant E07 provided insight from a teacher perspective: “[Neurotypical students] thought that [the autistic student] had more capability to control things than he actually might have.” Participant S28 lamented neurotypical peers’ conflation of ‘disability’ with ‘inability,’ wanting them to know that it is a “normal condition,” and Participant S14 stated, “We would love to live life with [neurotypical peers] without any form of discrimination.”

The stigma that autistic children face impacts their mentalities towards socializing and academia. When asked to provide advice for a younger autistic child trying to make friends, Participant S06 said to “expect negativity” from neurotypical peers. Participant E08 explained:

Kids are using terms like 'tism' and 'sped' like they are derogatory terms. And then there are a lot of kids who aren't even on the spectrum but are just in the sped program who, because they know the association that kids have with sped as just a term, they're like, 'I don't want anything to do with [the sped program]. I want to be normal. I don't want to use my accommodations. I don't want to use headphones. I don't want to go to the inclusion teacher's room. I

just want to be normal.' And they will fail tests because they didn't use the accommodations that could have helped them. I've seen it happen with at least one kid every year who thinks that if they use their accommodations, it means admitting that they're stupid.

### *Communication*

The communication barrier between autistic and neurotypical children poses another challenge to friendship development. Participant E02 stated that it is akin to a “language barrier,” elaborating that “it's hard for [autistic children] to communicate with other students.” Participant S13 corroborated this, saying “some people say I am slow, so they don't like me around them, especially in group discussions.” Some common autistic characteristics, like niche interests and limited expressive language, also hinder friendship development between autistic and neurotypical children.

Regarding niche interests, Participant E03 stated:

My [autistic] students who are verbal...they're so interested in doing or talking about what they want to talk about, it's kind of hard to get past what they want to discuss. They lose interest once you try to play something different that they're not interested in or talk about something different. You really have to engage with them in a way that is meaningful for them. Gen Ed students, especially at the middle school level, don't want to talk about the NBC Peacock logo all day long. They want to talk about different things, so that's kind of a barrier there.

In reference to limited expressive language, Participant E04 explained:

I have a student who is pretty impacted. She's so kind and loving; she just doesn't really talk, and so people talk for her. And then she needs a lot of processing time. And so students, even if they're trying to be nice, they talk for her. And I'm like, 'no, let's give her time to think.' And then they're all staring at her.

### ***Collaboration***

Collaboration, particularly in non-academic settings, also posed a challenge for friendship development. Participant E02 stated that neurotypical peers did not make a cognizant effort to include autistic peers during unstructured play on the playground. “Recess is just every man for himself. [Neurotypical kids] are trying to have fun; they don't want to try to get [autistic kids] to participate in a group.”

Participant E07 expressed a similar issue he observed when autistic students tried playing team-based games.

The autistic kids I worked with all had dedicated aids, but one of the difficulties was field games or turn-based games. Individual based games, they did really well, but games where it was team based, they had a hard time understanding taking turns and 'You go, then they go.' That was challenging in terms of their socialization because the majority of the socialization was team-based games.

## **How Can Teachers Support Friendship Development Between Autistic and Neurotypical Children? (RQ3)**

### *Autism Education for Teachers*

Participant S01 stated, “Seeking support from trusted adults, such as teachers or parents, can be helpful in navigating the challenges of friendship.” This may prove difficult if teachers have a limited understanding of autism. Participant E03 said of her experience teaching special education:

There's a misconception about what my students are capable of, even from [general education] teachers in the building. I swear, there are still teachers that think we're down there babysitting, and these kids shouldn't be in this school. You'll see some teachers that turn and go the other way and when they see my students coming.

Participant E01 stated that paraprofessionals within special education and inclusion classrooms who work directly with autistic children also lack an understanding of autism:

I don't see [some paraprofessionals] trying to learn [about autism]. For instance, we had teachers saying, 'Okay, we're gonna use a clipboard with a checklist on it, and the student has to get three check marks to earn a break.' I'm seeing that one of the paraprofessionals in the classroom is using it for a couple of days, but then just decided to get rid of it because she saw it as a waste. But any time I worked with the student, I had that clipboard handy. And that's my guide--and the student's guide--to know that they have to do a certain level of work in order to get that reward.

When asked how teachers can support friendship development between autistic and neurotypical students, student focus group participants spoke mostly of differentiation. Participant S11 stated, “I would like teachers to know that autism affects each child differently, and they shouldn't use a generalized approach while interacting with us.” Participant S02 wanted teachers “to handle learners differently and more cautiously, especially those living with autism,” and Participant S04 wanted them “to handle [autistic] learners more carefully.” Participant S24 stated that if teachers had more knowledge of autism, such as communication styles, “they should teach peers more about it and spread awareness.”

Educators stressed the importance of teacher influence in fostering friendships between autistic and neurotypical children. Participant E03 described her autistic students as following:

Very loving, very affectionate kids. They're relationship-building kids, so all of them require a relationship like a good trusting relationship before they'll do any interacting, any work for someone. I think that's their biggest strength is that once they have that relationship formed, they're very affectionate and very easy to be around.

In addition to relationship building between teachers and autistic students, Participant E05 discussed teacher influence on neurotypical students' inclusive behaviors:

"Leading by example, I think especially being mindful in unstructured places like the hallway or just when they're at their lockers" shows neurotypical children how to treat their autistic peers.

### *Classroom Accessibility*

Accessible and inclusive classrooms was another common theme that participants stated would create equitable learning environments, thus fostering equitable friendships between autistic and neurotypical students. Participant S14 said that she would prefer to have “a classroom that caters [to] all students equally, since schooling is our main form of interaction.” She followed that statement by encouraging teachers to “avoid seeing [autistic students] as weaklings, and integrate us equally with other students.” Participant S20 also emphasized equality, offering this advice to teachers: “We may be a bit slower to learn, but we’re definitely and equally smart in class.” Similarly, Participant S19 wanted his teachers to know that “I may understand things differently, but it’s not that I am wrong,” underscoring the need for individualized approaches to learning.

Many students mentioned supplemental support methods as a means of creating these equitable learning environments. Participant S05 suggested that teachers learn that “some students with autism may have difficulty with verbal communication. Teachers should be patient and open to alternative communication methods.” Participants S09 and S15 both discussed visual supports, with the former participant focusing on individualization (“Teachers should be aware that students with autism may have specific learning needs and sensory sensitivities. Providing clear instructions, visual aids, and a structured environment can be beneficial.”) and the latter participant focusing on ability to acquire academic knowledge (“I may need other types of visual supports to better understand the material.”)

Participant E05 spoke about her intentionality in creating heterogeneous groups for in-class assignments.

When they are in groups, there's always kids that have a sweeter demeanor. So if I put them in groups, I'm just making sure [autistic students] are with kids that will treat them well and then when [other neurotypical students] start to see those guys get along, I feel it creates a good sense for the classroom.

One teacher, Participant E06, discussed how difficulties with administrative staff hindered classroom accessibility. She was unable to adequately help her autistic preschool students cope with their feelings because of a “chaotic” classroom environment and reached out to the school’s administrators for support.

The few times that I have gone to admin, they come in and they're just like, 'oh, everything looks fine.' But honestly, it's not fine. There's a lot of challenges on a day to day and it's overwhelming. And I feel like if we had that support and the teacher training [to help students cope with their emotions], I could definitely help these kids out.

### **What Programs and Interventions Will Support Teachers in Fostering Friendship Development Between Autistic and Neurotypical Children? (RQ4)**

#### ***Collaboration***

Students and teachers alike advocated for collaborative projects and interventions to foster friendship development. As Participant S22 stated, she envisioned “a world which promotes fairness and kindness among kids would ensure that we are treated equally.” Some suggestions focused solely on autistic children; Participants S04 and S27 said that “social support groups for autistic children” would

help them learn how to converse with their neurotypical peers. Participant S01 also wanted social skills training, specifically for autistic children.

Providing opportunities for structured social interactions and teaching social skills would make it easier to connect with peers without autism. This could involve creating social clubs or groups with shared interests, providing clear guidelines and explanations of social expectations, and offering social skills training or therapy.

Most suggestions involved both autistic and neurotypical children working together. Student participants frequently suggested heterogeneous training programs. Participant S11 stated: “There should be programs that encourage team building among the autistic and the non-autistic children,” and Participant S28 stated that he would appreciate “training programs that can combine all of us [autistic and neurotypical]; for example, social skills coaching.” Participant S24 specified using “webinars” that include autistic and neurotypical children as a means of teaching social skills. Participant E04 proposed conversational aids for autistic and neurotypical children.

I think something that would be helpful is having sentence starters or sentence frames so that the conversation is still natural, but it gives the students with autism and the neurotypical students what to say, but not make it like so black and white.

Having platforms to engage in common interests was another suggestion. Participant S16 said she would appreciate having “the opportunity to play with [neurotypical children] and do activities together.” Participant S26 also advocated for

“common platforms to have conversations, like after-school activities” Participants S29 and S34 mentioned that teachers could “create activities [autistic and neurotypical students] could participate in together” and to “give students a common platform to participate in activities.” Participant E05 added:

Just because [autistic children] might not put forth the same social cues [as neurotypical children], they do really want to be social and they want to have these groups of friends, and they don't always want it to be something that's so structured by teachers. [Teachers] can make these more fluid opportunities for them to interact with their peers and we don't always have to be monitoring and making sure it goes okay.

### ***Autism Education for Neurotypical Peers***

Teaching neurotypical children specifically about autism was another suggestion given by students and teachers. Participant S31 wanted neurotypical children to receive “training to learn to [understand] autistic people.” Participant S15 suggested “educational apps or videos about autism” for neurotypical children. Participant E02 expanded on this, offering the idea of a school-wide social-emotional learning (SEL) program that includes the topic of neurodiversity.

SEL...this is just something they started up in the past three years or so. [It doesn't focus] on our students on the spectrum and fostering those friendships, but it is public service announcements for all the students in terms of how to operate as an individual. Things that they might experience in their normal school life. It encompasses all the students, but I don't think they bridge that connection between neurodivergent students and neurotypical students.

### *Autism Education for Teachers*

Educators had some concern regarding any intervention implementation. Participant E06 suggested teacher training to help her solve the following problems she encounters in her classroom: "How can I make the classroom run smoothly without the autistic kid being judged? How can I make it like a safe space for everyone? Typical or not typical, how can I cater to everyone in the classroom?"

Participant E07 discussed how the focus group brought to his attention an issue he hadn't previously realized: his autistic students did not have friends.

It seemed like [autistic students] weren't trying to make friends. I was so focused on not having them be bullied or made fun of, and no one was doing that. So I just felt like, look at us, we're doing a great job because no one's making fun of them. But I didn't think, 'no one's like really befriending them.' And that is something that I wish I had been cognizant of. That makes me a little sad now because I'm like this kid was really lonely. So I wonder if we had put more effort into asking the [neurotypical] kids to say, 'hey, come on and join us...'. [Autistic kids] always seemed fine, but [neurotypical kids] were never asking the [autistic] student to play.



## CHAPTER 5 – GENERAL DISCUSSION

The goal of this study was to determine what attributes autistic children value when making friends, the challenges they face during friendship development, and the ways in which teachers can support friendships between autistic and neurotypical children. I conducted focus group interviews with autistic middle school and high school students to answer these questions. Participants indicated that they appreciated having friends who did not blame them for having autism, acknowledged their strengths, and understood that autistic children experienced sensory and learning differences, without making them feel inferior. Participants sought out peers who had similar interests and hobbies, such as sports, watching cartoons, or arts and crafts. Inclusivity was another attribute that participants often highlighted as a positive characteristic of a good friend. They emphasized that their friends made sure to include them in activities and defended them from bullying.

Friendship development between children with and without autism is not without its challenges. Participants discussed being treated as outsiders by their own peers, or as though they were at fault for having autism. These issues were compounded by teachers' lack of support and understanding. To combat this, participants suggested offering teacher training and workshops on supporting autistic students academically and socially. They noted that autistic children often need more time and explicit instruction to develop these skills, stating that teachers need to show compassion and patience when working with this population. This training will help create more inclusive classrooms; participants stated that schools were the easiest places to make friends because they spend the majority of their time there.

As researchers, we are in the unique position of being able to design programs that fit the needs of our target population. Previous studies have shown the importance of consulting disabled individuals to determine what interventions best benefit them (Danieli & Woodhams, 2005; Rosqvist et al., 2019). Through the focus groups I conducted, I learned that autistic children would feel supported if interventionists set up support groups and collaborative social skills training sessions to teach neurodivergent/neurotypical friendship development. These sessions should include opportunities for structured social interactions and playtimes. Focus group findings also prioritized autistic opinions in our intervention development, such as involving autistic students (as well as their parents, teachers, and neurotypical peers) in target behavior selection and social validity measures.

### ***Connection to the Literature***

This participants in this study were middle- and high-school students, differing from existing qualitative research on neurodiversity and autism, which primarily focuses on autistic adults (Jones et al., 2021). Other qualitative studies that examined autism and the neurodiversity paradigm had mostly White, male participants (Angulo-Jiménez & DeThorne, 2019), while most participants in the current study were Black females.

This study builds upon previous research that states the importance of emancipatory research in the autistic community. Throughout the student focus group process, I made a cognizant effort to regard the participants as experts in the autistic experience (Oliver, 1992; Johnson & Walmsley, 2003). My focus was not on “deficits,” but on the ways I can promote understanding of neurodivergence

(Harrington et al., 2014). When discussing the challenges they face during friendship development, most participants posed solutions that encompassed class-, school-, or society-wide adaptations to autistic needs. This is information that may not be uncovered without consulting with autistic individuals.

Student focus group participants echoed previous sentiments made by participants in Calder et al (2013). Autistic children appreciate the companionship aspects of friendship, particularly having someone to play with and having someone to defend them against bullying. There were also varying levels of emotional connection, with some participants discussing the importance of deeper emotional understanding (“Most of all, [autistic people] need love and care”), while others focused more on having someone with whom to participate in activities, such as swimming or football. Results from a case study echoed sentiments that focus group participants gave about integrating autistic and non-autistic children in a school setting, with the recess playground being the primary place where friendships developed (Potter, 2015). Desires regarding friendship quantity differed between these studies; participants in Calder et al (2013). preferred having small groups of friends, while participants in this current study advised autistic children to “make as many friends as possible.”

Responses from educator focus groups were also supported by the literature. First, participants discussed the importance of establishing a relationship with autistic students, centering the mentality of individuality (Sweetapple, 2022; Watson, 2022). As one teacher stated, “If you’ve met one person with autism, you’ve met one person with autism.” The neurodiversity model of behavior addresses many of the obstacles

to inclusion and equity that participants discussed. The issue of general educators not understanding the function of autistic behaviors and dismissing them as “abnormal” or “socially maladaptive” promotes ableism and oppressive normativity (Armstrong, 2017; Sweetapple, 2022). This is evident when teachers avoid autistic students in the hallways, or when they do not consistently implement behavior plans because they “don’t see the purpose,” as one paraprofessional noted. Training on creating classrooms that are founded in the neurodiversity paradigm may be the first step to fostering inclusive and equitable friendships between autistic and neurotypical children.

By aligning with the neurodiversity paradigm, this study differs from studies founded upon the medical and social models of disability. The medical model places the blame of disability on autistic individuals, while the social model states that disability results from societal barriers imposed on disabled individuals (Chown & Beardon, 2017). In contrast, the neurodiversity model of disability acknowledges the difficulties autistic individuals face because of their diagnosis and because of social norms; however, this model emphasizes acceptance of neurological differences rather than assimilation to neurotypical standards (Singer, 1999; 2016).

### **Limitations**

There are several limitations to this study. The first limitation is conducting the focus groups using a virtual platform. While this allowed individuals to participate from around the country, it also eliminated the opportunity to have face-to-face interactions between participants and between myself and the participants. Another limitation is that not all autistic participants had experience making friends

with neurotypical children, which prevented them from answering questions specifically regarding this type of friendship development. I did not verify autistic students' diagnosis using documentation from their parents and relied on autistic participants' self-diagnosis. I did not include their classroom assignment (e.g., self-contained, inclusion) in the demographics form. Moreover, the paraprofessional in the educator focus group was not a certified teacher and primarily worked on a one-to-one basis with his autistic students, which may have limited his exposure to other autistic students in the class. Some findings from this study may not be applicable across ages and grade levels; for example, the use of Dungeons & Dragons as a collaborative activity could be too developmentally advanced for preschool and kindergarten students. Lastly, due to audiovisual and scheduling issues, some focus groups had only one participant, which excluded those participants from interacting with others.

### **Implications for Practice**

Student focus group participants stated that they primarily made friends and interacted with neurotypical peers at school, either in class or during after-school activities, and emphasized that teachers could be trusted adults to help them navigate social situations. First, educators should familiarize themselves with autism as explained by the neurodiversity model, which frames autistic behaviors as differences (e.g., learning, sensory, behavioral), not deficits. Teachers can foster inclusive classroom environments by building relationships with their autistic students: learning about their interests, consistently implementing their supplemental supports

and accommodations, and explaining autistic behaviors (e.g., stimming) as part of life's normal differences.

An educator focus group participant noted that communication differences between autistic and neurotypical children was akin to a “language barrier.” A social-emotional learning (SEL) curriculum may be a way to eradicate this barrier on a school-wide level, teaching through a neurodiversity lens. The curriculum would explain neurodiversity at a level that is appropriate for elementary school students, focusing on learning how to play and socialize with those who communicate differently than they do. Educators can also draw implications from these findings for the collaborative activity, such as using a developmentally appropriate game that involves working in a team to achieve a common goal (e.g., solving a puzzle created by the teacher).

### **Implications for Research**

The results of this study will be used to develop a Literacy Based Behavior Intervention (LBBI) with a collaborative activity intervention package to foster friendship between elementary school-aged autistic and neurotypical children. The LBBI will focus on awareness and understanding of play and socialization differences and will teach participants that friends can navigate these activities in various ways. The activity will provide participants with opportunities to work together, aligning with Allport's (1954) Intergroup Contact Theory. The activity will emphasize collaboration over competition, ensuring that participants communicate to complete the task. LBBI target behaviors would be based off a selection process that includes teacher and neurotypical and autistic participant input. To strengthen the beneficence

of peer-oriented social skill LBBI, future research could also involve systematic observation (Michaels, 1983), in which interventionists observe autistic children's experiences making friends in school-based social settings (e.g., classrooms, after-school clubs, cafeteria) and how certain circumstances impact friendship development.

To ensure robust intervention development, the LBBI will have iterative phases for testing research, as described by Gitlin (2013). First, I will ensure that the target behavior is meaningful to autistic participants using the findings from this study and by including autistic participants in the target behavior selection process. I will compare effect size of the neurodiversity aligned LBBI that align with the medical or social models to compare the efficacy. While the LBBI may first be implemented in a more clinical setting as a pilot study, I will then assess how well it translates to a classroom setting using Tau-U effect size.

The educators who participated in the focus groups stated that there was minimal teacher training on inclusion, and even less on autism specifically. One general education teacher suggested videos showing how to manage autistic behaviors in ways that promote neurodiversity. A Youth Participatory Action Research (YPAR) project with autistic children and adolescents as co-researchers could shape these materials, using their schooling experience to inform teachers about inclusivity and how to support friendships between autistic and neurotypical students. Future studies could also analyze the gender differences in intergroup friendship development between autistic and neurotypical children. Prior to conducting further research with autistic individuals, researchers could include a diagnosis verification

using documentation from a medical professional and autistic participants' classroom assignment (e.g., self-contained, inclusion, general education) to determine discrepancies between friendship development across different class types. Further, any future projects should have autistic participants at the forefront to ensure equitable treatment and alignment with the neurodiversity model of disability; specifically, inclusion in target behavior selection and social validity measures to ensure that the target behavior is meaningful to autistic individuals and that the intervention was beneficial to them.

## CHAPTER 6 – FOSTERING NEURODIVERSITY IN THE CLASSROOM USING LBBIS

*“It seemed like [autistic students] weren’t trying to make friends,” an inclusion teacher explained during a focus group (Pepkin Dataram, in progress). He’d taught for six years prior to participating, and had had various autistic students in his class, each with a dedicated aid. “I was so focused on not having them be bullied or made fun of, and no one was doing that. I just felt like, ‘look at us, we’re doing a great job because no one’s making fun of them’. But I didn’t think, ‘no one’s like really befriending them.’ And that is something that I wish I had been cognizant of. That makes me a little sad now because, I’m like, ‘this kid was really lonely.’ They always seemed fine, but [neurotypical kids] were never asking the [autistic] student to play”*

With so much of special education research and practice rooted in oppressive normativity (Sweetapple, 2022), it is no surprise that social skills interventions also seek to have autistic children conform to neurotypical standards. This is true of Literacy Based Behavioral interventions (LBBIs), which use written expression (e.g., stories) to teach various social skills, often to autistic students. Previous research shows that social skills LBBIs for autistic children, such as Social Stories (Gray & Garand, 1993), aim to increase pro-social behaviors or decrease aberrant behaviors (Leaf et al., 2015; Milne et al., 2020). Researchers typically consult teachers, parents, and peers, rather than autistic individuals, when selecting LBBi target behaviors (Pepkin Dataram & Cummings, in progress). As a result, the selected behaviors often adhere to neurotypical social norms (Singer, 2016). These social norms include eye contact, agreeing with peers, and playing with toys as intended (Pepkin Dataram &

Cummings, in progress). We as educators can help change this narrative by (a) including autistic children in target behavior selection and social validity measures, (b) teaching neurotypical children about autistic differences, and (c) including neurotypical children in the interventions as social partners, where they learn how to communicate and play with their autistic peers.

### **Deficits of Current LBBIs**

Autism education and social skills interventions, like any pedagogical structures, have changed over time. Early attempts at inclusion erred on the side of assimilation, with autistic children being expected to learn and behave like their neurotypical peers (Singer, 2016; Veneziano & Shea, 2023). The goal of special education practices, such as applied behavior analysis (ABA) was to make autistic individuals “indistinguishable” from their neurotypical peers through trait erasure (Singer, 1999; 2016). These behavior modifications include reducing stereotypy (colloquially known as “stimming”) and forcing eye contact (Owren & Stenhammer, 2013; Singer, 2016). Autistic people use stimming behaviors to self-soothe; without stimming, they often experience anxiety and are unable to regulate their intense emotions (Kapp et al., 2019).

### ***Adherence to Neurotypical Standards***

A literature synthesis of LBBIs indicated that LBBIs heavily rely on the aforementioned neurotypical standards to determine what skills to teach (Pepkin Dataram & Cummings, in progress). Of the 29 studies evaluated, 10 (34.5%) did not involve neurotypical peers in any part of the LBBi process. Twelve studies (41.4%) only involved neurotypical peers in an observation environment, which means that

neurotypical peers were in the same setting (e.g., playground, classroom toy area) as autistic participants, but did not receive any instruction on communicating with autistic children.

Three (10.3%) studies used neurotypical peers as a comparison standard to which researchers held autistic participants (Krasch, 2013; Soenksen & Alper, 2006; Wright, 2007). Two studies (6.9%) involved neurotypical peers as peer models: one in a Social Stories with a social robot intervention, in which neurotypical peers modeled sharing toys and saying “thank you” and “hello,” for autistic participants to emulate (Vanderborcht et al., 2012) and another as peer models in a recorded video, where they modeled (a) how to join in gameplay and (b) maintain conversation for autistic participants to emulate (Sansosti, 2005). The last two studies (6.9%) involved neurotypical peers as conversational partners in Social Stories interventions targeting verbal initiations and responses (Sutton et al., 2021) and social engagement (Simpson, 2020), but, like peers in the observation environment, interventionists did not provide any communication instruction (Pepkin Dataram & Cummings, in progress).

### ***Exclusion from Social Validity Measures***

The literature synthesis by Pepkin Dataram and Cummings (in progress) found that social validity measures, when implemented, rarely included autistic participants. Only 15 (51.7%) of studies assessed social validity by using informal interviews, Intervention Rating Profile (IRP; Lane et al., 2009), surveys, Likert scale ratings, peer comparisons, and the Behavior Intervention Rating Scale (BIRS; Elliott & Treuting, 1991). Twelve of those studies (80%) used teacher input, three (20%) used peer input, and only two (13.3%) used autistic participant input Daubert et al.,

2015; Simpson, 2020). Educators can ensure that autistic individuals are benefitting from LBBIs if by including autistic individuals in social validity measures and including neurotypical peers in the intervention as participants. This literature review found that none of the interventionists implementing LBBIs included autistic participants in the target behavior selection. Instead, interventionists consulted with parents, school staff, and even peers to determine what social skills to teach using the LBBIs.

### ***Purpose of the Paper***

The neurodiversity model of disability frames autism as one of the many ways brains process information and is a direct response to ableism and oppressive normativity (Singer, 2016; Sweetapple, 2022). Ableism can be direct, such as bullying and rejection from peers (Dunn, 2021). It can also be indirect, such as using deficit-based language like “challenging” or “restrictive behaviors,” or categorizing autistic people as high- or low-functioning (Owren & Stenhammer, 2013). An LBBIs based on the neurodiversity paradigm would ensure that the target behaviors improve autistic participants’ quality of life, not just the lives of their neurotypical teachers, family members, and peers (Leadbitter et al., 2021). While oppressive normativity does not begin and end in the classroom (Sweetapple, 2022), educators can begin disrupting oppressive normativity on a classroom- and school-wide level before, during, and after intervention implementation by (a) establishing a relationship with autistic children, (b) teaching neurotypical peers about autism using the neurodiversity paradigm, and (c) fostering play environments that are collaborative, not competitive. The following paper provides information on how to use

neurodiversity to create LBBIs that actively combat oppressive normativity practices against autistic individuals including prejudice formation and social exclusion (Singer, 2016; Sweetapple, 2022).

### **Neurodiversity as the Future Foundations of LBBIs**

A study conducted with autistic middle and high school students provided crucial information for teachers of autistic students (Pepkin Dataram, in progress). Participants explained that school was the primary setting for friendship development, given accessibility to peers and the amount of time spent there. They emphasized the importance of teacher knowledge of autism for three main purposes. The first is for teachers to develop their own understanding so they can better teacher academic and social-emotional concepts to their autistic students. The second reason is to adequately teach neurotypical students about autism. The third reason is to create opportunities for collaboration, rather than competition, to foster a truly inclusive environment.

**Table 10**

*Summary of Recommendations for Educators*

Establishing Relationships	Autism Education	Opportunities for Collaboration
Maintaining consistent classroom routines and practices	Dispelling biases and misconceptions about autism	Establishing environments around shared interests
Learning about autistic students' interests	Framing autistic behaviors as differences, not deficits.	Modifying the learning environment to one that promotes academic-based intergroup contact

## **1. Establish a Relationship with Autistic Students**

*When asked to give a younger autistic child advice on friendship-making, a participant in an autistic student focus group (Pepkin Dataram, in progress) stated that “seeking support from trusted adults, such as teachers or parents, can be helpful in navigating the challenges of friendship.”*

Prior to implementing an LBBI, school staff should ensure that they establish a relationship with their autistic students. Teachers can build trusting relationships with autistic children by learning about their strengths, interests, and struggles (Pepkin Dataram, in progress). With the still-present biases of autistic students being more aggressive and less academically adept than their neurotypical peers (Aubé, 2021), it is necessary for teachers to educate themselves about autism communication preferences, not only for their own knowledge of autism but also to dispel any prejudices or misconceptions about autistic play and socialization from their neurotypical students (Tracy-Bronson & Scribner, 2023). Educators have noted that their autistic students do not always have a natural inclination to form connections with them compared to their neurotypical students (Pepkin Dataram, in progress). From autistic students’ and special education teachers’ experiences, there are certain actions teachers can take to forge these relationships such as (a) maintaining consistent classroom routines and practices and (b) learning about their autistic students’ interests.

### ***Maintaining Consistent Classroom Routines and Practices***

*“I don't see [some paraprofessionals] trying to learn [about autism],” a special education paraprofessional of nine years stated during an educator focus group*

*(Pepkin Dataram, in progress). "I'm seeing that one of the paraprofessionals in the classroom used [the autistic students' self-management accommodation] for a couple of days, but then just decided to get rid of it because she saw it as a waste. But that's the student's guide to know that they have to do a certain level of work in order to get a reward."*

When teachers establish consistency in their classrooms, autistic students are more likely to thrive due to their preference for routine (Singer, 2016; Tracy-Bronson & Scribner, 2023). This not only applies to academic work, such as independent reading, but also to behavioral practices (Kauffman & Hallahan, 2011; Pepkin Dataram, in progress).

- Practitioners can provide autistic students with a structured and dependable routine helps build trust between teachers and these students (Tracy-Bronson & Scribner, 2023). Practitioners can also make students aware of any deviations to the routine, when possible, to foster trust.
- To strengthen autistic student-teacher relationships, practitioners can create accessible classrooms based on autistic students' needs; for example, allowing autistic students to have their independent work time in a space within the classroom away from activities that can result in overstimulation (Pepkin Dataram, in progress).
- Practitioners can ensure that autistic students' learning materials, including accommodations and modifications, are consistent between classroom teachers and paraprofessionals (Pepkin Dataram, in progress). Self-management strategies, such as using a checklist to monitor academic and

behavioral progress, are most effective when implemented with consistency (Kauffman & Hallahan, 2011).

### ***Learning About Autistic Students' Interests***

*"One of my students with autism is obsessed with Pokémon," a special education teacher of five years shared during an educator focus group (Pepkin Dataram, in progress). "On Monday, I'm starting a Pokémon club, so instead of him going to recess, he and some of his other his peers--because they're not really friends right now--are joining him at this Pokémon club."*

One common manifestation of autism is having fixed interests (Bolourian et al., 2022; Singer, 2016). Practitioners can not only learn about their autistic students' interests, but can also find ways to incorporate them into the classroom and into an LBBI (Bolourian et al., 2022; Kapp et al., 2019)

- When practitioners and neurotypical students participate in autistic students' hobbies (e.g., art, video games, swimming) and learning about their interests (e.g., television shows, music) provides autistic students with opportunities to communicate about their interests (Pepkin Dataram, in progress). An educator focus group participant from this study noted that her autistic students communicate more frequently and more "passionately" during after-school Dungeons & Dragons club than in the regular classroom setting.
- Practitioners can consider special interests, whether common (e.g., art) or more niche (e.g., memorizing birthdays) as strengths rather than hindrances to build relationships between teachers and autistic students, and between

autistic and neurotypical students by setting a classroom precedent that all interests are important (Bolourian et al., 2022).

- Practitioners can build autistic students' hobbies and interests into an LBBI with a collaborative component (e.g., an autistic and a neurotypical student reading a Social Story about working together and then building a Lego set together based on a preferred movie). This helps align the LBBI with the neurodiversity paradigm, as this centers the intervention around the autistic student rather than on what a teacher or interventionist deems an “appropriate” interest (Kapp et al., 2019; Pepkin Dataram & Cummings, in progress).

## **2. Autism Education for Teachers and Neurotypical Peers**

*When asked what he wished his peers knew about autism, one autistic focus group participant reported: “Having autism is not a crime” (Pepkin Dataram, in progress).*

Autistic students stated that one of the major barriers to friendship development was that neurotypical peers lacked knowledge about autism (Pepkin Dataram, in progress). Moreover, the same study found that autistic children said that it was easy to befriend neurotypical peers who “had an understanding of autism and were aware that it wasn't [autistic people's] fault.” Teachers and autistic children in this study have noted two primary means of teaching educators and neurotypical children about autism to dismantle this lack of understanding: (a) dispelling biases and misconceptions about autism, and (b) framing autistic behaviors as differences, not deficits.

### ***Dispelling Biases and Misconceptions About Autism***

*“[Neurotypical children] think [autistic] means stupid, especially now that there's a joke going around TikTok referring to any kind of like stupidity or lapse of memory or weirdness in general as shortening autism to having ‘the tism.’ And because it's a buzz phrase, it's now commonly used in everyday language,” a general education teacher with autistic students noted as a misconception neurotypical students had about autism (Pepkin Dataram, in progress).*

Bias research shows that prejudice develops as young as preschool, with neurotypical children stating that their autistic peers are less friendly than neurotypical peers (Aubé et al., 2021; Nesdale, 2007). When teachers actively work to combat this by changing the way they describe autistic behaviors and any accommodations their autistic students might use, using a ‘difference versus deficit’ approach, this can alleviate some of the bias among neurotypical students (Tracy-Bronson & Scribner, 2023).

- By honoring the intentionality of autistic children’s communication (e.g., using a Picture Exchange Communication System, typing, or saying the first sound in a word), practitioners can shift the narrative from “autistic children do not communicate properly” to “this is how autistic children communicate” (Tracy-Bronson & Scribner, 2023).
- Practitioners can change labeling behavior negatively (e.g., “aggressive,” “maladaptive”) to explaining the function of an autistic child’s behavior to neurotypical children. An educator from the Pepkin Dataram (2024) study told her neurotypical students that autistic children going to the restroom without first asking permission to leave the classroom is not a maladaptive behavior;

rather, it is a way for them to convey their needs as they learn how to communicate.

- Practitioners celebrating autism as a part of identity, rather than as a deficit or as something an autistic child will outgrow, promotes equity between autistic and neurotypical students by framing autistic behaviors (e.g., stimming, having specific interests) as an equally important part of human diversity (Kapp et al., 2019).
- Practitioners can relate autistic students' different accommodations or modifications to teach neurotypical children that all students are working towards their goals, but there are different means of achieving these goals (e.g., autistic students receiving tangible reinforcement on a fixed ratio of one [FR1] schedule for each completed question while neurotypical students receive tangible reinforcement after completing an entire worksheet; Pepkin Dataram, in progress).

### **3. Creating Opportunities for Collaboration, Not Competition**

*"Just because [autistic students] might not put forth the same social cues [as neurotypical students], [autistic students] do really want to be social and they want to have these group of friends and they don't always want it to be something that's so structured by teachers," a special education teacher of five years explained. "We can make these fluid opportunities for [autistic students] to interact with their peers, and we don't always have to be monitoring and making sure it goes okay."*

Intergroup Contact Theory (Allport, 1954) emphasizes using collaborative activities, rather than competitive, to reduce prejudice and foster friendships between children belonging to different groups. According to this theory, collaborative activities refer to tasks with common goals that individuals complete together. Teachers and autistic students stated that educators can cultivate collaboration between autistic and neurotypical students in a more natural manner by (a) establishing environments (e.g., after-school clubs) around shared interests, and (b) modifying the learning environment to one that promotes academic-based intergroup contact (Allport, 1954; Pepkin Dataram, in progress).

### ***Establishing Environments Around Shared Interests***

*During the autistic student focus groups, one high schooler said that having “common platforms for conversations” would have made it easier for her to have conversations with her neurotypical peers when she was in elementary school, while another high schooler said she would have liked “having opportunities to play together” with her neurotypical peers (Pepkin Dataram, in progress).*

Without opportunities to access reliable social communication with neurotypical peers, autistic students are likely to be excluded by their neurotypical peers (Pepkin Dataram, in progress). In addition, sensory overstimulation often leads autistic students isolate themselves (Tracy-Bronson & Scribner, 2023), particularly in more unstructured settings.

- Practitioners can provide autistic students with access to reliable social communication opportunities (e.g., play that does not overstimulate their

senses) and allow them to socialize in informal group settings (e.g., recess) with their neurotypical peers (Tracy-Bronson & Scribner, 2023).

- Practitioners can use autistic students' interests (e.g., music, art) as the foundations of after-school clubs, and in collaborative activities for an LBBI package, to create environments that are more hospitable to intergroup communication by providing a comfortable means of connection (Tracy-Bronson & Scribner, 2023). These increased opportunities for connection also result in greater prosocial emotions from neurotypical children towards their autistic peers (Cook et al., 2019).

### ***Modifying the Learning Environment for Intergroup Contact***

*“In an inclusion classroom, I would kind of...force [neurotypical and autistic students to work together]. If I was pulling a group, I would include [autistic children] in with the non-autistic children,” an inclusion teacher explained when asked how she fostered collaboration in her classroom (Pepkin Dataram, in progress).*

Practitioners can make various changes within the scope of their regular curriculum to help autistic students work alongside their neurotypical peers (Kauffman & Hallahan, 2011). Practitioners can also structure the classroom to help autistic and neurotypical students interact during academic work, as well as provide accommodations to foster communication from the autistic student (Allen et al., 2024).

- Practitioners can scaffold their curricula. This process often involves breaking whole tasks into smaller and more manageable steps that are slowly faded out

as students learn and eventually master a concept (University of San Diego, 2023).

- Practitioners can provide extra structure in group work by having autistic students write a script of what they will say during a group presentation, which promotes inclusion and encourages meaningful participation in an academic setting (Pepkin Dataram, in progress).
- Practitioners can use LBBIs to teach autistic students how to use sentence starters to express emotion (e.g., “I like,” “I don’t like,” “I feel”), in alignment with their level of verbal ability (e.g., verbally, typing, picture communication system). This allows autistic students to communicate their needs and amplifies their perspectives, even in unstructured settings such as the school gym (Allen et al., 2024).

### **Conclusion**

This article introduced the concept of aligning classroom inclusion strategies and LBBIs with the neurodiversity paradigm in a classroom setting. As found in a literature synthesis, previous LBBIs have been rooted in standard social norms, relying on input from neurotypical adults and children to determine intervention targets and social validity (Pepkin Dataram & Cummings, in progress). Previous research also shows that celebrating autistic traits, rather than denouncing them, improves autistic sense of (Kapp et al., 2019). Gray and Garand (1993) created LBBIs with the intention of teaching new skills to autistic children so they would assimilate with their neurotypical peers; however, the neurodiversity model of disability

suggests that neurotypical individuals should learn about how to communicate with autistic people (Singer, 2016).

A new generation of LBBI, therefore, would prioritize the needs of the autistic population that it aims to benefit, rather than the needs of neurotypical members of society. The focus would be on collaboration, not conformation or competition (Allport, 1954), and would emphasize understanding different communication and play styles instead of expecting autistic individuals to adhere to neurotypical standards (Dunn, 2021; Sweetapple, 2022). Establishing a trusting relationship with autistic students is crucial for teachers and neurotypical students to begin bonding with them (Pepkin Dataram, in progress), which includes acknowledging their own biases towards autistic individuals and working to dispel those prejudices (Tracy-Bronson & Scribner, 2023). When selecting collaborative activities, teachers should incorporate autistic students' interests, rather than choosing one that is deemed socially appropriate by neurotypical standards (Bolourian et al., 2022). While an overhaul of LBBI purpose from assimilation of autistic children to equitable communication between autistic and neurotypical children will not completely eradicate ableism and oppressive normativity (Sweetapple, 2022), this paper serves as a guide to begin chipping away at it on school- and class-wide levels.

# Appendices

## Appendix A

My name is Sara, and I'm a doctoral candidate at the University of Maryland, College Park. I am reaching out because I'm working on my dissertation. The goal of my project is to develop and implement a social skills intervention that fosters friendships between children with autism and their neurotypical peers.

In recent years, autism research has begun a gradual shift towards the neurodiversity model of disability. This means that we view autistic traits as differences, rather than deficits. In addition, we incorporate input and opinions from autistic individuals to ensure that the interventions are beneficial to them. My hope is for my dissertation research to align with this model.

The first part of my intervention development involves conducting focus groups with autistic middle school students (grades 6 through 8). The purpose of this group is to learn about the obstacles autistic children face when socializing, and the personality traits they look for when making friends. I will use this information to create a Literacy Based Behavioral Intervention (LBBI) that promotes friendship development between children with and without autism. All focus groups will be held via Zoom and should take no longer than 45 minutes.

I am asking that you pass this information along to parents of clients/students who think their child would be interested in participating in a focus group. If they have any questions, they can email me at [redacted]

Thank you,  
Sara Pepkin Dataram

Appendix A. Email template sent to listservs for autistic student focus group recruitment.

## Appendix B



This Photo by Unknown Author is licensed under [CCBY-NC](#)

# Want to be part of a study on autism?

**Looking for autistic middle school students (grades 6 through 8) to participate in 45-minute focus groups about socialization and friendship development for my dissertation research!**

**Location: Zoom**

**Dates: throughout summer 2023**

Appendix B. Flyer used to advertise for autistic student focus group recruitment.

## Appendix C

### SCRIPT

Hi, my name is Sara. If you have any questions about what I am telling you, you can ask me at any time.

I want to tell you about a research study we are doing. In this study, we want to find out more about supporting friendships between kids with and without autism.

You are being asked to be in this because you completed elementary school within the last five years and have an autism diagnosis.

If it is okay with you, I will ask you to participate in a focus group with about four or five other participants. In this focus group, I will ask you to answer questions about your experience making friends with kids who don't have autism, and you can answer out loud or by typing your answer. This will take about 45 minutes total, and there will also be time for you to listen to the other participants' opinions and have discussions with them, if you would like. These questions will help me understand what autistic kids find important when making friends.

Some of the things that we will ask you to do might make you uncomfortable or be hard to do. Some of the questions or tests might be hard to answer. If you get too tired or if this seems too silly just let me know. If you want to stop at any time, just tell me and we will stop.

You don't have to be in this research study. It is up to you. You can say yes now and still change your mind later. All you have to do is tell me. No one will be mad at you if you change your mind.

Your parents say it is okay for you to be in this study. If you have questions for me or for your parents you can ask them now or later. After completing the focus group, you will receive a \$25 Visa gift card via email.

Do you have any questions? Are you willing to answer questions about your experience making friends with kids without autism?

Child's/Participant's response:       Yes                                       No

Check which applies below:

- The child is capable of understanding the study
- The child is not capable of understanding the study

Appendix C. Verbal assent script read to autistic participants prior to beginning each student focus group.

## Appendix D

### Focus Group Interview Questions

*This focus group will be used to learn more about your experiences making friends who don't have autism. Your experiences may differ from other people's. Please keep all questions and comments respectful.*

1. What would make it easier to connect with peers without ASD?
2. Tell me about a friend you had in elementary school.
  - a. What were some things you did together?
  - b. What were some interests you shared?
  - c. What made them a good friend?
3. What would you like your peers without ASD to know about it?
4. What would you like your teachers to know about ASD?
5. What advice would you give your younger self or a younger student with ASD about making friends?

Appendix D. Instructions and interview questions for each student focus group.

## Appendix E

### Teacher Focus Group Questions

1. Tell me about your experience teaching autistic children.
  - a. What were some strengths they exhibited when socializing?
  - b. What were some difficulties they had when socializing?
2. What misconceptions, if any, do NT children in your class/school have about autism?
3. How do you promote inclusion in your classroom?
4. What difficulties have you experienced when creating an inclusive classroom?
5. What information about autism and neurodiversity would be helpful when fostering friendships between autistic and NT children?

Appendix E. Instructions and interview questions for each educator focus group.

## Glossary

**Literacy Based Behavioral Intervention (LBBI):** an intervention that uses text or pictures to teach a new behavior or targets a behavior already within a participant's repertoire for increase or decrease (Bucholz & Brady, 2008). Text-based LBBIs involve full or partial sentences that define and explain how to engage in the target behaviors, as well as opportunities to rehearse. LBBIs include Social Stories (Gray & Garand, 1993), comic scripts, picture schedules (Honsberger et al., 2019), social stations (Sutton et al., 2021), and Power Cards (Kuligowski, 2010; Daubert et al., 2015). Researchers can implement an LBBI to teach social, academic, or daily living skills.

**Neurodiversity:** refers to the cognitive differences across all people, with and without neurological disorders, with an emphasis on learning, socialization, and attention (Singer, 2016). The neurodiversity model of disability views neurological differences as part of one's identity and focuses on the ways in which we can adapt environments to be more inclusive for neurological minorities.

**Neurotypical:** a means of describing individuals without a neurological disorder, whose brains function similarly to their same-age peers (Singer, 2016).

**Social Story:** an LBBI used to improve the social cognition of autistic children. They involve simple, direct sentences that explain how and when to engage in a particular behavior. In order to maximize generalization, interventionists should refrain from using illustrations. When writing a Social Story, interventionists should take on the perspectives of their target participants (Gray & Garand, 1993).

**Socialization:** constructive interactions between two or more people or groups. In the context of the study, socialization includes verbal communication, nonverbal communication, and play.

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